THE PURPOSE OF PUBLIC EDUCATION IS NOT TO *SERVE* THE PUBLIC BUT TO *CREATE* A PUBLIC.

THOMAS JEFFERSON, FOUNDING FATHER

IN MANY SCHOOLS TODAY, THE PHRASE 'COMPUTER-AIDED INSTRUCTION' MEANS MAKING THE COMPUTER TEACH THE CHILD. ONE MIGHT SAY THE COMPUTER IS BEING USED TO *PROGRAM THE CHILD*. IN MY VISION, THE *CHILD PROGRAMS THE COMPUTER* AND, IN DOING SO, BOTH ACQUIRES A SENSE OF MASTERY OVER A PIECE OF THE MOST MODERN AND POWERFUL TECHNOLOGY AND ESTABLISHES AN INTIMATE CONTACT WITH SOME OF THE DEEPEST IDEAS FROM SCIENCE, FROM MATHEMATICS, AND FROM THE ART OF INTELLECTUAL MODEL BUILDING.

SEYMOUR PAPERT, COMPUTER SCIENTIST

A GOOD EDUCATIONAL SYSTEM. . . SHOULD PROVIDE ALL WHO WANT TO LEARN WITH ACCESS TO AVAILABLE RESOURCES AT ANY TIME IN THEIR LIVES; EMPOWER ALL WHO WANT TO SHARE WHAT THEY KNOW TO FIND THOSE WHO WANT TO LEARN IT FROM THEM; AND, FINALLY, FURNISH ALL WHO WANT TO PRESENT AN ISSUE TO THE PUBLIC WITH THE OPPORTUNITY TO MAKE THEIR CHALLENGE KNOWN.

IVAN ILLICH, PHILOSOPHER

WE LEARN TO DO SOMETHING BY DOING IT. THERE IS NO OTHER WAY.

JOHN HOLT, FATHER OF MODERN HOMESCHOOLING

CHRIS ANGELLI, LEO DESIMONE, SHAUNA-LYNN DUFFY, ROB GREGORY, BAKHTIAR MIKHAK, JOHN OTERI, ALEC RESNICK, CHRIS ROGERS, MARCUS SANTOS, ADAM SWEETING, LISA TATTERSON, KAREN WOODS

THE SOMERVILLE STEAM ACADEMY INNOVATION PLAN

THE SOMERVILLE STEAM ACADEMY
INNOVATION PLANNING COMMITTEE

Drafted by sprout & co.

PUBLISHED BY THE SOMERVILLE STEAM ACADEMY
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Dedicated to the Somerville of 2020.

Introduction

> In January 2010, Governor Patrick signed historic education reform legislation that gives all students and families greater access to high-quality schools. The Innovation Schools initiative, a key component of this legislation, provides educators and other stakeholders in all districts across the state with the powerful opportunity to create new "Innovation Schools," in-district and charter-like schools that will operate with greater autonomy and flexibility with regard to curriculum, staffing, budget, schedule/calendar, professional development, and district policies. These public schools will be able to implement innovative strategies to improve student achievement while keeping school funding within districts. There are currently 47 approved Innovation Schools across the commonwealth.

This book lays out what we hope will be the plan for the 48th Innovation School in Massachusetts: the Somerville STEAM Academy. The design and approval process constitutes seven stages.

1. PROSPECTUS DRAFTING & APPROVAL: At the very beginning, the applicant—in this case, sprout & co—drafts a prospectus. After our initial conversations with the Mayor wherein he encouraged us to apply, we put together a prospectus broadly outlining what the problems and opportunities that a new school might be able to address were, and the very broadest strokes of our vision for the school. You can find this prospectus in the Supporting Documents appendix.

   The prospectus had to include, but was not limited to, a description of:

   (a) whether the school will be a new school or a conversion of an existing school;

   (b) if the school is a new school, the proposed location of the school;

   (c) if the school is a conversion of an existing school, the school that is being proposed for conversion;

   (d) the external partners, if any, that will be involved in the school;

   (e) the number of students the school is anticipated to serve and the number of staff expected to be employed at the school;

   (f) the overall vision for the school, including improving school performance and student achievement;

(g) specific needs or challenges the school will be designed to address;

(h) a preliminary assessment of the autonomy and flexibility under subsection (b) that the school will seek;

(i) why the flexibility described is desirable to carry out the objectives of the school;

(j) anticipated components of the school's innovation plan;

(k) a preliminary description of the process that will be used to involve appropriate stakeholders in the development of the innovation plan; and

(l) a proposed timetable for development and establishment of the proposed school.

2. SCREENING COMMITTEE APPROVAL: Within thirty days of receiving the prospectus, the screening committee decided, on the basis of a two-thirds vote whether the prospectus: (*i*) presented a sound and coherent plan for improving school performance and student achievement; (*ii*) supported or enhanced existing educational efforts in the district; and (*iii*) reasonably could be expanded into a comprehensive innovation plan.[1] This prospectus was unanimously approved in the summer of 2012 by the screening committee, constituting the Superintendent (Tony Pierantozzi), Chair of the School Committee (Paul Bockelman), and President of the Somerville Teachers Association (Jackie Lawrence).

3. CONVENING THE INNOVATION PLAN COMMITTEE: Within 30 days of screening committee approval, we convened the Innovation Plan Committee. The innovation plan committee had to include the following individuals but could not have more than eleven total members:

[1] You can find a copy of the official acceptance letter in the Supporting Documents appendix

Figure 1: From left to right, top to bottom: (ROW 1) Adam Sweeting, Marcus Santos, Karen Woods, Leo DeSimone, ROW 2 Rob Gregory, Chris Angelli, Bakhtiar Mikhak, Lisa Tatterson, ROW 3 Chris Rogers, Shaunalynn Duffy, John Oteri

(a) the applicant (represented by Shaunalynn Duffy);

(b) the superintendent or a designee (Leo DeSimone, appointed by Tony Pierantozzi);

(c) a school committee member or a designee (Adam Sweeting);

(d) a parent who has one or more children enrolled in the district (Lisa Tatterson);

(e) a principal employed by the district (John Oteri); and

(f) two teachers employed by the district—one of whom is selected from nominees submitted by the local teacher's union (Karen Woods, with Chris Angelli representing the Somerville Teachers Association)

The purpose of the innovation plan committee is to: (*i*) develop the innovation plan; (*ii*) assure that appropriate stakeholders are represented in the development of the proposed Innovation School; and (*iii*) provide meaningful opportunities for the stakeholders to contribute to the development of the school.

4. DRAFTING THE INNOVATION PLAN: The purpose of the innovation plan is to comprehensively articulate the areas of autonomy and flexibility that the proposed school will use. The Innovation Plan Committee (IPC) met an average of bi-weekly beginning in mid-October 2012.[2]

The innovation plan must include, but is not limited to:

(a) a curriculum plan, which includes a detailed description of the curriculum and related programs for the proposed school and how the curriculum is expected to improve school performance and student achievement;

(b) a budget plan, which includes a detailed description of how funds will be used differently in the proposed school to support school performance and student achievement;

(c) a school schedule plan, which includes a detailed description of the ways, if any, the program or calendar of the proposed school will be enhanced or expanded;

(d) a staffing plan, which includes a detailed description of how the school principal, administrators, faculty and staff will be recruited, employed, evaluated and compensated in the proposed school and any proposed waivers or modifications of collective bargaining agreements;

(e) a policy and procedures plan, which includes a detailed description of the unique operational policies and procedures to be used by the proposed school and how the procedures will support school performance and student achievement; and

(f) a professional development plan, which includes a detailed description of how the school and other partners will provide high-quality professional development to its administrators, teachers and staff.

[2] Meetings were convened on: *2012:* 16 October, 23 October, 15 November, 4 December, 18 December; *2013:* 29 January, 9 April, 22 April, 29 April, 2 May, 7 May, 8 August, 14 August, 6 September, 16 September, 4 November. These group meetings were in addition to over three hundred meetings between individual committee members and dozens of one-on-one meetings between committee members and staff, residents, and district employees.

In order to assess the proposed school across multiple measures of school performance and student success, the innovation plan must also include measurable annual goals including, but not limited to, the following:

i. student attendance;
ii. student safety and discipline;
iii. student promotion and graduation and dropout rates;
iv. student achievement on the MCAS;
v. progress in areas of academic underperformance;
vi. progress among subgroups of students, including low-income students as defined by Chapter 70, limited English-proficient students and students receiving special education; and
vii. reduction of achievement gaps among different groups of students.

A majority of the members of the innovation plan committee had to approve the innovation plan in order to proceed.

5. ADJUSTING THE COLLECTIVE BARGAINING AGREEMENT: After the Innovation Plan was approved by the Innovation Plan Committee, the applicant, local union president, and superintendent are required to negotiate waivers or modifications to the applicable collective bargaining agreement that are necessary for the school to implement the innovation plan. Notably, this process is not a referendum on the plan overall, but rather specifically limited to working conditions.

   If the negotiations have not resulted in an agreement within 40 days, any of the parties can petition the Division of Labor Relations for the selection of an arbitrator. The Division will select an arbitrator within 3 days of the petition from a list submitted by the parties, who will conduct a hearing within 14 days of the arbitrator's selection. Within 14 days of the close of the hearing, the arbitrator will submit a decision which will be final and binding for all parties. The sole concern of the arbitrator is the extent to which the revisions or exemptions requested are consistent with the Innovation Plan as drafted.

6. EXECUTIVE OFFICE OF EDUCATION EXEMPTIONS: If an innovation plan includes provisions that conflict with state laws or regulations governing other public schools, they must be approved by the Commissioner of Elementary and Secondary Education. If an innovation plan includes proposed waivers to Innovation Schools regulations that were adopted in July 2010, they must be approved by the Board of Elementary and Secondary Education. If an innovation plan committee determines that Commissioner approval or a waiver under the respective regulations may be necessary in order to effectively implement an innovation plan, the innovation plan committee should submit the following documents listed below to the Department's Office of School Re-

design, with a copy to the district's superintendent and school committee:

- For Commissioner approval under 603 CMR 48.03(3), a letter listing the provisions contained in the innovation plan that may conflict with state law governing other public schools; a specific legal citation for each state law or regulation that poses a conflict and therefore requires Commissioner approval; and a detailed explanation for why approval is necessary to advance the mission or educational programs of the innovation school.
- For waiver requests under 603 CMR 48.03(4), a letter listing the provisions in 603 CMR 48.00 that require a waiver, and a detailed explanation of why each waiver is necessary to advance the mission or educational programs of the innovation school.
- For all requests, the most recent draft of the proposed innovation plan.

7. SCHOOL COMMITTEE APPROVAL: After receiving an innovation plan, the school committee is required to hold at least one public hearing. After the hearing, but not later than sixty days after the receipt of the innovation plan, the school committee votes to authorize the Innovation School for a period of up to five years. Approval of the majority of the school committee as fully constituted is required to authorize an Innovation School.

   If school committee approval is not obtained, the School Committee should provide guidance as to the changes needed, and an innovation plan committee may revise the innovation plan and resubmit, re-negotiating waivers to the collective bargaining agreement as applicable.

AFTER THIS PLAN'S APPROVAL, we'll begin the enrollment outreach process, which you can read more about in Enrollment Outreach.

Executive Summary

> In my life as an architect, I find that the single thing which inhibits young professionals, new students most severely, is their acceptance of standards that are too low. If I ask a student whether her design is as good as Chartres [the finest Gothic cathedral in France], she often smiles tolerantly at me as if to say, "Of course not, that isn't what I am trying to do . . . I could never do that."
>
> Then, I express my disagreement, and tell her: "*That* standard must be our standard. If you are going to be a builder, no other standard is worthwhile. That is what I expect of myself in my own buildings, and it is what I expect of my students." Gradually, I show the students that they have a right to ask this of themselves, and must ask this of themselves. Once that level of standard is in their minds, they will be able to figure out, for themselves, how to do better, how to make something that is as profound as that.
>
> — Christopher Alexander, architect and author of *A Pattern Language*

via MGL.I.XII.C71.§92: . . . *Upon the formation of the innovation plan committee in subsection (i), the committee shall develop the innovation plan for the proposed Innovation School. The purpose of the innovation plan shall be to comprehensively articulate the areas of autonomy and flexibility under subsection (ii) that the proposed school will use.* . . .

The Somerville STEAM[3] Academy (SSA) will be a vocational lab school opening in Fall 2015 emphasizing computational immersion and targeting struggling students offering an intimate, small school setting where learners will explore project-based curricula integrating the arts and sciences. The SSA will feature tight community integration via internships and mentorships and will rely on tie-in volunteer effort throughout Somerville.

[3] ≡ Science, Technology, Engineering, Arts, and Mathematics

No one school can serve every student equally well. But that is exactly the charge of public education. And one of the most exciting aspects of the mission of public education is to do so in a way that *creates* a public we are proud of, one which brings people from every ethnicity and economic station and race and creed together for a collective experience which nurtures our future. So, how do we reconcile this tension between egalitarianism and individualization? Just as we do with political parties or religions: by ensuring that there is a diversity of options to meet people's needs and the freedom to choose. But that choice mustn't be just for the wealthy or white or academically strong, just as it mustn't just be for the poor or black or academically weak. Apartheid schooling—even with the best of intentions—is a deeply anti-American project. Which means that we are left with the question: what does it mean to provide for a diversity of options for families in Somerville equitably and excellently?

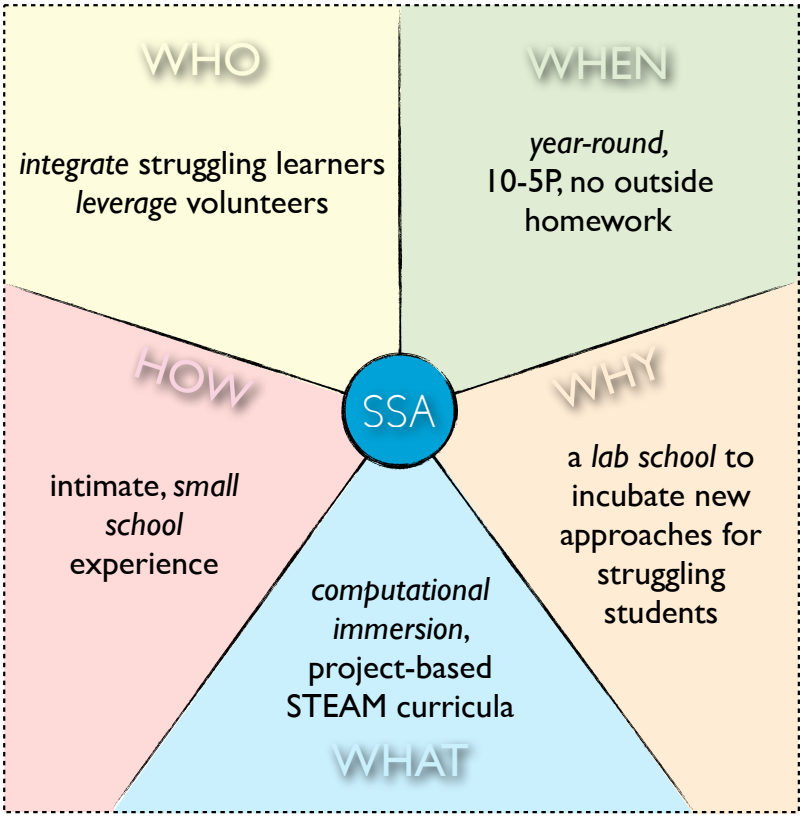


Figure 2: The first four months of the Innovation Plan's development were devoted to talking to parents, teachers, and administrators to discover—if there was going to be a new school in Somerville—what problems and opportunities should it address? How could a new school complement existing options? This is what we came up with: a vocational community lab school opening emphasizing computational immersion and targeting struggling students offering an intimate, small school setting where learners will explore project-based curricula integrating the arts and sciences.

Overall, the SSA grows from a single hypothesis: there are families in Somerville—spanning demographic and socioeconomic spectra—whose children would benefit from a small, intimate setting where project-based approaches open up traditionally academic subjects to more vocational and artistic approaches. In particular, we think technology—in concert with Somerville's rich community of creative people and organizations—can stand to reach and uniquely equip those for whom traditional contexts have not proven a good fit.

Embracing that opportunity, the mission of the SSA is to *transform students into independent investigators*, cultivating learners' scientific curiosity and the hands-on capacity needed to follow through on that curiosity. The SSA will *specifically target those students who have struggled with existing options or found them lacking* who feel they may benefit from an intimate, small school setting where learners deeply integrate the arts and sciences through computational, project-based curricula.

The SSA is *neither remediation nor enrichment*—the principles underlying its design and operation cut across lines of race and class and academic background. That said, our moral and civic responsibility as a public school demands we reduce the achievement gap. After all, it is exactly public education's role in ensuring political, social, and economic mobility that has ensured it such a central place in the American project. To narrow that gap requires we have

some understanding of how current options are falling short.

For some students, this means providing more support in traditional contexts. For other students, improving their experience requires something new, something different. This is not a critique of existing options in Somerville; it is just an acknowledgment that no one school can serve every student equally well. This means that *all else held equal, a diversity of options is a good thing for Somerville students*. A big school cannot offer a small school experience. A school day with seven periods cannot accommodate whole categories of project-based experiences. Conversely, a small school cannot offer the same breadth of activities within its walls as a big school. And a small school has a distinctly different feel and camaraderie than a big school.

We've decided as a society that one size cannot fit all. So in considering the design of a new school in Somerville, where does that leave us?

Design Constraints

Because similar rhetoric could be used to justify some of the worst examples of "starting a private school with public funds" which has characterized many charter schools [and dominated the opposition to past proposals for new schools in Somerville], let's unpack "all else held equal." We think it is essential the SSA avoid detracting from the experience of other Somerville students and staff. Ultimately, even though it it essential to try new things as part of our commitment to doing right by students, it's *also* essential to do so thoughtfully and responsibly, both with regards to minimizing the risk to the students involved and mitigating the impact on SPS at large. Through all our conversations with parents, teachers, and school administrators, we've adopted four design constraints for the SSA to address these concerns:

Complement—don't compete with—existing options To do things well, the SSA must focus on doing as few things as possible. That means that wherever possible, the SSA will turn to community partners with relevant expertise to provide everything from varsity sports via Somerville High School to healthy, affordable food via local restaurants.

Focus on historically struggling students Our focus on complementing existing resources is one reason—in addition to many moral and civic—we must focus on those students who have not thrived with existing options. For the SSA, that means one half the students enrolled in the SSA each year will have been identified as 'struggling'—either by their status in the bottom 50% of MCAS score and/or attendance rates.[4] The remaining half of each year's enrollment will match the socioeconomic and demographic makeup of Somerville High School, and gender parity will be ensured

[4] If neither of these data are available for whatever reason (*e.g.* they are new to the district or otherwise undocumented, letters of recommendation from a teacher or parent to that effect can also identify a student as struggling.

across the entire enrollment. [5]

Start small, grow slowly As a new model (albeit combining a variety of proven approaches), the SSA must start small and grow slowly. The SSA will feature an intimate, small school setting providing individualized attention. But at nearly any size, a school is a complex undertaking. Complex systems which work invariably evolved from a simple system which worked. Designing a complex system from scratch never works, and worse, it cannot be patched up and made to work. Furthermore, starting small and growing slowly minimizes any disruption to the rest of SPS (which is especially important, given how closely the SSA would like to integrate with SPS). Combined with the fact that we are trying something new, we think this means that we should start as small as possible and grow as slowly as possible. Two constraints limit this:

- the financial viability of a small school (we couldn't set up a school with the per capita allocation of ten students)
- and the social viability of a small cohort (if your entire eighth grade were ten students, there would be some cases where no matter how good your program design, there simply wasn't enough social room to offer a good experience)

Taken together, these define a minimum of thirty students to start, and a growth rate in the neighborhood of three dozen students per year.[6]

Clearly define results and commit to consequences for failure Trying something new can be valuable. But when you're talking about the lives of Somerville students, that novelty should come with measurable results. It is easy to talk about the *a priori* virtues of project-based, computationally enabled curricula; but ultimately, the SSA's purpose is civic and political. Right now, students who do not succeed with existing options are statistically sentenced to enter the underclass, recapitulating the achievement gaps with which our whole society struggles. Escaping this requires a focus on measurable results. We will be designing a system to collect longitudinal data on everything from MCAS scores to starting salary to college GPA and concentration, but the immediate metrics which will define the School Committee's oversight are the SSA's success in hitting its goals for: 1) MCAS[7] student growth percentile performance, 2) socioeconomic and demographic equity in enrollment, and 3) [in]equality in student performance within the SSA.

Contributing Models

Developing new things is hard. It is especially hard in education. New things require experimentation, and experimenting with people's futures is not what public education is for. The SSA is new,

[5] Why not focus 100% enrollment on students who have struggled with existing options? For many reasons, but the two biggest are simple: 1) public education at its best is a democratic, egalitarian institution that serves *everyone*. Creating schools *only* for struggling students, even if it improves test scores, leads to apartheid schooling. Even if instituted with the best of intentions (and to academic benefit!), functional segregation is ultimately hurtful to the community. If we believe that Somerville's diversity is a strength, that diversity should be reflected in the classroom and in the streets. 2) It is easy to assume that the success of students is the result of what a school does *to* them. The reality is more complex, and among the strongest determinants of students' experience will be their peers. And if you're going to be asking students to reform their image of themselves as "not good at school" you can't make them attend a school fighting a reputation as the school for "dumb kids."

[6] Mather, D. and B. Hanley (1999). Cohort grouping and preservice teacher education: Effects on pedagogical development. *Canadian Journal of Education/Revue canadienne de l'education*, 235–250

[7] and later PARCC

but it is a hybrid approach. We've spent the last year working full time to bring together a variety of proven models in Somerville's unique context. Combined with the SSA's commitment to starting small, remaining nimble, and growing slowly, we're confident that—especially since the SSA is focused on students who've struggled with traditional contexts—the SSA will be a wholly positive development for Somerville students.

Many other points of inspiration are elaborated on in the remainder of the Innovation Plan, but there are five, central models we're combining as the basis of the SSA. But these models are not simply best practices. They've been selected to match the unique challenges and opportunities posed by Somerville's context and the SSA's specific focus on working with folks who have struggled with traditional options:

- The *schedule* and *integrated staff positions* of Generation Schools make it possible to provide for a schedule better matched to teens' biology and more flexibly accommodate the challenges outside of the classroom that often dominate student performance. The year-round setup helps address issues like summer learning loss while providing for time to set up new support structures which typically are impossible to fit into a traditional schoolday.

- The *academic case management* and *tight community integration* of Harlem Children's Zone ensures that the wraparound services and attention required to make urban education work reinforce, rather than compete with, the academic goals of public schooling. Many of the reasons that students struggle sit outside the classroom. And given Somerville's proximity to incredible human and institutional resources, this community-driven approach to providing deep support is uniquely possible in Somerville.

- The *personalization* of Big Picture Learning means staff will be free to focus on the affective, not just the cognitive, aspects of student learning and engagement. Targeting individual students' interests and background is especially important for students who have historically been turned off from academic work, and tying work to those interests is very hard for staff unless you give them the time and curricular autonomy to do so. For those students who would struggle with larger school contexts, this personalization is key to their success.

- The *project-based approach* of High Tech High has been repeatedly shown not only to deepen engagement among struggling students, but to develop an increasingly essential set of metacognitive and executive function skills across all levels of academic aptitude. And given the tremendous diversity of companies, artists, and professionals in Somerville and greater Boston, the

possibilities for even deeper, internship and co-op based approaches is very exciting.

- The *emphasis on autonomy* and *high fidelity assessment* of institutions like Hampshire College takes what can be an extraordinarily broad and diverse set of opportunities and experiences and effectively packages it up not only for use in traditional academic contexts (e.g. transcripts), but offers levels of subtlety and nuance in feedback that can be essential for students for whom a straight-up 'C' grade has been useless—or worse, actively distracting—in the past. Somerville's already been pioneering the e-portfolio program and approach; this extends and builds on the best strengths of that approach.

Enrollment

Fundamentally, the creation of the SSA is meant to improve the lives and prospects of Somerville students. That means its design must begin with the question of *who* those students are and *why* existing options haven't worked as well as we'd hope for them.

50% of the SSA's enrollment will be students who have been identified as having struggled with existing options. For the SSA, "struggling" will mean that students will either have scored in the bottom 50% on MCAS in fifth grade or have found themselves in the bottom 50% of attendance rate in the three years prior to their enrollment. If neither of these data are available, a parent and teacher recommendation elaborating the students struggles will substitute.

The remaining 50% of the SSA's enrollment will match the socioeconomic and demographic profile of Somerville High School (backed out from a combination of Department of Education, Census, and City data).[8] Gender parity will be ensured across the entire cohort, and a diagnostic academic examination will be required for admission to provide data enabling placement and data-driven guarantees that the SSA is not creaming high-performing students. The examination does *not* penalize students for low scores, it is meant to help us meet our equity commitment and provide higher resolution data about the SSA's performance.

Our enrollment outreach plan embodies this commitment to generate broad and diverse enough interest to meet our equity goals. We've raised $100,000[9] to cover the planning and implementation of the enrollment outreach process in the year before opening (after opening, the enrollment outreach will continue, but will be funded from the SSA's allocation).

1. (FEBRUARY 2014–MAY 2014) *program development and planning*, wherein SSA staff are developing the outreach plan, materials, setting up after school and in-school connections and beginning marketing.

[8] In particular, the socioeconomic profile of Somerville High School will be much higher resolution than simply free- or reduced-lunch. American Community Survey data allows us to match the profile down to quarter-multiples of the poverty line, determined by household income per capita.

[9] with a commitment of up to $300,000 if needed.

2. (MARCH 2014–JANUARY 2015) *community programming*, wherein the SSA offers free after- and in-school programming at local middle schools, as well as mini-camps during school vacations and a full-fledged summer camp.

3. (JANUARY 2015–MAY 2015) *targeted outreach*, wherein if during the first three months of the community programming phase we do not generate sufficiently broad or diverse interest to meet our equity commitments, we begin targeting specific families at the District's recommendation for outreach

4. (MAY 2015) If by May 2015 we *still* have not generated sufficiently broad or diverse interest, we will ask the School Committee for permission to perform an *opt-out lottery*—a phase we plan to never arrive at—wherein we select middle school students by past academic performance, socioeconomic status, and demographic to fill any remaining gap between our registered interest and our equity commitment (up until this point, enrollment will be opt-in).[10]

In addition to outreach, this year-round enrollment process will double as a testbed where the SSA can prototype and test curricula and vet potential hires, interns, and community volunteers.

[10] We are ambivalent about the opt-out lottery because on the one-hand, it's a classic countermeasure to mitigate the inevitable selection effects in traditional lotteries. But on the other, if we aren't able to generate sufficient interest from families, we think that this should push us to step back and reconsider the claim that there are students who would benefit from this. Of course, there are many other factors at play—e.g. the fidelity and reach of the outreach efforts—which is why we've decided to leave it as a gametime decision to be overseen by the School Committee. At that time, the SSA will present a case for why—despite its failure to generate interest—we should proceed with an opt-out lottery to bridge the outreach gap.

Curriculum

The SSA's curricular innovations are what drive the other design elements and autonomies in the Innovation Plan. The basic premise behind the SSA is that computational thinking opens up novel, project-based, vocational, and artistic approaches to traditionally academic disciplines. "STEAM" is the closest moniker we have for this new angle.

We've chosen our focus on transitioning folks from *students* to *independent investigators* carefully. You can't just dump someone into complete autonomy and expect them to thrive. Scaffolding that transition involves slowly growing and coaching students' ability to manage their time, deal with uncertainty, and master tools basic to future projects. This is reflected in our breakdown of SSA time into *seminars, studio time, and intensive workshops*. *Seminars* most resemble traditional classes, but rather than being organized around a discipline (e.g. 'math class') they'll be organized around big ideas which cut across disciplines, lending themselves to the interdisciplinary projects characterized by STEAM. *Studio time* will be facilitated time focused on developing and completing projects. *Intensive workshops* will be one or two week workshops where students are focused entirely on the topic of the workshop, all day each day. These will be reserved for picking up new toolsets or basic skills in which a minimum fluency is required for students to be able to productively tinker—e.g. programming or web development or video editing or...

But to make this dramatically different approach viable, we must reconcile it with standards. This is what the SSA's curricular mapping process will accomplish. Each student will have an individualized record mapping pieces of various projects they complete and seminars they participate in back to the Common Core. This will both serve as the basis for generating documentation like transcripts and as an ongoing-but-not-omnipresent guide to help staff select appropriate projects and opportunities for students throughout their time with the SSA.

Overall, the SSA will have complete curricular autonomy. Staff teams will have final authority in making curricular decisions for their cohort. Though the principal and Board of Trustees will be able to submit recommendations or offer guidelines, the administration's primary curricular responsibilities will be twofold:: on the front end, run defense and procure resources to enable staff to develop and implement curricula, and on the back end, ensure the availability of time and outside expertise to formalize and document successful curricula.

These curricular differences manifest most immediately in the SSA's need for a different approach to staffing, one focused on facilitation, project management, and the type of interdisciplinary integration which will characterize students' transition from workshop to seminar to open ended studio work.

Staffing

The staffing structure and policies of the SSA are driven by a twofold mandate:

- develop ways of making things more *learnable* (as opposed to teaching them more effectively).[11] This entails active research developing new tools and curricula, exploring new subject domains, and creating new ways of representing old skills and ideas to create activities which are focused less on communication and more on students' engagement with projects and tools.
- nurture people's growth from *students* (i.e. largely passive receivers of information) into *independent investigators* (i.e. largely independent askers-and-answerers of questions, posers-and-solvers of problems). This entails working closely with SSA students, taking responsibility for the development of the whole person and not focusing on a single discipline.

Taken together, these objectives inspired our focus on mentorship-over-instruction, our insistence on staff-as-practitioner, and our small cohort model.

Mentorship-over-instruction The focus of the SSA is helping students grow into independent investigators. This is not a change that can be effected through a simple act of communication. That is a change that involves trust and guidance and deep personalization.

[11] via Papert's "Constructionism vs. Instructionism"—"All my work is focused on helping children learn, not on just teaching. Now I've coined a phrase for this: Constructionism and Instructionism are names for two approaches to educational innovation. Instructionism is the theory that says, 'To get better education, we must improve instruction. And if we're going to use computers, we'll make the computers do the instruction.' And that leads into the whole idea of computer-aided instruction.

Well, teaching is important, but learning is much more important. And Constructionism means 'Giving children good things to do so that they can learn by doing much better than they could before.' Now, I think that the new technologies are very, very rich in providing new things for children to do so that they can learn mathematics as part of something real."

Combined with the SSA's project-based pedagogy, this means that staff will more often be acting as mentors or coaches, facilitating seminars and suggesting project prompts and helping people to manage motivation and time than instructors standing up, lecturing a class.

Staff-as-practitioner Staff must have a natural authority to act as effective mentors. Combined with the fact that staff will be constantly riffing on student projects and designing new curricula, it is essential that staff be *practitioners* of their domain—e.g. that in some sense, a staff member whose focus is mathematics be a practicing mathematician. This does not mean that they need to publish articles in the American Mathematical Monthly, but it means that they should have a live interest in math, independent of the teaching of math.

Small Cohort Model Every student at the SSA will be part of small ($\sim$ 36 person) cohort, similar in some ways to the 'advisories' you see at schools like High Tech High. Each advisory is managed by a team of three SSA staff. These staff are entirely responsible for the experiences of their thirty-odd students. In addition to the domain expertise of each staff member, each will have a unique role:

- The *social worker* will take responsibility for students' physical, social, and emotional well-being. Whether that's knowing that a given student is struggling with food security issues at home, knowing that today is their birthday, or knowing they're recently excited about medicine because of the TV show *House*, this staff member is responsible for making sure the non-academic realities of a student are known and actively incorporated into their SSA experience.
- The *curriculum developer* will take responsibility for brainstorming and developing the projects and seminars which will form the backbone of students' academic experiences at the SSA. The curriculum developer will also be in charge of working with the project manager to coordinate the curriculum mapping process for each student.
- The *project manager* will take responsibility for ensuring that student work is being completed on time and under-budget [quite literally—students will have project stipends they manage] . This will entail regular check-ins with students, and as students branch out into community internships and mentorships, liaisons with local community partners.

Each of these roles is not exclusive to that staff member—e.g. the social worker need not be the closest confidant of every student. The point is that there is someone who is taking ownership of those dimensions of student experience. For some students, in the case of the social worker, that may simply mean ensuring that a student

has a group of close friends. Or for the project manager, that their community partner contact point is checking in regularly. Or for the curriculum developer, that they've found a book well-suited to self-study they're working through.

Because these roles and structure are so different from traditional classroom environments, the SSA's principal will have complete autonomy (subject to applicable STA collective bargaining provisions) in determining its staffing policies and procedures, including defining new positions and licensure requirements (subject to the statutory limitations and the flexibility created by the exemptions in the Innovation Plan).

Together this trio will act as a tightly knit team, planning seminars and reflecting on the day's work and attending PD together, etc. At best, they will grow to be part of students' extended family—hosting and attending dinners with families, brainstorming new community partners the school should reach out, helping to frame and document student work, etc. The advisory will be the organizing unit of the SSA, much like a lab at a research university or a company in the armed forces.

And it is precisely from the gains afforded by the flexibility of a project based approach and the vertical integration of the small cohort model that frees up the resources—both time and money—to make this new approach viable.

Financial Viability

It is easy, in re-imagining a system from scratch, to overspend. A new program here and a new program there and pretty soon you're talking real money. We have gone line-by-line through the District's End of Year audit and calculated the share of Somerville's $16,108 per student allocation[12] This comes out to $13,842/student.

[12] which accounts for the various, centralized functions the SSA will not be replicating and therefore should not pull funds from—e.g. the costs of Central Office.

The SSA will be completely sustainable on this base budget. Although the SSA will have new budget flexibilities, the SSA will allocate as much or more per ELL and SPED student as Somerville High School, and through a buyback arrangement, every SSA student will have access to the full range of Somerville Public School services. This buyback mechanism was incorporated into the design to ensure that students would have access to the services the SPS provides while enabling the SSA to explore approaches to meeting SPED and ELL needs which may not show up on a budget as line-item SPED or ELL services.

This flexibility is exemplary of the SSA's complete budget autonomy. Throughout the design process, the best practices we've seen and been recommended at every turn—from institutions like High Tech High to the advice of Tom Hehir, previous Director of Special Education for the United States and IDEA Author—has emphasized the importance of the "single bucket" approach the SSA will incorporate, leveraging the Innovation School legislation to carve out the necessary regulatory room.[13]

[13] *viz.* exemptions from MGL 30§39M, 30B, 149, and 7§44-57

Taken together, this means that the efficiencies and flexibilities made possible by the SSA's curricular approach will enable us to simultaneously work with students who have struggled in traditional contexts (who in general, draw more resources from SPS) while ensuring the same or greater ELL & SPED coverage and all without pulling resources away from any centralized district functions

This suggests a necessary question: where is this 'extra' money coming from? What are we scaling back or not offering? You can refer to Financials, Supplies, Services, & Procurement for further details, but the basic story is that we've accomplished this by integrating a variety of staff positions (*e.g.* guidance) into the academic case management model while also vertically integrating curricular functions usually centralized at the District, rather than school, level (*e.g.* music and art).

Schedule for School Day & Year

As with money, it is trivially easy to overspend your time in designing a new school. A new program here and there and pretty soon you need twenty five hours in a day. The SSA will operate on a sustainable schedule for teens: Monday through Friday, 10AM–5PM, with no mandatory work outside those hours. Inspired by the Generation Schools model, the SSA will feature a mix of foundation and studio courses alongside intensive workshops in varying proportions over students' five years with us. The integration of multiple roles into staff positions means that—like Generation Schools—over 90% of staff time will be academic, reducing administrative overhead. The SSA itself will be year-round, with open vacation policies (subject to both logistical and academic constraints) for students and teachers, and while the schoolday will span 10AM–5PM, auxiliary services will be provided before school to make sure families can comfortably drop off students when their schedules permit.

As with money, the SSA will have complete scheduling autonomy (subject to the applicable provisions of the negotiated collective bargaining agreement and legal mandates defining a full school year) which will be the principal's responsibility to structure; however, staff within each advisory/advocacy group will have the final authority and control, subject to their cohort's performance.

Location

The fact that the SSA will look and feel very different means that that difference will also be reflected in the built environment of the school. [14]

We've budgeted to ensure that we can afford to rent space within walking distance of Somerville High School (to ease the logistical challenge of the tight integration we're seeking with SHS), and while we haven't signed a lease yet, we have identified five cur-

[14] We've budgeted for 75 square feet per student, which is lower than the median 125 square feet allotted per high school student nationwide. However, there are a variety of factors that bring this figure in line, including but not limited to:

- we will be working with much more open floor plans, meaning no square footage will be devoted to hallways
- we won't have a cafeteria or gymnasium
- students will often be working (especially as they get older) in the community and community spaces throughout Somerville

rently available spaces which would suit our needs. Part of our focus during the planning and implementation year will of course be securing a space.

Why not be in SHS? Our interest in both giving students a fresh start and in avoiding pulling away resources from SPS. Furthermore, on the advice of many, many school designers and operators—including staff at Department of Elementary and Secondary Education—we've decided that having two programs with such different designs, schedules, and general look and feel co-located will create unnecessary and distracting friction.

Governance

The SSA is designed to maximize the autonomy of students and staff. The SSA will have little to no administration beyond a principal. The small cohort model will be the organizing unit for the SSA, and the day-to-day job of the administration will be primarily twofold: 1) run defense for the time and resources of students and teachers, and 2) develop the community partnerships and opportunities which students and staff need to do their respective jobs well.

Ultimately, the SSA is accountable for exactly three results: 1) the SSA's graduation rates and collective MCAS/PARCC performance, 2) maintaining equity in enrollment, and 3) family and staff satisfaction.[15]

[15] These metrics are unpackd in more detail in our draft School Improvement Plan

A six person Board of Trustees will act as the interface between the SSA and the Superintendent and School Committee, approving metrics and goals set semi-annually. Repeatedly missing *MCAS/PARCC, graduation, or equity* goals will mean that the School Committee will have the option to put the SSA's authorization to a School Committee referendum. Repeatedly missing *family satisfaction* goals will mean that families have the option to put the principalship to a referendum. Repeatedly missing *staff satisfaction* goals will mean that families have the option to put the principalship to a referendum. The Board of Trustees will make the decision to recommend the principal's contract be renewed each year. Outside of this, the principal, advised and overseen by the Board of Trustees, will have complete autonomy.

The Future of the SSA

The SSA would begin as an 8–12th grade institution. Each year, the SSA will only commit to enrolling 8th graders, though other ages may be considered. Once that setup is stable, it's likely the SSA will look to grow into lower grades one year at a time, spending a few years in each new configuration before going onto another. At some point, it may even make sense to expand into K–12, but for the foreseeable future we are focused on 6–12th.

Part I

What We'll Learn

Curricular Content

"Curriculum" comes from the Latin for "[horse] race course"[16], evoking a linear track that everyone travels, some more quickly and some more slowly. The SSA is about breaking apart this metaphor in favor of deeply *divergent* experiences. *i.e.* at the SSA, there is an emphasis on pushing everyone to end up with unique work and output. We do not think this is simply a matter of subverting some of the more pernicious aspects of competition and self-concept[17], but a basic design principle of rich, individualized learning experiences. This aesthetic must be reconciled with the need to render students and their work legible[18] both to provide the appropriate measure of accountability and feedback (after all, the basic justification for curricula is often located in the notion that, "Well everyone should know x...") and to make possible smooth transitions between schools and from high school to whatever comes next for a student.

[16] Simpson, J. A., E. S. Weiner, et al. (1989). *The Oxford english dictionary*, Volume 2. Clarendon Press Oxford

[17] Chickering, A. W. and L. Reisser (1993). *Education and Identity. The Jossey-Bass Higher and Adult Education Series.* ERIC

[18] Scott, J. C. (1998). *Seeing like a state: How certain schemes to improve the human condition have failed*. Yale University Press

In discussions about the future of school, the focus is almost always exclusively either on the *what* or the *how*, but rarely both—despite the fact that they are in fact tightly coupled. That said, this chapter focuses on the *what* of the STEAM Academy. What students learn, what curricula they cover, what fluencies they will develop, what STEAM really means, and so on.

Modeling & Representation

Nobel Laureate Herbert Simon, in his classic *The Sciences of the Artificial* wrote[19]

> All mathematics exhibits in its conclusions only what is already implicit in its premises... Hence all mathematical derivation can be viewed simply as change in representation, making evident what was previously true but obscure.
>
> This view can be extended to all of problem solving—solving a problem simply means representing it so as to make the solution transparent. If the problem solving could actually be organized in these terms, the issue of representation would indeed become central. But even if it cannot—if this is too exaggerated a view—a deeper understanding of how representations are created and how they contribute to the solution of problems will become an essential component in the future theory of design.

[19] Simon, H. A. (1996). *The sciences of the artificial*. MIT press

The SSA takes this and the whole tradition of related claims that cut across fields as diverse as artificial intelligence and mathemat-

ical physics seriously. Concrete representations—and the process of articulating, designing, and tweaking them with the aid of computational media—go directly to the constructionist project of supporting learners in becoming skillful model-builders. In Piaget's classic experiments exploring children's conception of wind,[20] it is made clear that when six-year old Mary says that the wind is caused by trees' waving their leaves, the essential next step is not to correct her and bring her into line with the meteorological orthodoxy of high and low pressures. Instead, we know that it is essential to engage learners in active, reflective model building and debugging.[21]

[20] Piaget, J. (1930). *The child's conception of physical causality*. Transaction Publishers

[21] Duckworth, E. R. and E. Duckworth (1996). " the having of wonderful ideas" & other essays on teaching & learning

Because programs and projects at the SSA won't be built around traditional subjects *per se* (*e.g.* there will be no 'Algebra class'), this emphasis on modeling and representation can be incorporated as a natural response to learners' work unpacking and controlling phenomena. Whether it's building your own cartographic representation for projects using geospatial data with `d3.js` or exploring all the different representations of a circle (as a surface of constant curvature, as $x^2 + y^2 = r^2$, as the set of all points equidistant from some other point,...), the emphasis will be on understanding through multiple models and uses.

This emphasis filters up from curricula to the design approach to many aspects of work at the SSA, ranging from a natural role in the public exhibitions of projects students will be putting together to an emphasis on storyboarding as an approach to writing, outlining, and storytelling to workshops focused on visualization and visual brainstorming in the tradition of the work of Tufte, Roam, *et al.* [22]

[22] Roam, D. (2009). *The back of the napkin (expanded edition): Solving problems and selling ideas with pictures*. Penguin; and Tufte, E. R. and P. Graves-Morris (1983). *The visual display of quantitative information*, Volume 2. Graphics press Cheshire, CT

Computational Immersion

Throughout the SSA's design process, we've struggled to find a clear way to articulate these visions for people who haven't spent time building models and programming computers. We're not done yet, but the best we have right now is by way of analogy to a language immersion school. The classes are not limited to communicative competence in said language. Similarly, the SSA is not limited to "programming computers"—instead, computers are the medium on which most of the other experiences in the school rely. This will require new curriculum development and professional development. In many ways, the SSA will be in uncharted territory through this focus; it's been pioneered in higher education and professional contexts, but has only recently made its way into the learning sciences community[23] and as far as we know, has not been as deeply integrated into a school design as we're proposing here (though it has appeared in more programmatic forms in a wide variety of schools, *e.g.* High Tech High, Brightworks, *et al.*)

[23] Wing, J. M. (2006). Computational thinking. *Communications of the ACM 49*(3), 33–35

The SSA's approach was not possible fifteen years ago. The technology was too expensive, the resources online too sparse, the ecosystems of apps too minimal. But in recent years a dramatically

different approach, first envisioned by researchers like Papert[24] *et al.* in the 1970s, is now possible. Unlike initiatives like the Academy for Software Engineering in New York City, the SSA is not looking to create more software engineers or web developers or turn every student into a computer scientist. Instead, we think that the prevalence of computational tools enables deeply different ways of thinking, teaching, and learning, which because of the computer's Protean adaptability to so many domains, has enormous potential to change how learning and teaching happen. Most technology use focuses on using technology to teach those things we've always taught, but better [or cheaper or faster or more engagingly]. We think that this dramatically undersells technology's potential.

The reason the quadratic equation is in so many curricula is not because we, as a society, have decided that conic sections are capital-I Important. It's because it was a domain and type of mathematics that, among other things, was well-suited to the omnipresent technology of paper, pencil, and blackboard (which is why most people remember the quadratic equation, not 'conic sections'). For the same reason, Monte Carlo methods were typically reserved for advanced study in mathematics. The availability of a tool like Mathematica makes it possible to open up traditionally academic subjects which have historically been reserved for those comfortable with and excited by symbolic manipulation. All of a sudden it becomes possible to authentically expose people to kinematics through game design or statistics through real-time electoral analysis or control theory through mechatronic theater. Plenty of disciplines remain untouched—or at least, we're not sure what the value of a computational approach is, yet—*Moby Dick* is still a great book. But even the basic nuts and bolts of these other disciplines (and even the operation of the SSA writ small) are transformed by omnipresent technology. When every student has a tablet, all of a sudden reading analytics becomes possible. It becomes feasible for everyone to be reading something different without incurring the overheard of trips to the media center or complicated purchase ordering for staff.

Over the past four years, sprout's programs have focused on the curricular and pedagogical issues attendant to combining computation with themes of modeling and representation to build entry points opening up traditionally academic subjects to more artistic and vocational angles. We know that it can work and that it has something compelling to offer many students, especially some of those who have struggled in traditional environments for the lack of a hands-on, project-based approach or because of their self-concept as 'not a math person' or 'not a science person' or at the extreme, 'not a learner.' In different ways, programs ranging from computational art[25] to mechatronic theater to cybernetics[26] to acoustics in musical instrument design have sketched a path forward that we think has something exciting to offer a minimum of three dozen Somerville students per year.

[24] Papert, S. (1980b). *Mindstorms: Children, computers, and powerful ideas*. Basic Books, Inc

[25] Abelson, H. and A. A. Di Sessa (1986). *Turtle geometry: The computer as a medium for exploring mathematics*. the MIT Press

[26] Braitenberg, V. (1986). *Vehicles: Experiments in synthetic psychology*. MIT press

STEAM

Partly born of our struggles to articulate computation for a broader audience, we decided early on that STEAM was the closest we could come to communicating the naturally multidisciplinary, technologically enabled emphasis on design and investigation as opposed to traditional, subject-based classes.

But, STEAM is a buzzword. STEM was a buzzword. And as STEM became more dilute, people noticed that the world was moving to acknowledge the importance of creativity and design and with the publication of books like Richard Florida's *The Creative Class*[27] increasing pressure was brought to bear on educational policymakers and decisionmakers at all levels to embrace the arts. Hence John Maeda's STEM to STEAM initiative.[28]

I've said this before, but thought it was worth repeating: It's in Apple's DNA that technology alone is not enough. That it's technology married with liberal arts, married with the humanities, that yields us the result that makes our hearts sing.
— Steve Jobs ...

Unfortunately, despite there being a real kernel of exciting pedagogical potential in the initiative, like many fads you often see a kitchen-sink approach to the matter, literally tacking on art to an already fragmented curricula, saddling staff with another initiative, and creating circumstances guaranteed to fail. We think STEAM requires re-thinking much of the structure and emphasis of the traditional classroom—which is why this Innovation Plan is as long as it is. So despite its weaknesses—like the implication that 'Art' is one-fifth of the experience, really serving as no more than a vehicle for STEM—we've decided to move forward with it because we think there's something valuable in its frame.

Often, STEM is handled with what we describe as a 'cough medicine' approach: there's an assumption that you're right, STEM is in fact dry and hard and boring, and teachers' job is to find the right shtick or angle to wrap it up in a sufficiently palatable package to make sure it goes down easy. The SSA rejects that metaphor, and rejects the misuse of STEAM as an attempt to cast the arts in that cough-medicine role. The real test of relevance in an educational setting is not, "Will you use this in 'real life,"' whatever that means, but "Do you want to solve it?" It's not that you want to solve it because it's relevant; wanting to solve it is what it means to be relevant. For us, the arts represent a wellspring of fascinating, expressive domains and problems that naturally resonate with people because of the role of arts in culture. We think that the tools and ideas which have been monopolized by STEM fields for so long have a lot to offer—in obvious places like computational art[29] and less obvious places like information visualization and graphic design. And it is in this emphasis on design thinking that's intrinsically multidisciplinary, not synthetically interdisciplinary, that many proponents of STEAM have it right in calling out the value of STEAM and design curricula, even if it isn't obvious how it maps back onto traditional frameworks.

[27] Florida, R. (2002). The creative class. *The rise of the creative class*

[28] Maeda, J. (2011, October). Stem to steam

[29] Greenberg, I. (2007). *Processing: creative coding and computational art*. Apress

Non-cognitive Skills, Executive Function, & Metacognition

As of late it has become fashionable to talk about 'grit'[30] and the value a variety of 'non-cognitive skills' have for our youth. Skills like the ability to persevere or handle confrontation or manage your time or remain comfortable with uncertainty. Skills like the ability to reflect on your learning and work or take initiative and responsibility or tackle a poorly posed problem and turn it into something actionable. Unsurprisingly, as the role of the knowledge worker and the scope of their work has grown dramatically in recent years,[31] postsecondary institutions and employers have increasingly turned toward school as a mechanism for building the soft skills which are so central to productivity in the workplace. This project has acquired a renewed urgency as it has been uncovered that *especially* for those folks who struggle in school by dint of socioeconomic or cultural circumstance, academic success is less important to long term outcomes than the development of this variety of soft skills.[32]

[30] Duckworth, A. L., C. Peterson, M. D. Matthews, and D. R. Kelly (2007). Grit: perseverance and passion for long-term goals. *Journal of personality and social psychology 92*(6), 1087

[31] Drucker, P. F. (2009). *Managing in a time of great change*. Harvard Business Press

[32] Tough, P. (2012). *How children succeed: Grit, curiosity, and the hidden power of character*. Houghton Mifflin Harcourt (HMH); and Borghans, L., A. L. Duckworth, J. J. Heckman, and B. Ter Weel (2008). The economics and psychology of personality traits. *Journal of Human Resources 43*(4), 972–1059

The SSA's approach is explicitly designed to develop these capacities by shifting the basic frame of program design from *preparation*—to which traditional curricula and classrooms are well-suited—to *practice*. So rather than a math class that's a prerequisite for another math class that will prepare you for a career in engineering, the SSA will emphasize projects that bring all of the 'real-world' challenges of teamwork, communication, design thinking, *etc.* into the classroom. Conversely, we'll also be working to push students to take on larger and larger scale projects, culminating in co-op and internship relationships with local organizations, institutions, and businesses.

Right now, you can walk into an eighth-grade classroom and ask, "What's the longest period of time this student can be productively autonomous?" For some, it's five minutes. For some, it's fifty. As a general rule, it isn't a day or a week. Because of the SSA's mission to transform every person from a student to an independent investigator, a significant portion of the SSA's emphasis will be on developing *independence* (which need not be solitary). Concretely, that shows up in the SSA's focus on metrics like mean time autonomously productive. Growing that capacity involves constantly providing contexts just beyond students' capacity,[33] which when it comes to self-management, requires a more flexible, project-based context where students can explicitly reflect on their learning and self-management strategies. Despite the fact that many say that school is about learning to learn, we spend a surprisingly small amount of time actually talking about learning and how to do it well (or how people do it poorly). We spend time talking about French or history or the binomial theorem and largely hope that people pick up the skills of learning through implicit practice.

[33] Vygotsky, L. (1987). Zone of proximal development. *Mind in society: The development of higher psychological processes*, 52–91

One of the strongest pedagogical differences in a computational, project-based environment is the shift from convergent to divergent workflows. In a traditional environment, at any given mo-

ment, most students are working toward the same goal, which at its best, looks and feels the same (*e.g.* the typical math worksheet is the epitome of this). In most writing or art classes however, that convergence would be regarded as a failure. One upshot of this generally convergent atmosphere is that students learn to construe their work in very binary, right/wrong terms and develop poor mental and emotional hygiene around that, meaning only the most studious students take a corrected test and really reflect on or rework through problems they got wrong. Computational and project based environments bring this same divergence to a much broader array of subjects. When your program doesn't work as you expect the first time, you quickly learn to shift into a debugging mindset rather than thinking, "Oh, I got this wrong." This both gives people explicit language for thinking not only about their mental model and how it did or didn't work, but about the broader problem solving and self-management strategies which figure so much more prominently than straight-up IQ in determining success.[34]

[34] Borghans, L., A. L. Duckworth, J. J. Heckman, and B. Ter Weel (2008). The economics and psychology of personality traits. *Journal of Human Resources 43*(4), 972–1059

More than any particular canon, the SSA is focused in the development of students' *capacity* and *disposition* with respect to any individual skill. In our experience, it is easy to roughly categorize aspects of a learning experience and the design process going into it as being primarily *cognitive* or primarily *affective* in nature. We think that the affective is consistently and dramatically underemphasized; the returns on someone's deep and authentic engagement cannot be underestimated. This means we are much less concerned about making sure someone reads *Moby Dick* by the time they're seventeen than we are about making sure that they fall in love with reading. It means that we're much less concerned about the quadratic equation than we are with numeracy and comfort with abstraction. Of course, there are realities (including the Common Core and PARCC) to confront, but we don't think it is necessary to relinquish deep learning experiences to those pressures, *especially* given the flexibilities offered by the Innovation School architecture.

Fundamental Fluencies

This comparative canon-agnosticity can be misinterpreted as a simple rejection of structure and curriculum. It is no such thing. As Papert put it,[35]

> In the real world, there are many ways to do things, and this is how creativity develops. This is how people make exciting new discoveries—because they try many different ways to get the results they're looking for. And here, in all the examples I've shown you, we're going to look at some more more closely, children are using knowledge about computers and about mathematics in personal ways to do personal projects. Each one doing something different, but through these different activities, learning the same sort of knowledge.
>
> Does that seem strange? In school we say there's a curriculum: everybody must do the same curriculum or else how can they learn

[35] Papert, S. (1980a). Constructionism vs. instructionism. In *Speech by video to a conference of educators in Japan. Available WWW:[http://www. papert. org/articles/const_inst/const_inst5. html]*

> the same thing? To see what nonsense that idea is, think of a baby. All babies—well, all Japanese babies I suppose, are going to learn to speak Japanese. But we don't think they all ought to say the same things to their mother.
>
> Each one says something different. They just live their lives in different homes, and have different toys, and they have different relationships, each one saying what comes from the heart—what they feel, what they think. But they all learn Japanese because they're using the same language. And they learn it well. But at school, we try to systematize and make everybody do the same thing. I just can't understand why, except maybe it was because we didn't have the technological possibility to give children this wonderful variety of things to do.

We think this broad construal of fluency is powerful; it is not simply a metaphor. And this is why we think the canon is less important than the fundamental fluencies—numeracy, literacy, analysis, synthesis—which we all agree are basic ingredients for good society, not to mention for productive contributors to that society.

All that idealism aside, what are the nuts and bolts of developing these fluencies? Generally, we expect to take an approach of immersive, direct instruction to get students to a point where they can tinker on their own combined with the design of a project workflow which necessarily brings all of these fluencies together at every time scale. Concretely, let's take a look at what written fluency in English might look like.

For an English Language Learner, that might begin with a multi-week, full-time immersion program in English. For others, it may begin with one of our intensive workshops but focused on writing, storytelling, or rhetoric. Regardless, we know that one, forty hour week of full time focus is far more effective than forty, one hour classes spread out over a month or year—and not just for language.[36] These intensive experiences aren't typically allowed for in a traditional schedule, requiring the SSA's scheduling flexibility.

[36] Bishop, A. J. (1991). *Mathematical enculturation: A cultural perspective on mathematics education*, Volume 6. Springer

These immersion experiences are intended to get students to a basic level of proficiency such that the other aspects of our curricular approach can take over. In particular, work at the SSA is intrinsically multidisciplinary at every stage: from articulating your project plan to communicating with your project manager to exhibiting your work to reflecting on the aesthetic dimensions of your work, language fluency will be front and center, even if you are nominally working on a computational art project. These fundamental fluencies extend beyond literacy and numeracy to include graphic design, multimedia skills, public speaking, negotiation skills, *et al.* Over the course of a student's time with us, each of these and more will be the subject of a variety of intensive workshops paired with longer term follow-up structures as part of the project and curriculum development undertaken by each student's Advisory. Of course there are important details to take care of for ELL and

SPED students, but even in those contexts the interventions we'll be planning (see the Programmatic Student Supports chapter for more detail) fit under this broad rubric of intensive workshop combined with ongoing dimension of project performance.

Educational Standards

With this context and detail in hand, we're ready to turn to considerations of reconciling these curricular impulses with the necessary boundary conditions of the MCAS/PARCC, Common Core, and NGSS.

Common Core

The Common Core can be traced back to the founding of Achieve, Inc. in 1996 at the peak of the "Accountability Movement." As part of Achieve's American Diploma Project, the report "Ready or Not: Creating a High School Diploma That Counts" was released calling attention to the ostensible skills gap between high school graduates and the expectations of colleges and employers. This report and its descendants would figure prominently in the 2009 discussions of the National Governors Association which, over the course of the next couple years, eventually resulted in the drafting of what is now the Common Core State Standards (CCSC). Incentivized by Federal Race to the Top grants, Massachusetts (along with forty-four other states) adopted the CCSC.

That said, Massachusetts is famously local in its jurisdictional structure. While Massachusetts encourages districts to adhere to the state curricula, districts have the ability to define their own curricula. The SSA will take full advantage of this autonomy to *guarantee coverage of the Common Core* without structuring our curricula around the Common Core.

The Common Core only covers Mathematics and English Language Acquisition (ELA), so with regards to science, the SSA will *guarantee preparation for the MCAS Science Technology and Engineering Test*. Although the Next Generation Science Standards have been drafted, Massachusetts is likely to significantly revise these standards before adoption and the consequent revision of the MCAS is at least two years away.[37] Currently Somerville High School focuses on the MCAS Biology test. The SSA will focus on the Technology and Engineering strand of the MCAS Science test.

Collectively, these curricular standards are surprisingly high-level and canon-agnostic. *e.g.* the ELA Common Core does not mandate particular books or even genres be covered. By way of example, consider one of the Writing Standards for students in Grades 9–10:

> Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.

[37] Foster, J. (2013, September). Personal communication with jake foster, dese director of curriculum for ste

1. Engage and orient the reader by setting out a problem, situation, or observation, establishing one or multiple point(s) of view, and introducing a narrator and/or characters; create a smooth progression of experiences or events.
2. Use narrative techniques, such as dialogue, pacing, description, reflection, and multiple plot lines, to develop experiences, events, and/or characters.
3. Use a variety of techniques to sequence events so that they build on one another to create a coherent whole.
4. Use precise words and phrases, telling details, and sensory language to convey a vivid picture of the experiences, events, setting, and/or characters.
5. Provide a conclusion that follows from and reflects on what is experienced, observed, or resolved over the course of the narrative.

This flexibility is intentional on the part of the drafters of the CCSC; after all, there is a big difference between a curriculum and a curricular framework. The SSA will take advantage of this flexibility to make divergent, project-based curricula possible when they are usually prohibitively challenging to plan. In many classrooms, teachers walk in with the goal of teaching all their students the same facts and skills in a given day, even in the case of approaches like differentiated instruction.[38] The SSA is looking to change that.

Rather than thinking about what *everyone* needs to cover in that single period, we want to enable staff to think about what an individual student should be covering in the next three or four weeks. On a daily time scale, we want staff and students coming together considering what the deepest, most interesting project is. To make this possible, we will develop a curriculum mapping process[39] which makes it possible to retrospectively map student work back onto the Common Core and the MCAS STE Curriculum Framework for Technology and Engineering. We'll cover this in more detail later; for now, it is enough to know that we will guarantee Common Core coverage and adequate preparation for the MCAS STE tests.

[38] which we think sounds great, but frankly typically calls for a superhuman increase in the amount of preparation and coordination required by staff

[39] Which you can read more about in the Curriculum Mapping section.

PARCC & MCAS Science

The MCAS Math and ELA tests are not long for this world. PARCC is coming. And PARCC targets the Common Core. Funded by a $186,000,000 grant through the USDOE's Race to the Top competition, PARCC will be field-tested in the 2013–2014 school year and its administration will be fully operational by the 2014–2015 school year. By summer 2015, PARCC will have set its achievement levels, including college- and career-ready performance levels. This lines up nicely with the Fall 2015 enrollment of the SSA.

Though related, it is valuable to separate questions of curricula from questions of standardized tests, especially since the SSA will be drawing a bright line between learning-focused activities and standardized tests. For us, the best case scenario is that testing—whether PARCC or the MCAS—'just' measures learning

well, meaning we 'just' have to do a good job and test scores will reflect that. In the worst case scenario, standardized tests are orthogonal to learning and require teaching to the test to make any headway. We suspect the truth is somewhere in between. Rather than compromise students learning experience or staff's autonomy, our plan explicitly firewalls test prep time from the rest of students' time. Allotting about eight percent[40] of student time to all the non-academic support work they'll need to do (beginning with MCAS/PARCC prep, later SAT/ACT prep, interview skills, college admissions essays, *etc.*), the SSA will install ongoing diagnostic tests which provide finely-grained, individualized maps of who's test performance is weak in which areas. These diagnostic tests will inform ongoing test prep which will be kept to a viable minimum.

[40] For more details on the time budget of staff and students as it pertains to test prep *et al.*, refer to Standardized Testing

MCAS Science and Technology/Engineering Tests The MCAS Science and Technology/Engineering (STE) Standards define four tests open to high school students: Earths and Space Science, Life Science (Biology), Physical Sciences (Chemistry and Physics), and Technology/Engineering. Somerville High School offers three of the four, excepting Technology/Engineering. The SSA will focus on the Technology/Engineering strand, which emphasizes the engineering design process and is the highest-level and most canon-agnostic of the tests. Consider the following summary from the MCAS STE Framework itself:[41]

> In a high school technology/engineering course, students pursue engineering questions and technological solutions that emphasize research and problem solving. They achieve a more advanced level of skill in engineering design by learning how to conceptualize a problem, develop possible solutions, design and build prototypes or models, test the prototypes or models, and make modifications as necessary. Throughout the process of engineering design, high school students are able to work safely with hand and/or power tools, various materials and equipment, and other resources.

[41] Driscoll, D. P. (2006). Massachusetts science and technology/engineering curriculum framework. Technical report, Massachusetts Department of Education

Furthermore, the other tests and the prevalence of scientific vocabulary pair especially poorly with the needs and weaknesses of many English Language Learners and students with an IEP with indications for language or reading issues. In combination with the natural resonance between the Technology and Engineering strand and the SSA's curricular focus—where students will be intensely engaged in repeated, iterative design projects cutting across disciplines—the Technology/Engineering strand becomes the obvious choice. And as with the PARCC, this test will be incorporated into the ongoing test preparation and diagnostic structure to ensure that the SSA's students collectively meet the goals set out in this Innovation Plan[42] and future School Improvement Plans.

[42] For more details on our MCAS goals [which will need translation to PARCC indicators after the PARCC is calibrated and finalized], see the School Improvement Plan

Next Generation Science Standards

PARCC—by virtue of targeting the Common Core—does not have anything to say about science or engineering. This means the

MCAS Science strand tests will persist for at least another three years.[43] While the NGSS are nearing completion, it is also clear that Massachusetts won't adopt the NGSS without "significant" revisions.[44] The nature of those revisions are unclear; however, they are likely to include an increased emphasis on computational thinking, a thread for which many organizations like Massachusetts Computing Attainment Network (MassCAN) have been lobbying, going so far as to push for the inclusion of computer science as a required subject in K–12 settings.[45] It seems that these revisions will only line up more closely with the SSA's emphases; regardless, similar to the Common Core, the standards are surprisingly high-level and canon-agnostic, *e.g.* consider this progression for the Grade 9–12 grade band:[46]

> Asking questions and defining problems in 9âĂŞ12 builds on KâĂŞ8 experiences and progresses to formulating, refining, and evaluating empirically testable questions and design problems using models and simulations. Ask questions
>
> - that arise from careful observation of phenomena, or unexpected results, to clarify and/or seek additional information.
> - that arise from examining models or a theory, to clarify and/or seek additional information and relationships.
> - to determine relationships, including quantitative relationships, between independent and dependent variables.
> - to clarify and refine a model, an explanation, or an engineering problem.

Needless to say, there's an incredibly broad array of projects which could map onto this, and by design many of the projects undertaken at the SSA will line up with this [and related] standards. But changing the problem of curricular coverage from a demand-side to a supply-side problem is essential to provide staff the flexibility to implement a truly project-based—as distinct from project-oriented or problem-based or inquiry-driven—curriculum.[47]

[43] Bickerton, B. (2013, October). Mass drive-in conference

[44] Foster, J. (2013, September). Personal communication with jake foster, dese director of curriculum for ste

[45] Farrell, M. B. (2013). Tech firms call for mandatory computer classes

[46] (2013, April). Appendix f – science and engineering practices in the ngss

[47] Robin, J. What project based learning isn't

Autonomy Analysis

To make all this happen, it is necessary that the SSA have complete curricular and staffing autonomy. Although we'll be committing to specific results through our MCAS/PARCC goals, the autonomy to design the curricula to make this happen will sit within the SSA. Furthermore, while the principal will be responsible for managing and directing the vision for these curricula (as well as ensuring the availability of the necessary time, money, and resources to develop them), the authority to choose, riff on, and design curricula will sit directly with staff at the advisory level.

Why should we expect this will benefit students? We know that it is necessary for teams of teachers to be relatively autonomous in order to obtain a variety of benefits—for students *and* teachers.[48]

[48] Buckley, F. J. (1999). *Team teaching: what, why, and how?* Sage

Furthermore, this autonomy is necessary to implement a computational, project-based curricula: something which is largely uncharted territory. And this computational, project-based approach stands to both reach many of those students traditionally struggling or disengaged for a variety of reasons—whether IEP indications for dyslexia, ADD/ADHD, or spectrum disorder or longstanding self-concepts of alienation from particular subjects or school in general. Going beyond this, the research supporting the value of computational thinking, project-based approaches, and the variety of non-cognitive, executive, and metacognitive skills this type of experience develops are well-documented[49] but generally impossible to implement with the traditional curricular and scheduling constraints.

[49] DeBerard, M. S., G. Spielmans, and D. Julka (2004). Predictors of academic achievement and retention among college freshmen: A longitudinal study. *College Student Journal 38*(1), 66–80; Wing, J. M. (2006). Computational thinking. *Communications of the ACM 49*(3), 33–35; (2011). Building the brain's "air traffic control" system: How early experiences shape the development of executive function. Working Paper 11, Center on the Developing Child at Harvard University; and Meltzer, L. (2011). *Executive function in education: From theory to practice*. Guilford press

What legal affordances will be required? We are still in the process of writing up the necessary exemptions and waivers required for this. You can find a partial list in Legal Affordances, but per 603 CMR 48.03(b),

> If an innovation plan committee is proposing an innovation plan that may conflict with laws (including regulations) governing other public schools, the committee shall, before presenting the plan to the school committee for approval, request approval from the Commissioner for any provision in the plan that may conflict with such laws. The Commissioner's approval shall be based on his determination that the plan is consistent with 603 CMR 48.03 (2) and with the state's obligations under the education clause of the Massachusetts Constitution, Mass. Const., pt. II, ch. V, s. II, as defined by a court of competent jurisdiction, and that the provision in the plan that may conflict with such laws is necessary to advance the mission or educational programs of the innovation school. If the Commissioner does not approve the proposed provision in the plan, the innovation plan committee may ask the Board to review the matter and the Board shall make the final decision.

which means that the full process of articulating points of contact between state laws and regulations and the Innovation Plan as voted on need not conclude until the School Committee presentation. As with negotiating necessary affordances in the Collective Bargaining Agreement to make the Innovation Plan possible, non-substantive design edits and alterations may be made after the Innovation Plan Committee vote without triggering a re-start of the process.[50]

[50] French, D. (2013, August). Personal communication with dan french. Regarding voting and editing process between Innovation Plan and School Committee votes

Curricular Forms

With such a different curricular approach, the SSA will require different curricular forms than the traditional sixty-six minute class. But in implementing a different curriculum and different form for that curriculum it is doubly important to install mechanisms to insure and document curricular coverage and competence. This chapter explains our current design for the structures and forms we expect will govern student work and how those will be reconciled with traditional curricular requirements of legibility and documentation.

Curriculum Mapping

A core feature of the SSA's design will be our curriculum mapping process supporting our version of what is fundamentally an earned credit model like that implemented at Full Circle/Next Wave. Through this process we will take traditional curricula and curricular frameworks–*viz.* the Common Core and MCAS STE Technology & Engineering test materials—and set up a system by which work is retrospectively mapped back onto those curricular frameworks. Traditionally curricular frameworks are drafted then precise lesson plans designed which are known with 100% certainty to cover said standards. This is not feasible in an environment where you're aiming to ensure maximal divergence between students' work, and even less feasible when you're designing to accommodate individualized paths through the various ontologies possible within a curriculum.[51]

Instead, staff and students will come into the SSA each day focusing on how to deepen the intellectual work of a project, refine its output, and reflect on the dimensions of performance determining individual student's engagement in a process inspired by the success of Expeditionary Learning.[52] Questions of curricular coverage, instead of constrained on the demand-side, will be accounted for on a much longer time scale (months) through the mechanism of project choice and seminar design. As students work on projects (or develop extensions to those projects, like exhibitions or essays), their Advisory will help guide those decisions in a way to ensure that their individualized path through the Common Core and MCAS STE standards is complete. This requires significant time investment on both staff and students' parts, which is why it is

[51] Turker, A., İ. Görgün, and O. Conlan (2006). The challenge of content creation to facilitate personalized e-learning experiences. *International Journal on E-Learning 5*(1), 11–17; Ferran, N., E. Mor, and J. Minguillón (2005). Towards personalization in digital libraries through ontologies. *Library Management 26*(4/5), 206–217; and Baldoni, M., C. Baroglio, I. Brunkhorst, N. Henze, E. Marengo, and V. Patti (2006). A personalization service for curriculum planning. In *LWA*, pp. 17–20

[52] Rheingold, A., J. Seaman, and R. Berger (2014). Assessment across boundaries: How high-quality student work demonstrates achievement, shapes practice, and improves communities. In *Assessing Schools for Generation R (Responsibility)*, pp. 115–131. Springer; and Series, A. A. E. C. (2009). Qualities of quality: Understanding excellence in arts education

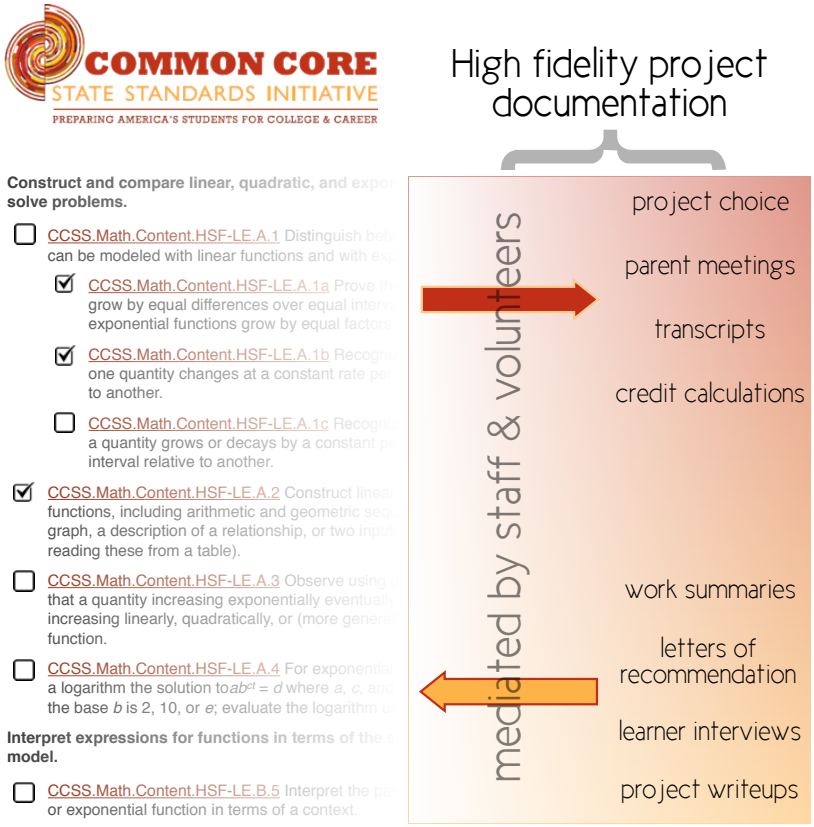


Figure 3: Inspired by the design process behind curricula like the Interactive Mathematics Program, the SSA's curriculum mapping process will invert the traditional lesson plan design process, putting control and autonomy in the hands of staff and students while insuring total documentation of curricular coverage.

built into the reflection and portfolio development process. Rather than a paperwork tax, the expectation is that this coverage and documentation thereof will be iteratively developed as a relatively natural part of the project design and documentation process—exactly the focus and responsibility of the Project Manager in each Advisory.

This curriculum mapping process will create a high-fidelity, personalized record (backed up by specific links to student work, whose resolution and completeness are substantially enhanced by virtue of the SSA's digital infrastructure) guaranteeing and documenting curricular coverage and performance. This record will be at the center of a variety of other mechanisms in the SSA, ranging from our matriculation requirements to transcripts to definitions of students' good standing.

Species of Time

School is generally tasked with the responsibility for taking a bunch of skills and content—the curriculum—and getting it 'into' students. A natural design response to this need is to linearize the task: take that pile of content and spread it evenly over the the seven periods per day, one hundred eighty days per year you have with students. It cannot be overstated how much this design con-

straint has influenced the structure of the modern American school, despite research documenting how much of an obstacle this structure is for many of the learners who struggle in traditional environments.[53]

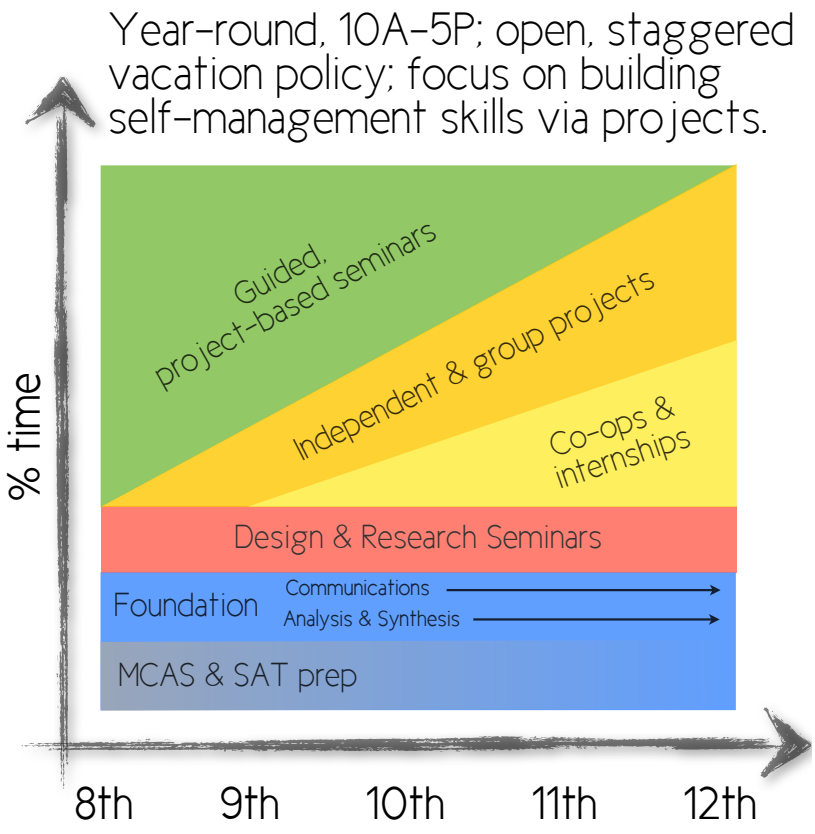


Figure 4: Over the course of students' five years with the Somerville STEAM Academy, they will spend their time with increasing autonomy, shifting from structured options of staff design to options of their own design. The speed and nature of their transition will be governed by their advisory team.

[53] Tyack, D. B. (1976). Ways of seeing: An essay on the history of compulsory schooling. *Harvard Educational Review* 46(3), 355–389; Lee, V. E., J. B. Smith, and R. G. Croninger (1997). How high school organization influences the equitable distribution of learning in mathematics and science. *Sociology of education*, 128–150; and Lee, V. E. and D. T. Burkam (2003). Dropping out of high school: The role of school organization and structure. *American Educational Research Journal* 40(2), 353–393

The texture of staff and student time at the SSA will be much more varied. This presents additional logistical challenges, which is one of the primary motivations behind our year-round design. Rather than a single type of class structure paired with homework, the SSA has four species of time which represent different approaches to immersion and autonomy across disciplines. Our expectation is that over the course of five years with us, a greater and greater share of students' time will be devoted to increasingly autonomous and self-managed experiences. But you cannot simply dump an eighth grader into an autonomous setting and expect [most] to flourish. Scaffolding that transition is essential, and controlling the scope and scale of the required autonomy in the design of a project or task is a well-established tactic.[54]

[54] Azevedo, R. and A. F. Hadwin (2005). Scaffolding self-regulated learning and metacognition–implications for the design of computer-based scaffolds. *Instructional Science* 33(5), 367–379; Meyer, D. K. and J. C. Turner (2002). Using instructional discourse analysis to study the scaffolding of student self-regulation. *Educational Psychologist* 37(1), 17–25; and Athanassiou, N., J. M. McNett, and C. Harvey (2003). Critical thinking in the management classroom: Bloom's taxonomy as a learning tool. *Journal of Management Education* 27(5), 533–555

Intensive Workshops

The most straightforward of these is the intensive workshop. Seven hours a day, every day, for 1–3 weeks, these workshops are intended for basic fluencies which suffer for being cut up into smaller pieces. Anyone who's taken Spanish for four years and can't speak

a lick but has a friend who went abroad for six months and came back conversational has an intuition for the research behind this piece of the SSA's design. Whether it's learning a new programming language, developing your negotiation skills, learning the basics of rapid prototyping, or getting the fundamentals of storytelling down, many of the skills which will be regularly relied on in SSA projects will get their start in short, intensive workshops taking advantage of the SSA's scheduling flexibility.

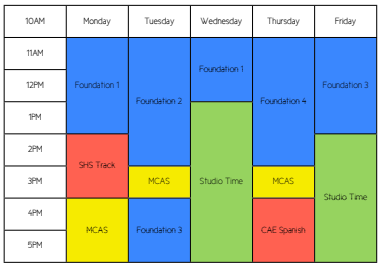


Figure 5: An evocative 8th grade time budget; see Sample Schedules for more details.

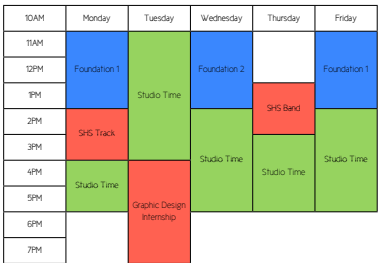


Figure 6: An evocative 12th grade time budget; see Sample Schedules for more details.

Seminars

Stepping up a level in terms of scope and flexibility, the SSA's seminars will be the nearest relative of a traditional class. Spanning several months, meeting for 2–4 hours daily, these seminars will be structured around research and design questions rather than specific disciplines. Rather than "Algebra II," you might have "Signs of Life"—a program we've run in the past which explores what it means for something to be alive by making something that's alive in one way or another, each week. Whether that's a basic robot that responds to feedback or software implementing a genetic algorithm, it's clear how this cybernetic approach can get at entirely new angles to traditional questions of biology and computer science. But going beyond that, we've been able to bring in philosophical, literary, and religious angles in an authentic way. These seminars will offer a natural transition from traditional classroom environments in terms of their expectations of student work and self-regulation, as well as a natural starting point for practicing the process of brainstorming and designing appropriate projects through decreasingly specific prompts framed by the theme of the seminar.

Internships & Co-ops

The most complex form in the SSA is the internship or co-op. Involving community partners like local businesses, universities, and artists, students will be paired up with these partners in one-off arrangements which may be as simple as taking on a part-time job or as subtle as a collaboration between the SSA and the community partner to design a project together that addresses student interests and partner capacities while walking through specific aspects of the Common Core. In particular, this is where the most intense development of non-cognitive and executive function development is expected to occur, and is the natural holding pattern and testbed for students transitional support (see the section on longitudinal support for more details) in taking their next steps. By the end of a student's time with us, they very well may be spending the majority of their time working with their community partner, checking in with their project manager to document and flesh out their portfolio (and go through the curriculum mapping process). This will be the epitome of the the SSA's notion of school and staff

playing primarily a mentoring, coaching, facilitating and connecting role, leveraging Somerville's incredible community resources. And already at this stage in the planning process, we have concrete partners like Wolfram Research, Artisan's Asylum, Google, MIT, and Tufts who are excited and ready to support a variety of these types of relationships.

Project Studios

There is a smooth continuum connecting the autonomy expected of a student in one of our seminars and that required to go through the highest form of our construal of independent investigation:

1. Articulate a problem or question personally meaningful to you.
2. Design a project or experiment to engage that question.
3. Rustle up the necessary resources to carry out that project or experiment.
4. Manage yourself, your time, and said resources to execute that project successfully, iterating on the first three steps of this process to converge on a clear vision.
5. Document and share the results of that project or experiment with relevant experts and people whose opinion you care about in a [meaningful] culturally and socially situated context.

As we back off the support and constraints offered students in their seminars, they will transition more and more to their own, independent projects. Importantly, 'independent' need not mean 'alone.' The structure for these increasingly independent projects will be the project studio. Inspired by the pedagogy of the architectural studio,[55] these project studios will move from the content themes and questions of the seminar structure to much broader and more flexible formats where students enter the studio with a sense of the direction and form they'd like their project to take (akin to traditional, independent study formats). Staff work with students to constrain the scope of the project, define milestones, enrich the plan with deeper intellectual and academic components, and manage the execution of the project.

[55] Kuhn, S. (2001). Learning from the architecture studio: Implications for project-based pedagogy. *International Journal of Engineering Education* 17(4/5), 349–352; and Dutton, T. A. (1987). Design and studio pedagogy. *Journal of Architectural Education*, 16–25

Work Design, Exhibition, & Critique

Public exhibition and critique of staff and student work is central to the SSA's workflows. We know that exhibiting work to an authentically interested audience—especially one with the natural authority of domain expertise or meaningful personal relationship—is an incredible lever for student engagement.[56] Unfortunately, it's generally very hard to get excited about an essay that's on the same thing as twenty other students that you didn't have a chance to revise and which won't be showcased anywhere publicly.

[56] Hetland, L. (2013). *Studio Thinking 2: The Real Benefits of Visual Arts Education*. Teachers College Press; and Mergendoller, J. R., T. Markham, J. Ravitz, and J. Larmer (2006). Pervasive management of project based learning: Teachers as guides and facilitators. *Handbook of Classroom Management: Research, Practice, and Contemporary Issues, Mahwah, NJ: Lawrence Erlbaum, Inc*

That's why *every substantial piece of work* students are asked to do at the SSA will have some meaningful, public endpoint after going through several rounds of revision. Sometimes that may be as simple as posting it on their personal portfolio with an analysis of the strengths and weaknesses of the project and a summary of the critique they received from their peers. But for many projects, it will be as substantial as identifying early on who would be a qualified and interesting expert to critique the project (*e.g.* a computational artist for a computational art project) and bringing them in an advisory capacity to both comment on revisions of the project and ultimately execute a studio-style critique session.[57]

[57] Goldschmidt, G. and D. Tatsa (2005). How good are good ideas? correlates of design creativity. *Design Studies 26*(6), 593–611

Of course, there will also be a variety of very natural, very public contexts like exhibitions of student work, community-facing projects, or structurally public endpoints for student work output (*e.g.* rather than asking for an essay to be handed into a teacher, graded, and dumped, supporting students in the process of selecting an online publication for submission, editing, revision, and publication).

REAL IS BETTER THAN FAKE is the simple design principle at work here. And like most design problems, embodying that principle involves inevitable trade-offs and compromises (*e.g.* the Common Core, MCAS, transcripts, *etc.*) But to whatever extent students can *practice* rather than *prepare*, issues of engagement, assessment, planning, and depth are mitigated.

Autonomy Analysis

To make this happen requires not only complete curricular autonomy as has already been covered, but significant flexibility in scheduling and credit mechanics. The different time scales of student and staff work and interfacing with the community in a meaningful way almost immediately require not only a year-round schedule, but Advisory-scale autonomy in designing student schedules. Similarly, the SSA will require complete autonomy in defining and implementing credit standards to develop an earned-credit system that acknowledges the individualized paths through the curricula and their diverse mappings to the variety of time forms detailed herein.

What legal affordances will be required? These types of setups also make questions of 'seat time' incoherent. Rather than focusing on inputs, the SSA is committing to certain outputs, but requires autonomy in *how* those outputs are delivered. This is within the Department of Education's 1996 revisions to the definition of 'structured learning time,' *viz.* via 603 CMR 27.02

> Structured learning time shall mean time during which students are engaged in regularly scheduled instruction, learning activities, or learning assessments within the curriculum for study of the 'core

> subjects' and 'other subjects.' In addition to classroom time where both teachers and students are present, structured learning time may include directed study, independent study, technology-assisted learning, presentations by persons other than teachers, school-to-work programs, and statewide student performance assessments.

but will require autonomy in designing systems for measuring and documenting that learning time *retrospectively*.

Why should we expect this will benefit students? The research on extended learning time and extended learning time schedules (especially those incorporating a later start time) is clear on the question of improving student outcomes, especially for students who have struggled historically with motivation or issues of summer learning loss (something especially a concern for SPED students).[58] Year-round scheduling is not a panacea; when it is deployed as simply 'more school' the results are inconclusive at best.[59]. In the cases where it has been most effective has used the extended schedule to create significantly more flexible experiences.[60],

[58] Wolfson, A. R. and M. A. Carskadon (1998). Sleep schedules and daytime functioning in adolescents. *Child development 69*(4), 875–887; and Cooper, H., B. Nye, K. Charlton, J. Lindsay, and S. Greathouse (1996). The effects of summer vacation on achievement test scores: A narrative and meta-analytic review. *Review of Educational Research 66*(3), 227–268

[59] McMullen, S. C. and K. E. Rouse (2012). The impact of year-round schooling on academic achievement: Evidence from mandatory school calendar conversions. *American Economic Journal: Economic Policy 4*(4), 230–252

[60] Gandara, P. and J. Fish (1994). Year-round schooling as an avenue to major structural reform. *Educational Evaluation and Policy Analysis 16*(1), 67–85; and Jacobson, R. and M. J. Blank (2011). Expanding the learning day: An essential component of the community schools strategy. *New directions for youth development 2011*(131), 55–67

Part II

Who We'll Be

Students

Who will comprise the SSA? We know that the SSA can complement existing options for students. Early in the design process—as we were simply working to get a handle on what problems or opportunities people thought a new Innovation School might be able to address—it became clear that many people within and without Somerville Public Schools felt that there was room for a smaller, more intimate setting targeting students who had struggled in traditional classroom environments. No one school can serve every student equally well. All other things held equal, we think that means a diversity of options is a good thing. We kept hearing the phrase, "kids who fall through the cracks." These are the students with whom we're most interested in working. But we need to balance that emphasis with an essential pedagogical and civic counterparty: the importance of school's function in *creating* a public, not 'just' remediating inequality.

Pedagogically, it's essential that students who come to the SSA don't feel like they ended up there because they were the dumb kids, the kids who failed. Civically, it's essential that those interested in supporting those who struggle in a public institution not inadvertently design an apartheid institution separating the haves and have-nots. This tension will be one that we all struggle with as we work to make our civil institutions better and more equitable, but in the context of the SSA's design in particular we have a distinct advantage: the premises behind the increased fit and efficacy of computational, project-based work deployed in an intimate setting cuts across class and race and creed. This, coupled with the SSA's [very small] size has made it possible to design a uniquely egalitarian process of enrolling students which leverages several affordances specific to the Innovation School architecture.

The purpose of this chapter is to lay out the entire arc of students' progress through the SSA—with whom will we be working? How will they hear about the SSA? How will they enroll? What constitutes advancement? How does matriculation work at an institution like the SSA? What sort of support will the SSA offer in transitioning students to their next steps, whatever that may be?

Target Population

The SSA is explicitly *not* an enrichment program. Nor is it a magnet program. Nor is it a remediation program. The SSA is intent on working with students who have struggled in traditional contexts, *especially* for reasons of boredom; a proclivity for hands-on projects; IEP indications for dyslexia, ADD/ADHD, or spectra disorders; or a self-concept of being 'not a {math, science, or worst of all school/learning} person.' To return to Papert's discussion of our approach once more,[61]

> When one looks at how people think and learn one sees clear differences. Although it is conceivable that science may one day show that there is a "best way," no such conclusion seems to be on the horizon. Moreover, even if there were, individuals might prefer to think in their own way rather than in the "best way." Now one can make two kinds of scientific claim for constructionism. The weak claim is that it suits some people better than other modes of learning currently being used.... A variant of the strong claim... allows the full range of intellectual styles and preferences to each find a point of equilibrium.

[61] Papert, S. and I. Harel (1991). Situating constructionism. *Constructionism*, 1–11

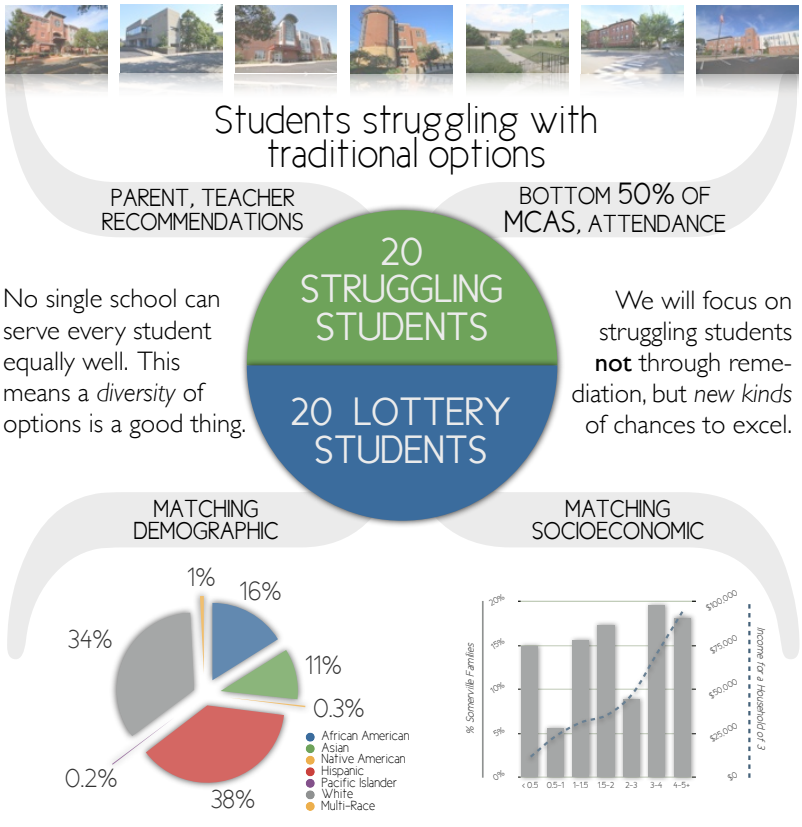


Figure 7: Ultimately, the question of, "For whom is the SSA?" is the one that is quickest to people's tongues, and for good reason. Our commitment is to focus on students who haven't found their place in traditional academic settings while guaranteeing that we meet our civic and equity commitments. It's essential that the SSA be *neither* remediation *nor* enrichment. We've taken advantage of the Innovation School legislation's flexibility to make it legally impossible for us to enroll a cohort that does not meet our equity commitments. We've also installed safeguards (see Governance for details) to prevent us from breaking our equity commitments through attrition.

Unlike charter, pilot, or traditional district schools, the SSA is not forced to have a blind enrollment process. This means we can design an enrollment process which *guarantees* we embody the equity and diversity commitments we'd like to make. Concretely, we've decided on the following equity targets for its annual enrollment of

$\sim$ 36:[62]

- The SSA is only committing to enrolling eighth graders at this time, though it will reserve the option to register interest from younger or older students in cases where the family meets with the SSA staff and the principal approves the registration.[63]
- 50% of students enrolled each year will have been identified as 'struggling.' That will mean one of three things: 1) being in the bottom 50% of MCAS performance, 2) being in the bottom 50% of attendance rate in the previous year, or 3) *if and only if those data are not available*, a parent and teacher recommendation to that effect.
- Some portion of the complementary 50% of students enrolled each year may well also be struggling, but *will* match the socioeconomic and demographic profiles (including proportions of SPED, ELL) of Somerville High School.
- Gender parity will be ensured across the entire enrollment.
- *After* families have registered interest and entered the weighted lottery, an examination will be administered which will be used to ensure that the academic strength of students actually admitted is widely distributed.[64] That is, someone does *not* pass or fail the exam, the examination is explicitly meant to ensure that those students who are academically weak receive *extra* emphasis in the enrollment process. Not participating in the exam—for whatever reason—will *not* penalize a potential enrollee, the exam will just be administered as part of their enrollment process for purposes of data collection and maintaining the school's accountability for this equity commitment.

Notably, these equity commitments will be applied *schoolwide*—meaning if through attrition the socioeconomic or demographic distribution of the SSA shifts substantively, future enrollment processes will be forced to compensate.

Enrollment Outreach

Somerville is tiny. There will be $\sim$ 350 seventh graders next year. That means we can sit down with *every single potential enrolling family* in one form or another. We've designed an enrollment outreach process which ensures that we're able to meaningfully reach out to every single seventh grade family in Somerville. In our experience, you can't go up to most families in Somerville and talk about a "computational, project-based school"—aside from language and cultural barriers, those buzzwords just don't mean much to people outside of the world of education (and barely that). Instead, we've found that it's much better to give families a taste of what that means in real life, after which it's much easier to decide whether you want more of that for your child or not.

[62] Throughout this plan, you'll see discussion of both the numbers forty and thirty-six. Our target is 36. Conversations with other school leaders and staff at the Department of Elementary and Secondary Education suggests a 10% melt rate for families that express interest and then back out. The plan's financials and logistics is robust to that range and uncertainty.

[63] Because the SSA will not be age segregated, this will be possible; however, we expect the overwhelming majority of students to be rising eighth graders. The social and academic considerations outside of that default scenario are too heterogeneous to put a policy in place. These students enrollment are subject to the same equity constraints as the targeted eighth grade students.

[64] More precisely, we'll ensure the results are normally distributed—*i. e.* are Gaussian. We'll also release the full dataset of aggregate, anonymized student performance on the diagnostic test for audit. The specific diagnostic still needs to be designed.

Figure 8: The SSA will implement a year-round enrollment outreach effort designed to ensure that each of the $\sim$ 300 seventh graders each year are meaningfully exposed to STEAM-ly experiences so that they and their family can make an informed decision about registering interest. This enrollment outreach process will double both as a testbed for potential hires and a lower-pressure sandbox to prototype curricula for the following year. We've raised $100,000 to cover the costs of implementing this outreach process the inaugural year. Subsequent years' efforts will be folded into the professional development time of staff and a subset of the seminars of existing SSA students.

To make this possible for as wide an audience as possible, we've designed a six-level enrollment outreach process intended to work with potential enrollees in increasing depth:

1. EVENTS: These events will aim primarily to get families in the door. Working with local churches, businesses, and schools we'll host some primarily social events (*e.g.* potlucks, movie screenings, booths at local festivals), some events focused specifically on the questions and concerns that potential enrollees might have (*e.g.* We've arranged for talks from local college admissions staff and employers to address questions about postsecondary options for students from an environment like the SSA.), and finally straight-up informational sessions organized through channels like the Parent Information Center (PIC) and local PTAs.

2. WORKSHOPS: Inevitably, if you are only reaching out to families outside of the schoolday, you create a selection bias making it less likely that families that already struggle with school engagement—whether by dint of circumstance or culture—will connect. To address this, we'll be running in- and after-school workshops during X-block, science and math classes, and after-school at the local K-8 schools[65] We'll also be inviting staff at the local K-8 schools to participate in [free,] related professional development workshops [in addition to one-on-one outreach] to help develop a sense for the type of place the SSA will be and

[65] and have already begun meeting with principals to arrange the details.

what type of students might benefit from it. This is essential because we expect teachers who have worked with students to be the best source of help and connection reaching out to potential families.

3. PROGRAMS: We'll also offer free versions of sprout's existing 8–16-week programs, targeting solely Somerville students. This will serve to prototype and document new programs which will grow into SSA Seminars. Because of their depth and intensity, we expect the audience here to be much smaller than for the workshops and event series.

4. MINICAMPS: Some subset of the students participating in the programs we run as part of this enrollment process (as well as other potential, interested enrollees) will have the option of attending free minicamps during spring, winter vacation, and other school holidays/half-days.

5. SUMMER CAMP: Immediately prior to enrollment each year, we will also conduct a full on, all day summer camp where we include as many of the registered students whom we know will enroll as possible. This will be the closest we come to full operation and will act as a trial period mitigating growing pains year-over-year. In particular, this means the summer camp will be tightly integrated with ongoing operations after the SSA's first year.

6. RETREAT: In the weeks before official enrollment, we will also coordinating a retreat for students and staff that aims to do two things: 1) seed students' relationships to staff and to one another in a non-academic setting offering something of a clean slate, and 2) offer an entry point for a facilitated process of involving students in the ongoing definition and refinement of the school's vision and brand (*e.g.* via workshops with local designers creating and iterating on the graphic identity package for the school).

Needless to say, at each level fewer and fewer students will participate. The whole idea is to give students and their families an increasingly high fidelity sense for what the SSA will be like so that they can make a meaningfully informed decision. At the same time, the earlier we identify enrollees we're likely to see in their eighth grade year, the earlier we can begin working with them and their families to develop a relationship and the necessary trust to undertake a big shift like this. We've raised $100,000 to support this enrollment outreach process before the SSA opens. After the SSA opens, these enrollment outreach activities will be brought into the SSA and coupled to student and staff work.

This enrollment outreach process's first function is to generate sufficiently broad and diverse interest to meet our equity commitments. But it doubles both as a testbed for hiring (which we'll talk more about later) and an informal sandbox for curriculum development for the following year. In this way, the enrollment outreach

process will be built into the ongoing hiring, professional development, and curriculum formation processes for the SSA, requiring no additional funding.

That said, we're being very conservative in our approach to designing and funding the enrollment outreach process the first year. Not only have we never done it before, but the importance of the initial hires, enrollment, and launch cannot be overstated given our emphasis on getting the *culture* of the school right.[66] You can read more about the specifics of our funding and plan in SSA Enrollment Outreach Budget.

[66] Deal, T. E. and K. D. Peterson (1999). *Shaping school culture: The heart of leadership*. ERIC; and MacNeil, A. J., D. L. Prater, and S. Busch (2009). The effects of school culture and climate on student achievement. *International Journal of Leadership in Education* 12(1), 73–84

Enrollment Process

We've detailed an enrollment mechanism which will prevent us from enrolling cohorts which do not satisfy our equity commitment. But that means the onus to generate sufficiently broad and diverse interest among families in Somerville is on us. This will involve a three step process:

1. We'll begin the outreach process immediately upon approval of the SSA[67] and continue year-round.
2. If, after three months, we somehow have generated insufficiently broad and diverse interest to meet our equity commitments, we'll go to the District for help targeting families. We'll look at the socioeconomic, demographic, and academic backgrounds of families who *have* registered interest and work with the District to solicit families whose enrollment would bridge the gaps we have. This would not only involve reaching out to them for participation in the public outreach process as detailed in the section on enrollment, but for one-on-one and one-on-few conversations over dinner, coffee, or by phone.
3. If after another three months, we somehow have not yet generated sufficiently broad and diverse interest to meet our equity commitments, we'll frankly take a step back and reconsider whether this initiative is something Somerville actually wants before running an opt-out lottery to close the remaining gap between the cohort of interested families and our equity commitments. Typically, the best-practice *starting point* for public institutions reaching disengaged populations is "active outreach"[68] which in the case of schools, typically looks like a mix of informational sessions and an opt-out lottery.[69] Because of how much work we'll be doing in advance of this phase, we want to be sure to put some pause in place for reflection. Concretely, this will mean that the SSA will have to ask for the School Committee's permission[70] to conduct an opt-out lottery and publicly explain or interpret its failure up to this point (which we hope we never reach) to generate sufficiently broad or diverse interest.

[67] We've found that, especially for families unused to school outreach and engagement, being asked to dig into the details of an imaginary school tests their patience

[68] Wood, C. (2005). Making choice a reality in secondary education. *London: Social Market Foundation*

[69] Lubienski, C. (2004). Charter school innovation in theory and practice: Autonomy, r&d, and curricular conformity. *Taking account of charter schools: What's happened and what's next*, 72–90

[70] A majority vote of the School Committee as fully constituted will be required to allow the opt-out lottery after no fewer than two public hearings and thirty days' consideration.

Note that the enrollment process will very explicitly avoid marketing or advertising itself as targeting struggling students; how-

ever, we will take pains to ensure that those students who *have* struggled know that the SSA is very explicitly *not* an enrichment or magnet program. Participants in the enrollment process will be informed about the mechanics of the lottery in detail after they register, though the full details will also be made available online from the beginning. This shift and timing of emphasis is essential to the counterproductive stereotyping of the SSA's students, sabotaging the re-invention of their relationship to school before they even start. No waitlist will be generated or considered year-over-year in selecting students.

Transfers Into the SSA The SSA has only committed to enrolling eighth graders. Transfers outside of this age-range and outside of the yearly enrollment period (whose dates remain to be defined, though interest will be registered throughout the year) will be entirely optional for the SSA, though yearly enrollment *must* be constrained by the equity commitments defined in this plan. Transfers will carry with them a prorated per capita allocation from the sending District. Just as at Full Circle, the principal will be responsible for sitting down with relevant staff to review student transcripts, work, and background to translate their background into the SSA's curricular coverage, portfolio, and credit system.

Defining a Margin of Error for the SSA Enrollment Process The SSA's general margin of error will be 10% of the reference distribution's standard deviation. For some measures—like MCAS CPI targets—this is easy to define since everything is one-dimensional and naturally quantitative. For others—like measures of statistical dispersion for achievement gap metrics or target distributions of demographic or socioeconomic profiles in SSA enrollment—more sophisticated statistical tools are required. Depending on the nature of the reference distribution—in particular, whether that distribution is over a theoretically continuous variable like household income or a categorical variable like race—a normalized version of either the Kolmogorov-Smirnov[71] or Bhattachyra[72] goodness-of-fit measures of statistical distance will be defined. The SSA will document and explain these tools, releasing them into the public domain, and will brief the Somerville School Committee on their usage.

[71] Massey Jr, F. J. (1951). The kolmogorov-smirnov test for goodness of fit. *Journal of the American statistical Association 46*(253), 68–78

[72] Eubank, R. and J. D. Hart (1992). Testing goodness-of-fit in regression via order selection criteria. *The Annals of Statistics 20*(3), 1412–1425

Assessment

Just as your family doctor does not rely on your temperature alone to assess your health, the SSA will not rely on a single metric like GPA to quantify student performance. Similarly, the performance it commits to through its School Improvement Plans in aggregate will not be one-dimensional (see the school improvement plan for further details). Every student will have a full record which will contain a mix of quantitative and qualitative assessment artifacts gathered from a variety of sources over time. This record will be the

basis for discussions requiring summative assessment—*viz.* cross-registration, matriculation, and approval of projects, internships, and co-op participation.

For these summative uses, the primary metric of progress will be a Standards Coverage metric combining velocity and depth of coverage of the Common Core and MCAS STE/NGSS standards as documented through our curriculum mapping process. These metrics will be accompanied by a host of narrative evaluations from projects, regular staff meetings with and about students, community partners, *et al.*—basically everyone who's worked with the student in a significant capacity. The results from the official and diagnostic MCAS/PARCC/SAT tests and test preparation courses over time will also be included.

More important than all of these metrics, however, is students' capacity to produce quality work and the match between that capacity and the students' self-described aims. For further details on how students will evaluate themselves, their work, and their peers (which we distinguish from assessment for formative and summative purposes), see Student Evaluation. An essential part of making the transition from student to independent investigator is being able to define the standards of performance for a project. Concretely, this means that in every project students undertake, there will be a phase—which may sometimes just be a few minutes in very small projects or very early on in students' time at the SSA—where they are sitting down and considering what would make their project a success. As projects get more and more sophisticated, this will involve finding and choosing experts who can act in a critical capacity. Much of the work that students do will be subject to small-group, studio critique style evaluations, each of which will produce a variety of artifacts, inspired by the narrative evaluation system at institutions like Hampshire College.[73] Throughout a project's evolution and over the course of many projects, staff will be consistently mapping students' work back to the Common Core/MCAS STE.

[73] Astin, A. W. et al. (2012). *Assessment for excellence: The philosophy and practice of assessment and evaluation in higher education*. Rowman & Littlefield

Advancement

The SSA will not be age segregated, so the traditional notions of grade advancement do not apply. That said, there are two, primary dimensions along which students will formally advance, though they are spectra and not discretized categories: 1) project autonomy and 2) project sophistication. Neither of these standards will be rigorously quantified or necessarily used to segregate students. Inevitably, some separation will occur as different seminars or projects ask for different backgrounds or maturity levels. But the design of SSA curricula will specifically aim to encourage sufficiently broad divergence in student work so as to accommodate amateur work alongside expert work, given the plethora of research supporting this proximity and the resulting interactions, modeling,

and formal student teaching opportunities as extremely valuable.[74]

Project Autonomy The SSA's mission is to transform students into independent investigators. Students cannot simply be dumped into autonomous environments and expected to flourish, and so we've carefully designed a setup which will allow us to individually scaffold the growth of student autonomy. Some students who might otherwise find themselves in the ninth grade may be a perfect match for a co-op opportunity, while others who might be seniors may still be struggling to manage projects longer than a week in scope. These decisions—about the scope and scale of projects that students are ready to take on—will be made in coordination with the student's Advisory (see Staffing for more details) and will cut across concerns as diverse as project time scale to funding control (students will receive increasing project budgets to manage over their time with the SSA).

Project Sophistication Much more simply, many projects will require skills and background an interested student may not have. While this will partially be captured by the curriculum mapping process, inevitably there will be dimensions of readiness which will need to be interpreted and brought to bear by staff. Again, the student's Advisory will make decisions about student readiness based on demonstrated competence and their experience with that student.

Matriculation

Re-thinking assessment and advancement necessarily involves re-thinking matriculation. The SSA has very deliberately excluded college entrance or aggregate completion rates in its definitions of success. The SSA's mission is to transform people from students into independent investigators, and if we're going to help those who traditionally fall through the cracks, we must reduce the number of cracks. That means the SSA will not only be much more intimate, but more vertically integrated—rather than growing in breadth, the SSA will be looking to grow in depth. Instead of considering high school to be a four-year transaction, we want to structurally build in support for decade long relationships with students. You can read more about this later on, but this focus on longitudinal support does not obviate the notion of matriculation, but it behooves us to revisit it.

For the SSA, matriculation is a step that is taken when a student is ready for and excited about their next step in life—whether that's entering the workforce or going to college. The minimum precondition for matriculation will be one of the following:

- Complete Standards Coverage as documented by our curriculum mapping process.

[74] CORNISH, L. (2012). Mixed-grade elementary-school classes and student achievement. *International Guide to Student Achievement*, 122; Doherty, A. (2012). " teacher, i showed her how to do that!": Teaching early-years children through mixed-age play. *Primary Science 122*, 24–26; Whitman, N. A. and J. D. Fife (1988). *Peer Teaching: To Teach Is To Learn Twice. ASHE-ERIC Higher Education Report No. 4, 1988.* ERIC; and Boud, D., R. Cohen, and J. Sampson (1999). Peer learning and assessment. *Assessment & Evaluation in Higher Education 24*(4), 413–426

- Admission to a postsecondary institution.
- Board of Trustees approval of your portfolio and personal summary.

Transfers Out of the SSA

An axiom underlying the design and creation of the SSA is that no one school can serve every student equally well. Which means, all things held equal, a diversity of options is better for students. This applies to the SSA just as it applies to SHS. This means that we expect to experience attrition through transfers as students either discover the SSA isn't working out or that it isn't for them. Overall, we've been inspired by what the IEP and special education advocacy process looks like at its best, going from 1) articulating and programmatically attempting to address issues with the current setup to 2) identifying long-term, irreconcilable needs to 3) careful, individualized support of the entire family in searching for, securing, and supporting the transition to alternatives.

Deciding "It's just not working out," is a long process culminating in a decision not to be made lightly. Just as we take the equity ramifications of our enrollment extremely seriously, we take the equity ramifications of students leaving the SSA even more seriously. We are committed to avoiding creaming students and to ensure that we serve those students who need alternative options most. But we can't let that commitment hurt students. To reconcile these tensions requires two different types of response.

First, how do we prevent any student attrition from exacerbating inequality in Somerville Public Schools or working against the SSA's equity goals? Rather than frame this student by student, we've committed to maintaining distributions of demographic, socioeconomic, and academic diversity and need that if we violate repeatedly, will result in the dissolution of the SSA (see chapter I for details). These measures do not just address enrollment, but retention as well because these distributions will be measured for the student body as a whole.

Second, how do we avoid hurting that student? If, after deliberation by the principal and the student's Advisory Team and family, the decision is made to begin searching for alternatives to the SSA, the SSA will shift into a phase similar to a student's college search. We will arrange for tours and perhaps trial periods at other educational options throughout Somerville and Greater Boston. This might be Next Wave/Full Circle, Somerville High School, Prospect Hill Academy, or the bevy of schools that inter-district choice opens up. Overall, the emphasis will be on finding the right place for that student, and the SSA will take full responsibility for supporting the family in investigating those options while ensuring their children don't unduly lose credit or access within SPS.

SSA staff, working with SPS Student Services, will take on the responsibility for ensuring that the student finds an environment that works for them, that their family is fully apprised of the options and ramifications of their choice, and that the details of logistical and financial viability are addressed as needed. Transfers to SHS have been fleshed out in greater detail and are covered in Transfers and will be further fleshed out by the SSA Integration Team. Depending on the reasons behind someone's issues with the SSA, either the project manager or social worker in their Advisory will be the primary point person in managing and effecting these transitions.

Handling the logistics The SSA will be operating on an earned credit model relying on our curriculum mapping process. When someone transfers out, we'll have a situation basically identical to matriculation in terms of generating a legible and meaningful transcript to aid placement and credit transfer. The project manager in the student's Advisory will be responsible for this.

Transcripts & Portfolios

In addition to a transformative educational experience, the SSA is responsible for rendering students' work legible so that they can smoothly make a transition to whatever their next step may be, whether the workforce or college. Given how unusual the SSA's programs will be, the transcript process will be different than that at many schools. That said, a traditional credit-hours and course-selection transcript will be generated, relying on the same data and process as the overall curriculum mapping mechanism for Common Core/MCAS/NGSS. Depending on the type of projects involved, this may also involve pairing the student transcript with recommended credit analysis effecting prorated mappings from student work onto portions of commonly used, introductory textbooks. This mapping process is no small task and will be one of the primary responsibilities of the curriculum developer as members of their cohort are preparing for matriculation or transfer. We expect the curriculum mapping system we'll be building will make it easier to maintain and re-use these mappings over time.

But the most interesting and substantive meat of the transcript will be provided for by twofold support specifically tailored to handle project-based work:

- All students, throughout their time with the SSA, will be individually mentored in the design and implementation of their own websites and portfolios. These will take different forms depending on students' interests and background (*cf.* an aspiring architect, electrical engineer, and writer), but this will serve as the focal point for comprehensively documenting students' intellectual work.

- The SSA will provide time and staff support to students to help them design a curricular map of their work, packaging the finely grained Common Core/MCAS mapping into a more easily parsed record (though that full, raw record will be included in their transcript). This curricular map may involve connecting elements of their projects to appropriate textbook chapters, apprenticeships, or related programming.

Taken together these materials will form the basis for the articulation agreements with unions and other postsecondary institutions with whom the SSA will negotiate over time. Fortunately, this is by no means a new problem—not only have colleges like Hampshire and New College been dealing with it for decades, but when high-fidelity narrative evaluation and mastery-based metrics (though they weren't called that at the time) began to crop up in the 1970s, a small but significant cohort of alternative high schools around the country began taking advantage of the infrastructure. These schools included obvious, alternative schools (free schools, conservatories, high level sports schools, *etc.*) as well as wide variety of small, progressive schools.[75] The preliminary conversations we've had with admissions staff at local institutions like MIT, Harvard, and Olin have convinced us that these conversations will go smoothly when the time comes. And of course, we'll have at least five years to open these conversations and work closely with institutions immediately relevant to our students.

[75] Labaree, D. F. (1986). Curriculum, credentials, and the middle class: A case study of a nineteenth century high school. *Sociology of Education 59*(1), 42–57; and Labaree, D. F. (1997). *How to succeed in school without really learning: The credentials race in American education*. Yale University Press

Transitional Services

The core of the SSA's handling of students' transition grows from two, basic principles:

1. Graduation should be *gradual*.
2. Graduation should be a *team effort*.

Inspired by the best practices of special education advocacy,[76] the SSA is intent on treating every student's transition out of the daily contact with the SSA to their next step—whatever that may be—carefully and individually. For a long time, people said that high school dropout rates were the problem. Then it was college entrance rates. Now it's college completion rates. At some point, we need to take responsibility for the entirety of our students' launch into life, returning to the notion that if we're going to help those who traditionally fall through the cracks, we must reduce the number of cracks. A robust set of transitional services is central to this.

[76] Janiga, S. J. and V. Costenbader (2002). The transition from high school to postsecondary education for students with learning disabilities a survey of college service coordinators. *Journal of Learning Disabilities 35*(5), 463–470

We want to make sure that our students succeed. And we want to build the necessary autonomy and flexibility into the school's operations to accommodate this. Specifically, students will all have an Individual Action Plan (IAP) which is revised over the course of their time at the SSA and tied into evaluations of their work

and growth. A significant portion of the IAP and the conversations around it are devoted to students defining their goals and the dimensions of growth that matter most to them. Managing these conversations over time is one of the primary responsibilities of the social worker in the student's Advisory. A natural ending and transition point for these conversations is the question of where and how the student wants to proceed from the SSA. This conversation will start well in advance of their matriculation and up to 8% of student and staff instructional time will be set aside for handling these transition questions in students' final year.

Not only that, but before students make their transition they and their family will articulate their primary concerns and what types of ongoing connections (*e.g.* to alumni of their intended college or professionals in their chosen industry) would be most useful so that the administration and social worker can take on arranging for those connections and minimally a community member (preferably with relevant expertise and a history with the student) who will be in charge of checking in regularly, becoming aware of quite a fine grain of the student's activities. *e.g.* both for purposes of longitudinal data analysis and student transition support, we want to ensure that informed adults are not only collecting samples of student work and academic performance (as relevant) over time, but helping students connect to professors and other colleagues to help with tasks like class choice and scholarship applications—nominally non-academic skills, background, and emphases which pose a significant, unarticulated advantage for students from educated or otherwise atypically engaged families.

Longitudinal Support

Which brings us to the question of what the SSA's long term relationship to students looks like. While student's next step—to college or work—will be taken with the full support of our transition services, capitalizing on corporate and institutional connections made in the course of community projects, internships, and co-ops, the SSA wants to maintain an ongoing relationship that goes beyond organizing the class reunion or occasional Facebook messages from staff, inspired by community organizing models like Harlem Children's Zone and mentorship models like YearUp.

Even if the SSA erases the academic achievement gap, the repercussions of the social, cultural, and racial achievement gap go well beyond students' academic work. Interview skills, negotiation skills, career counseling, network capital: these are just a few of the cracks that students—even those who successfully graduate, are admitted to college, and complete college—struggle with over time. Cumulatively the effect is to recapitulate the existing inequities with which our schools struggle so valiantly in the first place.

We see the SSA as a long-term learning community. That emphasis on the long haul will not only offer very interesting and

important opportunities for longitudinal data analysis, but if managed well a rapidly growing network of potential future mentors, community connections, internships, co-ops, and volunteers: our own alumni network. Combined with careful documentation of the important people in *their* lives (*e.g.* formative professors, strong job recommendations, *etc.*) and we have a potentially very compelling, bootstrapped longitudinal support network for students that embodies the best practices of such efforts.[77]

[77] Nahapiet, J. (2009). Capitalizing on connections: social capital and strategic management. *Social capital: Reaching out, reaching in*, 205–236

The obvious question becomes: where will the time and money to support this come from? Like many of the SSA's facets, this is something that a combination of its tiny scale and emphasis on community integration can address. Each staff member will be graduating, on average, somewhere in the neighborhood of twelve students per year. Each of those students will be paired with a mentor. Even keeping tabs on students a decade out means that one hour per week on the part of these two adults could sustain an hour long phone call every five months from a staff member and two half hour phone calls from their mentor every week! The point of this calculation is not to commit to that level of mentorship but to demonstrate how long term and how formative an influence maintaining a connection with students could be and how feasible such efforts are. Inevitably, the details will need to be worked out, but as with issues in transition services, we're actually five years away from that and know that we want to make it a priority starting now.

Growing the SSA

The plan that we've sketched out here covers the SSA's next five years, at least. At that time the School Committee will need to renew the Innovation Plan for the SSA to continue. Assuming that the SSA is a success, we expect there will be compelling opportunities to grow down into younger grades once the SSA's 8^{th}–12^{th} setup is stable.

Boundary conditions Without an initial motion by the SSA Principal and subsequent, majority vote from the Somerville School Committee, the SSA will never exceed an average of forty students per grade level without a two-thirds approval vote from the School Committee. The SSA will, however, be guaranteed the ability to enroll at least thirty-six students yearly (assuming we generate sufficiently broad and diverse interest to support such enrollment).

Growing into lower grades The core, curricular innovations of the SSA focus on computational, project-based contexts tightly integrated with the community. Several pillars of that community integration—*e.g.* co-ops and internships—are socially and legally challenging to extend into lower grades. That said, as the SSA's praxis and curricula are established and proven, we fully expect

to grow into the lower grades (still constrained by aforementioned growth rate conditions). But because many of the mentorship and community relationships will need to look different, we'd like to do so slowly—to have a stable, functioning 8–12th community before attempting to add further, new initiatives. This interest in "growing down" is also based in a variety of research-based,[78] peer-teaching approaches that would engage older students in mentoring and tutoring students in younger grades.

[78] Fantuzzo, J. W., R. E. Riggio, S. Connelly, and L. A. Dimeff (1989). Effects of reciprocal peer tutoring on academic achievement and psychological adjustment: A component analysis. *Journal of educational psychology 81*(2), 173; and Goldschmid, B. and M. L. Goldschmid (1976). Peer teaching in higher education: a review. *Higher Education 5*(1), 9–33

Autonomy Analysis

To make all this possible, we need complete autonomy in our definition of credits and matriculation standards, as well as all necessary access to contact information for District families to implement our comprehensive enrollment outreach process. This is mostly a policy implementation of our curricular autonomy, just as Full Circle/Next Wave can create classes and determine appropriate credit transfers.

Why should we expect this will benefit students? The research overwhelmingly supports the prominence of long term, supportive adult relationships in improving student outcomes[79] *especially* for students who have struggled historically[80] or with special needs.[81] To repeat ourselves: if we want fewer students to fall through the cracks, then we need fewer cracks. Throughout the practice and design of public institutions, we're seeing a transition to increasingly wraparound, vertically integrated services.[82] Whether in the emergence of social medicine, the prominence of community organizations like Harlem Children's Zone, the rise of 'grit'—the SSA wants to lean into this trend and take it to its logical conclusion.

[79] Astone, N. M. and S. S. McLanahan (1991). Family structure, parental practices and high school completion. *American Sociological Review*, 309–320; Larose, S. and M. Boivin (1998). Attachment to parents, social support expectations, and socioemotional adjustment during the high school-college transition. *Journal of Research on Adolescence 8*(1), 1–27; and Barone, C., A. I. Aguirre-Deandreis, and E. J. Trickett (1991). Means—ends problem-solving skills, life stress, and social support as mediators of adjustment in the normative transition to high school. *American Journal of Community Psychology 19*(2), 207–225

[80] Lundberg, S. (2013). The college type: Personality and educational inequality. *Journal of Labor Economics 31*(3), 421–441; and Kidd, C., H. Palmeri, and R. N. Aslin (2012). Rational snacking: Young children's decision-making on the marshmallow task is moderated by beliefs about environmental reliability. *Cognition*

What legal affordances will be required? We are still in the process of writing up the necessary exemptions and waivers required for this. You can find a partial list in Legal Affordances, but per 603 CMR 48.03(b),

> If an innovation plan committee is proposing an innovation plan that may conflict with laws (including regulations) governing other public schools, the committee shall, before presenting the plan to the school committee for approval, request approval from the Commissioner for any provision in the plan that may conflict with such laws. The Commissioner's approval shall be based on his determination that the plan is consistent with 603 CMR 48.03 (2) and with the state's obligations under the education clause of the Massachusetts Constitution, Mass. Const., pt. II, ch. V, s. II, as defined by a court of competent jurisdiction, and that the provision in the plan that may conflict with such laws is necessary to advance the mission or educational programs of the innovation school. If the Commissioner does not approve the proposed provision in the plan, the innovation plan committee may ask the Board to review the matter and the Board shall make the final decision.

[81] Wagner, M. M. and J. Blackorby (1996). Transition from high school to work or college: How special education students fare. *The Future of Children*, 103–120

[82] VanDenBerg, J. E. (1996). Individualized services and supports through the wraparound process: Philosophy and procedures. *Journal of Child and Family Studies 5*(1), 7–21; Burchard, J. D., E. J. Bruns, and S. N. Burchard (2002). The wraparound approach. *Community treatment for youth: Evidence-based interventions for severe emotional and behavioral disorders 2*, 69–90; and Theodos, B. (2010). Inclusive public housing: Services for the hard to house

which means that the full process of articulating points of contact between state laws and regulations and the Innovation Plan as voted on need not conclude until the School Committee presentation. As with negotiating necessary affordances in the Collective Bargaining Agreement to make the Innovation Plan possible, non-substantive design edits and alterations may be made after the Innovation Plan Committee vote without triggering a re-start of the process.[83]

[83] French, D. (2013, August). Personal communication with dan french. Regarding voting and editing process between Innovation Plan and School Committee votes

Student Evaluation

The SSA has committed to very clear dimensions of performance to which it is accountable to the School Committee (see the school improvement plan and chapter on governance for details). But largely, we see those as necessary but by no means sufficient to define success. Success focuses on the SSA's mission of transforming students into independent investigators and helping them to happily and successfully transition to the next steps in life.

This bright line distinction shows up clearly when considering not only what you evaluate but why you evaluate it. Designing an evaluation system is implicitly about setting your goals as an organization and not just finding out if you're meeting them (summative assessment) but providing yourself with the necessary resolution and fidelity in ongoing awareness so that you can make the appropriate course corrections and feedback on progress or lack thereof (formative assessment).

This evaluation process can happen within the student (reflective), within the the school (internal), or for an outside party (external). Combining these, we have a high level picture of the evaluation landscape at the SSA.

This landscape does not tell us *to what end* evaluations are made, though. For the SSA, the standard is simple: we think that if students find themselves highly engaged in deep, hard work every day at increasing levels of autonomy, resulting in projects of increasingly high quality for five years, everything will be fine. Ultimately, our success is measured against our mission: when a student leaves us, what is their capacity to act as an independent investigator? Drawing from articulations of investigative process in a variety of educational and professional settings,[84] for us that means,

1. Articulate a problem or question personally meaningful to you.
2. Design a project or experiment to engage that question.
3. Rustle up the necessary resources to carry out that project or experiment.
4. Manage yourself, your time, and said resources to execute that project successfully, iterating on the first three steps of this process to converge on a clear vision.
5. Document and share the results of that project or experiment

[84] Gardner, H. (1994). *The Arts and Human Development: A Psychological Study of the Artistic Process; with a New Introduction*. Basic Books; Berger, R. (2003). *An Ethic of Excellence: Building a Culture of Craftsmanship with Students*. ERIC; Lakatos, I., P. Feyerabend, and M. Motterlini (1999). *For and against method: including Lakatos's lectures on scientific method and the Lakatos-Feyerabend correspondence*. University of Chicago Press; Lawson, B. (2006). *How designers think: the design process demystified*. Routledge; and Pahl, G. and W. Beitz (1988). Engineering design: a systematic approach. *NASA STI/Recon Technical Report A 89*, 47350

with relevant experts and people whose opinion you care about in a [meaningful] culturally and socially situated context.

These three notions of autonomy, quality, and depth go to the core of the aims of our student evaluation system, inspired by conservatories like Julliard, organizations like Big Picture Learning, and Expeditionary Learning schools, each of which have different takes on notions of craftsmanship and autonomy, and each of which have developed successful models focusing on these qualities in students and their work.

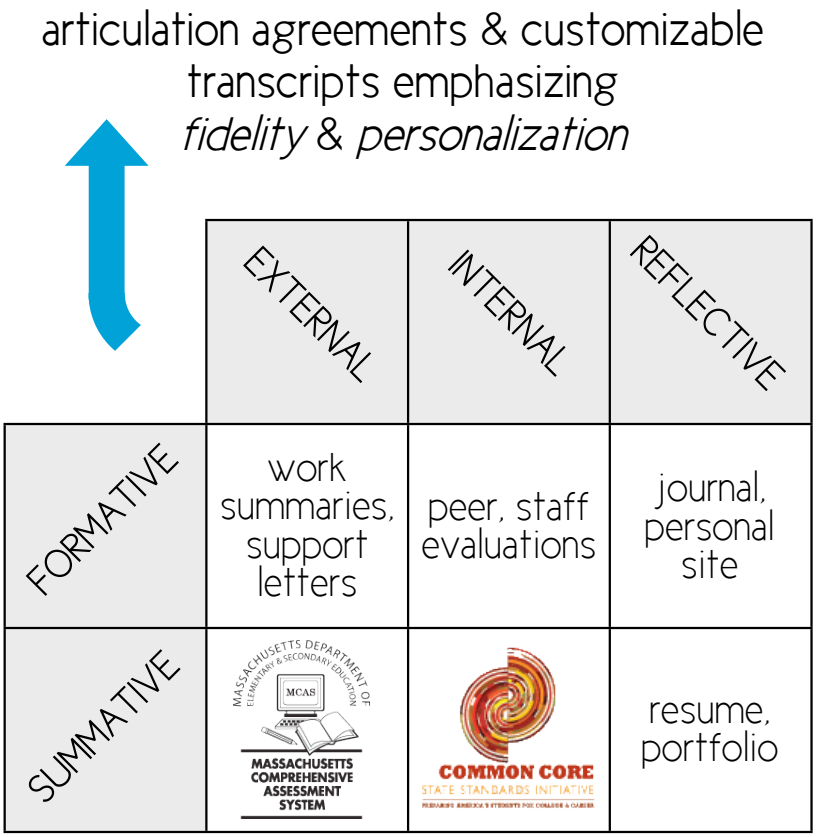


Figure 9: Students will be reflecting on their work, peers, staff, and com-munity members will interview and critique students' work. In addition to the MCAS/SAT and students' corpus of work mapped back to the Common Core, this collection of high fidelity assessment will be collated into custom transcripts and measures, all emphasizing a personalized and individualized approach. This will involve a variety of often qualitative work assessments and artifacts—just like the real world. We'll be uniting models from success stories like High Tech High, New College, Big Picture Learning, and Expeditionary Schools.

This chapter lays out the current designs of the SSA for achieving an effective evaluation system for students and their work which lines up with its mission, as distinct from the boundary conditions of things like MCAS which we've put into commitments like our School Improvement Plan.

Individual Action Plans

Inspired by the best hopes of the practices of performance reviews and IEP development, the SSA will implement what we're currently terming Individual Action Plans (IAPs). These plans are meant to be individualized considerations of student background, aptitude, goals, and development. But of course, they aren't contextualized as addressing a pathology, they're meant to surface students and

families goals and concerns for themselves to articulate long term developmental goals and reconcile those with midterm activities and opportunities. For some, they may identify fitness as a priority. Others might want to focus on their social skills. By the time some have a clear idea of their career interests, they may decide to incorporate the development of specific skills or achievement of specific, personalized milestones into their IAP. Regardless, this plan forms the basis of our evaluation both of the student's progress and when taken in aggregate, staff and school success.

These will be the basis of regular meetings and revision with students' Advisory and may, as time goes on, incorporate the community relationships and mentorships attaching to that student's projects and development. These conversations will be one of the primary contexts in which students develop and articulate their metacognitive vocabulary, goals, and self-concept: central to the development of their ability to manage themselves and their development.[85]

[85] Azevedo, R. and A. F. Hadwin (2005). Scaffolding self-regulated learning and metacognition–implications for the design of computer-based scaffolds. *Instructional Science 33*(5), 367–379; Pintrich, P. R. and E. V. De Groot (1990). Motivational and self-regulated learning components of classroom academic performance. *Journal of educational psychology 82*(1), 33; and Rivers, W. P. (2001). Autonomy at all costs: An ethnography of metacognitive self-assessment and self-management among experienced language learners. *The modern language journal 85*(2), 279–290

Peer Reviews

The SSA's focus on autonomy does not mean students will be working alone. Collaborating effectively is central to our vision and definition of independent investigation. Given significant and frequent collaboration among students at a variety of timescales, we will have the basic foundation for substantive project peer reviews, which themselves will be the first context in which students are introduced to many of the metacognitive and reflective executive functions we're focused on developing.

The focus of these peer reviews will be on two dimensions of performance identified as central in effective project-based and knowledge work environments: developing students' sense of craft and quality[86] and developing their empathy, broadly construed.[87]

[86] Series, A. A. E. C. (2009). Qualities of quality: Understanding excellence in arts education

[87] Association, N. M. S. (2003). *This we believe: Successful schools for young adolescents: A position paper of the National Middle School Association*. National Middle School Association; and Bosworth, K. (1994). Developing collaborative skills in college students. *New Directions for Teaching and Learning 1994*(59), 25–31

Surveys

Family and student happiness show up nowhere in the state or District's default evaluation frameworks. Given that they are in fact the primary constituency of the SSA, we think it is important to bring that evaluation into every level of the SSA's operation. In particular with regard to student evaluations, surveys looking to assess their relative contribution to the SSA community and other students' success and satisfaction will figure into their assessment. While measuring this is hard, there is a precedent for it and a variety of tools (*e.g.* sentiment analysis[88]) to make it easier.

[88] Pang, B. and L. Lee (2008). Opinion mining and sentiment analysis. *Foundations and trends in information retrieval 2*(1-2), 1–135

Portfolios

Capturing, communicating, and rendering legible what makes individual learners uniquely impressive is central not only to the eval-

uation process, but to ensuring that students' next, postsecondary steps can be taken confidently and smoothly.

Independent investigators should have independent investigations to point to. These do not show up cleanly on a transcript. Managing the process of documenting, curating, and framing these experiences will be one of the primary responsibilities of the project manager in the student's advisory. A central artifact in this process will be a student's portfolio(s). Depending on the nature of student's interests and work over time, the specific form, style, and content will differ. But collectively, they're intended to represent a set of high fidelity narratives which make clear what the student is [uniquely] capable of, what their story of growth and development has been, and what their near term targets for themselves and their work are.

For some, this portfolio will be their eventual submission to their Advisory and Board of Trustees for graduation. For all, we expect it to be a valuable record likely to be incorporated into their personal web presence which will be central to future job offers, college admissions processes, scholarship interviews, *etc.*

Dimensions of Performance

One upshot of the SSA's emphasis on divergent activities across the board is that in no way are we looking for all students to look or achieve the same. Traditional schools offer some of this diversity through a mix of extracurricular activities and sports in addition to whatever course catalogue diversity they can support. Despite this, most of the evaluation frameworks available to discuss student work are surprisingly one dimensional (*e.g.* GPAs) or entirely qualitative (*e.g.* letters of recommendation). For the SSA, the overall student evaluation will specifically target four dimensions of performance which will be collectively judged by their peers, Advisory, portfolio, and involved community partners in a process managed by their Advisory's project manager:

- SKILL: We think depth is more important than breadth. We're not looking to cultivate well-rounded students, *per se*. We want students to become deeply expert in a few things but develop a broad awareness of and sensitivity to other skills and domains. In industry and academia, this trope is referred to as "T-shaped" people.[89] Aside from the instrumental value distinguishing students from their peers in job and college applications, most students are denied the opportunity to ever feel deeply expert in something, and we now know that these feelings of competence and expertise have [very positive!] repercussions that reverberate well beyond the domain of expertise.[90]
- PRODUCTIVITY: One downside to some schools' emphasis on preparation is that students spend remarkably little time producing anything. As anyone who's managed a flaky college student

[89] Morgan, J. M. and J. K. Liker (2006). *The Toyota product development system*. Productivity press New York; and Rip, A. (2004). Strategic research, post-modern universities and research training. *Higher Education Policy 17*(2), 153–166

[90] Bouffard-Bouchard, T., S. Parent, and S. Larivee (1991). Influence of self-efficacy on self-regulation and performance among junior and senior high-school age students. *International Journal of Behavioral Development 14*(2), 153–164

knows, the ability to consistently produce shippable output while maintaining effective work/life balance is a deeply valuable skill. But despite the widespread acknowledgment of the importance of these skills—especially in knowledge work—there's rarely any time to acknowledge their importance in school, much less develop this skill. At the SSA, a student's *productivity* will be explicitly called out as a dimension of their performance which transcends any individual project.

- GROUP CONTRIBUTION: The SSA aims to be a learning community. Much of the work that goes into maintaining and expanding such a community and its efficacy don't necessarily show up in individual projects. Students who act as social leaders, those who motivate others, those who mediate disputes—these skills and capacities go unrecognized (and therefore, largely uncultivated) in traditional classroom environments. The SSA's project-based context will not only mean these skills are much more important, but will make authentic assessment and articulation of these skills plausible.
- PROJECT CONTRIBUTION: Because the SSA is focused on developing new models of community-driven learning and research, with much of its staff designing new curricula and projects from scratch, there's an overall project articulated in which students themselves can participate. Whether helping to create curricular materials or developing tools for managing student records or fleshing out the SSA's CRM database for managing community connections, there are many ways of 'giving back' to the SSA which might not show up as curricular projects but which are central to the SSA's success and development (not to mention deep developmentally for the students involved).

Standardized Testing

In conversations about alternative schools, many folks' first question is often, "Well sure, but what about the MCAS?" The SSA design team feels that the MCAS is a wonderful measure of socioeconomic status and family education, but largely irrelevant to our mission of transforming students into independent investigators. But it is a boundary condition of public education, and denying that does many students a disservice.

After visiting a number of high performance, test-focused schools in Boston and New York focused historically struggling students and reviewing the literature on successful test preparation approaches[91], we've put together a mix of targeted test preparation and diagnostics which we're confident can address student's testing needs.

Rather than focusing specifically on the MCAS in designing the structure of the SSA, we've allocated $\sim$ 8% of students' time for all the work associated with schooling which we see as too

[91] Buchmann, C., D. J. Condron, and V. J. Roscigno (2010). Shadow education, american style: Test preparation, the sat and college enrollment. *Social Forces 89*(2), 435–461; and Volante, L. (2004). Teaching to the test: What every educator and policy-maker should know. *Canadian Journal of Educational Administration and Policy 35*(Sept. 25)

disconnected from the design of good learning experiences to allow to have a first-class impact on the design of projects and curricula. Specifically, this includes the MCAS, SAT/ACT, college admissions essay-editing, interview preparation, general test-taking skills, *etc.*

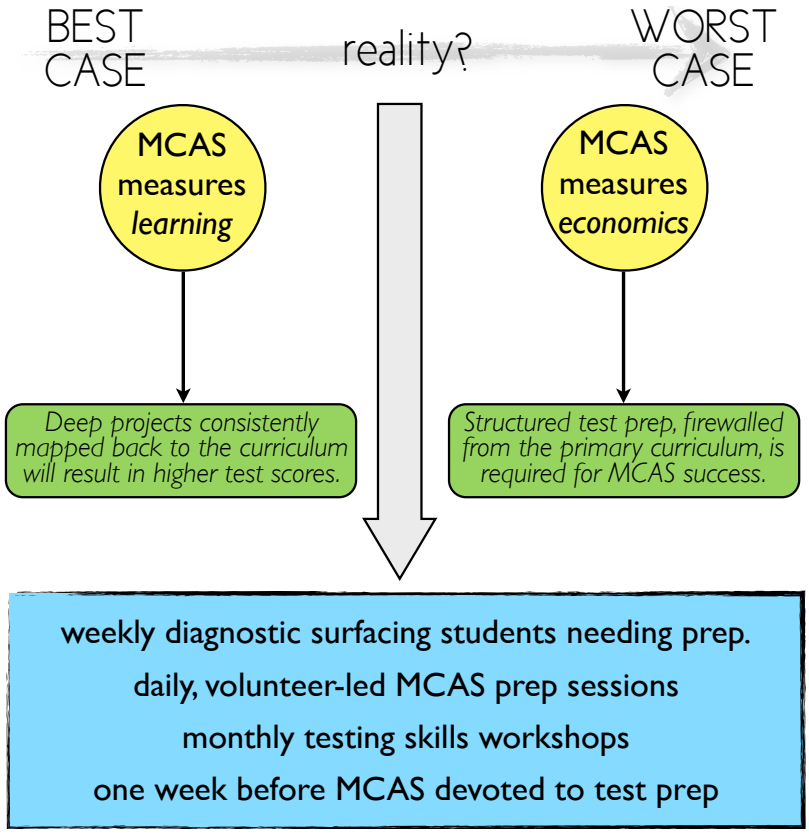


Figure 10: Improving MCAS scores is a minimum pre-condition for our success, but it by no means defines success. We want to cleanly separate the MCAS, SAT, and other schooling-mechanisms from deep learning while respecting the central role these gatekeepers play in students' futures. Emulating the test prep programs at performant academies and test prep programs like Kaplan, we'll be isolating those concerns and optimizing students' training accordingly.

We think that denying the importance of these mechanisms is irresponsible. But, we've firewalled developing these skills from the rest of the SSA experience.

In the MCAS's case, our general reasoning is simple: If MCAS measures real learning, we "just" need to do a good job. If it's just a test that tells you nothing about learning, you would have to prep for it exclusively. To avoid all the issues of 'teaching to the test' we are completely separating MCAS (and later, SAT) preparations from the rest of the curriculum.

Students—with the help of community mentors—will undergo ongoing diagnostic tests assessing MCAS readiness. This diagnostic will be paired with ongoing, small-group, targeted test prep. This prevents staff from distorting their lesson plans to match the MCAS while insulating students from harmful stereotype threat and other effects which stem from being identified as a 'failing' student.

Even better, this means there will be time set aside for test-taking as a skill—a neglected and unfortunately essential part of many present and future academic experiences.

Longitudinal Analysis

The SSA is intent on maintaining a much longer term relationship with students than is typically expected. This will be effected by both a more gradual matriculation process and an emphasis on continued transitional support services and mentorship. This will afford the SSA a unique vantage point from which to perform ongoing student evaluations to assess their growth and the SSA's success. This longitudinal setting suggests a three part framework for considering whether the SSA did right by a given student:

- Whom did that student want to become?
- How smoothly was their transition out of the SSA and into the steps leading to that goal effected?
- To what heights has the student gone? While there are some obvious proxies for this—salary, level of education, *etc.*—we're much more interested in their definition of success and how they've achieved that. For some that might be salary, for others industry prominence, for others a stable family, for others creative output, *etc.*

Autonomy Analysis

The SSA will have complete autonomy in defining and implementing evaluation frameworks for its students.

Why should we expect this will benefit students? We think the problem of designing evaluation systems sits at the boundary between two points of view. The mathematical physicist Lord Kelvin said, "If you can not measure it, you can not improve it." A few decades later, Albert Einstein said, "Not everything that can be counted counts, and not everything that counts can be counted." Obviously, they're both right. And just as obviously, the solution isn't a compromise. Just as your doctor doesn't rely solely on your temperature to assess your health, research over the past three decades has made it clear that in educational settings—when its feasible to implement—multifaceted, narrative evaluation processes offer higher fidelity, better outcomes, stronger metacognitive skills, and a whole host of other student benefits that pair nicely with the SSA's emphasis and flexibilities.[92]

But fundamentally, we feel that if it is so natural for these evaluation structures to be promulgated in the real world—and even in plenty of collegiate settings—then the burden of proof should be on traditional modes of evaluation to justify how they are uniquely suited to the needs of high school students.

What legal affordances will be required? To effect some of our specific ideas for evaluation systems and their longitudinal use, we'll need

[92] Astin, A. W. et al. (2012). *Assessment for excellence: The philosophy and practice of assessment and evaluation in higher education*. Rowman & Littlefield; Wolf, A. (1995). *Competence-based assessment*. Open University Press Buckingham; Rheingold, A., J. Seaman, and R. Berger (2014). Assessment across boundaries: How high-quality student work demonstrates achievement, shapes practice, and improves communities. In *Assessing Schools for Generation R (Responsibility)*, pp. 115–131. Springer; Adelman, C. (2006). The toolbox revisited: Paths to degree completion from high school through college. *US Department of Education*; and Levine, E., T. Sizer, T. Peters, D. Littky, and E. Washor (2002). *One kid at a time: Big lessons from a small school*. Teachers College Press New York

some legal flexibilities empowering students to be more in control of their student records and the constraints attaching to those.

We are still in the process of writing up the necessary exemptions and waivers required for this. You can find a partial list in Legal Affordances, but per 603 CMR 48.03(b),

> If an innovation plan committee is proposing an innovation plan that may conflict with laws (including regulations) governing other public schools, the committee shall, before presenting the plan to the school committee for approval, request approval from the Commissioner for any provision in the plan that may conflict with such laws. The Commissioner's approval shall be based on his determination that the plan is consistent with 603 CMR 48.03 (2) and with the state's obligations under the education clause of the Massachusetts Constitution, Mass. Const., pt. II, ch. V, s. II, as defined by a court of competent jurisdiction, and that the provision in the plan that may conflict with such laws is necessary to advance the mission or educational programs of the innovation school. If the Commissioner does not approve the proposed provision in the plan, the innovation plan committee may ask the Board to review the matter and the Board shall make the final decision.

which means that the full process of articulating points of contact between state laws and regulations and the Innovation Plan as voted on need not conclude until the School Committee presentation. As with negotiating necessary affordances in the Collective Bargaining Agreement to make the Innovation Plan possible, non-substantive design edits and alterations may be made after the Innovation Plan Committee vote without triggering a re-start of the process.[93]

[93] French, D. (2013, August). Personal communication with dan french. Regarding voting and editing process between Innovation Plan and School Committee votes

Staffing

If we could control exactly one design element of the SSA, it would be *who would be in the room*—staff and students both. The SSA is an unusual design and will require an unusual [for schools] staff, an unusual organizational structure, an unusual professional development strategy, and so on. These alternative structures are by no means untested—even in education—but the SSA represents a hybridization of many of these approaches and requires autonomy to implement them.

Staff positions will be very different than traditional classroom roles. In particular, the SSA will be designing roles where staff are in many ways taking an active hand in research and development focused on making their domain more learnable, as opposed to teaching it more effectively. That distinction is subtle but significant, as it means that there will be a significant emphasis on ongoing research and professional development.[94]

Operationally, teachers—frequently working with community members—will be teaching in tight teams of three, in highly differentiated roles of curriculum developer, project manager, and social worker. Together these staff will be much more focused on developing student skills than the instructional provision of a particular canon.

All of this requires a significant comfort with uncertainty and ambiguity that's much more akin to a startup environment than many schools. The purpose of this chapter is to lay out the broad strokes of how staff will be prospected, hired, trained, organized, and developed.

[94] Pring, R. (2012). Teacher as researcher. *Theory and Practice of Curriculum Studies (RLE Edu B)*, 17

Administration

There will be very little administration at the SSA. Alec Resnick will be the SSA's inaugural principal. We will begin with no more than a principal, part of whose time—in emulation of the Generation Schools model—will be devoted to teaching. Overall, the SSA's management structure will be remarkably flat. The goal of the administration is simple and twofold:

1. run defense for staff and students time and attention so that they can do deep work of which they're proud.
2. work to rustle up the necessary resources—connections, money,

professional development opportunities, *etc.*—that the staff and students require.

Especially in the early years, a primary focus of the principal will go beyond this twofold mandate and include hiring and training new teachers. Fortunately, the SSA's scale and slow growth makes this feasible (three staff per year, at most).

Outreach

Hiring outreach will be bundled into the SSA's overall enrollment outreach efforts. However, they will be advertised nationwide through a variety of channels at graduate schools of education, colleges, and businesses (which is a network the principal will be charged with growing over time to increase the scope and reach of the SSA's hiring.)[95] We have no idea how we would filter resumes or conduct a three-hour interview to hire effectively for the types of positions we're looking at. We do, however, have a very keen sense after working with someone of whether they're a good fit. The informational sessions, after- and in-school programs, and mini- and summer camps will serve as a testbed for potential hires. This enrollment outreach process will be occurring year-round, and will be coordinated by existing students and staff.

This will be the basis for student and staff sensibilities and impressions informing hiring decisions in a process that stops short of traditional democratic schools but embodies the best practices from a variety of create and knowledge work organizations.[96]

[95] Needless to say, existing Somerville Public School employees are of course more than welcome to apply.

[96] Davenport, T. H. and L. Pruzak (2000). *Working knowledge: How organizations manage what they know*. Harvard Business Press; and Bowen, D. E., G. E. Ledford, and B. R. Nathan (1991). Hiring for the organization, not the job. *The Executive* 5(4), 35–51

Hiring & Firing

Throughout the year, the ongoing enrollment outreach process at local K-8 schools will serve as a testbed where candidates for SSA positions will come to design and teach with us for whatever period their schedule allows—ranging from a weekend workshop to an entire program. Administration and staff at the SSA will review candidates' performance in these mini-internships and select some for continued staff and student interviews focused on assessing cultural fit. In hiring, the SSA will keep with the best practices of research and development organizations and focus on hiring *people*, not positions—i.e. a strong candidate is more important than their nominal position fit. While traditional licensure and experience will be taken into account as a distinct advantage in considering a hire, the SSA will be able to hire independent of licensure, and specifically, licensure cannot ever be made a requirement of an SSA hiring contract.

These staff will be immediately brought in for orientation, training, and professional development on the job, co-teaching with existing staff before beginning their own Advisory team in the next enrollment period. The SSA will have the required legal and fi-

nancial autonomy to fundraise in order to establish the flexibility to begin paying candidates before they are officially hired so that we can secure good candidates who might not have the financial flexibility themselves to wait until the next school year.

And of course, while we expect some staff to discover that teaching—or the SSA—isn't their cup of tea or move on to other endeavors, staff will only be dismissed under the protections and procedures outlined in the applicable sections of the STA Collective Bargaining Agreement and M.G.L. Chapter 71, Section 42, *viz.*

> A teacher with professional teacher status, pursuant to section forty-one, shall not be dismissed except for inefficiency, incompetency, incapacity, conduct unbecoming a teacher, insubordination or failure on the part of the teacher to satisfy teacher performance standards developed pursuant to section thirty-eight of this chapter or other just cause.

The SSA will, however, have complete autonomy in defining its staff evaluation system, which will be used as the basis for any such considerations.

Professional Development

Staff's professional development will be governed by their own Individual Action Plans, similar to student's development and evaluation. These Individual Action Plans will form the basis for the individualized professional development efforts for teachers. Supporting these efforts—again in analogy with the best of performance contract and IEP processes—will be a primary responsibility of the principal.

In analogy with students' IAPs, staff IAPs will articulate their own self-development goals and struggles and near-term plans for achieving these. They will be refined through regular meetings with their Advisory colleagues and separate one-on-ones with the principal.

These professional development goals will be given guarded time through three mechanisms:

- The first is 20% time for personal projects,[97] which will largely be opened up to students for participation. SSA staff are expected to be enthusiastic and continually developing practitioners not only of the craft of teaching, but their domain expertise as well.
- Additionally, staff will have two hours daily for co-planning time, much of which will be spent with their Advisory colleagues, but which we expect to become more broadly connected as the set of adults involved in the SSA grows.
- Initially, not only will we conduct targeted trainings responsive to new cohorts and their background (*e.g.* Sheltered English Immersion (SEI) endorsement training, web development workshops, language immersion classes, *etc.*), but designing and

[97] Walker, A. (2011). 'creativity loves constraints': The paradox of google's twenty percent time. *ephemera*, 369; and Tate, R. (2012). *The 20% Doctrine*. HarperCollins

fleshing out this intake process for new hires will be itself a professional development opportunity for existing staff, who will be supported in developing new skills identified in their IAP and testing their development in the training of new staff.

Team Teaching

For years, research has been accumulating supporting the value of team teaching both for teachers' professional development (and sanity!) and student outcomes.[98] At the SSA, there's no other way to implement the project-based, heavily individualized curricula we're looking for, and we wouldn't want a community any other way. Given that for many students at the SSA, we expect the intimate setting of a small school environment will be among the primary draws, it's important to ensure that those experiences are as human and interpersonally rich as possible. Even though we have a similar student-teacher ratio to a comprehensive setup like Somerville High School, by avoiding disciplinary classes and the periods that go along with them, we're in a position to provide a setting where each staff member sees about three dozen, instead of ten dozen or more, students daily. For students for whom a small school setting has something to offer, this decreased attentional churn has been highlighted as a central mechanism in improving student outcomes.[99]

When you talk to staff at [successful] project-based environments like High Tech High, they consistently return to team teaching and protected time for planning as central to their success. The SSA will be no different, guaranteeing an average of two hours daily for co-planning and teaching time. Furthermore, this team teaching will be the basis of staff intake and training—new hires will be paired with an existing team as soon as possible and work with them, rotating between apprenticing with each of the three Advisory positions before the new staff members' team is assembled.

These small, multifunctional teams have been the basis for research and development and knowledge work for decades, but the structures of a traditional classroom make them very hard to implement. At the SSA, the team teaching setup is essential to provide a structure where slack and uncertainty can be managed comfortably.

Staff Structure

Overall, the SSA is unusually flat in its organization. There is a single principal. And above him are all the staff, organized into multi-functional trios, each of which is called an Advisory and is responsible for their cohort of three dozen students. Each Advisory is entirely responsible for managing the experience of their cohort; however, this does not mean that students only interact with their advisors. As is covered throughout the rest of this plan, we expect a whole panoply of adults—both within and without the SSA—to be

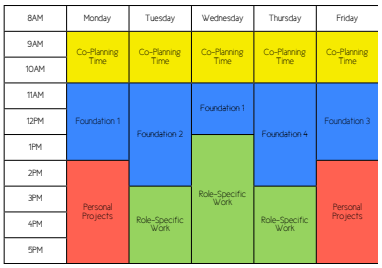


Figure 11: An evocative staff time budget; see Sample Schedules for more details. Time and money are where all of the hopeful and good ideas in this plan need to mesh with reality. Between models like Generation Schools which we're emulating and back-of-the-envelopes like these time budgets, we're confident that we'll have access to the raw ingredients to pull the SSA off.

[98] Buckley, F. J. (1999). *Team teaching: what, why, and how?* Sage; Davis, J. R. (1995). *Interdisciplinary courses and team teaching: New arrangements for learning*. American Council on Education and the Oryx Press Phoneix, AZ; and Bruffee, K. A. (1999). *Collaborative learning: Higher education, interdependence, and the authority of knowledge*. ERIC

[99] Meier, D. (2002). *The power of their ideas: Lessons for America from a small school in Harlem*. Beacon Press; and Anderson, C. S. (1982). The search for school climate: A review of the research. *Review of educational research* 52(3), 368–420

involved in each student's life. The Advisory, however, is where the buck stops, where the responsibility for managing and keeping tabs on those thirty-odd students is located.

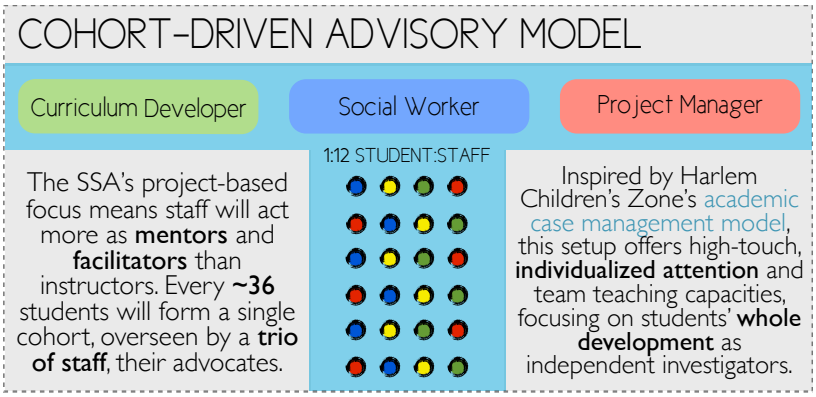


Figure 12: The SSA's staff structure is inspired by the Harlem Children Zone's Academic Case Management model. A trio of specialized staff (students' advocates) will manage a cohorts of 36. One advocate will be responsible for managing the curriculum dev-elopment, brainstorming projects, finding relevant texts, designing intensive workshops, *etc.* Another advocate will be responsible for social work. This could mean anything from knowing a student is struggling with food security issues to knowing its their birthday and throwing a mini-party for them. And the final advocate will act as a project manager, helping students manage their workload to finish projects on time and under-budget.

This responsibility is further broken down for each Advisory along three dimensions, translated to three distinct roles which staff will adopt: curriculum developer, social worker, and project manager.

Curriculum Developer

The Curriculum Developer (CD) will be responsible for managing the design and development of activities and seminars for students. Often working forward from an inspiring book (*e.g. Gödel, Escher, Bach*[100]) or theme (*e.g.* in Hofstadter's case, recursion), the CD will be responsible for developing the activities, collating necessary materials, and introducing other staff to the necessary skills and content to ensure their success. This means they'll be deeply embedded in the professional development process and will constantly be feeding back on staff's sense of their cohorts' interests and capacities. The CD will be the primary point of contact for managing the curriculum mapping process, identifying various entry points to and angles on the particular seminar to ensure broad coverage options for various students.

Returning to Papert's *Mindstorms*

> The educator must be an anthropologist. The educator as anthropologist must work to understand which cultural materials are relevant to intellectual development. Then, he or she needs to understand which trends are taking place in the culture. Meaningful intervention must take the form of working with these trends.

Nowhere will this need to be truer at the SSA than the CD position.

Social Worker

The SSA will aim to have at least one licensed social worker in the school[101] But, each 'social worker' (SW) position in Advisory will

[100] Hofstadter, D. (1979). *Gödel, Escher, Bach: an eternal golden braid*. New York: Basic Books

[101] Among other things, this will give us the ability to work with local schools of social work and sponsor caseworkers doing their fieldwork certification, free of charge.

not necessarily be a licensed social worker. The intent of this position is to put one staff member explicitly in charge of surfacing the exogenous social, emotional, mental, and physical factors which are often the primary determinants of student outcomes and bringing awareness of these into staff discussions and designs.

This doesn't mean that the SW will be the closest confidant of every student in their cohort. It *does* mean that the SW will be responsible for knowing who that confidant is and helping to establish one if one doesn't exist. Whether it's knowing that someone is struggling with food security issues at home or remembering it's their birthday or knowing that because of a recent obsession with *House* a student is newly interested in forensic science, the SW is explicitly tasked with ensuring the depth and health of students' *human* relationships.

This will include some more traditional social work responsibilities, *e.g.* the SW will also be responsible for coordinating extracurricular supports for families, *e.g.* identifying families who are eligible for SNAP but not receiving benefits. The SW will also be the primary point person in considering all transfer into and out of the cohort and be responsible for identifying and articulating social and emotional growth opportunities throughout the IAP process.

Project Manager

The Project Manager (PM) is responsible for making sure students finish their work on time and literally under budget (since students will be given increasing control over project stipends over their time). The PM will be focused on helping students develop their capacity for *independent* investigation, meaning they will be focused on students' executive function and metacognition.

Operationally, this means that they will help decide project scope and sequence, coordinate with community partners with whom students are working, introduce time and project management tools and techniques, and so on. They will be working closely with the CD to actually implement the documentation of curricular coverage, and in IAP conversations will be focused on identifying and articulating opportunities for growth in executive function and self-management skills.

Autonomy Analysis

Overall, the SSA will have complete autonomy in its hiring and firing (within the bounds of the MGL and the applicable sections of the Somerville Teachers Association collective bargaining agreement as eventually negotiated as part of the Innovation Planning process).

Furthermore, these policies and autonomies—to the extent they do not contact the eventual, applicable collective bargaining provisions—will be open to revision by the principal and Board

of Trustees. Staff will be compensated within the same step and lane system as the STA, but the principal will be given control over stipend management to ensure that staff are paid a salary at least proportional to the extended time they'll be working in comparison to non-year-round setups.

And of course, staff will retain all legal rights to organize, file complaints, join unions of their choice, *etc.*

Why should we expect this will benefit students? We know small, multifunctional teams focused on wraparound services benefit students and teachers, and that they're especially important in project-based environments.[102] We also know that implementing computational, project-based work—*especially* in a small school environment featuring multidisciplinary work—will require unique backgrounds and dispositions. In concert with the project management literature[103] and best-practices for small-school design, we have every reason to suspect that our implementation of project-based team-teaching will improve student outcomes in the case of students who would stand to benefit from the small school environment.

What legal affordances will be required? While the SSA will be able to consider licensure and background as a competitive advantage in hiring, no teaching contract with the SSA will require licensure.

We are still in the process of writing up the necessary exemptions and waivers required for this. You can find a partial list in Legal Affordances, but per 603 CMR 48.03(b),

> If an innovation plan committee is proposing an innovation plan that may conflict with laws (including regulations) governing other public schools, the committee shall, before presenting the plan to the school committee for approval, request approval from the Commissioner for any provision in the plan that may conflict with such laws. The Commissioner's approval shall be based on his determination that the plan is consistent with 603 CMR 48.03 (2) and with the state's obligations under the education clause of the Massachusetts Constitution, Mass. Const., pt. II, ch. V, s. II, as defined by a court of competent jurisdiction, and that the provision in the plan that may conflict with such laws is necessary to advance the mission or educational programs of the innovation school. If the Commissioner does not approve the proposed provision in the plan, the innovation plan committee may ask the Board to review the matter and the Board shall make the final decision.

which means that the full process of articulating points of contact between state laws and regulations and the Innovation Plan as voted on need not conclude until the School Committee presentation. As with negotiating necessary affordances in the Collective Bargaining Agreement to make the Innovation Plan possible, non-substantive design edits and alterations may be made after the Innovation Plan Committee vote without triggering a re-start of the process.[104]

[102] Friedman, I. A. (1991). High and low-burnout schools: School culture aspects of teacher burnout. *The Journal of Educational Research 84*(6), 325–333; Mergendoller, J. R., T. Markham, J. Ravitz, and J. Larmer (2006). Pervasive management of project based learning: Teachers as guides and facilitators. *Handbook of Classroom Management: Research, Practice, and Contemporary Issues, Mahwah, NJ: Lawrence Erlbaum, Inc*; and McPartland, J. M. and S. M. Nettles (1991). Using community adults as advocates or mentors for at-risk middle school students: a two-year evaluation of project raise. *American journal of education*, 568–586

[103] Kannel-Ray, V., P. J. Zeller, W. E. Lacefield, et al. (2009). Academic case management: Promising interventions for closing achievement gaps in multicultural urban settings. *ERS Spectrum 27*(3), 19–30; and Bowen, D. E., G. E. Ledford, and B. R. Nathan (1991). Hiring for the organization, not the job. *The Executive 5*(4), 35–51

[104] French, D. (2013, August). Personal communication with dan french. Regarding voting and editing process between Innovation Plan and School Committee votes

Staff Evaluation

Staff evaluation practices at the SSA are inspired by the best practices of knowledge work organizations like Google[105] and Valve,[106] much as student evaluation processes were. This overlap is not insignificant; we see staff and students as members of a learning community with a shared mission. While the topics of their investigations differ, our intent is that staff come to their work with as much an investigative mindset as students, working on personal projects, creating shippable output, *etc.*

The purpose of this chapter is to layout how the SSA will use its autonomy in defining its own evaluation processes to effect its mission. Unlike student evaluations—which focus on students' development—staff evaluations [which do include questions of personal development] are focused on the aggregate performance of their cohort. Advisories are judged as a team with respect to their students' performance, no one staff member stands alone. This means that peer reviews are essential in the process and will figure more prominently than those in the student evaluation process. But like the student evaluation process, there are four dimensions along which staff themselves are evaluated (skill, productivity, group contribution, project contribution), though the meaning of those is a little different (especially in light of staff's highly differentiated roles).

[105] Mediratta, B. and J. Bick (2007). The google way: give engineers room. *The New York Times 21*; and Girard, B. (2009). *The Google way: How one company is revolutionizing management as we know it*. No Starch Press

[106] (2012). Valve handbook for new employees

Individual Action Plans

The shift from staff's roles as instructional providers in traditional contexts to coaches, mentors, and facilitators in Advisory is accompanied by a shift in emphasis to framing staff as researchers exploring how computation can enable the exploration of modeling and representation across their domains of expertise. This is our take on the broader emphasis on a shift from teaching to learning in the design of a school's activities and evaluative structures.[107] This transformation of the teacher role into that of researcher is central to the lab school model and directly informs the design of the professional development process.

[107] Huba, M. E. and J. E. Freed (2000). Learner centered assessment on college campuses: Shifting the focus from teaching to learning. *Community College Journal of Research and Practice 24*(9), 759–766

Just as students go through an IAP process to articulate their background, aptitudes, interests, strengths, and goals, staff will do so as well in a process involving their Advisory colleagues and the SSA principal. This IAP will be regularly revised and will be the

basis of planning individual staff members' professional development, designing their formative and summative evaluation metrics, and driving the development of their personal portfolio.

Peer Reviews

In a team teaching environment, peer reviews have been found to be among the most effective and essential mechanisms in designing an assessment system which judges teams by their collective performance.[108] Because staff will need to cohesively function as a team comfortable giving honest and clear feedback, time for feedback and reflection will be built into the professional development offerings (specifically, the work of Kegan[109] and Dalio[110]) and the co-planning time allotment. While the principal will be responsible for ensuring feedback occurs, the administration will explicitly *not* be involved in staff-to-staff feedback sessions. It's important that those feedback channels be a safe space to make it possible for struggles and failures to end up functionally regarded as issues of management and not individual issues—a substantial shift from typical evaluation cultures.

[108] Bernstein, D. J. (2008). Peer review and evaluation of the intellectual work of teaching. *Change: The Magazine of Higher Learning 40*(2), 48–51; and Blackmore, J. A. (2005). A critical evaluation of peer review via teaching observation within higher education. *International Journal of Educational Management 19*(3), 218–232

[109] Kegan, R. and L. L. Lahey (2001). *How the way we talk can change the way we work: Seven languages for transformation*. Jossey-Bass

[110] Dalio, R. (2011). Principles

Surveys

Families and students are the primary constituents of the SSA. This means that surveys of family and student satisfaction with staff will be central to overall staff (and in aggregate, school and therefore administration) evaluation. Furthermore, surveys of staff satisfaction itself (partially capturing some of the consistent lessons of peer reviews) will figure into staff evaluations as well.

Portfolios

Just as the SSA is intent on its students becoming productive, independent investigators and wraps this assumption into the evaluation structures dedicated to their work, a similar expectation of teachers means SSA staff will be given the time and support to develop their own portfolio and reflective practice. Inspired by practitioners like Dan Meyer[111] and Bret Victor[112], staff's personal projects and professional development will be guided, through the IAP process, to cohere in a portfolio or personal site capturing their reflections and documenting their work over time.

[111] Meyer, D. (2013). dy/dan

[112] Victor, B. Up and down the ladder of abstraction

This emphasis on creative output, documentation, reflection, and analysis is essential to offer staff at the SSA long term opportunities for promotion and advancement. Rather than a typical corporate or district structure involving promotion out of the classroom, we want to cultivate a culture more similar to labs at universities, wherein PI's gain access to more resources, interesting connections and collaborators, and are rewarded with increasing prominence

in their chosen field (and accompanying autonomy in designing further research).

Dimensions of Performance

Just as the personalization of the SSA experience for students means we made a diversity of measures first-class citizens in the evaluation process, the highly differentiated roles and backgrounds of the staff call for a similar diversity. The same four, basic dimensions of performance apply, though their specific meaning changes for staff. Ensuring staff and students have shared language with which to discuss notions of performance and competence is not only central to our project of creating a community of learners, but has been shown to be essential to building effective communities of practice and professional development as well as securing student engagement and buy-in to mastery-based frameworks.[113]

This shared language for the central dimensions of performance for staff will govern the design and framing of various feedback activities ranging from performance reviews to peer feedback sessions which will be the basis of primarily qualitative evaluations—informed by metrics where appropriate.

- SKILL: The SSA is explicitly looking to hire and cultivate 'T-shaped people'[114] who have a deep expertise from which they can derive the natural authority essential to effective, project-based mentorship.[115] Unlike in students' case though, there will be an explicit effort to implement a portfolio management HR approach wherein we work to ensure breadth in background and capacity at the organizational level rather than the individual level. This will happen primarily at the school level, though at the Advisory level this will occur naturally in the selection process of the curriculum developer, project manager, and social worker positions. This dimension will basically attempt to capture how difficult or unique a set of problems a staff member can solve. At a higher level, the uniqueness *and* depth of this skillset will be considered in the ongoing evaluation process as driven by the IAP.
- PRODUCTIVITY: Because the SSA is actively exploring research questions and depending on its staff to produce and refine curricula and professional development materials to sustain the SSA's growth, it's essential that staff member's productivity be incorporated into definitions of success. Concretely, this is simply a question of how much shippable output—targeting both students (*e.g.* curricula) and staff (*e.g.* reflections, writings, professional development activities)—does a staff member produce? Needless to say, this won't be quantified, in part to avoid the pathologies in incentive that you see in industries like academia where quantity ends up prioritized over quality.[116]
- GROUP CONTRIBUTION: The SSA is a learning community. And

[113] McLaughlin, M. W. and J. E. Talbert (2006). *Building school-based teacher learning communities: Professional strategies to improve student achievement*, Volume 45. Teachers College Press; and Little, J. W. (1982). Norms of collegiality and experimentation: Workplace conditions of school success. *American educational research journal 19*(3), 325–340

[114] Morgan, J. M. and J. K. Liker (2006). *The Toyota product development system*. Productivity press New York

[115] Goodson, I. and I. F. Goodson (1992). *Studying teachers' lives*. Psychology Press

[116] Azoulay, P., W. Ding, and T. Stuart (2009). The impact of academic patenting on the rate, quality and direction of (public) research output*. *The Journal of Industrial Economics 57*(4), 637–676

many of the functions and activities which sustain a community—especially given the mentorship roles staff will be adopting—don't show up on paper. This is why qualitative channels like peer review are essential, *especially* for the contributions this category is meant to capture, namely how a particular staff member contributes to group cohesion and operation. Generally, these activities trade against individual productivity but are essential to the health of the organization—*cf.* participating in hiring, taking on administrivia, *etc.*

- PROJECT CONTRIBUTION: It is in this category that the structural similarities between student and staff evaluation structures mean the least. This is because whereas there is no normative output for students—their projects and their scope is derived from their natural interests and backgrounds—for staff there is a broader mandate focusing on the nature of modeling and representation and the uses of computation in expanding the practical explorations of these themes. This means for staff, this last dimension of performance is focused on how substantial an individual staff member's contribution to this broader project is—whether through toolkits or papers or new curricula, for each staff member there is some expectation they will explore (and prototype) learnable representations.

Longitudinal Analysis

As with students, in addition to any formative and summative measures we install, these are merely policy instruments to achieve a twofold policy goal: increasing student performance and success as defined by the SSA's mission, and cultivating staff increasing capable of supporting such growth. Longitudinally, this means that staff's evaluations will incorporate an expectation of continuing professional growth. At an organizational level, we will be looking at retention rates and surveys of staff satisfaction, in addition to the common exit points and destinations of those staff who do move on (as well as an ongoing exit interview and follow-up process). The point of these is not necessarily to reduce turnover (though there are clearly turnover rates which would indicate a problem) so much as they are to diagnose organizational issues where the SSA is failing to provide staff with something it set out to.

Autonomy Analysis

The SSA will have complete autonomy to design and implement its own staff evaluation system. The SSA is responsible overall for very clear commitments to student performance and diversity; rather than having the District or DOE manage the feedback process of the SSA—which is unique institution in their jurisdiction—we think it's important for the SSA to be given sufficient autonomy to effect its mission. This is *doubly* true given the widespread dissatisfaction

with the standing evaluation system and the perceived cost/value proposition of that oversight.

Why should we expect this will benefit students? Too often, discussions about how to create alternative contexts for struggling students focus exclusively on *either* the what or the how of a school. At least when it comes to the SSA's computational, project-based focus, these are deeply coupled. The research tells us these shifts in practice toward smaller scale schools, cohesive teams offering wraparound services, and multidisciplinary projects require changes in evaluation.[117] We've worked to embody the best practices and principles of this research in the SSA's design while creating a shared language for students and staff that can enable schoolwide discussions about competence, craft, quality, and autonomy: central themes in the SSA's mission.

[117] Blackmore, J. A. (2005). A critical evaluation of peer review via teaching observation within higher education. *International Journal of Educational Management 19*(3), 218–232; and Van Kannel-Ray, N., W. E. Lacefield, and P. J. Zeller (2008). Academic case managers: Evaluating a middle school intervention for children at-risk. *Journal of MultiDisciplinary Evaluation 5*(10), 21–29

What legal affordances will be required? The SSA will need exemption from the state's evaluation mandate and will need to have the autonomy to incorporate its own evaluation system into the hiring/firing considerations subject to the constraints of M.G.L. Chapter 71, Section 41.

We are still in the process of writing up the necessary exemptions and waivers required for this. You can find a partial list in Legal Affordances, but per 603 CMR 48.03(b),

> If an innovation plan committee is proposing an innovation plan that may conflict with laws (including regulations) governing other public schools, the committee shall, before presenting the plan to the school committee for approval, request approval from the Commissioner for any provision in the plan that may conflict with such laws. The Commissioner's approval shall be based on his determination that the plan is consistent with 603 CMR 48.03 (2) and with the state's obligations under the education clause of the Massachusetts Constitution, Mass. Const., pt. II, ch. V, s. II, as defined by a court of competent jurisdiction, and that the provision in the plan that may conflict with such laws is necessary to advance the mission or educational programs of the innovation school. If the Commissioner does not approve the proposed provision in the plan, the innovation plan committee may ask the Board to review the matter and the Board shall make the final decision.

which means that the full process of articulating points of contact between state laws and regulations and the Innovation Plan as voted on need not conclude until the School Committee presentation. As with negotiating necessary affordances in the Collective Bargaining Agreement to make the Innovation Plan possible, non-substantive design edits and alterations may be made after the Innovation Plan Committee vote without triggering a re-start of the process.[118]

[118] French, D. (2013, August). Personal communication with dan french. Regarding voting and editing process between Innovation Plan and School Committee votes

SHS ⇔ SSA Interface

From the outset, the SSA has been conceived of as a complement to Somerville High School, working with those students for whom traditional contexts haven't been a good fit. We believe that all other things held equal, a diversity of options for learners in Somerville is *good*. This applies not only to the notion of schools, but we think at even finer grains—classes, programs, and so on. In that spirit, we've worked hard to ensure that to the extent practicable, the SSA is permeable and accessible to the rest of the Somerville Public School system in general and Somerville High School in particular. This chapter outlines the interface between Somerville High School (SHS) and the Somerville STEAM Academy (SSA) programmatically and in the case of transfer students to a level of sufficient detail that a) it becomes clear that the policies outlined here can be made to work, and b) the Integration Team will have a sufficiently clear mandate to begin its work.

In general, we have tried to make things free and easy for SHS, offloading the cost and effort to the SSA. SHS resources will be available to SSA students and vice versa. The SSA will pay 110% of the prorated cost of SSA students partaking of SHS programs (*e.g.* sports, classes, and so on) and SHS will pay *nothing* for its students to participate in SSA programs. SHS will have complete autonomy in determining which SSA students to cross-register, and the SSA *must* accept interested students from SHS (as long as, in a given program, SHS students don't constitute more than 25% of the enrollment). Similarly, in the case of a transfer student, SSA staff will take complete responsibility for generating a finely-grained transcript at the resolution of individual Common Core items to make easily moving credits between the two schools straightforward.

Coordinating Structures

Recognizing that the SSA's permeability is a new logistical challenge for the District in general and Somerville High School in particular, we've sketched out two, coordinating structure which we think, taken together, will be sufficient to ensure the smooth operation and rollout of the SSA's policies: an Integration Team connecting Somerville High School and the SSA, and a possible liaison between Somerville High School and the SSA.

Integration Team Finer grained implementation details and policy than sketched out here will be fleshed out by an Integration Team comprising one staff member and one administrator from SHS and SSA respectively, to be convened after the approval of the SSA to look more closely at and establish policies and procedures to support the interface between the SHS and SSA. Because no eighth graders from the SSA will be eligible for cross-registration into or participation in SHS activities, the Integration Team will have over two years to hash out the necessary details. This should be more than enough time to work through the implementation details. In addition to cross-registration details, the Integration Team's responsibility will be to identify opportunities for professional development, mentorship, and community outreach overlap so as to prevent duplication of effort and take advantage of the different characters and offerings of each institution. Pending an assessment of the coordination load by SHS, there are tentative plans to create a liaison position to interface between the two schools' operations. This person would be responsible for figuring out logistical issues that arise in the course of the schools' interactions and collaborations without unduly burdening either institution.

SHS ⇔ SSA Liaison Because not every implementation detail will be able to be predicted—even with a two-person integration team and a two-year headstart—it may also end up being a good idea to establish a part time liaison at Somerville High School whose job it is to coordinate the interface of cross-registration and participation in extracurriculars. City Hall has indicated its support for establishing such a position, but looking at the necessity of and scope for such a position will be one of the primary tasks of the Integration Team (again, taking advantage of its sizable lead time to perform a full analysis).

Financial Relationship

We would like to unbundle SHS and SSA offerings and open them up—as much as logistics permit—to students and staff in both organizations. This goal of openness is what drives all of these designs and considerations, and this section attempts to outline in reasonable detail, what the programmatic and financial interface between the SSA and SHS could look like. The tentative, broad strokes of the financials of this arrangement—subject to the work of the Integration Team–follows.

The SSA will make its offerings *freely available*[119] to all SHS students and staff, covering any transportation or logistics costs necessary to ensure students and staff can conveniently reach the SSA, wherever it may be.

On a monthly basis, the SSA will compile the offerings (workshops, field trips, tutoring hours, *etc.*) which it can clearly and meaningfully make available to SHS students. These offerings will

[119] *modulo* material costs that scale per student and a maximum SHS cohort of 25% in a given offering

be listed on its website, translated into appropriate languages, printed up as fliers, and provided to SHS teachers, guidance, and administration. These offerings will also be sent out to Somerville High School parents.

For a given program or service at SHS, if SSA students would like to participate, the SSA will compensate SHS. Just under one-third[120] of the per-pupil allocation for Somerville High School is actually budgeted to Somerville High School. The remaining two-thirds of district expenditures are funneled through centralized programs like Art, Music, SPED, Guidance, *etc*. We break apart the setups for financial compensation along similar, school/district lines.

[120] 32.7%, FY2012

Professional Development

We think the fact that the SSA has been design to complement the offerings at SHS means that there will be similarly complementary professional development opportunities. We're very excited for these opportunities to act as a seed from which to grow a community crossing traditional disciplinary and institutional boundaries—especially given how common complaints of feeling silo'ed can be in public school systems.[121]

While the new and different aspects of the SSA involve some risk, we also think it offers significant opportunities for sharing and learning with teachers throughout Somerville. The SSA would love to *e.g.* host workshops and events targeting the needs and interests of Somerville High School teachers wherein not only are Professional Development Points offered, but SHS staff have a chance to explore incorporating fields like rapid prototyping, computation and simulation, and STEAM-ly project-based learning into their own programs, learning from the mistakes and experiences of SSA staff. Reciprocally, we expect the experience of SHS staff with the Common Core, with Somerville families' unique issues and needs, and their own professional development expertise to be an exciting set of resources to open up to SSA staff, assuming interest and bandwidth on SHS teachers' parts.

[121] D'amour, D. and I. Oandasan (2005). Interprofessionality as the field of interprofessional practice and interprofessional education: An emerging concept. *Journal of interprofessional care 19*(S1), 8–20

Clarifying the scope and nature of the co-professional development opportunities that make sense for SHS and the SSA will be one of the central tasks of the Integration Team.

Defining Good Standing

The SSA will define its own analogue of Somerville High School and Full Circle/Next Wave's notions of a 'student in good standing.' *e.g.* at Somerville High School, there is a 20-credit minimum for participating in school sports. At FCNW, a combination of the earned credit model and staff input defines good standing. At the SSA, the core of this definition will rely on our curriculum mapping framework through the Common Core/MCAS STE. The Integra-

tion Team will use this to define a minimum velocity through the Common Core/MCAS STE standards analogous to SHS's 20-credit minimum. This will be used to determine whether SSA students are eligible for cross-registration into activities and classes at SHS. One wrinkle: because the SSA's earned credit model may mean that there are some traditionally extracurricular activities which we may award credit for, the calculation will simply focus on the question, "If this student were to cross register into this option at SHS, would they fall below the minimum velocity defining 'good standing?"'

Academic Cross-Registration

Inevitably, there will be a class with a favorite English teacher or with your sibling (or crush) or on a topic that the SSA doesn't cover that can be found only at SHS. These are natural opportunities for collaboration—staff bandwidth and interest permitting. The SSA will accommodate whatever cross-registration process SHS employs to enroll its students in other institutions. The SSA will accept any SHS student who wishes to enroll in its seminars for free, with the caveat that the the SHS-enrollment of any SSA program not to exceed 25% of the program size. Because the SSA's schedule will be so different from SHS's, it will almost certainly not be possible for every SHS student to cross-register in every SSA offering.

If applicable (as in the case of a course or field trip), a minimum of two weeks before the starting date of the offering, SSA staff will provide SHS staff a list of students interested in taking part in their offering. These SHS staff will have the option to meet and freely choose to accept any, all, or none of the interested SSA students and work out the details of their credit exchange. *All* materials costs and any costs that scale marginally on a per capita basis will be covered in full by the SSA. In addition to this, the SSA will pay a per-student fee equal to 110% the prorated, per capita cost of the FTEs required to provide said program. The SSA will pay 50% of this before the first day of the program and 50% before the last day of the program or within thirty days of the receipt of an itemized invoice, whichever is later. If a student drops out of the program, the cost will be prorated and the appropriate party (SHS or SSA) will reimburse the other (SSA or SHS) within thirty days.

Extracurricular & Sports Participation

SHS has many strong, extracurricular activities (*e.g.* its theater program) that the SSA isn't looking to duplicate. As with sports and classes, the SSA can guarantee students the scheduling flexibility to participate in these extracurriculars and the logistical/transportation support to make these opportunities meaningfully available. For programs within SHS, the school and headmaster can grant SSA students permission to participate. For MIAA athletic programs, which have external standards regarding team and league mem-

bership, there are provisions for cooperative teams between schools and districts who partner to create eligible teams. Alternatively, the SSA may also function under a Superintendent's waiver as Full Circle/Next Wave does.

The SSA will not have its own sports program, and its extracurriculars are expected to map closely into the seminars and projects undertaken by students. That said, staff and students will of course be able to organize their own extracurricular clubs and activities, and any of those which are meaningfully accessible to SHS students and staff will be made available in the same manner as the SSA's academic cross registration opportunities.

Community Partnerships

Both SHS and SSA have connections to community partners which drive a variety of school support activities like tutoring, remediation, and co-ops/internships. The SSA will be setting up a variety of its own programs targeting, *e.g.* MCAS and SAT prep. These programs will be opened up to SHS just like any other academic cross-registration opportunity. At an organizational level, any and all community partners we develop we'd gladly connect SHS to in the context of particular projects or students.[122]

[122] We've already secured support from local companies including Google, VMWare, EchoNest, and Wolfram Research in addition to local universities like MIT, Tufts, and Harvard.

Credit Mapping

The SSA will take complete responsibility for generating sufficiently finely-grained transcripts for SSA students transferring into SHS to give SHS the necessary credit-hour descriptions of their history via our curriculum mapping process. We will *also* take responsibility, in the case of any students transferring *from* SHS, to evaluate students to generate our own, internal transcripts for students coming into the SSA. In other words, the SSA will take responsibility for ensuring that—when it comes to paperwork—SSA students will appear as any other school's students to SHS.

Working out the details of credit mapping and transfer between the two institutions will be a primary responsibility of the integration team, but given the viability of transfers not only from generic alternative schools but specifically Full Circle Next Wave, it's clear that there is some process which can be made to work, especially given the unusually finely grained credit mapping within the SSA.

Transfers

Transfers from and to each institution will be handled just as though any other school were involved. Somerville High School has its own policies and procedures for receiving students, and the SSA's infrastructure for transfers, transcripts, and supporting student transitions is well-documented. In particular, the SSA will be

in a position to offer much more finely grained and gradual transition support services for students transferring between SHS and SSA, working with staff on either side to identify gaps in student preparation and setting up tutoring and other relationships to ease the transition (in addition to the straightforward transcript preparation process described elsewhere). Notably, transfers *into* the SSA will only be a guaranteed option in the eighth grade; however, we will gladly consider transfers at other ages, subject to our equity commitment considerations and a one-off process of looking at transfer students' backgrounds and timeline to determine whether the SSA can offer them meaningful and useful development.

Safety, Transportation, & Discipline

Students who cross-register between the two schools will be expected to follow the rules of the campus they are at. If there is an incident, the institution at which the incident occurs will follow its own policy in the immediate handling of the situation. Longer term follow up will be the responsibility of the student's home institution. If students are at neither institution (*e.g.* in the case of walking between the two campuses), the disciplinary policy of the institution whose staff was responsible for overseeing the students at the time will apply. Definitions of infractions will be the same between the two institutions; however, consequences for those infractions will be left up to the respective principals of each school as qualified by the SSA's legal affordances.

The SSA will be totally responsible for handling (and funding) the transportation and logistics needed to make SSA and SHS opportunities meaningfully available to Somerville students.

Autonomy Analysis

The primary autonomies required to implement the efforts outlined in this section overlap with the SSA's ability to define and award credit autonomously and open up its campus for student travel and to students from outside the SSA.

Why should we expect this will benefit students? No one school can serve every student equally well. A diversity of options is a good thing. Just as dual enrollment and cross registration make it possible to meet individualized student needs more effectively, our efforts to make the SSA more permeable are meant to both increase student choice and importantly *reduce redundancy* so that the SSA can focus narrowly on what we think we have uniquely to offer without duplicating efforts wastefully.

What legal affordances will be required? We are still in the process of writing up the necessary exemptions and waivers required for this.

You can find a partial list in Legal Affordances, but per 603 CMR 48.03(b),

> If an innovation plan committee is proposing an innovation plan that may conflict with laws (including regulations) governing other public schools, the committee shall, before presenting the plan to the school committee for approval, request approval from the Commissioner for any provision in the plan that may conflict with such laws. The Commissioner's approval shall be based on his determination that the plan is consistent with 603 CMR 48.03 (2) and with the state's obligations under the education clause of the Massachusetts Constitution, Mass. Const., pt. II, ch. V, s. II, as defined by a court of competent jurisdiction, and that the provision in the plan that may conflict with such laws is necessary to advance the mission or educational programs of the innovation school. If the Commissioner does not approve the proposed provision in the plan, the innovation plan committee may ask the Board to review the matter and the Board shall make the final decision.

which means that the full process of articulating points of contact between state laws and regulations and the Innovation Plan as voted on need not conclude until the School Committee presentation. As with negotiating necessary affordances in the Collective Bargaining Agreement to make the Innovation Plan possible, non-substantive design edits and alterations may be made after the Innovation Plan Committee vote without triggering a re-start of the process.[123]

[123] French, D. (2013, August). Personal communication with dan french. Regarding voting and editing process between Innovation Plan and School Committee votes

Community Interface

The SSA is intent on making the walls separating it from Somerville at large as permeable as possible. Somerville's an incredible city. Dense enough to have many of the challenges and opportunities of urban education, small enough to be remarkably agile, sitting at the nexus of institutions like MIT, Tufts, and Harvard, second only to New York in artists per capita—the list goes on and on. But many fewer of those resources and connections intercalate into the public educational process than many want, mostly because of the mismatch between the structures and aims of a traditional classroom and the capacity of the community at large. Tutoring, CTE internships, Biogen sponsorships—SPS leverages many of the community connections which fit into traditional classroom settings. And while it's clear that there's a District-level role for devoting more time and attention to prospecting, coordinating, and managing these community connections, the SSA will begin building and leveraging a small network of community partners to begin stitching student experience and student work into the real world.

In many schools, this type of outreach is spearheaded and coordinated by parents—hence programs like NuVu at Beaver County Day or Newton North's robotics programs. As the provenance of both of those examples might suggest, schools whose families aren't wealthy or don't have the time or inclination to engage deeply in school can't take advantage of this design pattern. That means that Somerville Public Schools need a different approach and different type of infrastructure to leverage these types of community resources.

The purpose of this chapter is to set out the broad structure and uses of the community interfaces the SSA will develop and rely on. For each of them, we've established at least three, concrete examples of partners ostensibly ready-to-commit.

Collaborative Relationships

From the point of view of staff and students at the SSA, there is a broad spectrum of opportunities for involvement of community members ranging from 'simple' volunteerism plugging into the basic logistics of the SSA's operation all the way to the co-op and internship partners who in many ways, at their most involved, will be

Figure 13: Somerville is chock-full of amazing people, companies, and organizations. Rather than focus on "preparing" students for the real world, the SSA is focused on *engaging* students with it, leveraging community resources to get students out of the classroom and into real projects with real people. This is a partial, Somerville-centric take on the tight community integration central to projects like North Star or the Harlem Children's Zone.

peer to SSA staff in terms of their impact on and responsibility for student experience. We've worked hard to embody the best practices of community organizing and volunteer management[124] and arrived at this graded spectrum of clear structures for involvement after working through a rough census of community resources and talking to a variety of experienced community organizers and public institutions known to do an especially good job of leveraging volunteer effort (*e.g.* 826 Boston).

Importantly, while other staff and administrative support for managing volunteers will be provided at the administrative level, in every single one of these species of relationship, there is a *single* SSA staff member responsible for managing the relationship.

[124] Brudney, J. L. (1999). The effective use of volunteers: Best practices for the public sector. *Law and Contemporary Problems 62*(4), 219–255; Furco, A. (1996). Service-learning: A balanced approach to experiential education. *Expanding boundaries: Serving and learning 1*, 1–6; and Henderson, A. T. (2007). *Beyond the bake sale: The essential guide to family-school partnerships*. New Press

Volunteer

At the least complex level, the SSA will look to local college students, families, and professionals for participation in a variety of the school support activities with which the SSA is confident many, non-expert adults can step in to lend a hand. These activities include things like MCAS and SAT tutoring, help editing and drafting college admissions essays, job and college interview practice, and writing feedback. It is also at this level which we will open up opportunities for volunteer and student co-teaching, especially for individual seminars and workshops where we can intelligently match volunteer background and disposition to class need. Prospecting and coordinating these volunteers will be one of the

primary responsibilities of the principal, though close management responsibility will depend on the context for their volunteering.

We also plan to train our own [small] cohort of substitute teachers, given the unique constraints and useful backgrounds in the SSA's context. Managing the substitute teachers will be one of the responsibilities of the curriculum developer.

Mentor

The SSA's emphasis on projects that are not necessarily construed in terms of their discipline (*i.e.* the expected dearth of 'math projects') and which are deeply connected to real world questions and concerns means that there will be tremendous opportunity and hunger for mentors who are equipped to offer ongoing advice and critique to students and staff in three, primary capacities:

1. STUDENT MENTORSHIP: One of the basic themes behind the SSA's design is the re-integration of many of the specialized roles which have been identified by large school districts over time. The importance of a single, supportive adult relationship cannot be overstated.[125] The SSA wants to bring the sensibilities and power of programs like YearUp, Big Brothers Big Sisters, and the Harlem Children's Zone within the school's wheelhouse. If a student is looking for a strong father figure or is especially excited about the military or is just getting interested in law—each of those situations suggest natural dimensions of performance for a potential mentor with whom a regular, unprogrammed meeting can do wonders. There are many forms these meetings can take, but at least one we've begun fleshing out is a regular lunch: we've already found four local establishments happy to offer free meals to mentors coming in for lunch with an SSA student. Identifying and managing these relationships will be one of the primary responsibilities of the social worker in the student's Advisory.

2. PROJECT SUPPORT: For every significant project that students take on, they will be expected to both identify what success looks like for their project (*i.e.* what dimensions of performance matter to them) *and* what type of people would be a good audience to provide critique in formative and summative capacities. *e.g.* if a student is undertaking a computational art project, a computer scientist, artist, or a computational artist would be a natural choice. These positions may sometimes be filled by peers, sometimes by staff, but especially as students get older, we expect that more and more of their projects' focuses will turn outward sufficiently that bringing in adults in advisory and critical capacities will become a central mentor function. Prospecting these relationships will be one of the primary responsibilities of the principal; managing these relationships will typically fall to the project manager in students' Advisory.

[125] McPartland, J. M. and S. M. Nettles (1991). Using community adults as advocates or mentors for at-risk middle school students: a two-year evaluation of project raise. *American journal of education*, 568–586; and Merriam, S. (1983). Mentors and protégés: A critical review of the literature. *Adult Education Quarterly* 33(3), 161–173

3. PARTNER LIAISON: At the extreme of project involvement is being a project liaison—rather than 'just' offering ongoing advice and critique for a student project, a project liaison is acting as project client or manager in some meaningful capacity. The internship/co-op model is the obvious inspiration for this type of relationship, but as opposed to an ongoing, organizational relationship this will be limited to a single project. This may be something as simple as a student developing a web page for a community organization.

Expert

Because of the novelty of the SSA's approach, there will be many instances where we'll need to go out of the SSA to solicit support and advice in the design and implementation of projects and seminars. Sometimes these may be domain experts at local universities, professionals with relevant backgrounds, or staff at local schools of education. In each of these cases, the expert will be working directly with a staff member on a specific project, typically the design of a project or curricular unit. Prospecting and coordinating these relationships will be one of the primary responsibilities of the principal.

Partner

Becoming a partner institutionalizes the ongoing relationship as partner liaison—rather than limiting the collaboration with Google to a single project, Google would become an ongoing partner and voice in not only reliably taking students on for individual projects, but longer term internship and co-op style relationships. This would enable much larger scale and longer term projects to have a home within local organizations, accommodating turnover in students working on the project without limiting the scale of projects of which the SSA could take ownership.

Sponsor

And finally, there's an intense but well-established relationship between sponsors and schools. Not only for basic fundraising, donations of old equipment, and so on, but for ongoing projects where the SSA's interests align with that of another organization. For example, the Tufts Center for Engineering Education and Outreach relies on research grants for its continued operation. The number of lab schools open to the flexibility and character of collaborations the SSA will be able to consider is miniscule. Taking advantage of this to set up long term sponsorships and relationships with local institutions is not only a good idea for procuring more resources for students, but will figure prominently in our approach to longitudinal data collection and analysis, as well.

Collaborators

Each of the species of relationship outlined so far has said nothing about *with whom* these relationships might be cultivated. This is intentional. Some great experts might be freelancers, others might be researchers. That said, the channels for accessing different community resources depends nearly entirely on who they are, not what they might do for the SSA. We've identified four such groups, each of which will both be represented on the SSA's Board of Trustees. Cultivating relationships with each will be among the principal's primary responsibilities given their central mandate to procure and make available the necessary resources to Advisories.

Families

The most obvious but often overlooked community interface in a school is its families. These are the people who know our students best and care about them most. They will be central not only in helping to define success for students, but in supporting them in their postsecondary endeavors. A structural acknowledgment of this shows up immediately in the SSA's notion of the Individual Action Plan.

The IAP process—inspired by a mix of the performance review and IEP processes at their best–is an ongoing conversation among students and the important adults [especially family members] in their life. Managing and facilitating these conversations will be a primary responsibility of the social worker in students' Advisories.

Going beyond conversations between staff, families, and their students will be SSA efforts to connect families to one another, especially along lines of common concern. *e.g.* Families whose children have IEPs have repeatedly told us how central advice from people who have been through what you're going through is to their success and sanity. We want the SSA to take a central role in facilitating and managing these connections, *especially* across cultural and socioeconomic lines.

Businesses

Already, many Somerville businesses are involved in supporting co-op and internship relationships with the local school system. Recently, the change of the Somerville High School schedule mitigated one of the primary obstacles to deeper collaborations historically (the rotating block schedule).

Going even further, we'd like to open up conversations with some of these partners—especially outside of the traditional trades—as to what type of preparation or demonstration of competence would be required to let them consider a high school student for an entry level position. Building a network of companies who have long term relationships with students well in advance of their matriculation is a central strategy both in building the support net-

work the SSA needs to intercalate student projects into real world contexts and to ensure the necessary support to make its ambitions to diverse and extensive transitional services possible.

A natural starting point for these conversations is going to local businesses for support in designing and implementing the intensive workshops which will serve to develop fundamental fluencies at the SSA. Whether that's reaching out to organizations like danger!awesome to run videography workshops or bocoup for web development workshops, greater Boston is chock-full of exciting partners for these collaborations.

Organizations

The SSA is intended to be a connector, stitching together community resources, mentors, and services to meet individual student's needs. Inspired not only by the individual attention of programs like Harlem Children's Zone and their Academic Case Management model, but the general shift in public institutions towards an emphasis on wraparound service provision[126], the SSA partnerships with community organizations is central to our approach.

In general, we expect the principal to prospect connections and partners in response to student needs and interests as identified by their Advisory. That said, we already know our top three focuses in our planning and implementation year: social work, special education, and English language learners/Sheltered English Immersion. For each of these, we've either identified[127] or will identify three partner organizations who will both provide professional development for SSA staff and begin developing relationships with enrollees as soon as they are identified.

[126] Burchard, J. D., E. J. Bruns, and S. N. Burchard (2002). The wraparound approach. *Community treatment for youth: Evidence-based interventions for severe emotional and behavioral disorders 2*, 69–90; and VanDenBerg, J. E. (1996). Individualized services and supports through the wraparound process: Philosophy and procedures. *Journal of Child and Family Studies 5*(1), 7–21

[127] Specifically: Northeastern and Boston University's Schools of Social Work, two staff members at Boston Arts Academy's SPED program (referred to us by Tom Hehir), and Centro Presente.

Institutions

Boston has a higher number of college students per capita (and colleges) than anywhere in the world. This academic and educational industry gives rise to a whole constellations of research and educational institutions. Each of which, by the very nature of their mission, often has something to offer local high schools structured to spare the bandwidth to reach out to them and nurture a relationship.

In particular, bringing these institutions into the picture as early as possible is central to making sure that the transition to collegiate postsecondary options is effected smoothly for students and colleges both. That involves both bringing in professors and admissions officers to the SSA to acquaint them with the unusual background and context from which students will be coming and establishing ongoing, programmatic relationships broadly inspired by mechanisms like Dual Enrollment and the Undergraduate Research Opportunity Program at MIT. As students approach the end of their time at the SSA, this will transition to college tours, lunches with college students, conversations with professors in relevant

field, *etc.*.

e.g. Cambridge Public Schools cross-registers students into Harvard, for free. Not only will the SSA be looking to establish similar programmatic relationships, but we'll be starting with much smaller, one-off setups involving undergraduate research opportunities, individual professors receptive to the SSA angle, *etc.* If there's one lesson we've learned from four years of working with community partners through the greater Boston area, it's that the best relationships grow from something small involving tiny commitments and clear successes.

Autonomy Analysis

Ultimately, the SSA will be significantly blurring the line between teacher, mentor, coach, facilitator, and community member. To effect this we need staffing and curricular autonomy and the necessary procurement and financial autonomy to implement these types of relationships and iterate on them.

Why should we expect this will benefit students? Wraparound services, community integration, service learning—even before we get to the necessary steps to implementing a deeply project-based (as opposed to problem based or inquiry driven) curriculum, the research on the effect of such community engagement and its positive effects on student outcomes piles up.[128] The rub, as always, is making sure the school's structure actually accommodates the necessary time, energy, and resources to make these relationships real. In traditional settings, because the classroom is designed to be able to function without *any* of these relationships, the day-to-day operating reality of the school understandably takes precedence, systematically biasing the school against external collaborations despite the best of intention

[128] Jacobson, R. and M. J. Blank (2011). Expanding the learning day: An essential component of the community schools strategy. *New directions for youth development 2011*(131), 55–67; McPartland, J. M. and S. M. Nettles (1991). Using community adults as advocates or mentors for at-risk middle school students: a two-year evaluation of project raise. *American journal of education*, 568–586; Merriam, S. (1983). Mentors and protégés: A critical review of the literature. *Adult Education Quarterly 33*(3), 161–173; and Henderson, A. T. (2007). *Beyond the bake sale: The essential guide to family-school partnerships*. New Press

What legal affordances will be required? The SSA will, in addition to the staffing, curricula, and financial flexibilities outlined elsewhere, need to be able to author and award its own Professional Development Points and definition of student learning time to accommodate the broader set of parties and activities this type of deep, community integration will involve.

We are still in the process of writing up the necessary exemptions and waivers required for this. You can find a partial list in Legal Affordances, but per 603 CMR 48.03(b),

> If an innovation plan committee is proposing an innovation plan that may conflict with laws (including regulations) governing other public schools, the committee shall, before presenting the plan to the school committee for approval, request approval from the Commissioner for any provision in the plan that may conflict with such laws. The Commissioner's approval shall be based on his determination that the plan is consistent with 603 CMR 48.03 (2) and with the state's

> obligations under the education clause of the Massachusetts Constitution, Mass. Const., pt. II, ch. V, s. II, as defined by a court of competent jurisdiction, and that the provision in the plan that may conflict with such laws is necessary to advance the mission or educational programs of the innovation school. If the Commissioner does not approve the proposed provision in the plan, the innovation plan committee may ask the Board to review the matter and the Board shall make the final decision.

which means that the full process of articulating points of contact between state laws and regulations and the Innovation Plan as voted on need not conclude until the School Committee presentation. As with negotiating necessary affordances in the Collective Bargaining Agreement to make the Innovation Plan possible, non-substantive design edits and alterations may be made after the Innovation Plan Committee vote without triggering a re-start of the process.[129]

[129] French, D. (2013, August). Personal communication with dan french. Regarding voting and editing process between Innovation Plan and School Committee votes

Part III

How We'll Get It Done

Programmatic Student Supports

The SSA's focus on struggling students drives our commitment to personalizing support for the many places from which students are coming when they struggle. We know that most of the reasons students struggle are not academic *per se*, even if they show up as academic issues.

Overall, our emphasis on small settings, wraparound services, the elevation of people over protocol, and individualized attention is the rule. This goes back directly to the inspiration of the Harlem Children's Zone. Everyone has all sorts of issues, the fundamental premise of the SSA is that a smaller school given the flexibility to pay attention to individual student needs will be able to be responsive in ways that address the underlying issues which have led to struggles in traditional contexts. That said, it is worth specifically calling out the most common sources of issues for struggling students and how the SSA will both uniquely meet these needs and ensure the availability of at least the same level of service the District currently offers.

The basic theme tying all of these together is simple: the SSA's current plan introduces a number of autonomies, among those budgetary. That budgetary autonomy has been designed to make it possible for the SSA to access and pay for (functionally buying back) District services which are traditionally bundled. The design—which we've fleshed out with the help of Pat Durette (Somerville Public Schools Director of Finance) at Central Office—is intended to provide for the SSA's operational flexibilities while ensuring that if those flexibilities are not leveraged in the case of a particular, centralized District service, that the SSA can access those services without double dipping and pulling resources away disproportionately.

District Supports

Even though people talk about schools' per capita allocations, the way budgeting actually works is significantly more complex. In particular, the lines between the City, the District, and individual schools is quite blurry. Individual schools do not receive an allocation they freely spend. The mechanics of municipal and District finance are outside our scope, but the SSA team has worked with Pat Durette to sketch out the broad strokes of a setup which will

both be legally workable and achieve the ends outlined in this plan. Furthermore, we've talked through the setup with the Department of Elementary and Secondary Education and Executive Office of Education and the broad strokes have passed muster with those staff as well. Basically, the setup is intended to achieve three objectives:

1. Meet the statutory requirement in the Innovation School legislation that the SSA "shall receive each school year from the school committee the same per pupil allocation as any other district school receives."

2. Provide this per pupil allocation in a flexible, "one bucket" setup that enables the SSA to spend its allocation autonomously, in accordance with best practices for small schools targeting struggling students.[130]

3. All while guaranteeing SSA students will maintain access—at a minimum—to the same set of District services as are available at other Somerville schools *without* disproportionately or unduly pulling away resources from other initiatives to achieve this flexibility.

The basic outline of this setup is simple. The SSA team combed through Somerville Public Schools' budget, looking specifically at Somerville High School expenditures, and done three things:

- Set aside *at least* as much per ELL & SPED pupil as Somerville High School.
- Identified centralized costs which do not scale per student or per class for Somerville High School (*e.g.* the Superintendent's salary, debt service, *etc.*) and subtracted those out of our budgeted allocation.
- And found a legal procurement process whereby the City will periodically (likely quarterly) give the SSA its allocation in a single bucket to spend and audit.[131]

Overall, the point of all this is to establish infrastructure which makes it possible to flexibly spend the SSA's per pupil allocation while also making it possible to buy-back appropriate District services to ensure that the SSA is able to flexibly spend its budget without disproportionately pulling funds from existing initiatives. This flexibility is necessary not just as a general design principle and best practice for small, agile organizations,[132] and not just for small schools implementing novel, project-based environments,[133] but because there are a variety of ways in which the very new-ness of the SSA's model means that the balance sheet looks different. For example, there are many aspects of the types of programs and environment you'll find at the SSA which are very well-matched to students who have struggled with issues like language based learning disabilities (LBLDs), ADD/ADHD, and spectrum disorders.[134]

[130] Hehir, T. and L. I. Katzman (2012). *Effective inclusive schools: Designing successful schoolwide programs*. John Wiley & Sons

[131] The precise details of this—specifically with regards to the necessary lines of credit, the City's involvement in non-academic expenditures like building maintenance, and a few other subtleties—remain to be worked out. But in conversations with Pat Durette, staff at DESE/EOE, and staff at the Massachusetts Inspector General, we've confirmed that there's some arrangement within the current outlines which will make this possible.

[132] Otley, D. (1994). Management control in contemporary organizations: towards a wider framework. *Management accounting research 5*(3), 289–299

[133] Blumenfeld, P., B. J. Fishman, J. Krajcik, R. W. Marx, and E. Soloway (2000). Creating usable innovations in systemic reform: Scaling up technology-embedded project-based science in urban schools. *Educational Psychologist 35*(3), 149–164

[134] Filippatou, D. and S. Kaldi (2010). The effectiveness of project-based learning on pupils with learning difficulties regarding academic performance, group work, and motivation. *International journal of special education 25*(1), 17–26; Armstrong, T. (1996). A holistic approach to attention deficit disorder. *Educational leadership 53*(5), 34–36; and Mitchell, S., T. S. Foulger, K. Wetzel, and C. Rathkey (2009). The negotiated project approach: Project-based learning without leaving the standards behind. *Early Childhood Education Journal 36*(4), 339–346

But the variety of spending patterns and programs necessary to implement such an environment would not show up on the SSA's balance sheet as SPED line-items necessarily.

Community Supports

In the past four years of working with institutions and companies throughout greater Boston, one of the most consistent themes we've heard regarding why community partners do/do not work with the Somerville Public Schools is that of flexibility. This shows up in a variety of ways: "Schools always just want you to come in and tutor. We never get to do anything we'd be interested in." or "The rotating block schedule makes it impossible for my employees to do anything meaningful with them." or "There's never any money for interesting projects. I'm happy to donate my time, but I can't afford to pay for a class set of tools." or "The District wanted us to work with all the schools at once. Maybe that could make sense one day, but I want to start small." or "I tried reaching out to the administration, but they never got back to me. I wish I could just work with a single teacher." This list goes on and on, but the basic theme is clear: traditional classroom environments are not flexible enough to accommodate working with many community partners. This is not only true of local companies and universities, but even the very advocacy organizations which may specifically focus on the concerns of SPED, ELL, or low-income students.

Somerville and greater Boston are incredibly dense with exciting people, companies, organizations, and universities. Designing a school which doesn't need any of them means you end up with a design that isn't set up to match their needs and constraints. The SSA's flexibility not only makes it easier to match these needs (*e.g.* affording scheduling flexibility or project budgets), but will be designed around using community partners as a measure of first rather than last resort. Concretely, beyond the community partnerships and internships discussed elsewhere, three of the partnerships we'll set up immediately deserve specific mention, but are representative of the SSA's broader, intended approach:

- SCHOOLS OF SOCIAL WORK: Once the SSA has a licensed social worker on staff, we'll be able to pull in a number of social work students through fieldwork internships funded by their schools' programs. We have already established Boston University and Northeastern University's schools of social work would be up for participating in a collaboration where we pair their social work students with individual Advisories to support the SSA social worker staff members.

- YOUNG SOMERVILLE ADVISORY GROUP: Throughout the SSA planning process, people have consistently pointed us to the Young Somerville Advisory Group (YSAG) as an underleveraged group of young people in Somerville excited to get involved in

the community. Talking to a few YSAG members, we've found some frustration with the relative shallowness of the YSAG's organizing—focus groups, surveys, and meetings only go so far—and excitement about concrete opportunities for small-batch volunteer effort. Whether supporting families with IEPs in the IEP process as note-takers or tutoring MCAS prep or... YSAG is a great example of an unleveraged resource for SPS which is even sometimes construed as a burden or threat (given YSAG's largely professional membership).

- MIT PUBLIC SERVICE CENTER *et al.*: At MIT, Tufts, and Harvard, our conversations with the various, community-facing staff responsible for coordinating volunteerism and other collaborations with the institutions have all been very excited by the SSA's willingness to design opportunities around the interests and aptitudes of their students and faculty. *e.g.* inspired by programs like PROMYS and RSI, extending undergraduate research and mentorship structures to the high school level, involving SSA students—especially once they've developed basic fluencies in programming—in introductory college offerings in the same subjects, teaming up to offer adult education or permeable dual enrollment programs, *etc.* In each case, being able to assuage institutions' concerns about the hassle or constraints that typically come with public school district collaborations was essential to being able to move the conversation forward.

Low-Income Students

There is no stronger correlate of student test performance—among *all* the data the Massachusetts DOE collects—than your district's median household income. Much of what's exciting about the project of public education is mitigating this vicious cycle.

Concretely, the SSA's focus on reducing the number of cracks in service provision to reduce the number of students who fall through those cracks means that the social worker in each student's Advisory will be taking on responsibility for ensuring that those students and their families are connected to the necessary services based on their socioeconomic background. In eleventh grade this will mean coordinating FAFSA workshops where staff visit families in their homes to help them fill out the necessary paperwork. At enrollment time it may mean sitting down with families to fill out the necessary paperwork to participate in SNAP or file for affordable housing or get energy assistance or...

One of the first programmatic supports we'll be putting in place for many low-income families will be targeting those families who either don't have wireless connectivity at home or whose parents don't have cell phones. Because of the importance of connectivity not only in supporting students in the SSA but ensuring open channels of communication, the SSA will take on ensuring complete

connectivity and offer subsidized phones to ensure we can reach every SSA student's family as part of our technology infrastructure development.

Needless to say, there will be many more small projects like this, some of which will be developed and coordinated by the social worker in each student's Advisory, some of which may be taken on as schoolwide projects pulling together student effort, as well.

English Language Learners

11.4% of Somerville High School's enrollment are English Language Learners (ELLs). In addition to the additional effort this typically requires in core classes, ELLs bring with them needs for language instruction and immersion. And of course, entering high school as an ELL is correlated to other issues covered in this section, especially low income and immigrant status. Organizations in Somerville like the Parent Information Center (PIC), Somerville Family Learning Collaborative (SFLC), Liaison Interpreters Program of Somerville (LIPS), and the District's ELL services (headed by Dr. Davila) are all essential resources in addressing ELL student needs. The social worker in each student's Advisory will be in charge of bringing these resources to bear appropriately and responsively. For some of the services featuring heavily in logistics or communications with parents (*e.g.* LIPS and translation services), the SSA will organize additional support through its family and community partner networks.

Every staff member at the SSA will be proficient in at least one language germane to the SSA's student population in addition to English. While this will be a factor in hiring, we are budgeting for intensive, summer immersion programming via organizations like the Boston Language Institute. This integration will ensure always-on support for ELL issues, in addition to providing very healthy contexts for defining students' relationships to teachers in non-academic, culturally enriching and empowering contexts. This will be in addition to applicable RETELL/SEI endorsements and related training.

In addition to the thorough staff support for ELL, there is a body of research demonstrating the utility of project-based learning to ELL students. The multimodal, divergent curricula emphasize informal, conversational communication and experiential learning[135] and both in our own experiences running programs focused on computational thinking and in a nascent body of research[136], computers have been used to work through and around many of the traditional academic weaknesses faced by English language learners. In particular, to the extent that a programming language is in fact, a new language for all involved, there is a much more equal playing field.

[135] Dewey, J. (2007). *Experience and education*. Free Press; Gardner, H. (1985). *Frames of mind: The theory of multiple intelligences*. Basic Books (AZ); and Duckworth, E. R. (2001). *" Tell me more": Listening to learners explain*. Teachers College Press New York

[136] Gibbons, P. (2002). *Scaffolding language, scaffolding learning: Teaching second language learners in the mainstream classroom*. Heinemann Portsmouth, NH; and Goode, J. (2010). Connecting k-16 curriculum & policy: making computer science engaging, accessible, and hospitable for underrepresented students. In *Proceedings of the 41st ACM technical symposium on Computer science education*, pp. 22–26. ACM

Special Education Students

It is no coincidence that the pedagogies and communities around art-based therapy, special needs pedagogy, and project based learning are so similar. In Massachusetts, fully 85%[137] of students with special needs did not have a physiological disability. Traditional schedules and classroom environments—often emphasizing structure and stability and demanding a great deal of students' attention—are especially challenging for these students. Furthermore, those students with developmental or specific learning disabilities often require degrees of differentiation impossible to accommodate in traditional classrooms.

Project-based learning's emphasis on divergent work and self-pacing—not to mention learner autonomy—is very well-matched for many students with special needs. In sprout's experiences running programs, these contexts mitigate signs of dysfunction, especially with language based learning disabilities, attentional issues like ADD/ADHD, and spectrum disorders.[138] In short, because students needn't march in lockstep from one carefully managed class to another, there's much less friction created by the differences in style and capacity which come with special needs status. These experiences are corroborated by a large body of research [139] exploring and substantiating the value of more flexible, art-based, project-driven environments for special needs students.

Overall, after reading through nearly a dozen books looking at the design of alternative, special education programs (especially the opportunities and challenges that come with a project-based environment), we've settled on Tom Hehir's[140] *Effective Inclusive Schools: Designing Successful Schoolwide Programs*[141] as our primary guide. Fortunately, Hehir is local and will be helping us with the design of the SSA's SPED-specific elements, especially with regard to project-based environments. Needless to say, the Somerville Department of Special Education will be a close partner in advising us on the design and implementation of these efforts.

Going beyond the contact points between SSA design, curricula, and SPED issues, the SSA will also introduce a variety of new programmatic supports. Because the SSA is expecting somewhere between 6–10 students in its entire enrollment each year to have an IEP, it's feasible for family engagement with each of these programmatic supports to be managed by the social worker in each student's Advisory.

Reviewing Student IEPs Upon Enrollment Because the SSA will be a significantly different environment, we expect that it will behoove us to sit down and review students' IEPs with parents upon enrollment. At that point, we expect most families will have had some exposure to the project-based style environment through our enrollment outreach, but if not, we'll organize introductions and tours for families so that the conversation about their child's situation

[137] Hehir, T., T. Grindal, and H. Eidelman. Review of special education in the commonwealth of massachusetts; and Deninger, M. and R. O'Donnell (2009, March). Special education placements and costs in massachusetts. Education research brief, Massachusetts Department of Elementary and Secondary Education, http://www.doe.mass.edu/research/

[138] Filippatou, D. and S. Kaldi (2010). The effectiveness of project-based learning on pupils with learning difficulties regarding academic performance, group work, and motivation. *International journal of special education 25*(1), 17–26; Armstrong, T. (1996). A holistic approach to attention deficit disorder. *Educational leadership 53*(5), 34–36; and Mitchell, S., T. S. Foulger, K. Wetzel, and C. Rathkey (2009). The negotiated project approach: Project-based learning without leaving the standards behind. *Early Childhood Education Journal 36*(4), 339–346

[139] Bell, S. (2010). Project-based learning for the 21st century: Skills for the future. *The Clearing House 83*(2), 39–43; Gardner, J. E., C. A. Wissick, W. Schweder, and L. S. Canter (2003). Enhancing interdisciplinary instruction in general and special education thematic units and technology. *Remedial and Special Education 24*(3), 161–172; and Warschauer, M., D. Grant, G. D. Real, and M. Rousseau (2004). Promoting academic literacy with technology: Successful laptop programs in k-12 schools. *System 32*(4), 525–537

[140] Hehir was previously Director of Special Education at the U.S. Department of Education 1993–2000, and is now faculty at the Harvard Graduate School of Education as an expert in the area of policies and programs for the education of disabled children. During his tenure at the DOE, his primary statutory responsibility was the implementation of the Individuals with Disabilities Education Act (IDEA). Prior to his work with the DOE, he directed the special education programs for the Chicago (1990–1993) and Boston (1983–1987) public school systems.

[141] Hehir, T. and L. I. Katzman (2012). *Effective inclusive schools: Designing successful schoolwide programs*. John Wiley & Sons

can be properly contextualized. Families will then have the option to sit down, review, and potentially revise their child's IEP given the unique concerns and opportunities attendant to an environment like the SSA. We'll be working with Tom Hehir and a variety of contacts from sprout's previous work with schools focused on students with special needs to design the details of this IEP review and counseling process in the intervening year between the SSA's approval and enrollment.

Supporting Parent Connection A consistent theme in conversations with SPED specialists, school leaders, and parents—not to mention the research[142]—is an emphasis on the importance of parental support networks. This is fantastic for parents equipped with the bandwidth and inclination to develop and leverage such networks, but the SSA is intent on building in support for exactly these types of functions within the school. Many families in Somerville (especially whose children struggle in traditional academic environments) for reasons ranging from language and culture to disposition and means—are not in a position to implement best practices for SPED advocacy.

[142] Harry, B. (1992). *Cultural diversity, families, and the special education system: Communication and empowerment.* Teachers College Press

Working with the Special Education Parents Advisory Council (SPEDPAC), the SSA will begin curating a list of parents (turning to the District for help tracking down families of alumni) and reaching out to various institutions into which Somerville families are commonly outplaced to seed a group of potential advisors and mentors for SPED families in the SSA. In ongoing conversations about students' IAPs and IEPs at the SSA, staff will surface potential issues which the social worker in the student's Advisory will be responsible for translating into an actionable responses, with a particular eye toward making connections with other families with relevant experience. This will be in addition to things like connecting the family to an appropriate expert or finding relevant professional development opportunities for that student's project manager. Sometimes this might be as simple as a `cc` on an email thread, but often it may require arranging for dinner or an in-person introduction and facilitated relationship depending on the family of the SSA student.

Establish Legal & Psychological Advisory We've also begun tracking down lawyers, doctors, and psychiatrists whom the SSA will stitch together in a similar, *pro bono* advisory group. The goal of this group isn't to provide free, extended support, but to make the simple act of asking a question or getting a pointer or second opinion on a next step easy and free—for both SSA families and SSA staff. We already have two lawyers, one doctor, and one family counselor excited to join such a consortium providing *pro bono* support and advice to families, teachers, and administrators.

Notetaker Corps Inspired by the LIPS program and feedback from SPED families about the IEP and advocacy process, we'll also be setting up a small group of volunteers explicitly dedicated to attending meetings with families and acting as a designated notetaker to keep minutes from each meeting to help families keep everything straight and documented.

Archival Support Related to the notetaker corps, the SSA itself will also act to support SPED families with an archive for records and communications related to their child, offering help to parents organizing and maintaining records of conversations with doctors, SSA staff, relevant papers and research, *etc.*

Handling Unexpected Costs Discussing 'average' Special Education costs is somewhat misleading because of the incredible spread possible depending on the nature and severity of students' issues. This is doubly true because of the increased variance expected as a result of the SSA's small size—resulting in an expected SPED enrollment of 6–10 students annually. That said, in conversations with Debbie Connell, we've confirmed our budgetary estimate of $\approx$ \$20,000 as an appropriate target for SPED per capita spending.[143] Going beyond this, we'll also be taking advantage of Massachusetts' pooled risk and zero-interest loan programs to guard against extraordinary SPED costs negatively impacting either Somerville SPED or the quality of service we can provide SSA SPED students.

[143] Connell, D. (2013, November). Personal communication with debbie connell

Specifically, under MGL Chapter 71B, Section 5B, the SSA will be authorized to participate in a pooled risk program off-setting extreme SPED costs,

> Districts [and district-like bodies, which in our case will include the SSA by virtue of our legal status—*e.g.* this same program is available to individual charter schools] may submit claims for payment not to exceed 75 per cent of the amount by which the district's current year total special education expenses exceed 110 per cent of the district's average total special education expenses of the prior three years. For the purposes of this section, total special education expenses shall include instructional costs and private school tuition costs but shall not include transportation costs. Claims shall be subject to review and approval by the commissioner. Approved claims shall be paid from the trust fund.

Additionally, the SSA will participate in a related, zero interest loan program for extraordinary costs which we expect will be mitigated over the course of the loan period (likely through matriculation of other students). Under MGL Chapter 71B, Section 5C will be eligible for zero-interest loans to cover extraordinary SPED costs,

> Districts [and district-like bodies, which in our case will include the SSA by virtue of our legal status—*e.g.* this same program is available to individual charter schools] may apply for zero interest loans to cover any portion of the amount by which the current year's total special education expenses are expected to exceed 110 per cent of the district's average total special education expenses of the prior

> three years. For the purposes of this section, total special education expenses shall include instructional costs, private school tuition costs and premiums paid to the risk pool trust fund established in section 5B, but shall not include transportation costs. Loan applications shall be subject to review and approval by the commissioner. Approved loan amounts shall be paid from the trust fund established in subsection (c).

Collectively, these programs offer a reasonable guarantee of the usefulness of our budgeting procedure here, which is easily robust to the 10% margin provided for by the combination of the pooled risk and loan programs.

Immigrant Families

Setting aside the ELL-specific concerns covered elsewhere in this chapter which often accompany immigrant status, there are two problems specific to immigrant families which the SSA will specifically and separately address:

- The first is the incredible strain and opacity involved in being undocumented. This is an issue that makes the provision of all social services much more challenging, especially in cases where there isn't the necessary trust within the family to even open up the conversation. The SSA will be working with the PIC and Centro Presente to sit down one-on-one with families who have undocumented members. The goal of these sessions is twofold: 1) first and foremost, develop a rapport with the family and connect them to a knowledgeable immigrant mentor family in the community, and 2) connect the family to friendly legal help through the school. Families need to come to see the SSA as a resource and protector, not as a threat.

- Related, the Advisory social worker will specifically pull in *pro bono* immigration law and service support in their process of identifying gaps in service (*e.g.* healthcare). The social worker will also have time set aside to specifically touch base with the family's immigrant mentor in addition to the default menu of mentorships and community connections to which every SSA student will be connected.

Gender- and Ethnicity-Specific Supports

The SSA's small size means that it will be important to ensure that students' various intersectionalities—whether LGBTQ, Latino, Hmong, *etc.*—are not only respected, but supported. In larger contexts like Somerville High School, this can show up naturally in the form of student organizations. When each class is only three dozen students, it's not obvious that that will be workable. Instead, the SSA will focus on three vectors of support:

- CONNECTING students to existing cultural and support organizations both as individuals and by bringing those organizations into the SSA as part of projects, workshops, and regular events.
- MENTOR CHOICE AND DEVELOPMENT offers a clear lever for ensuring students develop relationships with role models that can reinforce and develop aspects of their identity which in larger contexts might be cause for social denial and ostracism.
- TAILORING AND GUIDING PROJECT DEVELOPMENT to encourage and develop students' connections to those dimensions of identity.

There are a wide variety of relevant advocacy organizations and programs throughout greater Boston who could make for great partners. But because we see these relationships as driven by individual students and their backgrounds, these may not show up as structural programs within the SSA. *e.g.* Centro Presente's community organizing programs or MIT's Society of Women Engineers are likely to be among our partners in supporting specific students, but their involvement will be responsive to individual students' projects and contexts.

Autonomy Analysis

Most schools are designed to survive total insularity. This ends up biasing a lot of the communication, funding, and staffing structures in a way that make it less likely that community partners will become an integral part of students' experiences. While this is a very common organizational pattern[144] (and not just in schools, either[145]), the SSA will be intent on avoiding this by casting staff and the school overall as first and foremost infrastructure for connecting and surfacing community resources and constructing contexts which render those resources educational. This in and of itself doesn't cut against any traditional limits or structures in school, but it shows up as a design principle across questions of curriculum, budgeting, scheduling, staffing, operations—every aspect of the school. And in each of those categories, new autonomies are required (which are laid out, in their broad strokes, in this plan).

Why should we expect this will benefit students? The design of the SSA works very hard to ensure that we can focus on our relationship with students. Sometimes, the issues a student is dealing with require particular expertise to be brought to the table. Just as the school system houses a variety of expertise that can't be reasonably expected to be located within a single teacher, the community at large offers the exact same benefit. To take advantage of this, it's necessary for small schools to set themselves up relying on community partners as first class collaborators,[146] and when they do so they're able to implement wraparound services which can dramatically improve student outcomes.[147]

[144] Lipham, J. M. (1981). *Effective Principal, Effective School.* ERIC; and March, J. G. (1978). American public school administration: A short analysis. *The School Review 86*(2), 217–250

[145] Fountain, J. E. (2001). *Building the virtual state: Information technology and institutional change*. Brookings Institution Press

[146] Goos, M., D. Lincoln, A. Coco, S. Frid, P. Galbraith, M. Horne, L. Jolly, A. Kostogriz, T. Lowrie, T. Short, et al. (2004). *Home, school and community partnerships to support children's numeracy*. Department of Education, Science and Training Canberra; and Battistich, V., D. Solomon, M. Watson, and E. Schaps (1997). Caring school communities. *Educational Psychologist 32*(3), 137–151

[147] McPartland, J. M. and S. M. Nettles (1991). Using community adults as advocates or mentors for at-risk middle school students: a two-year evaluation of project raise. *American journal of education*, 568–586

What legal affordances will be required? This chapter covers a strategy more than any particular provision; the various flexibilities in licensure, scheduling, budgeting, *et al.* have been covered elsewhere.

We are still in the process of writing up the necessary exemptions and waivers required for this. You can find a partial list in Legal Affordances, but per 603 CMR 48.03(b),

> If an innovation plan committee is proposing an innovation plan that may conflict with laws (including regulations) governing other public schools, the committee shall, before presenting the plan to the school committee for approval, request approval from the Commissioner for any provision in the plan that may conflict with such laws. The Commissioner's approval shall be based on his determination that the plan is consistent with 603 CMR 48.03 (2) and with the state's obligations under the education clause of the Massachusetts Constitution, Mass. Const., pt. II, ch. V, s. II, as defined by a court of competent jurisdiction, and that the provision in the plan that may conflict with such laws is necessary to advance the mission or educational programs of the innovation school. If the Commissioner does not approve the proposed provision in the plan, the innovation plan committee may ask the Board to review the matter and the Board shall make the final decision.

which means that the full process of articulating points of contact between state laws and regulations and the Innovation Plan as voted on need not conclude until the School Committee presentation. As with negotiating necessary affordances in the Collective Bargaining Agreement to make the Innovation Plan possible, non-substantive design edits and alterations may be made after the Innovation Plan Committee vote without triggering a re-start of the process.[148]

[148] French, D. (2013, August). Personal communication with dan french. Regarding voting and editing process between Innovation Plan and School Committee votes

School Improvement Plan

This School Improvement Plan is only a draft. The Board of Trustees will undertake designing and voting on an official School Improvement Plan each year, to be filed with the School Committee as an addendum to the Innovation Plan.

The Somerville STEAM Academy—if it is approved—will exist to *change people*. To transform students into independent investigators. It is easy, when thinking about school, to focus wholly too much on the *inputs* into the school . . . things like the budget or the number of computers per student or students per teacher. And of course, inputs are important. But inevitably, schools and school districts are responsible for their *outputs*. Ultimately, this is a changed person. And of course, there's a great deal of contention around what a "changed student" looks like. MCAS score? SAT? Happiness index? Starting salary? But it's clear that if you do not plan where you're going, you won't end up where you want to. And that's what this chapter sets out to do: describe the measures of performance *outside* of the SSA that will be monitored to ensure we accomplish our mission (including, of course, those we are legally required to, *e.g.* PARCC/MCAS.)

Our efficacy is defined by our mission: *cultivating learners' scientific curiosity and the hands-on capacity for creative, independent investigation and engineering required to follow through on that curiosity.* Our interest is the growth and development of students as investigators and citizens; however, as with all measurement, it is not only impossible to measure something without perturbing it, it is largely impossible to measure anything but those things correlated to the phenomenon of interest. We think that sticking as close to that phenomenon—deep inquiry—as possible is essential.

Formatively, our assessment strategy will focus on deep, hard projects and the capacity of students to imagine, iterate, manage, reflect, and share these. Capturing the data necessary for these assessments will be driven primarily by the project management staff, project advisory boards, and Board of Trustees. One of the primary upshots of a computationally focused and technologically enabled curriculum is that the process of capturing, reviewing, and collating student work becomes tractable on previously impossible scales. This output will be stitched together into a combination of a personalized archive and portfolio and mapped back onto the Common Core and MCAS/PARCC learning objectives to act as the

base from which to derive everything from students' transcripts to credit unit equivalents. These formative data will be compiled annually for presentation to the School Committee and quarterly for the Board of Trustees.

Summatively, the SSA's assessment strategy will focus on the fidelity and efficacy with which students transition from the SSA to their next step—whether that's the workforce or college. The SSA has very explicitly *not* included college admission or graduation rates in its definition of success because we think that just as one size does not fit all in high school, one path does not fit all after high school. The process of surfacing and articulating what "success" means for an individual student is one of the primary responsibilities of the social worker in each cohort. Furthermore, the SSA's longitudinal support means that our summative measures of performance will be much broader than typical, including but not limited to starting salaries, student satisfaction surveys, letters of recommendation and assessment from professors and employers, and so on. These summative data will be compiled annually for presentation to the Board of Trustees and School Committee.

These results ultimately exist solely *outside* of the SSA; *i.e.*, it is learners' future selves and successes by which the SSA should be judged, not the amount of effort the SSA invests. Everything within the SSA is nothing more than an input.

Of course, that is not enough to manage a school by. Recognizing that most of the outcomes which matter to the SSA can't be captured in a single number, we will collate a variety of metrics and measures by which to manage and improve its performance. While some of these—*e.g.*, average hours spent on a project—will be quantitative, the majority will be qualitative. Increasing the depth and fidelity of qualitative assessments (and using the good judgment of staff and board members to transform these into numbers) is the basic seed of our assessment strategy. All other inputs (*e.g.*, staff satisfaction, attendance rate, and so on) will be measured as indicators to track progress, but will not define success on their own.

The STEAM Trustees will oversee the results of the school itself, monitoring student, staff, and family satisfaction along with markers of academic success like PARCC scores and post-secondary achievement. This board will submit annual reports to the Somerville School Committee, documenting school performance, and will be responsible for establishing annual metrics towards which the school will strive each year in order to achieve its mission.

The Advisory Board will monitor and evaluate the depth and quality of student work within the SSA. This will include reviewing student projects and internship outcomes as well as the ongoing development of relationships with local experts and businesses to serve as potential resources to future SSA students and projects. This board will submit quarterly reports to The STEAM Trustees,

including an overview and evaluation of student work completed during the quarter, reviews of relationships with community members and organizations, as well as any open questions and suggestions.

Organizational Priorities

Especially in the design and opening of a new school, metrics like attendance rates and test scores woefully underspecify a clear and effective management strategy. The SSA's Board of Trustees will expand and revise a version of this chapter for our inaugural School Improvement Plan, but the design team thought it prudent to sketch out the broadest strokes for consideration by the Innovation Plan and School Committees.

In the year between the SSA's approval and projected opening in Fall 2015, our top three organizational objectives will focus on the people who will be in the room. Many other details—ranging from the curriculum mapping process to the build out of the facility—will need to be handled as well. But those elements which are naturally urgent will be taken care of. The elements essential to consciously prioritize are those which are *important* but not naturally urgent: enrollment outreach, hiring, and community development.

Comprehensive, effective enrollment outreach

The core of the design of the SSA is built around the notion that there are families whose students struggle in traditional environments *and* would benefit from a STEAM-ly opportunity. That means the onus is on the SSA to do the outreach required to generate sufficiently broad and diverse interest among families, to many of whom words like "computation" or "modeling and representation" or "project-based" don't mean much (and not just because of language barriers). We've sketched out the broad strokes of a multi-tiered outreach process spanning a range of engagement from informational session all the way to full-time summer camp. Operating at all the local schools and collaborating with a variety of families and community organizations is a lot of moving parts, especially for a new organization. Making sure we develop the organizational capacity to manage that process competently and smoothly is essential, but the ultimate success of the outreach process will be judged by two measures:

- its *comprehensiveness*—of the $\sim$ 350 rising seventh graders, how many participated in each level of enrollment outreach? Measuring this is a simple matter of counting.

- its *efficacy*—on the individual level, how thoroughly is the nature of the SSA, its staff, and its overall aims and philosophy communicated to parents by experiential workshops? Measuring

this will require the implementation of pre- and post-surveys for parents, or perhaps less formally, straight testimonials.

Smoothly operating, high fidelity hiring process

The SSA is unusual. This means that the staff we'll be hiring will also be unusual. Which in turn pushes us to consider an unusual hiring pipeline. By building in the testing of potential hires as a basic function of the enrollment outreach process, we'll be using the highest fidelity information available to us—working directly with people—to make the essential, inaugural hires. But unfortunately, the enrollment outreach process can only handle the involvement of a few dozen candidates, at most. Which means we need to establish other pipelines for references and general applications. We have some of the basic skeleton of this (*e.g.* specific professors, institutions, and companies whose work or disposition are a good match for helping to filter candidates), but managing a hiring process working with hundreds of people is something we've never done before and has many moving parts. Especially because we'll be continually hiring for five years, it's important to set up an ongoing process that can function smoothly at the get go.

Unfortunately, we can only look at the inputs to this process to assess it—the quality of the hires won't be known until we see students' experience firsthand. This means that we'll need to continually feedback to tweak the process, but at the get-go we'll be looking at two measures in particular:

- How much time organizing and implementing hiring ended up being devoted per hired candidate? Is this sustainable for the principal (who will have the primary responsibility for hiring) moving forward? We expect the principal to spend about one-third of their time organizing and implementing the hiring process. This is simple to measure.
- Are we processing enough people to a sufficient level of detail such that the questions of hiring feel clear and easy? If not, then we are either processing too few people (*i.e.* not finding the right candidates) or too shallowly (*i.e.* not surfacing sufficient information to differentiate candidates). This will be assessed through a writeup of the nine top candidates for the three positions by the SSA. This writeup will describe and justify the decision and present this to the Board of Trustees.

Cultivated student support networks

The SSA's community integration is central to its design. But as we know from four years of running an organization incorporating volunteer effort, managing people is *expensive*. And the more numerous your partners, the higher your switching and integration costs. This will be offset by the scale of the SSA, but the prominence of the community in curricular work, ELL services, SPED support,

and so on means that in the planning year we not only want to identify and confirm partners, but begin working with them as soon as possible in two capacities: professional development of our staff and cultivation of our student body.

Regarding professional development: in the best cases, we're working with a community partner not simply because the SSA doesn't have the time, but because we won't the best experts on everything. This means that our staff have something to learn from all of our community partners—whether the subtleties SPED advocacy or test-taking skills. We've found that the sooner and more slowly you can cultivate a real relationship with volunteers, the more effective and reliable the partnership. As we develop the various interfaces outlined in this plan, we'll also be setting up small workshops for SSA staff.

Regarding the cultivation of our student body: even though students won't be enrolling until Fall 2015, that doesn't mean we can't start developing relationships with interested families—and in this context, trying out these community relationships—in advance of that date.

Taken together, this suggests two measures for this objective:

- the *breadth* of our concrete, confirmed community partners, easily measured by number.
- and the *depth* of those collaborations, as measured by the raw time they've spent working with the SSA.

The remainder of this chapter is devoted to sketching out the performance metrics legally required by the Innovation School legislation (subject to yearly revision by the Board of Trustees in the drafting of the School Improvement Plan). While those measures capture a necessary minimum, they do not represent a plan.

No matter how innovative or compelling the SSA's design or curriculum, it's necessary to commit to traditionally regarded results: improvement on the MCAS/PARCC and in graduation rates. That said, no one's seen a school like the SSA before. The DOE offers a DART Analysis for all districts, which selects a comparable cohort of districts against which performance on the MCAS and graduation rate metrics can be contrasted. For the DOE, "comparable" is defined by a combination of school size and percentages low income, SPED, and ELL students. In Somerville High School's DART cohort, Worcester Technical High (WTH) was the highest performing school in 2011 and 2012. We've set that as our near-term goal.

Growth rate targets were derived by interpolating between Somerville High School's current performance (rounded down) and Worcester Technical High School's performance with the goal of reaching WTH performance in five years. WTH is the best-performing school in SHS's DART analysis. Where possible, SGP is used. For some, only CPI data are available (these figures appear in blue-green in Table 1).

These metrics will be revised and re-approved by the Board of Trustees every year after the first five years, during which the SSA will provide data for the School Committee's review.

Student Attendance

The SSA's unexcused absence rate will decrease a cumulative average of 1% per year for at least eight years, beginning with an initial goal of 90% the first year. Because of the SSA's flexibility in defining structured learning time, the meaning of 'attendance' is not strictly defined. During the planning year, we will define a finer grained metric incorporating velocity through the Common Core/MCAS STE which will attempt to weight attendance measures to appropriately account for student productivity and development as well.

Student Discipline and Safety

The SSA in-school suspension rate will decrease a cumulative average of 1.75% per year for at least eight years, beginning with an initial goal of 15% the first year. The SSA out-of-school suspension rate will decrease a cumulative average of 0.75% per year for at least eight years, beginning with an initial goal of 8% the first year. During the planning year, the SSA will also prototype a basic survey and sentiment analysis system[149] which will be used to put together the first iteration of our student happiness and safety dashboard. This will be the basis for defining new metrics for the measurement of student safety and happiness which will be incorporated into future School Improvement Plans.

[149] Pang, B. and L. Lee (2008). Opinion mining and sentiment analysis. *Foundations and trends in information retrieval* 2(1-2), 1–135

Student Promotion, Graduation, and Dropout Rates

The SSA grade retention rate will decrease a cumulative average of 0.5% per year for at least eight years, beginning with an initial goal of 5% the first year. The SSA's graduation rate will increase a minimum of 1.5% per year for at least eight years, beginning with an initial goals of 84% for its first cohort. Because the SSA will not be age-segregated, we will also be defining measures of grade retention and promotion based on a combination of student velocity through the curriculum mapping process and IAP iterations.

MCAS & PARCC

The SSA cumulative average MCAS SGP for 10^{th} grade ELA and Mathematics will increase a minimum of one percentile point per year for at least eight years, beginning with an initial goal of 53.0. The Board of Trustees will set the SSA's PARCC performance goals in 2015, when PARCC's field-testing and score calibration is complete.[150]

[150] Achieve, I. Parcc field test administration and timeline

Progress in Areas of Academic Underperformance

The SSA cumulative average CPI for 10th grade ELA will increase a minimum of one percentage point per year for at least eight years, beginning with an initial goal of 89.0%. The SSA cumulative average CPI for 10th grade Mathematics will increase a minimum of two percentage points per year for at least eight years, beginning with an initial goal of 81.0%. The SSA cumulative average CPI for 10th grade Science and Technology/Engineering will increase a minimum of two percentage points per year for at least eight years, beginning with an initial goal of 80.0%.

[151] Pyatt, G. (1976). On the interpretation and disaggregation of gini coefficients. *The Economic Journal 86*(342), 243–255; and Yitzhaki, S. (1979). Relative deprivation and the gini coefficient. *The Quarterly Journal of Economics*, 321–324

Progress Goals Among Subgroups of Students

Subgroup	**Graduation rate** (%)		**Grade 10 MCAS** (SGP, CPI)		
	4-YEAR	5-YEAR	ELA	MATH	SCI/TECH/ENG
Low income	$88.0 + 1.54/_Y$	$86.0 + 2.34/_Y$	$53.0 + 2.69/_Y$	$56.0 + 2.86/_Y$	$77.0 + 1.16/_Y$
Limited English	$78.0 + 2.04/_Y$	$68.0 + 3.42/_Y$	$69.0 + 3.48/_Y$	$58.0 + 2.52/_Y$	$61.0 + 2.24/_Y$
Special education	$80.0 + 3.02/_Y$	$81.0 + 2.70/_Y$	$37.0 + 1.90/_Y$	$43.0 + 3.20/_Y$	$62.0 + 0.90/_Y$

Table 1: Year-over-year improvement goals among student subgroups

Narrowing the Achievement Gap

The SSA is specifically targeting students who have struggled in traditional contexts. Though *a priori* it's not clear that this struggle need be racially, socioeconomically, or culturally situated, it's a depressing fact of modern American [especially urban] education. As part of our general civic commitment and specific policy commitment to ensuring the SSA complements and does not compete with existing options, we will incorporate data-driven measures of inequality and the achievement gap into our ongoing governance and reporting process. This section outlines two broad approaches for defining such measures; setting specific goals will not happen until these measures are calibrated and fleshed out during the planning and implementation year.

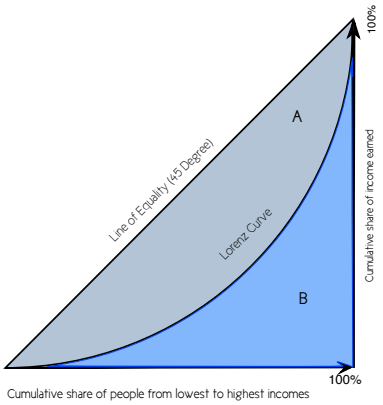


Figure 14: To understand why the Gini coefficient is a good measure of inequality, let's look at how it works in the case of income. The "Lorenz curve" represents what percentage y of the total income everyone from the 0th–x^{th} percentile have. In a perfectly equal society, the Lorenz curve is a straight line. The Gini coefficient is the area under the observed Lorenz curve (B) and the area under the curve in this perfectly equal case (A).

Measuring the Achievement Gap

The Gini coefficient is a measure of statistical dispersion commonly used in assessing the income distribution of nations.[151] The SSA will adapt the Gini coefficient as a general measure of inequality in general and achievement gaps in particular for all metrics of performance which can be quantified (MCAS scores, dropout rates, *etc.*). The metrics need not be one dimensional, as we'll construct a generalized Gini coefficient as well. This setup *only* makes sense for an independent variable which is continuous (*e.g.* household income).

When people discuss the achievement gap, they often have in mind the gap between two categories of student—*e.g.* black and white, ELL and native speaker, SPED and mainstream. The Gini-coefficient measure of the achievement gap doesn't accommodate such categories. To define a measure of inequality or achievement gap for such categories, the SSA will define a cross correlation metric based on a principal component analysis (PCA)[152] of the SSA's various [again, quantifiable but not necessarily one-dimensional] metrics.[153]

[152] Jolliffe, I. (2005). *Principal component analysis*. Wiley Online Library

[153] Digging into the details of calibrating the PCA is outside the scope of our discussion; however, we will set mid-term goals in the language of this PCA by situating Somerville in its DART cohort and extrapolating reasonably ambitious percentile improvements.

Operations

The purpose of this chapter is to lay out the broad strokes of our approach to operations (*e.g.* food, financial controls, scheduling, *etc.*) and the necessary autonomies required to implement them.

A school is full of details. Much of what makes an effective school is what makes a smoothly operating school. In a more flexible, project-based environment, attention to operations and logistics must be redoubled. However, the structures and policies that work for traditional classroom settings don't necessarily make sense for the SSA. In keeping with our acknowledgment that you cannot substantively change the *what* of a school without changing the *how* we have worked very hard to sketch out the operations of the SSA in sufficient detail—often by emulating successful, alternative models' operational innovations—such that the planning and implementation year will offer sufficient runway to a) nail down all the details, and b) prototype and practice our operational capacities during the enrollment outreach process, giving us the opportunity to ramp up even more slowly than our raw enrollment numbers would suggest.

Financials, Supplies, Services, & Procurement

The SSA will be a community of learners and researchers, and its staff will more often be acting as advocates, mentors, and coaches than instructors *per se*. Just as the flat organizational chart of the SSA embodies our belief in putting the authority and control of the school into staff's hands—those who know the needs of learners best—the budget is structured to make case-by-case decision-making and spending by staff and learners simple, systematically favoring flexibility and responsiveness over rigid planning and comprehensiveness.

This means that beyond organizational priorities like offering a competitive salary for teachers (nearing the 90th percentile nationally[154]), there is a strong emphasis on technology (which allows for dramatically increased managerial and curricular autonomy), project stipends for students and staff, and *a la carte* service provisioning for ELL, SPED, and other subsets of the school population—just to name a few. To enable these priorities and flexibility, the SSA will have complete autonomy in the dispensation of its funds. It will be in charge of—and adopt all legal exposure for—its procurement, payroll, and other financial functions, establishing

[154] Clotfelter, C. T., H. F. Ladd, and J. L. Vigdor (2010). Teacher labor markets, segregation and salary-based policies to combat inequity across schools. *Society for Research on Educational Effectiveness*

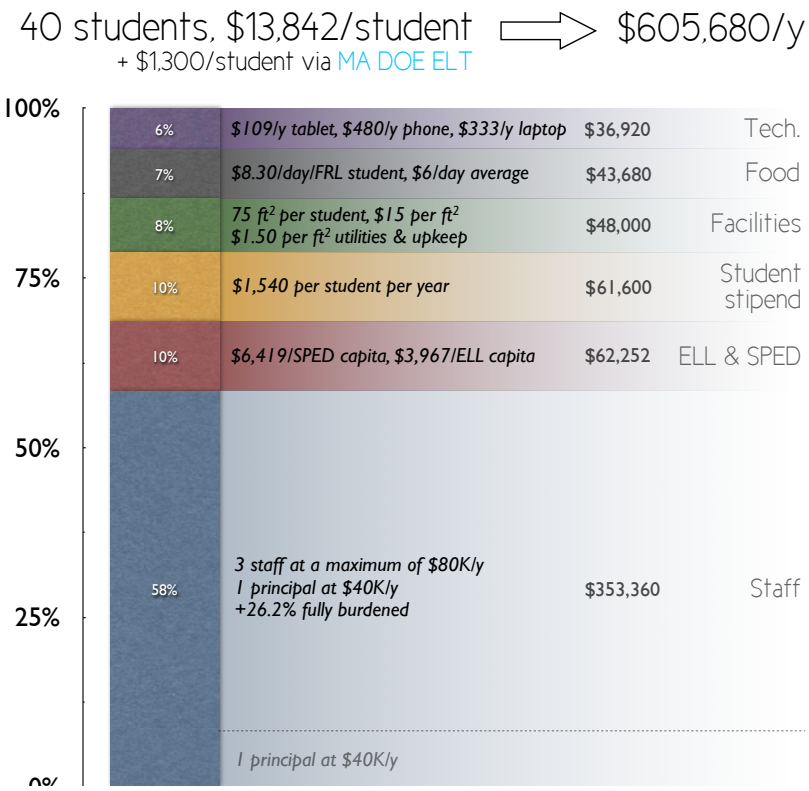


Figure 15: The SSA's budget has been designed to minimize impact on SPS—we went through SHS's end-of-year audit and subtracted out our proportional share of centralized costs—and to guarantee sufficient spending flexibility (via the "one bucket" small school budget pattern) to implement and iterate on a heavily project-based model. We've taken care to ensure as much or more spending per SPED and ELL student as Somerville High School so that through the buying back of district services we can guarantee the provision of the same level of service by default. The details of City/District jurisdictional breakdown and the specific timing of allocation allotment remain to be determined.

and maintaining proper accounting records and internal control procedures in the process with help from the Inspector General's office. This is largely to make possible the "one bucket" approach which has emerged as the consensus best practice for small schools targeting struggling students implementing flexible curricula.[155] The SSA will be exempt from MGL procurement laws including Chapters 30B, 30§39M, and 149.

The SSA will design and implement its own procurement, financial controls, and budgeting office. We went through the Masachusetts Certified Public Purchasing Official Program's procurement and school seminars to develop a basic fluency with the financial controls and procurement landscape. We'll be working with Amy McConnell, Associate General Counsel in the Legal Division of the Massachusetts Inspector General's Office, to design the full system with complete protocols in concert with Pat Durette at the District level and Ed Bean at City Hall. We've verified through conversations with the DOE and Massachusetts IG that the flexibilities we'll be seeking are both plausible and precedented, and indeed are well-supported by best practices for small schools efficacy and efficiency.[156]

The structure of the school is such that the roles of staff members and community stakeholders require a rethinking of traditional approaches to compensation. Because teachers will be working in such a dynamic environment and serving multiple roles as teacher, mentor, and administrator, and will be working year-round the SSA

[155] Hehir, T. and L. I. Katzman (2012). *Effective inclusive schools: Designing successful schoolwide programs*. John Wiley & Sons

[156] Bell, L. (1988). Local financial management in schools: efficiency, economy and administration. *School Organization 8*(2), 121–129; and Morse, A. (2011). Oversight of financial management in local authority maintained schools

will offer higher entry pay for teachers, but within the lane and step system of the STA. The principal will have complete authority over the definition and dispensation of stipends and will minimally cause all employees to be compensated proportional to what would be their hourly compensation in the traditional lane and step system. Other staff positions will be created in the form of community members acting as mentors to students and local experts acting as project advisers.[157]

Of course, in a resource-limited world, these emphases and flexibilities come at the price of other functions. Per the Innovation School statute,[158] the SSA will be receiving the same per capita allocation as other district schools. Some of this will be paid back to offset administrative costs and secure a la carte services on a prorated basis. Regardless, the SSA will be completely solvent using *only* the *per capita* allocation (though of course, other fundraising and development will be deployed to the benefit of learners and staff).

[157] Odden, A. and C. Busch (1998). *Financing Schools for High Performance: Strategies for Improving the Use of Educational Resources. The Jossey-Bass Education Series.* ERIC

[158] (2013). Massachusetts general law - part i - title xii - chapter 71 - section 92

Physical Plant

One of the open questions in the design of the SSA is its location. We've found five properties in Somerville which meet our budget constraints and space needs which are also within fifteen minutes of Somerville High School.[159] Of course, while we've gotten preliminary quotes for build-out in each of these spaces, these are neither final nor have we signed a lease for any space. Fortunately, the SSA's timeline (Fall 2015) provides ample time to find space—our initial search was meant to establish the viability of the SSA's budgeting and space requirements. In that initial search we aimed for $\sim$ 75 ft² per student, \$15 per ft² triple net, and \$1.50 per ft² utilities and upkeep. These figures are well within accepted bounds for school design and cost[160] Anything more than 55 ft² is viable,[161] and trading space price against raw square footage means we can afford up to $\sim$ \$25 per ft² triple net. This is less than the average square footage per high school student in Massachusetts; however, this difference is more than explained by a few, significant differences in the SSA's physical plant requirements:

- We won't have significant square footage devoted to hallways, instead opting for more open plan layouts in the module and pod design seen in many industrial and co-op spaces, which have been supported by research focused on the architectural needs of project-based environments.[162]
- The SSA won't have a traditional cafeteria, gym, media center, or footprint associated with administration. Each of these functions will be addressed through a mix of technology (in the case of the media center), community partnerships (in the case of the gym), or flexible use of classroom and studio space (in the case of the cafeteria). There is significant precedent for the viability of this

[159] Massachusetts General Law defines 'walking distance' as 1.5 miles, but the Innovation Plan Committee decided to focus on the important element in easing the logistical burden of integration with Somerville High School: transportation time.

[160] Kats, G. and E. Capital (2003). *Green building costs and financial benefits*. Massachusetts Technology Collaborative Boston, MA; Meyer, M. A., J. E. Cross, Z. S. Byrne, B. Franzen, and S. Reeve (2013). Green school building success: Innovation through a flat team approach. *Constructing Green: The Social Structures of Sustainability*, 219; and Bello, M. A. and V. Loftness (2010). Addressing inadequate investment in school facility maintenance

[161] Weinstein, C. S. (1979). The physical environment of the school: A review of the research. *Review of educational Research 49*(4), 577–610

[162] Higgins, S., E. Hall, K. Wall, P. Woolner, and C. McCaughey (2005). The impact of school environments: A literature review. *The Centre for Learning and Teaching, School of Education, Communication and Language Science, University of Newcastle. Accessed online on 10*, 04–08; and Tanner, C. K. (2000). The influence of school architecture on academic achievement. *Journal of Educational Administration 38*(4), 309–330

approach in small schools.[163]

- The SSA's extensive community partnerships and focus on co-op and internship experiences means that the average square footage load per student will be lower in part because as students get older, it will be likely that they are placed in organizations like Artisan's Asylum and INDUSTRY LAB and will be spending more and more time in the community at large.

These unique aims and constraints means that just as we'll have autonomy in defining and dispensing food services, the SSA will have complete autonomy in the management and build out of the physical plant. Pending the selection of a site, we will work out with Pat Durette, Ed Bean, *et al.* the appropriate municipal finance provisions and procedures to ensure the separation between academic and operational budgetary responsibilities which the Somerville ordinances mandate City Hall and the District maintain. Conversations with Pat Durette, EOE/DESE, and the Massachusetts Inspector General has made it clear that there is a workable solution to be found which ensures the autonomies listed in this chapter in particular and this plan throughout.

[163] Barker, R. G. and P. V. Gump (1964). *Big school, small school: High school size and student behavior*. Stanford University Press; Stables, G. J., E. M. Young, M. W. Howerton, A. L. Yaroch, S. Kuester, M. K. Solera, K. Cobb, and L. Nebeling (2005). Small school-based effectiveness trials increase vegetable and fruit consumption among youth. *Journal of the American Dietetic Association 105*(2), 252–256; Latrobe, K. H. (1998). *The emerging school library media center: Historical issues and perspectives*. Libraries Unlimited; and Craver, K. W. (1994). *School library media centers in the 21st century: Changes and challenges*. Libraries Unlimited

Technology

The SSA will have complete autonomy in funding, developing, and managing its technological infrastructure. This autonomy cuts across many other domains—including financial, budgetary, record-keeping, procurement *etc.* Because of the SSA's computational focus and emphasis on design, modeling, and representation, many of the logistical and design tasks typically relegated to IT can and will be productively brought into the wheelhouse of the SSA's students and staff. For example, given that every student and staff member will have a laptop, tablet, and phone (with low income student families guaranteed internet connectivity and device subsidies), whole new swathes of solutions to common logistical and pedagogical problems arise, *e.g.*

- Maintaining attendance records can be automated via geo-fencing.
- The cost and logistics of tracking, handling, and returning marked-up student work becomes far easier.
- Making financial auditing dead simple through the incorporation of transparency and reconciliation services like Xero (doubly important given our plans to give students increasing control over project stipends).
- Enabling the use of traditional project management, CRM, and productivity tools like Asana, Highrise, and Basecamp for the management of student and staff work and records (significantly easing the process of curriculum mapping)

- . . . the list goes on and on . . .

But to implement this, the SSA needs complete purchasing and management autonomy in order to develop its own solutions to issues like content filtering (the bane of every technical afterschool program), IT provisioning and repairs, *etc.*

Scheduling

For the SSA, project-based learning, the nature of knowledge work, and the growing importance of self-management and collaboration require a shift in our frame of mind about schooling. Rather than thinking about school as a collection of facts and skills that *prepare*, the SSA is focused on supporting learners' transition from student to independent investigator, which involves active *practice* managing yourself and thinking about your learning process. This in turn requires shifts in how scheduling is handled. To accommodate this shift for both students and staff, the SSA will have complete autonomy in its scheduling. We will be emulating the design of the Generation Schools model, described by their principal as,

1. TO REDUCE CLASS SIZE ÂĂŞ WE HAVE "ALL HANDS ON DECK" AT KEY TIMES. — Nearly 90% of our full-time professional staff teach classes. As a result, we cut core class size in half without needing more staff than a typical school. We strategically provide the other necessary non-teaching services and responsibilities by creating dual roles for most staff.
2. TO EXPAND THE SCHOOL YEAR ÂĂŞ WE STAGGER TEACHER VACATIONS. — All teachers still work the same number of days as in any public school âĂŤ just not all at the same time. As a result, students benefit from a 200-day school year and teachers from more than 20 days of high caliber training annually.
3. TO EXPAND THE DAY ÂĂŞ WE TRADE "TIME FOR TIME." — We offset longer school days with somewhat shorter training days: trading time for time. The total work hours balance out to be the same as in any school. As a result, it does not cost more.

The principal goes on to detail out the efficacy of breaking 'instruction time' into foundation seminars, studio time, and fully immersive intensives, as the SSA plans to do.

The SSA will be riffing on the basic Generation Schools model, in particular offering a significantly expanded and more flexible schedule and our own takes on the intersession/intensive workshop model. So while the SSA will be year-round like Generation Schools, we will use the staggered schedule and foundation/studio/intensive breakdown as a starting point. But to address issues of equity in home support, students won't be expected to do homework outside of the daily 10A-5P schedule.

In order to accommodate the flexible design of the curriculum, the SSA's schedule will look different from that of a traditional high school. The SSA will operate on a *year-round schedule* with vacations staggered throughout the year for both students and

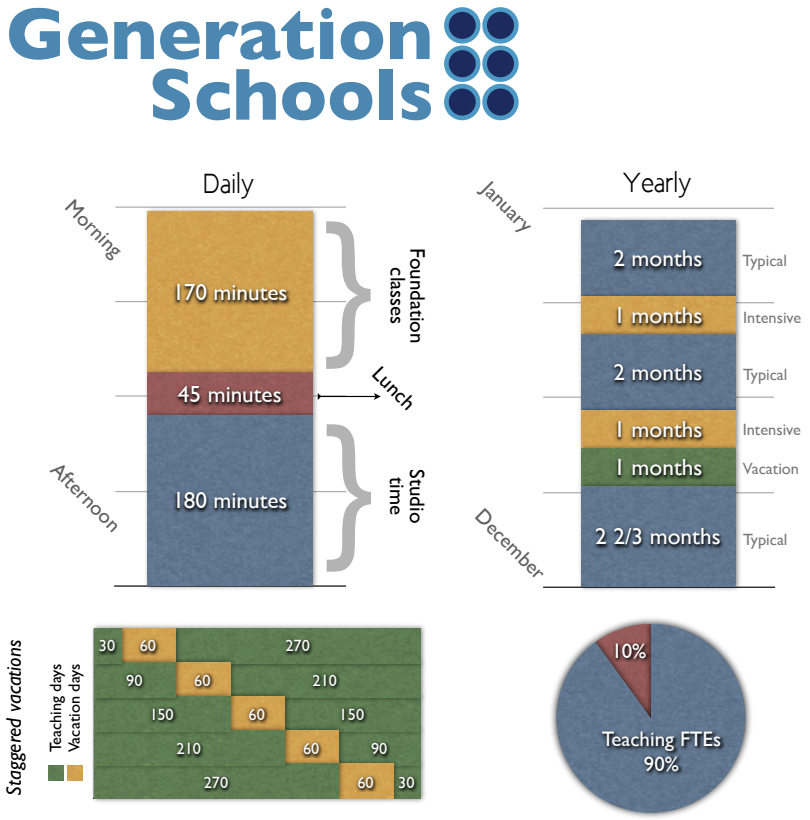


Figure 16: Emulating the successful Generation Schools model, the SSA will operate on a year-round model with flexible vacation policies for students and staff, subject to a minimum velocity as determined by our curriculum mapping process and the logistics of maintaining minimum student:teacher ratios. We'll be designing our own take on their species of time and staggered schedule, but the basic principles will be the same.

staff. The school day will begin and end later, running from 10AM–5PM, to better match the biology of teenagers, who need to sleep longer than younger children and naturally wake up later.[164] This flexibility will be paired with auxiliary services to enable morning drop-off.

This schedule will be punctuated by intensive, cohort-wide workshops exploring topics relevant to the work of the whole group, ranging from language immersion programs to skill development seminars. These seminars will serve as community-building, retreat-like events and focus on topics like website design, computer programming, data visualization, and other fluencies necessary for students to succeed in designing, executing, reflecting on, and documenting their work well.

The skills needed to be successful and self-directed, like time and project management, however, need to be grown and cultivated. For this reason, learners' autonomy will gradually grow in their investigations over the course of their time with the SSA. In their first years, students will spend proportionally more time participating in guided, project-based seminars, developing "foundations" skills through writing, presenting, and communicating about their work, and in preparing for the MCAS. In later years, students will spend an increasing portion of their time on individual or small-group projects, internships, and other self-directed endeavors.

[164] Carskadon, M. A., C. Acebo, and O. G. Jenni (2004). Regulation of adolescent sleep: implications for behavior. *Annals of the New York Academy of Sciences 1021*(1), 276–291; Wolfson, A. R. and M. A. Carskadon (1998). Sleep schedules and daytime functioning in adolescents. *Child development 69*(4), 875–887; and Wolfson, A. R. and M. A. Carskadon (2003). Understanding adolescent's sleep patterns and school performance: a critical appraisal. *Sleep medicine reviews 7*(6), 491–506

Because the SSA's schedule is such that students will not have a traditional high school schedule around which to structure things like summer jobs and internships, the SSA will provide a significant support structure to help place students in paid positions within the structure of the school year. By developing relationships with local companies and small businesses, SSA staff will work with students to find employment possibilities that suit them and make those possibilities financially and logistically feasible.

Years Over five years with the SSA, learners will spend an increasing share of their time on independent projects and internships. This will be governed by their Advisory Leaders (the three staff responsible for their cohort), who will consider their holistic academic, social, and emotional performance in gradually opening up a learner's schedule.

Months The basic tempo of the SSA year will be loosely structured around three-month terms with one-month intersessions. Vacations will be flexible and open for student and family design. Staff vacations will be staggered, *a la* the Generation Schools model. These intersession periods will be used for a combination of focused academic work for those 'catching up' on vacation work and a variety of intensive seminars and group collaborations, taking inspiration from the university intersession model.

Weeks Weeks will be the basic unit for project management and for the intensive workshops provided for by the SSA. An average of one week per non-intersession quarter will be such an intensive workshop.

Days Structured seminars will happen for the equivalent of four days per week, the fifth day (different for different students) will be a focused studio day for working on a given project. One night a week will offer communal dinners, movie screenings, and outings.

Hours Every day will begin with a communal breakfast/check-in, structured around learners' advisory groups. There will be a communal lunch provided however, many learners may choose to eat off campus.

Sample Schedules

These sample time budgets are rough and are meant to be evocative; *e.g.* they do not include lunch or pre-school services. Our year-round schedule ensures that we'll have more than enough time for the curricular coverage we're committing to. The essential aspects of these time budgets are the rough reasonableness of various time commitments we've made for staff and students, and in the

case of comparing the days of an 8th and 12th grader, the shift in the texture of their days.

In these time budgets, FOUNDATION TIME is devoted to structured seminars and intensive workshops (see Species of Time for more details) which are framed around organizing questions (*e.g.* For "Signs of Life" ⇒ "What does it mean for something to be alive?") which will be accompanied by structured project prompts and support. STUDIO TIME is devoted to personal projects of varying degrees of open-endedness and sophistication, resulting from facilitated planning and conversations with students' Advisory.

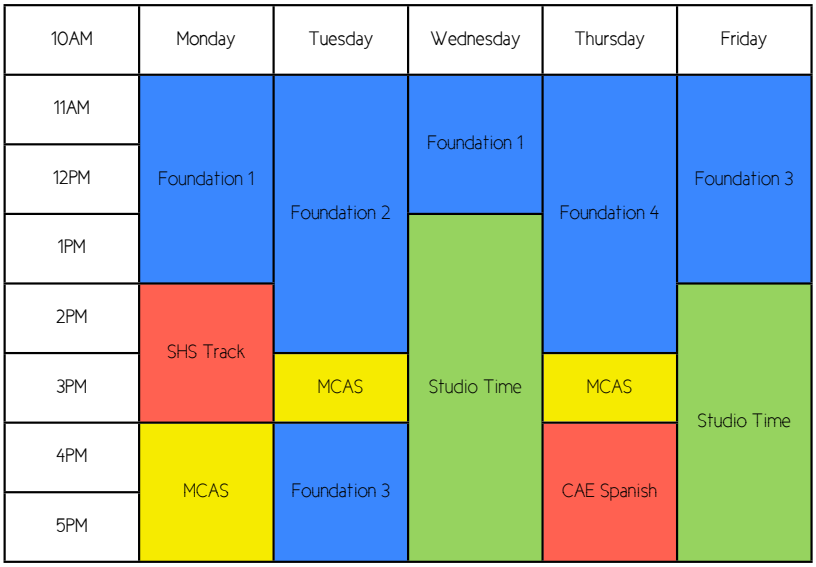


Figure 17: Scaffolding the transition from a traditional classroom environment to a project-based environment is the implicit focus of students' first year at the SSA. This means eighth graders' days offer many structured activities, which we'll slowly back off of over the course of their time with us.

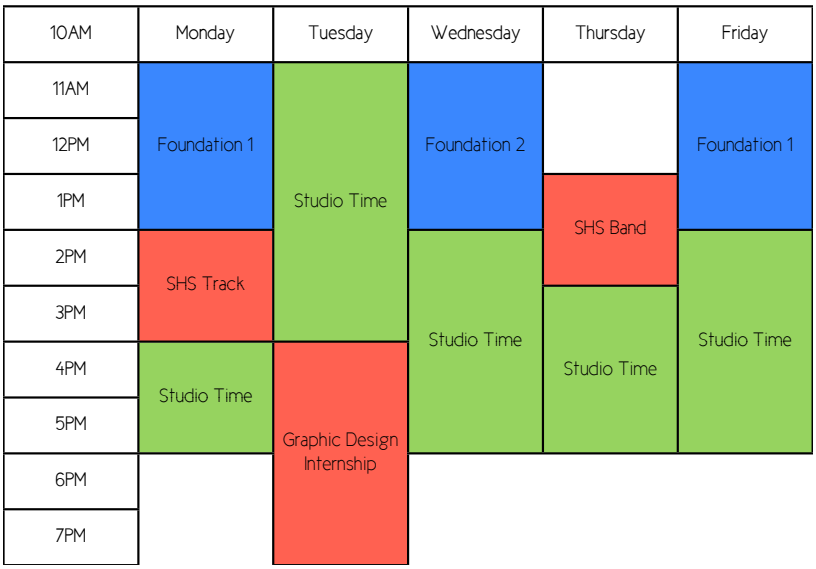


Figure 18: By the time someone is seventeen or eighteen, we expect for many students that they'll be spending most of their time in their community co-ops, internships, and projects of their personal design. This will be reflected in signficantly more autonomy, but this will come gradually as their Advisory helps them scope appropriate projects and problems to work on.

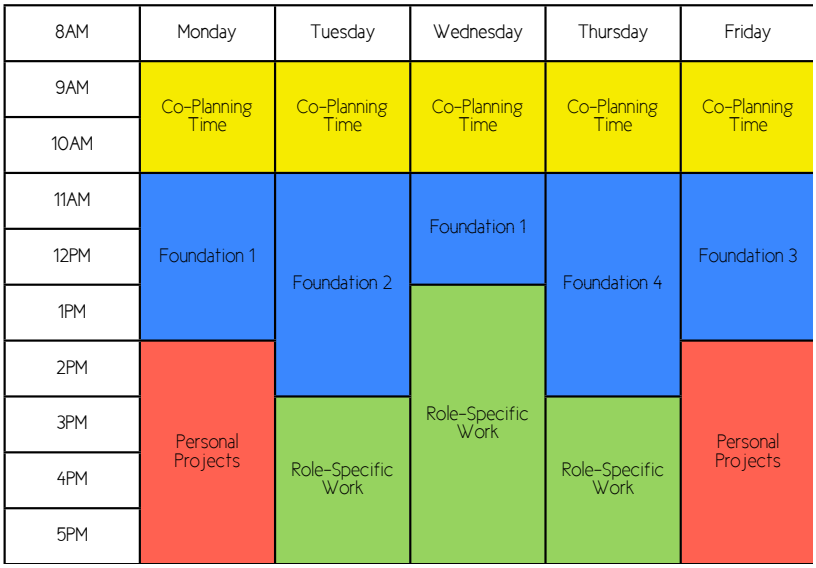


Figure 19: The staff's time is where the rubber hits the road. SSA staff will be working longer hours more of the year than most teachers officially do—though unfortunately, we all know most teachers work much longer hours than what shows up in their collective bargaining agreement. The most essential time for the administration to protect will be staff's co-planning and personal project time, as these are two species of staff time which are integral to small-school, project-based models but which can easily be compromised in favor of the emergency of the day.

Wellness

Originally, we located this section on wellness in the chapter on curricular content. It seemed like the obvious place, given health class and gym time and extracurricular sports. But the more we thought about it, the more it seemed appropriate to treat wellness as a central, raw ingredient in the operation of the school. It's what motivates our autonomy in scheduling—so we can enable students and staff to work on a schedule that's right for them. It's what motivates our autonomy in food services, so we can make sure that food is not just nutritious, but involve students and families in designing healthy lifestyles. It has important contact points with social services when we consider teen pregnancy, the realities of sexually transmitted diseases, the vicissitudes of health insurance, *etc.* Eventually, we realized that just as wellness is a central operations concerns in HR departments, it should be a central, unified concern across staff and students. This requires that the SSA have complete autonomy in handling the health and wellness of its students and staff.

Overall, the point of the SSA's health and wellness efforts is to promote the health and wellness of its students. This sounds tautological, but following it through to its logical conclusion means that the SSA will be designed not only to assess, but feed back on students' health and wellness. This means, for example, that rather than requiring a certain number of hours of physical education, the SSA will be focused on the health and wellness goals defined in students' IAP and their provision. During the planning and implementation year, we will define metrics of health and wellness in collaboration with local physicians which we'll incorporate into our School Improvement Plan. Similarly, the SSA will pull in community services via each Advisory's social worker and put together a

small group of local

The remainder of this section fleshes out some of the concrete affordances and programs we'll be developing. We've been significantly inspired by successful community health centers[165] and social medicine efforts in urban contexts[166] in the design of these programs. The social worker in each cohort will be responsible for managing many of these elements for individual students, but the SSA will be relying on significant community resources as well to effect the programming.

Food How people eat is one of the first places that the scale and intimacy of a school show up. We're intent not only on offering healthy, real food to students (some of which we intend to garden ourselves), but on using a mix of family-style meals, community events, and local establishments to set a humane and adult tempo for the day. Students and staff will eat lunch together, and the SSA will offer breakfast. We also expect food and cooking to be tied into a variety of the SSA's curricular offerings (*e.g.* via seminars in molecular gastronomy and gardening[167]) as well as to put on regular community events focused on food, inspired by sprout's spaghetti dinner series (which itself originated in the festivals and spaghetti dinners of Great Small Works). This means the SSA will require complete autonomy in defining and implementing its food services program, which while subject to the constraints of the National School Lunch Program (applicable to the extent that federal funding for free and reduced lunch is relied upon), requires further autonomy from state and district policies to unpack some of the issues attendant to school lunch that small schools are in an especially good position to address.[168]

Sports & Exercise Details of cross-registration with SHS are covered elsewhere, but in addition to these options, students will be able to use a physical education allowance to sign up for programs and classes in the community—whether that's O^2 Yoga or the boxing at Redline Fight Sports or simply a gym membership. Given appropriate critical masses of student interest, the SSA may also prospect for specific programs that aren't offered institutionally locally, but the breadth of service providers is astounding, especially given the chance to piggyback on top of local university programs. These community fitness programs have a great track record with small, urban schools[169] leveraging their metropolitan context to overcome issues of space and funding. Because the SSA itself won't be offering physical education (or indeed, have a gym), these supplements are essential, given the clear connection between physical activity and everything from academic performance[170] to long term health[171] to simple happiness.[172] To facilitate this process, the SSA will organize ongoing demos and workshops where these service providers come into the SSA to pitch various activities. To the extent logistically practicable, interested staff will also organize times

[165] Rooney, A. L. and P. R. Van Ostenberg (1999). *Licensure, accreditation, and certification: approaches to health services quality*. Center for Human Services, Quality Assurance Project; and Underhill, P. and C. Link (2013). Keeping the community and its economy healthy. *Communities*

[166] Park, K. (2009). *Park's textbook of preventive and social medicine*. Bhanot

[167] Blair, D. (2009). The child in the garden: An evaluative review of the benefits of school gardening. *The Journal of Environmental Education 40*(2), 15–38

[168] Levine, S. (2010). *School lunch politics: The surprising history of America's favorite welfare program*. Princeton University Press; and Winson, A. (2008). School food environments and the obesity issue: content, structural determinants, and agency in canadian high schools. *Agriculture and Human Values 25*(4), 499–511

[169] Sheldon, S. B., M. G. Sanders, B. S. Simon, and K. C. Salinas (2008). *School, family, and community partnerships: Your handbook for action*. Corwin-volume discounts

[170] Strong, W. B., R. M. Malina, C. J. Blimkie, S. R. Daniels, R. K. Dishman, B. Gutin, A. C. Hergenroeder, A. Must, P. A. Nixon, J. M. Pivarnik, et al. (2005). Evidence based physical activity for school-age youth. *The Journal of pediatrics 146*(6), 732–737

[171] Haskell, W. L., I. Lee, R. R. Pate, K. E. Powell, S. N. Blair, B. A. Franklin, C. A. Macera, G. W. Heath, P. D. Thompson, A. Bauman, et al. (2007). Physical activity and public health: updated recommendation for adults from the american college of sports medicine and the american heart association. *Medicine and science in sports and exercise 39*(8), 1423

[172] Strauss, R. S., D. Rodzilsky, G. Burack, and M. Colin (2001). Psychosocial correlates of physical activity in healthy children. *Archives of Pediatrics & Adolescent Medicine 155*(8), 897

when SSA students and staff can participate together.

Medical Support In addition to the social worker's responsibilities in their Advisory to maintain awareness of extra-academic student and family issues, the SSA is intent on ensuring that we take advantage of our small scale to provide a functional equivalent to complete wraparound services in analogue with the recent reform efforts of social and family medicine. Except in the SSA's case, rather than bringing all those functions in house, we'll be taking advantage of our small scale to centralize awareness and decentralize service provision. Concretely, this means that while the Advisory social worker will be responsible for ensuring we know, for example, *whether* every family has dental care, we will be working with local dentists and community health organizations to address gaps in service. This is why, similar to our setup with SPED students wherein a small coterie of doctors and counselors will be providing on-demand, *pro bono* support, the SSA will cultivate a similar, small network of mental and physical health care providers. The intent is not for these providers to become family's doctors (though that would be a bonus), but to instead have the necessary connections and expertise on hand to implement the Harlem Children's Zone model of academic *and* non-academic case management.[173]

[173] Page, E. E. and A. M. Stone (2010). From harlem children's zone to promise neighborhoods: Creating the tipping point for success. *Georgetown Public Policy Institute, Washington, DC*

Autonomy Analysis

Why should we expect this will benefit students? Operational capacity and policies are where the rubber hits the road in school design. We think people consistently underestimate how much not only the *what* and *how* of schools are coupled, but how much of what we expect school to look and feel like is the consequence of the control systems put in place to manage people's time, money, and autonomy.

Inspired by the managerial transition in handling knowledge work beginning in the 1980s[174], the SSA's approach to small school design emphasizes student and staff autonomy, pushing the scale of control and management structures down to students and staff at the Advisory level and putting the administration in a more traditional oversight and guidance role. Years of managerial theory and recent research into small school design all corroborate these principles.[175]

[174] Newell, S., M. Robertson, H. Scarbrough, and J. Swan (2009). *Managing knowledge work and innovation*. Palgrave Macmillan

[175] Hehir, T. and L. I. Katzman (2012). *Effective inclusive schools: Designing successful schoolwide programs*. John Wiley & Sons; Meier, D. (2002). *The power of their ideas: Lessons for America from a small school in Harlem*. Beacon Press; Otley, D. (1994). Management control in contemporary organizations: towards a wider framework. *Management accounting research 5*(3), 289–299; and Van Kannel-Ray, N., W. E. Lacefield, and P. J. Zeller (2008). Academic case managers: Evaluating a middle school intervention for children at-risk. *Journal of MultiDisciplinary Evaluation 5*(10), 21–29

THE SSA'S FINANCIAL AUTONOMY is essential to being able to fluidly implement a new approach. The balance sheet of a school tells you a lot, not just about its efficiency, but about its organizational structure, communication hierarchy, oversight mechanisms, *etc.* [176] That means that a different school will need to have a different financial controls system. Taking advantage of the SSA's small size, the one-bucket control system combined with a thoroughly transparent auditing and recordkeeping system and our exemption

[176] Bell, L. (1988). Local financial management in schools: efficiency, economy and administration. *School Organization 8*(2), 121–129

from traditional procurement strictures provides for a much more agile setup that has been shown to benefit students and staff.[177] *Especially* given the SSA's focus on students' executive function and project management skills, many of the operational details of implementing divergent project designs for individual students require this level of flexibility.

[177] Odden, A. and C. Busch (1998). *Financing Schools for High Performance: Strategies for Improving the Use of Educational Resources. The Jossey-Bass Education Series.* ERIC

THE SSA'S PHYSICAL PLANT is undecided at the moment; however, the emphasis on open floor plans, multipurpose spaces, and small scale social gathering areas is drawn directly from best practices for creative workplaces for adults and project based schools for children.[178]

[178] Tanner, C. K. (2000). The influence of school architecture on academic achievement. *Journal of Educational Administration 38*(4), 309–330; and Boys, J. (2010). *Towards creative learning spaces: Re-thinking the architecture of post-compulsory education*. Routledge

THE SSA'S TECHNOLOGY setup is central pedagogically and managerially to its success. The basics of staff-level fluency and autonomy have been known since nearly the earliest one-to-one programs[179]—the newest wrinkle is the capacity for students and staff to build central technologies for the school and to incorporate these activities into the curriculum. This is something that's effectively been done in many vocational education context for years (machine shop students fabricating infrastructure for the rest of the school), but for a variety of reasons, the computational analogue has yet to be fleshed out in practice as far as we know. Fortunately, the private sector has for the past decade been actively incorporating this strategy into its IT approach.[180] The same research and principles underlying the success of initiatives like service learning and general project-based environments are expected to apply here as well.

[179] Silvernail, D. L. and D. M. Lane (2004). The impact of maine's one-to-one laptop program on middle school teachers and students. *Maine Education Policy Research Institute (MEPRI), University of Southern Maine*

[180] Mediratta, B. and J. Bick (2007). The google way: give engineers room. *The New York Times 21*

THE SSA'S SCHEDULE is flexible and year-round and mimics the type of schedule many students will encounter when they enter the working world, taking jobs that require they work full-time and full-year. In this way, the schedule is designed around the needs of people doing real work, designing and executing on projects that require interaction with people outside of the school community and so can't be artificially constrained by the arbitrary length of "ELA Unit 4." In addition to allowing for more seamless community relationships within the SSA, this schedule will also foster students' project and time management skills as they balance their own schedules and project timelines with those of their classmates, teachers, and others they need to work with to accomplish their goals.

In order to accommodate the flexible design of the curriculum, the SSA's schedule will look different from that of a traditional high school. The SSA will operate on a *year-round schedule* with vacations staggered throughout the year for both students and staff. The school day will begin and end later, running from 10AM–5PM, to better match the biology of teenagers, who need to sleep longer than younger children and naturally wake up later.[181] This

[181] Carskadon, M. A., C. Acebo, and O. G. Jenni (2004). Regulation of adolescent sleep: implications for behavior. *Annals of the New York Academy of Sciences 1021*(1), 276–291; Wolfson, A. R. and M. A. Carskadon (1998). Sleep schedules and daytime functioning in adolescents. *Child development 69*(4), 875–887; and Wolfson, A. R. and M. A. Carskadon (2003). Understanding adolescent's sleep patterns and school performance: a critical appraisal. *Sleep medicine reviews 7*(6), 491–506

flexibility will be paired with auxiliary services to enable morning drop-off.

This schedule will be punctuated by intensive, cohort-wide workshops exploring topics relevant to the work of the whole group, ranging from language immersion programs to skill development seminars. These seminars will serve as community-building, retreat-like events and focus on topics like website design, computer programming, data visualization, and other fluencies necessary for students to succeed in designing, executing, reflecting on, and documenting their work well.

The flexibility of the schedule will allow for increased adult attention as students move between large and small group as well as individual work time. It will allow for personalized MCAS instruction on a day-to-day and week-to-week basis but will also allow for participation in longer-term programs like multi-week language immersion programs for ELL students, that would not be possible within a traditional school setting. This flexibility will allow the SSA to exercise agility in its design and execution of curricula, trying new things and iterating quickly with students and staff. Extended learning time will also provide more raw time devoted to foundational communication and literacy skills like reading, writing, and presentation.

In this way, students will be given more responsibility for organizing their own time, allowing them—with the guidance of caring but rigorous adults—to create their own milestones and deadlines. This flexibility will avoid the premature end and evaluation of unfinished projects simply because it is time to move to the next part of the curriculum, making room for failure as part of the process of working and learning. They will develop self-management skills and a sense of autonomy in organizing and executing their own work. They will develop persistence and grit[182] and nurture a deep relationship to craftsmanship and good work that will stay with them long after they graduate from the SSA.

[182] Tough, P. (2012). *How children succeed: Grit, curiosity, and the hidden power of character*. Houghton Mifflin Harcourt (HMH)

The SSA's approach to wellness is inspired by successful social medicine and community health centers around the country, all of which—including their educational variants like the Harlem Children's Zone—have arrived at the basic principle that caring people in the loop trump protocols every time. Somerville's resources and challenges as the sixteenth densest city in the United States are unique, and the SSA's community-driven approach to implementing a mastery-based model of physical education is designed to match that closely. And given the incredible prominence of wellness in determining student outcomes,[183] we think devoting this much time and attention is not only completely reasonable, but backed up by research.[184]

[183] Strong, W. B., R. M. Malina, C. J. Blimkie, S. R. Daniels, R. K. Dishman, B. Gutin, A. C. Hergenroeder, A. Must, P. A. Nixon, J. M. Pivarnik, et al. (2005). Evidence based physical activity for school-age youth. *The Journal of pediatrics 146*(6), 732–737

[184] Strauss, R. S., D. Rodzilsky, G. Burack, and M. Colin (2001). Psychosocial correlates of physical activity in healthy children. *Archives of Pediatrics & Adolescent Medicine 155*(8), 897

What legal affordances will be required? We are still in the process of writing up the necessary exemptions and waivers required for this.

You can find a partial list in Legal Affordances, but per 603 CMR 48.03(b),

> If an innovation plan committee is proposing an innovation plan that may conflict with laws (including regulations) governing other public schools, the committee shall, before presenting the plan to the school committee for approval, request approval from the Commissioner for any provision in the plan that may conflict with such laws. The Commissioner's approval shall be based on his determination that the plan is consistent with 603 CMR 48.03 (2) and with the state's obligations under the education clause of the Massachusetts Constitution, Mass. Const., pt. II, ch. V, s. II, as defined by a court of competent jurisdiction, and that the provision in the plan that may conflict with such laws is necessary to advance the mission or educational programs of the innovation school. If the Commissioner does not approve the proposed provision in the plan, the innovation plan committee may ask the Board to review the matter and the Board shall make the final decision.

which means that the full process of articulating points of contact between state laws and regulations and the Innovation Plan as voted on need not conclude until the School Committee presentation. As with negotiating necessary affordances in the Collective Bargaining Agreement to make the Innovation Plan possible, non-substantive design edits and alterations may be made after the Innovation Plan Committee vote without triggering a re-start of the process.[185]

[185] French, D. (2013, August). Personal communication with dan french. Regarding voting and editing process between Innovation Plan and School Committee votes

Governance

The role of proper governance structures is to ensure that the SSA's policy and procedural autonomy does not violate Somerville students' best interests. No matter what goes on within the SSA it is beholden to exactly two boundary conditions:

1. We must have good reason to suspect the SSA has improved outcomes for its students relative to other options available to them. This means that the SSA will be responsible to the families of the SSA for meeting its MCAS/PARCC and graduation goals, set yearly.

2. The SSA must not harm other Somerville students' experiences. This means that the SSA will be responsible to the School Committee for demonstrating that its enrollment is in fact targeting those students who have struggled historically and that its ongoing student body reflects its 50/50 enrollment mechanism focused on struggling and representative cohorts, respectively.

Outside of this, the SSA will have complete policy and procedural autonomy. In other fields, this setup is commonly described through a distinction between policy goals and policy instruments.[186,187]

The SSA will be a public school, operated under a this Innovation Plan, which although approved by the School Committee, will operate independently of the School Committee. The SSA will be operated and managed by its Board of Trustees independent of the school committee. The Board of Trustees, upon approval of this Innovation Plan, shall be deemed to be public agents authorized by the commonwealth to supervise and control the SSA. This chapter outlines what that entails; although, the particular procedures should be considered a draft subject to the convening and self-determination of each governing body.

At any time, if the School Committee determines that the SSA has failed to meet the necessary goals as laid out in the eventual school improvement plan, it has the capacity to limit the autonomies granted under this plan. Related, the School Committee has the chance to refuse authorization renewal after the initial five year period. But we wanted to go further in embodying our commitment to results.

If the SSA fails to meet its MCAS goals . . .

[186] May, P. J. (1992). Policy learning and failure. *Journal of public policy*, 331–354

[187] The point of view that we take on the governance of the SSA—which is not entirely reflected in the Innovation School legislation's language—is that ultimate authority attendant to community impact should rest with the School Committee, but ultimate authority attendant to individual students' experience should rest with parents. So *e.g.* the SSA's success in meeting its equity commitments (and the responsibility for overseeing and enforcing those) should ultimately rest with the School Committee. But we think that structures should be put in place to put the ultimate authority for responding to questions like graduation rate or MCAS performance into parents' hands. *e.g.* Some parents think the MCAS is a poor indicator, some think it is an essential one. While the MCAS is a reality of public education, its role in governance at the school level seems most appropriately parent-centric.

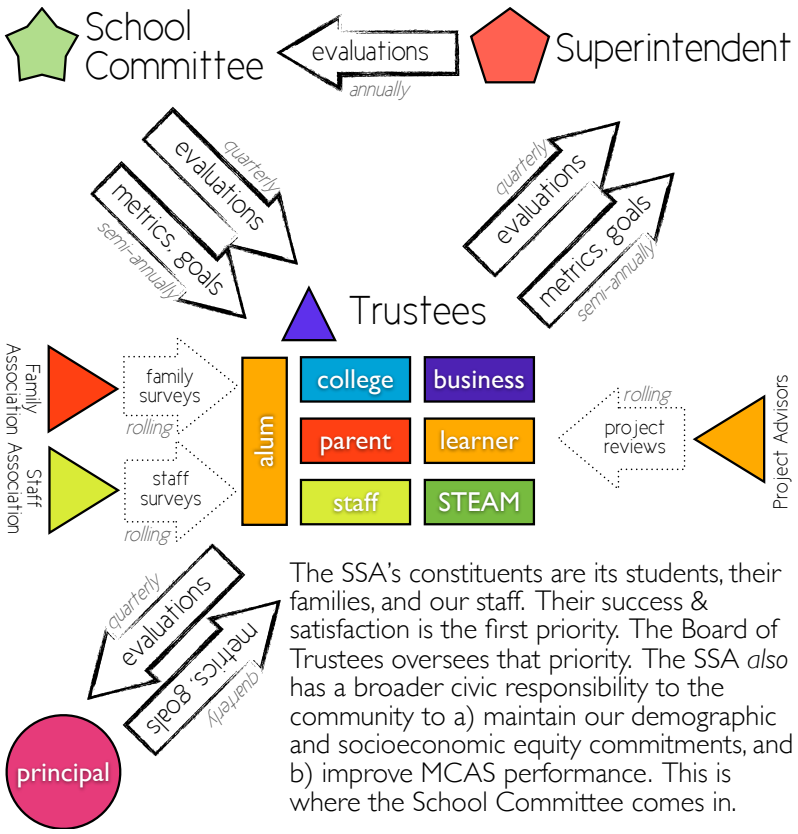


Figure 20: The SSA is responsible for exactly three things: 1) improving student's MCAS performance, 2) ensuring our civic and equity commitments are met and 3) satisfying student, staff, and family. A Board of Trustees and Project Advisory Boards will provide our mission-motivated oversight, ensuring projects are deep, challenging, and that students are growing into the independent investigators the SSA set out to nurture. The School Committee will be in charge of ensuring we hit our MCAS and equity goals.

1. . . . two years in a row ⇒ The SSA Parent Teacher Association (PTA) will have the option to—by majority vote—require the principal to convene an investigative team including one SSA parent, one school commitee member, and one SSA staff member to manage the creation of a report explaining the slippage. This report will be presented to the PTA and released publicly.

2. . . . three years in a row ⇒ The SSA PTA will have the option of putting the principalship to a parent referendum, with two thirds vote required for recall and a minimum 50% participation among parents.

3. . . . five years in a row ⇒ The SSA PTA will have the option of putting the principalship to a parent referendum, with a majority vote required for recall and a minimum 50% participation among parents.

If the SSA fails to meet its equity commitment . . .

1. . . . two years in a row ⇒ School Committee will have the option to—by majority vote—require the principal to convene an investigative team including one parent of a student who registered interest and either attrited or was not selected for enrollment, one school commitee member, and one SSA staff member to manage the creation of a report explaining the slippage. This

report will be presented to the School Committee and released publicly.

2. . . . three years in a row ⇒ The School Committee will have the option of putting the principalship to a community referendum, with a majority vote required for recall and no minimum participation.

3. . . . five years in a row ⇒ The School Committee will have the option of putting the school's authorization to an immediate community referendum, with a majority vote required for recall and no minimum participation.

School Authorization

The SSA's Innovation Plan authorization can be extended no more than five years at a time. This initial authorization is intended for five years. The *only* mechanism by which the school's authorization can be revoked outside of non-renewal is if the SSA fails to meet its equity commitment five years in a row.[188]

[188] which is nearly impossible outside of truly atrocious attrition which cannot be compensated for year-over-year

School Autonomies

The autonomies secured in this Innovation Plan are granted at the leisure of the School Committee. If the SSA fails to meet either the two boundary conditions described in this chapter or the minimum set of goals required by the Innovation School legislation,[189] then the School Committee will have the option to:

> (*i*) limit 1 or more components of the innovation plan; (*ii*) suspend 1 or more components of the innovation plan; or (*iii*) terminate the authorization of the school; provided, however, that the limitation or suspension shall not take place before the completion of the second full year of the operation of the school and the termination shall not take place before the completion of the third full year of the operation of the school.

[189] (*i*) student attendance; (*ii*) student safety and discipline; (*iii*) student promotion and graduation and dropout rates; (*iv*) student achievement on the Massachusetts Comprehensive Assessment System; (*v*) progress in areas of academic underperformance; and (*vi*) progress among subgroups of students, including low-income students as defined by chapter 70, limited English-proficient students and students receiving special education; (*vii*) reduction of achievement gaps among different groups of students.

Principalship

The inaugural principal of the SSA will be Alec Resnick. Each year, the Trustees will review the principal's performance and make the decision whether to recommend re-hire. The position of principal will be exempt from all state licensure requirements; however, the Board of Trustees will take licensure into account in making re-hiring recommendations and future hiring decisions. Furthermore, a majority of the Trustees or a 25% vote of all SSA families or 25% vote of all SSA staff can put the principalship to a referendum among the combined staff and family voting body at any time.

Board of Trustees

The Trustees will be seven members representing the interests of colleges, businesses, parents, learners, staff, and STEAM.[190] Each representative will be tasked with articulating the interests and concerns of their constituency as they pertain to the design, operation, and assessment of the SSA. Quarterly, the Trustees will meet to evaluate the Principal and to approve the Principal's metrics and goals for the next quarter. The Trustees will also be responsible for compiling these evaluations into a quarterly report for the Superintendent and a semi-annual report on the SSA's metrics and goals. Annually, the Trustees will seek recommendations and amendments from the School Committee in a school improvement planning process whose procedural details will be defined after approval.

[190] The College partner will be an employee (active or emeritus) of a college or university. The Business partner will be a local employee or employer. The Parent will, of course, be an SSA parent and the Learner will be an SSA learner (whose parent cannot be on the Trustees). The Staff Partner will be an SSA staff member who has not been employed with the SSA for more than five years or fewer than two years (excepting the first two years of operation). The STEAM Partner will be someone who in their active employment (or past career, if retired) regularly brought artistic and scientific concerns together to make something. The Principal will be an *ex officio*, non-voting member.

The Trustees will be chosen by the principal; however, a two-thirds vote of the SSA's PTA can veto any Trustee appointment.

Project Advisory Boards

The Project Advisory Boards will primarily be tasked with reviewing and locating reviewers to oversee student and staff work to ensure its quality and integrity. Each Advisory will be able to approve and appoint members to appropriate Project Advisory Boards. The project reviews and work summaries generated by the Advisory Board will be a primary assessment input for the Trustees, in addition to the aggregate statistics and summary the principal submits quarterly.

Autonomy Analysis

Peter Drucker, the father of modern management wrote in 1985,

> For the existing business to be capable of innovation, it has to create a structure that allows people to be entrepreneurial. [...] This means, first, that the entrepreneurial, the new, has to be organized separately from the old and existing. Whenever we have tried to make an existing unit the carrier of the entrepreneurial project, we have failed. [...]
>
> The new always looks so puny—so unpromising—next to the reality of the massive, ongoing business. The existing business, after all, has to nourish the struggling innovation. But the "crisis" in today's business has to be attended to as well. The people responsible for an existing business will therefore always be tempted to postpone action on anything new, entrepreneurial, or innovative until it is too late. No matter what has been tried—and we have now been trying every conceivable mechanism for thirty or forty years—existing units have been found to be capable mainly of extending, modifying, and adapting what already is in existence. The new belongs elsewhere. [...]
>
> The best, and perhaps the only, way to avoid killing off the new by sheer neglect is to set up the innovative project from the start as a separate business. [...] The innovative effort and the unit that carries it require different policies, rules, and measurements in many areas.

Inevitably, this governance structure will change and evolve over time. But at the moment, it's our best stab at incorporating the best practices and wisdom of designing incentive, business, and oversight structures—focusing on outputs rather than inputs, thinking carefully about which outputs matter to which constituents, and letting those constituents apply pressure to relevant leaders (rather than micromanage policy) to achieve the results to which they committed.[191]

[191] Ulrich, W. and N. McWhorter (2011). *Business Architecture: The Art and Practice of Business Transformation*. Meghan-Kiffer Press; Daily, C. M., D. R. Dalton, and A. A. Cannella (2003). Corporate governance: Decades of dialogue and data. *Academy of Management Review 28*(3), 371–382; and Bingham, L. B., T. Nabatchi, and R. O'Leary (2005). The new governance: Practices and processes for stakeholder and citizen participation in the work of government. *Public administration review 65*(5), 547–558

Why should we expect this will benefit students? Because ultimately, if this structure works, then it has been entirely designed to *ensure* student benefit as defined by the SSA's mission, its responsibilities to its stakeholders, and the goals it has laid out for itself in this Innovation Plan. The goal of governance is insure that incentives are aligned as tightly as possible among stakeholders while preserving a clean separation between responsibility for outcomes (policy goals) and authority for design and implementation (policy instruments).

What legal affordances will be required? Upon approval of the Innovation Plan by the School Committee, the Somerville STEAM Academy shall be regarded as a body politic and corporate with all powers necessary or desirable for carrying out its program. Notwithstanding section 59C of the MGL, the internal form of governance of the SSA shall be determined initially by this Innovation Plan and in an ongoing capacity by the SSA's Board of Trustees. Powers necessary or desirable for the SSA's operation include but are not limited to:

- adopt a name, seal, and other effects of logo and brand identity
- sue and be sued, but only to the same extent and upon the same conditions that a municipality can be sued—the Somerville School Committee and public school District will be indemnified outside of any explicit oversight responsibilities described in this Innovation Plan
- acquire real property, from public or private sources, by lease, lease with an option to purchase or by gift, for educational use
- receive and disburse funds for school purposes
- make contracts and leases for the procurement of services, equipment and supplies
- incur temporary debt in anticipation of receipt of funds; provided that notwithstanding any general or special law to the contrary, the terms of repayment of the SSA's debt shall not exceed the duration of the Innovation Plan's term without the approval of the School Committee
- solicit and accept grants or gifts for school purposes

- have such other powers available to a business corporation formed under chapter 156B of the MGL that are not inconsistent with the Innovation School legislation as modified by the approval of the terms in this Innovation Plan

For the purposes of chapter 268A of the MGL: the SSA shall be deemed to be a state agency; and the appointing official of a member of the Board of Trustees of the SSA shall be deemed to be the commissioner. Members of the Board of Trustees must comply with the disclosure and other requirements of said chapter 268A. The form of the disclosure shall be prescribed by the state ethics commission and shall be signed under penalty of perjury. Such form shall be limited to a statement in which members of the Board of Trustees shall disclose any financial interest that they or a member of their immediate families, as defined in section 1 of said chapter 268A, have in the SSA or with a person doing business with the SSA.

Individuals or groups may complain to the SSA's Board of Trustees concerning any claimed violations of the provisions of the Innovation Plan. Individuals or groups who believe their complaint has not been adequately addressed may *at any time* submit their complaint to the School Committee, which shall investigate such complaint and make a formal response only after the Board of Trustees has completed its investigation and made a formal statement.

We are still in the process of writing up the necessary exemptions and waivers required for this. You can find a partial list in Legal Affordances, but per 603 CMR 48.03(b),

> If an innovation plan committee is proposing an innovation plan that may conflict with laws (including regulations) governing other public schools, the committee shall, before presenting the plan to the school committee for approval, request approval from the Commissioner for any provision in the plan that may conflict with such laws. The Commissioner's approval shall be based on his determination that the plan is consistent with 603 CMR 48.03 (2) and with the state's obligations under the education clause of the Massachusetts Constitution, Mass. Const., pt. II, ch. V, s. II, as defined by a court of competent jurisdiction, and that the provision in the plan that may conflict with such laws is necessary to advance the mission or educational programs of the innovation school. If the Commissioner does not approve the proposed provision in the plan, the innovation plan committee may ask the Board to review the matter and the Board shall make the final decision.

which means that the full process of articulating points of contact between state laws and regulations and the Innovation Plan as voted on need not conclude until the School Committee presentation. As with negotiating necessary affordances in the Collective Bargaining Agreement to make the Innovation Plan possible, non-substantive design edits and alterations may be made after the Innovation Plan Committee vote without triggering a re-start of the process.[192]

[192] French, D. (2013, August). Personal communication with dan french. Regarding voting and editing process between Innovation Plan and School Committee votes

Open Questions & Concerns

When beginning something new, it's impossible to plan every detail or preempt every problem. The past eighteen months have been dedicated to surfacing as many questions and concerns as reasonable from as many stakeholders as possible: parents, DESE, SPS, SHS, other school innovators and designers. Bringing together the concerns of these stakeholders with our own experience as educators and the expertise gained from other initiatives and researchers, we have drafted this plan for the Somerville STEAM Academy. Keep in mind that, while this plan is ambitious, it will not all come to life at once. Instead, it will grow slowly, beginning with $\sim$ 36 eighth graders and increasing in size and complexity year-by-year.

The goal of this plan is thus not to articulate every detail of the SSA's future operation, but to lay out an evocative set of design principles and boundary conditions to which we will stay true after approval as we finish planning and begin to build and operate the SSA.

This section will act as a repository where we can articulate the major areas to which we will need to direct our attention post-approval. Of course, this listing is not comprehensive, but is instead meant to ensure that questions, concerns, warnings, and priorities that folks suggest we make sure to attend to are not forgotten. Fortunately, the SSA's Fall 2015 start date should give us *plenty* of time to address all of these concerns competently and comfortably.

1. CURRICULUM MAPPING PROCESS: Students at the SSA will participate in interdisciplinary seminars and follow curiosity-driven paths in working on projects of their own design. The curricular content of seminars will be largely known, though it will not necessarily map directly onto traditional classes. The curricular coverage of an individual project, however, will need to be assessed and retrospectively mapped back onto the common core in order to document the work of students. The exact protocol by and structure within which this mapping will happen and how it will be documented and archived remain to be hashed out. We expect to take significant inspiration from finely grained, project-based mappings in curriculum design like the Interactive Mathematics Program and other integrated curricula.[193]
2. TRANSCRIPT GENERATION: While the curriculum mapping process will happen on a rolling basis, the generation of transcripts

[193] Drake, S. M. and R. C. Burns (2004). *Meeting standards through integrated curriculum*. ASCD

will happen only when students need a transcript in order to make their learning legible to outside institutions (*e.g.* for SHS, a college, employer, or extracurricular program). Based on a bevy of conversations with SPS folks, other schools who use a project-based approach, as well as the example of FCNW within SHS, we are certain that the precise details of how to convert students work at the SSA into meaningful grade/unit equivalents will be tractable. However, the technical toolchain, nature for customization of the transcript on a case-by-case basis, and feedback from postsecondary institutions has yet to be explicitly designed.

3. SSA GOVERNANCE & ACCOUNTABILITY STRUCTURES: The governance chapter of this plan gives a bird's eye view of the reporting relationships and accountability structures by which the SSA will operate. The specific protocols to be followed, including any templates or best practices for reports, evaluations, and recommendations to be generated remain to be specified. After the approval of the plan, we'll begin soliciting drafts of the charter for the various governing bodies among folks like the school committee, superintendent, and aldermen for feedback.
4. STANDARDIZED TEST PREPARATION PLANS: Preparation for standardized tests like the MCAS/PARCC, SAT, and ACT will consist of regularly administered diagnostic tests followed by individual and small group prep based on student needs. This prep will be kept explicitly separate from students' other academic responsibilities at the SSA and will be based on proven models by the MATCH School, Veritas Tutors, and Kaplan Test Prep who have agreed to stay on as advisors in the event of our approval to help us develop, document, and tweak our approach to ensuring high test performance. But we have yet to design these specific prep programs or flesh out the necessary professional development for staff training.
5. POST-GRADUATION PROGRAMMING: This plan lays out an ambitious plan for post-graduation communication, information gathering, and direct involvement of alumni as TAs, mentors, and advisors to current students. This will be a *huge* project, but fortunately, one that will not begin until more than five years into the SSA's operations. We'll begin working on the design of this infrastructure after the conclusion of the first year of the SSA's operation.
6. PHYSICAL LOCATION: Many discussions have focused on physical location of the SSA, but until this plan is approved we cannot take meaningful steps to sign or secure a lease or get full build-out quotes. Many of the specific logistical questions—especially with respect to the interface to Somerville High School—will become much more concrete once this location is chosen.
7. CITY FUNDING FOR FACILITIES & OPERATIONS: An offshoot of this space-related ambiguity is a related question regarding the role of Somerville city funding behind the SSA's future facilities

and operations. The SPS budget deals with the costs associated with staff, students, and educational materials; the city foots the bill for operational costs (*e.g.* those associated with school buildings and their maintenance). Without clarity as to the precise location of the SSA, some of these financial workflow questions cannot be fully answered.

8. PRECISE PER STUDENT ALLOCATIONS: The Innovation Schools statute guarantees an Innovation School the same per pupil allocation as other schools in the same district. However, the way district budgeting actually works makes many of those lines blurry and fuzzy since there is not actually ever a check cut by the district on a per pupil basis. Whether it's centralized district functions like SPED and ELL or municipal financial roles like debt service, many different sources and contexts contribute to the ostensibly simply figure of "per pupil allocation." For this reason, we've worked closely Pat Durette, Director of Finance for SPS, to do two things: 1) sketch out the broad strokes of how we'll break down and work the logistics of the SSA's funding, and more importantly 2) verify that our estimate of $13,842 per SSA pupil was a fair and reasonable number to plan around in budgeting the SSA. After the approval of this plan, we'll be able to sit down and work with City Hall *et al.* to actually set up the necessary financial controls and commitments moving forward. In this context, the SSA's 2015 start date will be essential to give us the flexibility to plug into the municipal and district budgeting timelines.

Part IV

The Appendices

Socioeconomics of Somerville Public Schools

We're still typesetting this data; however, we'll be using a mix of data from the 2013 DESE Profile data, demographic data from the 2011 American Community Survey, and socioeconomic data from the 2007–2011 American Community Survey.

It is essential that we understand the socioeconomic and demographic trends in Somerville if we are to design an enrollment process and performance goals which actually achieve our goals of equity. Because of racial and economic stratification over time—not to mention the prominence of non-family residents in Somerville—the population of Somerville High School is significantly different from that of Somerville at large. This section lays out the assumptions and data underlying our picture of Somerville, and specifically *Somerville High School*.

This picture of Somerville drives our equity goals and enrollment process. For a variety of reasons (including rising property prices and a public perception of the Somerville Public School system's weakness) the median family at Somerville High School looks different than most of Somerville socially, economically, demographically, and geographically.

The socioeconomic weightings for our lottery will be defined by a combination of income and geography. Unfortunately, those data don't exist at the granularity and comprehensiveness we'd like. Fortunately, we've been able to cobble together a compelling substitute: a combination of the American Community Survey offering data on the distribution of poverty levels by children's age, a complete map of property value in Somerville (which combined with established econometric methods can proxy for income), and the District's free- and reduced-lunch data.

The American Community Survey (ACS) is an ongoing statistical survey by the U.S. Census Bureau and is the largest survey other than the decennial census that the Census Bureau administers. The ACS reaches a quarter of a million households monthly. And with it, we have access to finely grained information about levels of poverty by resident age in Somerville. This dataset[194] forms the backbone of the economic weighting of the lottery governing the SSA's enrollment process.

But, this data includes those families who do not send children to Somerville High School. In general, we expect these families

[194] Specifically, "AGE BY RATIO OF INCOME TO POVERTY LEVEL IN THE PAST 12 MONTHS"

to be wealthier than average. To overcompensate for this, we will subtract the number of children in Somerville sent to private school uniformly from the average income decile of the private school population.

Unfortunately, the ACS dataset groups all families at 5× the poverty threshold into a single bin. But, there is more finely grained information available about the income levels of families in Somerville, though not broken down by age. Together, these two datasets will be the primary source for the distribution of income to which the SSA's lottery process will adhere.

Income does not wholly define someone's socioeconomic status. Debt, housing, and other factors come into play. These will not be known perfectly, but we can borrow an econometrician's method [195] and use Somerville property values and occupancy rates to define a geographical distribution of wealth. This allows us to get a rough sense for a family's income simply by soliciting their address. This data will inform the weighting of the lottery for the SSA's enrollment and allow us to estimate whether we have generated sufficient interest to even execute the lottery and achieve the statistical ends defined by our equity goals.

The final check and success condition, of course, is the District's own data: does one half of the SSA's enrollment match the distribution of economic qualities tracked by the District—namely, 72% free and reduced lunch?

[195] Mimura, Y. (2008). Housing cost burden, poverty status, and economic hardship among low-income families. *Journal of Family and Economic Issues 29*(1), 152–165; and Stern, S. (2001). Valuing housing subsidies in a new measure of poverty: A statistical match of the american housing survey to the current population survey. *Housing and Household Economics Statistics Division, Working Paper, US Census Bureau*

Demographics of Somerville Public Schools

We're still typesetting this data; however, we'll be using the 2013 DESE Profile data for general demographics and SIMS Reports 6 and 7 for SPED data.

Budget of Somerville Public Schools

We're still typesetting this budget; however, we'll be using SPS's 2012 End of Year Audit, SPS FY2012 Budget, and the 2013 SPS Staffing Plan. If this plan goes on for consideration by the School Committee, we'll update the numbers to reflect the 2013–2014 budget.

The Somerville Public School system receives funding from three primary sources: City appropriations for education (∼ $50 million in FY12), city funding (∼ $35 million in FY12) for non-educational activities, and federal/state/miscellaneous programs (∼ $15 million in FY12). This means that overall, the Somerville Public School system spends nearly one hundred million dollars yearly. Of that, nearly $10 million goes to almost five-hundred out-of-district students. This means that the average, per-student expenditure within Somerville is ∼ $17,500.

The SSA's focus on equity means that we will be providing—either by purchasing back services *a la carte* from the District or otherwise—for *all* the needs Somerville High School satisfies for students who have struggled within the public school system. And we will be focusing on skills and domains (programming, rapid prototyping, and so on) that require more capital investment than typical curricula. We will accept students with all levels of need, regardless of SPED or ELL issues. And we believe we can do this with a per capita allotment of $13,842.[196]

To derive the appropriate per-student allocation for the STEAM Academy we must consider the respective roles of the district, city, and federal/state sources. While it is tempting to go, item-by-item, through the district's end-of-year audit and ask whether the STEAM Academy will need those funds, that's the wrong frame for this question. To see this, consider "Series 3510 – Athletic Services." Last year, Somerville spent $526,171.55 in this category. Now, the STEAM Academy won't be directly providing an athletic services. Through relationships with Somerville High School and a student stipend, students will have the option to pay to participate in everything from varsity football to boxing to ballroom dance. Some students may decide to spend $60 per month on their athletics, others might join a free running club. How should we accommodate this in the budgeting and planning process?

We've taken a simple approach: the STEAM Academy's per

[196] Because of the split between federal/state/other, district, and city appropriations, we haven't yet finalized the budget numbers, but have gotten assurances from Central Office that the respective District/City breakdown of $8,924 and $4,918 is reasonable to plan around.

pupil budget will be proportional to the costs incurred by the district for *per pupil* services (curriculum, instruction, psychological services, *etc.*) Some of this budget will be paid back to the District via *a la carte* offerings and services. Put differently, if you begin with the $\sim$ \$17,500 per capita budget and subtract those costs that do not provide direct pupil or family services and instead are centralized or district-wide costs, you'll arrive at the STEAM Academy's budget. Broadly, the STEAM Academy will *not* be receiving any proportional monies associated with District Leadership and Administration (Series 1000), Debt Retirement and Service (Series 8000), or Programs with Other School Districts (Series 9000)—these are costs that should be shared equally by the entire district.

Much of that allocation we expect to return to the district through a variety of mechanisms—buying back services from Somerville High School, paying for *a la carte* psychological services, and so on. But to provide personalized instruction and support, it is essential that SSA have the autonomy to decide how to best manage these funds for its students.

English Language Learner Support at Somerville High School

Somerville spent a total of \$2,814,907 on English Language Learner programs in 2012. The overwhelming majority of that (over 95%) goes to ELL staff salaries, with the remainder going to operations and minor grants. Somerville High School spends a total of \$577,125 on a mix of English as Second Language (ESL) and Sheltered English Immersion Program[197] (SEIP) staff.

Because all staff will be bilingual and trained in a second language, there is no distinction between SEIP costs and staff costs within the SSA. Without those costs, Somerville High School spends \$343,949 on ELL support staff, or \$2365 per Limited English Proficient (LEP) student. Of course, there are costs other than staff—but even if we assume they are evenly distributed across grade level[198]—this adds \$167 per LEP student for Somerville High School. Meaning *en toto* Somerville High School spends \$2,532 per LEP student per year.

The SSA has budgeted \$3,315 per LEP student per year. This is enough for two months of intensive English language immersion through organizations like the Boston Language Institute; a full, two month immersion program ($\approx$ \$2,800 via the BLI) for every staff member; *and* an inaugural two weeks abroad (at $\approx$ \$1,000 per week via organizations like The Center of Bilingual Multicultural Studies) for for every student and staff member (part of our cultural literacy efforts).

[197] via SPS ELL: "The Sheltered English Immersion Program (SEIP) is a K-12 program for students who speak languages other than English. The educational program includes English as a Second Language (ESL) and content instruction (math, science, and social studies) aligned to grade-level standards. Instruction is primarily in English. Teachers use sheltered content instructional techniques in order to make lessons understandable and meaningful to students as they become proficient in English."

[198] Unlikely, given the prominence of SEIP & programs like Unidos in K–8

Special Education Support at Somerville High School

Despite these advantages, we've budgeted conservatively, matching Somerville High School's per capita spending on SPED. Because of how nonlinear spending on special needs is (*i.e.*,most students are not especially costly, but a few students are *very* costly), it's necessary to carefully trace out how we arrived at our per pupil figure of $6,625.

977 students (≡ 19.84% of Somerville pupils) have an Individual Education Plan (IEP); *i.e.*,they are special education (SPED) students. In FY12, Somerville spent $15,908,875 on special education, but only $9,284,715 was spent on direct services to students in the district, in public day programs.[199] This works out to a bit over 9,500 per student. Of that $9,500, 68% is spent on instruction; the remainder goes to textbooks, guidance, and so on. Somerville High School spends $5,012 on instruction per SPED student. The District as a whole spends an average of $1,408 on everything *other than instruction* per SPED student. This brings Somerville High School's spend on SPED to $6,420 per SPED student per year.

Which brings us to the Somerville STEAM Academy's budget: $6,420 per SPED student per year. We expect this to be much higher than needed because such a large proportion of the SPED needs of students we expect to be addressed through the more flexible, project-driven environment, but we think it would be irresponsible to plan around that.[200]

[199] The rest went to administration, out-of-district schools, residential programs, private schools, and so on.

[200] Notably, the Circuit Breaker funds will provide for 75% of any student whose calculated cost would exceed four times that of the average foundation budget (see MGL.c71B§5A) This affordance is meant to ensure that the dramatic nonlinearities in special education student costs don't derail budgeting efforts like ours.

Free & Reduced Lunch Budgets in SPS

We're still typesetting this data; however, it is currently available in the DOE Profile for Massachusetts, which we'll be combining with National School Lunch data.

SSA Enrollment Outreach Budget

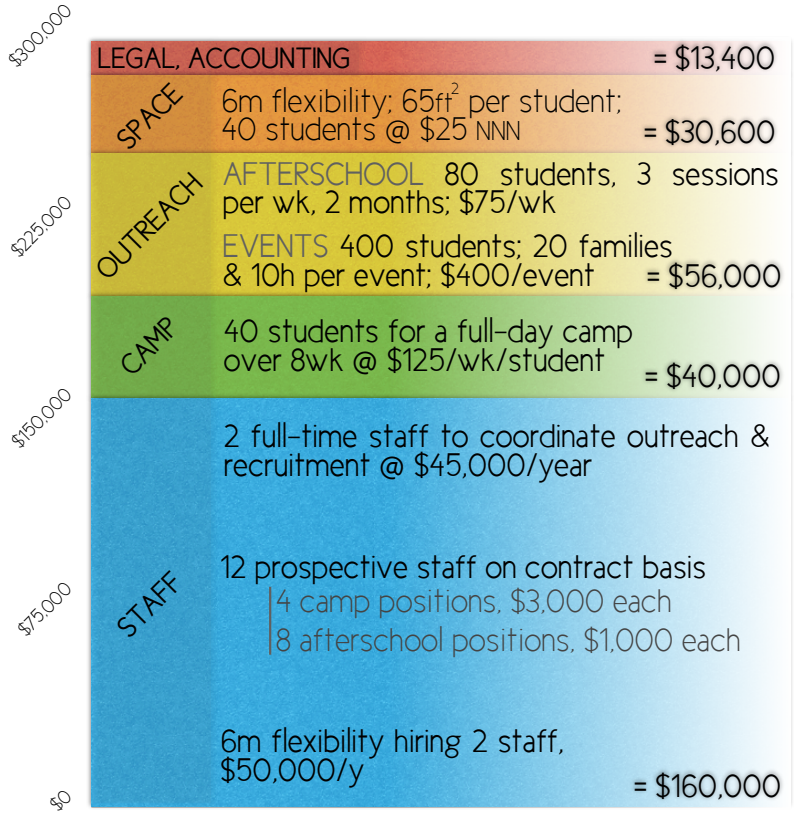


Figure 21: We pulled together a very conservative budget when we began fundraising for the planning and implementation year. Our target scenario is $100,000, with our worst case scenario (for which we secured support) is $300,000. This will insure we can knock the enrollment outreach process out of the park and focus on getting the inaugural culture right.

We've secured up to $300,000—beginning with an award of $100,000—to establish the inaugural enrollment outreach process. Our best-case-scenario budget for this process is $100,000 the first year, with our worst being $300,000. This process will be ongoing and year-round and will not need continued funding after the SSA's inaugural year. But, we think it is essential to get the process right the first year, and we'll be doing it for the first time. After the SSA is up and running, we'll have the advantage of three factors which will dramatically reduce the cost and complexity of the process:

- AN EXISTING NETWORK OF [HOPEFULLY SATISFIED] FAMILIES: Even though the SSA will be small, the outreach capacity of our thirty-six parents will figure prominently in identifying interested families for following years. One of the principal's responsibilities will be opening up ongoing conversations with

these families to begin prospecting interested and appropriate students for the following year.

- ACTIVE STAFF AND STUDENTS IN A LIVING, BREATHING SCHOOL: The whole point of the outreach process is to give families and students an experience which is more instructive than informational materials about "computational, project-based." In our inaugural year, we have to create this somewhat artificially in the form of after- and in-school programming. Once we're up and running, we'll not only have experiences and examples on hand we can point to, but we'll have students and staff whose design and implementation of outreach programs can double as academic and professional development.

- A CREDIT LINE: With the capacity to establish a credit line, our ability to float or front money for staff who need to be hired immediately (outside of our enrollment cycle)—a significant cost in our budgeting for the enrollmetn outreach process—will be entirely mitigated because we'll be in a position to float staff at lower-than-normal pay during their transition period and pay back that debt as they ramp up to their appropriate pay.

Legal Affordances

This chapter summarizes some of the points of contact between the vision for the Somerville STEAM Academy, an Innovation School proposal in Somerville, MA, and the MGL and CMR. Because the Innovation School legislation gives explicit power to School Committees to design proposals which require legal flexibility, *i.e.*

> An Innovation School shall operate in accordance with the law regulating other public schools, *except as the law conflicts with this section or any innovation plans created thereunder.*

we've developed this appendix to document each point of contact which requires a waiver. However, this listing is not yet comprehensive. Fortunately, the listing need not be comprehensively articulared in full until the School Committee's vote, per 603 CMR 48.03(b), *viz.*

> If an innovation plan committee is proposing an innovation plan that may conflict with laws (including regulations) governing other public schools, the committee shall, before presenting the plan to the school committee for approval, request approval from the Commissioner for any provision in the plan that may conflict with such laws. The Commissioner's approval shall be based on his determination that the plan is consistent with 603 CMR 48.03 (2) and with the state's obligations under the education clause of the Massachusetts Constitution, Mass. Const., pt. II, ch. V, s. II, as defined by a court of competent jurisdiction, and that the provision in the plan that may conflict with such laws is necessary to advance the mission or educational programs of the innovation school. If the Commissioner does not approve the proposed provision in the plan, the innovation plan committee may ask the Board to review the matter and the Board shall make the final decision.

but we've included this rough draft of exemptions as we develop the final version in collaboration with staff from DESE and EOE. In preliminary conversations with DESE, they've indicated their support for the waivers listed herein.

Basically, these waivers are driven by a single desire: we are happy to be *accountable* for results and issues (*i.e.*,to commit to 'what'), but would like to have autonomy in the *how* of the conduct of students, teachers, and administrators. In general, we would prefer oversight and accountability to management.

Concretely, this ended up shaking out into three categories:

- Outdated laws which happen to be on the books but which no one would or does enforce

- Active laws endowing the school committee and/or district with certain powers over schools we'd like to see waived. Some of these are in direct conflict with the current draft of the Innovation Plan for the SSA, some are matters of managerial disposition.
- And finally, laws which directly apply to schools which either conflict with the Innovation Plan as currently drafted or the SSA's managerial disposition.

Each point of contact has been linked to the MGL and we've provided a short description of why we'd like a waiver or revision. Many of these are handled by the specific autonomies afforded by the Innovation School statute. This means that any laws or regulations referring to the authority of the School Committee are alterable by the Innovation Plan (whose authority per the Innovation School legislation), takes precedence over the MGL).

via MGL.I.XII.C71.§92: *. . . An Innovation School shall operate in accordance with the law regulating other public schools, except as the law conflicts with this section or any innovation plans created thereunder. . . .*

Massachusetts General Law

1. Such schools shall be taught by teachers of competent ability and good morals, and shall give instruction and training in orthography, reading, writing, the English language and grammar, geography, arithmetic, drawing, music, the history and constitution of the United States, the duties of citizenship, health education, physical education and good behavior. Instruction in health education shall include, but shall not be limited to: consumer health, ecology, community health, body structure and function, safety, nutrition, fitness and body dynamics, dental health, emotional development, safe and healthy relationships with a focus on preventing sexual and domestic violence and training in the administration of first aid, including cardiopulmonary resuscitation.

   This may fall under the curricular autonomy provided under the Innovation School legislation; however, we'd like complete control—assuming the school's performance goals are being met—over the curriculum. In particular, this means that the choice to offer health education (or instruction in the duties of citizenship or orthography or. . .) should be ours. While we are of course sympathetic to the spirit of this requirement, we'd like to design and implement our own curriculum, subject to the performance goals and metrics defined by this Innovation Plan.

2. In all public elementary and high schools American history and civics, including the constitution of the United States, the declaration of independence and the bill of rights, and in all public high schools the constitution of the commonwealth and local history and government and a program relating to the flag of the United States of America, including, but not limited to, proper etiquette, the correct use and display of the flag, the importance of participation in the electoral process and the provisions of 36

U.S.C. 170 to 177, inclusive, shall be taught as required subjects for the purpose of promoting civic service and a greater knowledge thereof, and of fitting the pupils, morally and intellectually, for the duties of citizenship.

Related: we think the content and intent of this statute is reasonable, but we'd like control over and autonomy in deciding how and when to do this. Too often, the history and civics and good citizenship classes prompted by something like this are godawful. As it stands, public engagement with these issues and ideas is at an all-time low, and we think that wasting time pretending to address this with a social studies class does a disservice to learners as a whole.

3. Section 93. Every public school providing computer access to students shall have a policy regarding internet safety measures to protect students from inappropriate subject matter and materials that can be accessed via the internet and shall notify the parents or guardians of all students attending the school of the policy. The policy and any standards and rules enforcing the policy shall be prescribed by the school committee in conjunction with the superintendent or the board of trustees of a commonwealth charter school.

   Nearly every time sprout & co has run a program in a school, we've had issues with their internet. It's gotten to the point that we bring our own laptops and 3G hotspot so we can provide our own connection. Whether issues of speed—or more frequently, filtering—when you're running a program using something like Scratch, where students will frequently venture online to find media or look for help, it's an enormous obstacle to need to maintain the illusion that you can contain and curate an "appropriate Internet." This is *especially* true given how naive it is to assume that school can make a dent in the relative access or exposure to "inappropriate subject matter and materials." We think it is much more important to nurture students' healthy relationships to this technology and those cultural issues. And this means—uncomfortable as it may be for some—dealing with the consequences of "the Internet" being freely available.

4. A change may be made in the school books used in the public schools by a vote of two thirds of the whole school committee at a meeting thereof, notice of such intended change having been given at a previous meeting.

   This may be guaranteed by the curricular autonomies the SSA is pursuing; however, we'd like to ensure that we have complete control of the materials and ideas that we're spending money on putting in front of our students. For many of the domains and approaches we'll be pursuing, there don't even exist appropriate textbooks yet. This means that staff will be central in defining and reifying curricula, but also means that we should not need prior review of the school committee to iterate on these questions

5. Notwithstanding the provisions of the preceding paragraph or section fifty-three of chapter forty-four, the school committee of a

city, town or district may authorize a school principal to receive money in connection with the conduct of certain student activities and to deposit such money, with the municipal or regional school district treasurer, into an interest bearing bank account, hereinafter referred to as the Student Activity Agency Account, duly established by vote of the school committee to be used for the express purpose of conducting student activities. Interest earned by such Student Activity Agency Account shall be retained by the fund and the school committee shall determine for what purpose such earnings may be used. In addition to such Student Activity Agency Account, the school committee may authorize the municipal or regional school district treasurer to establish a checking account, hereinafter referred to as the Student Activity Checking Account, to be operated and controlled by a school principal and from which funds may be expended exclusively for student activity purposes for the student activities authorized by the school committee. Such account shall be used for expenditures only and funds received for student activities may not be deposited directly into such account.

The school committee shall vote to set the maximum balance that may be on deposit in such Student Activity Checking Account. The principal designated to operate and control such Student Activity Checking Account shall give bond to the municipality or district in such amount as the treasurer shall determine to secure the principal's faithful performance of his duties in connection with such account. To the extent that the funds are available in such Student Activity Agency Account, funds up to the maximum balance set by the school committee shall be transferred from the Student Activity Agency Account through the warrant process to initially fund such Student Activity Checking Account.

Periodically, to the extent that funds are available in such Student Activity Agency Account, the municipal or regional school district treasurer shall reimburse such Student Activity Checking Account, through the warrant process, to restore the limit set by the school committee. The principal shall adhere to such administrative procedures as the municipal or regional school district treasurer or accountant may prescribe.

We would like to locate the control of and authority to administer the Student Activity Agency/Checking Account *within* the SSA. Because of the SSA's deep integration with the community, the fundraising and grant-writing with which we will be helping students to support their projects, and the spectrum from 'activity' to 'class' which the SSA stakes out, there is a great deal of non-traditional uses for something like the Student Activity Agency/Checking Account. We'd like control over that and see no fiduciary or managerial reason for incurring the additional friction and confusion of having the School Committee administer it.

6. The school committee shall appoint one or more school physicians and registered nurses, shall assign them to the public schools within its jurisdiction, shall provide them with all proper facilities for the performance of their duties and shall assign one or more physicians to the examination of children who apply for health certificates required by section eighty-seven of chapter one hundred and forty-nine, but in cities where the medical inspection hereinafter prescribed is substantially provided by the board of health, said board shall appoint and assign the school physicians and registered nurses.

   While we are of course keen to ensure that the services of a registered nurse and/or physician are available at all times, we'd like to be in charge of handling this. Finding, documenting, hiring, and relating to medical care (and the bevy of almost-social-work functions a great school nurse can provide) is an essential and unique function. No more than we would be content to have someone else hire our teachers would we be comfortable having a school nurse simply assigned to us. As long as students' health and outcomes are not suffering, we'd like autonomy in the provision of this support.

7. In addition to any other requirements of this section, the board shall require, as a provision of an administrator's or educator's re-certification, that all educators and administrators shall have training in strategies for effective inclusive schooling for children with disabilities, instruction of students with diverse learning styles and classroom organization and management. Such training shall include, at a minimum, practical experience in the application of these strategies.

   Of course, we are keen to see staff *be effective* in these strategies, but we'd like for requirements to participate in training programs to this effect at most trigger *when there is an issue. e.g.*,if the SSA is not hitting its disciplinary goals, we should be accountable to demonstrate efforts (which may take the form of training) to address issues of classroom management and organization

8. The committee may supervise and control all athletic and other organizations composed of public school pupils and bearing the school name or organized in connection therewith.

   We'd like this authority to rest with the school principal. Given that students will be receiving stipends which they will use to fund a variety of intramural and unorganized sports (*e.g.*,boxing lessons), we'd like to absolve the school committee of any managerial oversight of this

9. The principal at each school, subject to the direction of the superintendent, shall, at the expense of the school district, purchase textbooks and other school supplies, and consistent with the district policy, shall loan them to the pupils attending such school free of charge.

   This may just be semantics, but ultimately, the choice of textbook and the purchasing process will be up to each teacher and their

students. Of course we are happy to provide them to students free of charge in the colloquial sense, but it is important to understand that in working on projects, students will not only have their own stipends but will often be in a position of earning their own money. In many cases, it will make managerial, social, and financial sense for students and their team of mentors/teachers to make decisions about books and materials to buy. The principal *will* take responsibility for ensuring that these funds are disbursed responsibly and maintaining documentation to such an effect

10. Pupils in the public schools may, if the committee so votes, purchase from the town, under such regulations as the committee may prescribe, any textbooks which are to be, or have been, used by them in such schools.

    Related, we would like to be able to autonomously manage the purchase of textbooks—as long as the SSA is meetings its performance goals, we see no reason to involve the School Committee at the managerial level. We'd like to ensure that in the absence of such a failure, the school committee cannot prescribe further regulation of any part of the SSA

11. The school committee may, at any national, state, or foreign exposition, make an exhibition showing the character, standing, or work of its public schools.

    We'd love for this to happen. However, we are very keen to ensure that the intellectual property students and teachers generate remains their own. This means that we'd like to require student consent for this, and furthermore, retain the authority to define default licensing terms. We don't do this because we *don't* want student work exhibited, of course, but precisely the opposite: we'd like students to take ownership of their work and relate to it as adults do. And we think that part of that is treating them as adults

12. No student shall be suspended, expelled, or otherwise disciplined on account of marriage, pregnancy, parenthood or for conduct which is not connected with any school-sponsored activities; provided, however, that in the case of a pregnant student, the school committee may require that the student be under the supervision of a physician.

    We are completely on board with the thrust and intent of this. However, we'd like the authority to require a student be under the supervision of a physician (or not be, as well as the choice of physician) to be entirely within the school, resting ultimately with the principal

13. At the commencement of the first class of each day in all grades in all public schools the teacher in charge of the room in which each such class is held shall announce that a period of silence not to exceed one minute in duration shall be observed for personal thoughts, and during any such period, silence shall be maintained and no activities engaged in.

    Really?

14. In all the public schools the last regular session, or a portion thereof, prior to the last Monday in May, known as Memorial Day, shall be devoted to patriotic exercises.

    Wait really?

15. A portion of the Bible shall be read daily in the public schools, without written note or oral comment; but a pupil whose parent or guardian informs the teacher in writing that he has conscientious scruples against it, shall not be required to read from any particular version, or to take any personal part in the reading. The school committee shall not purchase or use in the public schools school books favoring the tenets of any particular religious sect.

    Uhh...

16. ... no teacher or other employee shall receive compensation for any period of lawful suspension.

    We'd like the principal to have complete authority over whether an employee receives compensation during a lawful suspension. This compensation will not exceed the compensation they would have received otherwise.

17. teacher salary autonomy, via Section 43. The salary of no teacher employed with professional teacher status in any city or town except Boston shall be reduced without his consent except by a general salary revision affecting equally all teachers of the same salary grade in the town or except in connection with a reduction in status from full-time to part-time pursuant to a reduction in force resulting from declining enrollments or other budgetary reasons or pursuant to reorganizations for academic or budgetary reasons. Nothing in this section or in any other section of this chapter shall be construed to prevent a school district from entering into an individual annuity contract for such employee or from reducing the salary or compensation of such employee pursuant to such agreement for the purpose of such purchase as authorized by section thirty-seven B.

18. A flag shall be displayed, weather permitting, on the school building or grounds on every school day and on every legal holiday or day proclaimed by the governor or the President of the United States for especial observance; provided, that on stormy school days, it shall be displayed inside the building. A flag shall be displayed in each assembly hall or other room in each such schoolhouse where the opening exercises on each school day are held. Each teacher at the commencement of the first class of each day in all grades in all public schools shall lead the class in a group recitation of the "Pledge of Allegiance to the Flag". A flag shall be displayed in each classroom in each such schoolhouse.

The use & display of a flag will be under the authority of the teacher, or for all extra-classroom uses, the principal.

19. The compensation paid to such teachers shall be deemed to be fully earned at the end of the school year, and proportionately earned during the school year.

We'd like to leave the timing of teacher payment up to agreements between individual teachers and the school principal.

20. In each school building containing the grades nine to twelve, inclusive, the principal, in consultation with the school council, shall prepare and distribute to each student a student handbook setting forth the rules pertaining to the conduct of students. The student handbook shall include an age-appropriate summary of the student-related sections of the bullying prevention and intervention plan required by section 37O. The school council shall review the student handbook each spring to consider changes in disciplinary policy to take effect in September of the following school year, but may consider policy changes at any time. The annual review shall cover all areas of student conduct, including but not limited to those outlined in this section.

While we'll obviously invest effort in ensuring preventing and addressing bullying and in creating a culture of positive student conduct, we think that student handbooks are by and large a waste of students', teachers', and families' time. This is not to say that rules and expected conduct won't be delineated someplace accessible to all, but it *is* to say that we would like autonomy in how we go about that.

21. Section 3. Physical education shall be taught as a required subject in all grades for all students in the public schools for the purpose of promoting the physical well-being of such students. Instruction in physical education may include calisthenics, gymnastics and military drill; but no pupil shall be required to take part in any military exercise if his parent or guardian is of any religious denomination conscientiously opposed to bearing arms, or is himself so opposed, and the school committee is so notified in writing; and no pupil shall be required to take part in physical education exercises if a licensed physician certifies in writing that in his opinion such physical education exercises would be injurious to the pupil.

We would like the requirement we offer PE be driven by student's healthfulness and activity, as assessed by a doctor of the principal's choosing.

22. Section 34D. The board of education shall adopt regulations relative to the maintenance, retention, duplication, storage and periodic destruction of student records by the public elementary and secondary schools of the commonwealth. Such rules and regulations shall provide that a parent or guardian of any pupil

shall be allowed to inspect academic, scholastic, or any other records concerning such pupil which are kept or are required to be kept.

We think students are the ultimate owners of their academic records, and that releasing them to their parents should be a decision left up to them for students older than twelve years of age.

23. Each school district in the commonwealth, subject to appropriation, shall implement a specific policy and discipline code to address teen dating violence in public schools. The policy shall clearly state that dating violence will not be tolerated and shall include guidelines for addressing alleged incidents of dating violence. The policy may include a teen dating violence prevention task force comprised of staff, students and parents to provide awareness training and education for the school community. Topics to be covered in the policy include, without limitation, defining the issue of teen dating violence, recognizing warning signs, identifying issues of confidentiality, safety and appropriate legal school-based interventions.

We think that these issues are best handled by people and cultures. We don't think that policies and protocols are as valuable as a healthy environment. This does not mean, of course, that we won't be investing time and energy in addressing issues of dating violence. But it *does* mean we won't be asking teachers or administrators to waste their time drafting a document no one will read.

24. It shall be unlawful for any student, enrolled in either primary or secondary public schools in the commonwealth, to use tobacco products of any type on school grounds during normal school hours.

Ibid.

25. the date of graduation from such high school may precede the regular closing date of the school by not more than twelve school days.

We think that students should be able to graduate when they have demonstrated mastery of the curricula for which we are responsible. They of course will be welcome to stay with us longer, as long as we feel in a position to authentically offer enriching learning experiences. But we think it is important to consider *outputs*, not inputs.

26. In addition, any school department personnel shall report in writing to their immediate supervisor an incident involving a student's possession or use of a dangerous weapon on school premises at any time.

27. Each school district, charter school, approved private day or residential school and collaborative school shall provide age-appropriate instruction on bullying prevention in each grade that is incorporated into the curriculum of the school district or school. The curriculum shall be evidence-based.

    We would like the principal to have final authority in notification and intervention with respect to bullying. We have zero tolerance for the ridonkulousness that "zero tolerance" policies can create. We trust people more than protocols.

28. Each school district, charter school, non-public school, approved private day or residential school and collaborative school shall develop, adhere to and update a plan to address bullying prevention and intervention in consultation with teachers, school staff, professional support personnel, school volunteers, administrators, community representatives, local law enforcement agencies, students, parents and guardians. The consultation shall include, but not be limited to, notice and a public comment period; provided, however, that a non-public school shall only be required to give notice to and provide a comment period for families that have a child attending the school. The plan shall be updated at least biennially. Each plan shall include, but not be limited to: (i) descriptions of and statements prohibiting bullying, cyber-bullying and retaliation; (ii) clear procedures for students, staff, parents, guardians and others to report bullying or retaliation; (iii) a provision that reports of bullying or retaliation may be made anonymously; provided, however, that no disciplinary action shall be taken against a student solely on the basis of an anonymous report; (iv) clear procedures for promptly responding to and investigating reports of bullying or retaliation; (v) the range of disciplinary actions that may be taken against a perpetrator for bullying or retaliation; provided, however, that the disciplinary actions shall balance the need for accountability with the need to teach appropriate behavior; (vi) clear procedures for restoring a sense of safety for a victim and assessing that victim's needs for protection; (vii) strategies for protecting from bullying or retaliation a person who reports bullying, provides information during an investigation of bullying or witnesses or has reliable information about an act of bullying; (viii) procedures consistent with state and federal law for promptly notifying the parents or guardians of a victim and a perpetrator; provided, further, that the parents or guardians of a victim shall also be notified of the action taken to prevent any further acts of bullying or retaliation; and provided, further, that the procedures shall provide for immediate notification pursuant to regulations promulgated under this subsection by the principal or person who holds a comparable role to the local law enforcement agency when criminal charges may be pursued against the perpetrator; (ix) a provision that a student who knowingly

makes a false accusation of bullying or retaliation shall be subject to disciplinary action; and (x) a strategy for providing counseling or referral to appropriate services for perpetrators and victims and for appropriate family members of said students. The plan shall afford all students the same protection regardless of their status under the law.

Ibid.

29. The plan for a school district, charter school, approved private day or residential school and collaborative school shall include a provision for ongoing professional development to build the skills of all staff members, including, but not limited to, educators, administrators, school nurses, cafeteria workers, custodians, bus drivers, athletic coaches, advisors to extracurricular activities and paraprofessionals, to prevent, identify and respond to bullying. The content of such professional development shall include, but not be limited to: (i) developmentally appropriate strategies to prevent bullying incidents; (ii) developmentally appropriate strategies for immediate, effective interventions to stop bullying incidents; (iii) information regarding the complex interaction and power differential that can take place between and among a perpetrator, victim and witnesses to the bullying; (iv) research findings on bullying, including information about specific categories of students who have been shown to be particularly at risk for bullying in the school environment; (v) information on the incidence and nature of cyber-bullying; and (vi) internet safety issues as they relate to cyber-bullying. The department shall identify and offer information on alternative methods for fulfilling the professional development requirements of this section, at least 1 of which shall be available at no cost to school districts, charter schools, approved private day or residential schools and collaborative schools. The plan shall include provisions for informing parents and guardians about the bullying prevention curriculum of the school district or school and shall include, but not be limited to: (i) how parents and guardians can reinforce the curriculum at home and support the school district or school plan; (ii) the dynamics of bullying; and (iii) online safety and cyber-bullying.

Ibid.

30. bullying, (g) A member of a school staff, including, but not limited to, an educator, administrator, school nurse, cafeteria worker, custodian, bus driver, athletic coach, advisor to an extracurricular activity or paraprofessional, shall immediately report any instance of bullying or retaliation the staff member has witnessed or become aware of to the principal or to the school official identified in the plan as responsible for receiving such reports or both. Upon receipt of such a report, the school principal or a designee shall promptly conduct an investigation. If the school

principal or a designee determines that bullying or retaliation has occurred, the school principal or designee shall (i) notify the local law enforcement agency if the school principal or designee believes that criminal charges may be pursued against a perpetrator; (ii) take appropriate disciplinary action; (iii) notify the parents or guardians of a perpetrator; and (iv) notify the parents or guardians of the victim, and to the extent consistent with state and federal law, notify them of the action taken to prevent any further acts of bullying or retaliation.

Ibid.

31. (h) If an incident of bullying or retaliation involves students from more than one school district, charter school, non-public school, approved private day or residential school or collaborative school, the school district or school first informed of the bullying or retaliation shall, consistent with state and federal law, promptly notify the appropriate administrator of the other school district or school so that both may take appropriate action. If an incident of bullying or retaliation occurs on school grounds and involves a former student under the age of 21 who is no longer enrolled in a local school district, charter school, non-public school, approved private day or residential school or collaborative school, the school district or school informed of the bullying or retaliation shall contact law enforcement consistent with the provisions of clause (viii) of the second paragraph of subsection (d).

Ibid.

32. The superintendent, by means of comprehensive evaluation, shall cause the performance of all teachers, principals, and administrators within the school district to be evaluated using any principles of evaluation established by the board of education pursuant to section one B of chapter sixty-nine and by such consistent, supplemental performance standards as the school committee may require, including the extent to which students assigned to such teachers and administrators satisfy student academic standards or, in the case of a special education student, the individual education plan, and the successful implementation of professional development plans required under section thirty-eight Q; provided, however, that such principles and standards be consistent with the anti-discrimination requirements of chapter one hundred and fifty-two B. The superintendent shall require the evaluation of administrators and of teachers without professional teacher status every year and shall require the evaluation of teachers with professional teacher status at least once every two years. The procedures for conducting such evaluations, but not the requirement for such evaluations, shall be subject to the collective bargaining provisions of chapter one hundred and fifty E.

We would like all teachers, regardless of licensure status, to be evaluated at the same depth and schedule. Furthermore, we would like our teachers to only be evaluated by the Superintendent—or indeed, anyone outside of the SSA—*in the event the SSA falls short of its performance goals*.

33. Performance standards for teachers and other school district employees shall be established by the school committee upon the recommendation of the superintendent, provided that where teachers are represented for collective bargaining purposes, all teacher performance standards shall be determined as follows: The school committee and the collective bargaining representative shall undertake for a reasonable period of time to agree on teacher performance standards. Prior to said reasonable period of time, the school district shall seek a public hearing to comment on such standards. In the absence of an agreement, after such reasonable period, teacher performance standards shall be determined by binding interest arbitration. Either the school district or the teachers' collective bargaining representative may file a petition seeking arbitration with the commissioner of education. The commissioner shall forward to the parties a list of three arbitrators provided by the American Arbitration Association. The school committee and the collective bargaining representative within three days of receipt of the list from the commissioner of education shall have the right to strike one of the three arbitrators' names if they are unable to agree upon a single arbitrator from among the three. The arbitration shall be conducted in accordance with the rules of the American Arbitration Association to be consistent with the provisions of this section. In reaching a decision, the arbitrator shall seek to advance the goals of encouraging innovation in teaching and of holding teachers accountable for improving student performance. The arbitrator shall consider the particular socioeconomic conditions of the student population of the school district. Both the parties and the arbitrator may adopt performance standards established by state or national organizations. The performance standards shall be incorporated into the applicable collective bargaining agreement; provided, however, that any subsequent modification of the performance standards shall be made pursuant to the procedures set forth in this section.

We would like to locate the complete authority of defining performance standards to be located with the principal.

34. . . . nothing herein shall be construed to prevent a school committee from prescribing additional qualifications

We would like to be exempt from further constraints passed by the School Committee. We would, of course, take any policies passed by the School Committee under advisement in determining our own hiring practices.

35. In addition to any other requirements of this section, the board shall require, as a provision of an administrator's or educator's initial certification, that all educators and administrators shall have training in strategies for effective inclusive schooling for children with disabilities, instruction of students with diverse learning styles and classroom organization and management. Such training shall include, at a minimum, practical experience in the application of these strategies. In addition to any other requirements in this section, in order to receive a provisional or standard educator certificate, persons applying for such certification shall have completed such courses or training sessions as the board shall require in second language acquisition.

    We are keen for staff to be competent in strategies accommodating inclusive schooling, diverse learning styles, second language acquisition, and classroom organization & management. But we think that training and support should be determined by staff' *competence*; i.e. in focusing on output, not input, we think that staff should be reviewed for their competence and *if they are lacking*, we'd like the authority to seek out or design our own training programs.

Code of Massachusetts Regulations

1. (1) Requirement of taking a mathematics content assessment — The superintendent or the school's receiver, if any, may require all mathematics teachers at a Level 4 school to take a mathematics content assessment approved by the Department. The commissioner or the school's receiver, if any, may require all mathematics teachers at a Level 5 school to take a mathematics content assessment approved by the Department. A mathematics teacher shall be required to take a mathematics content assessment pursuant to 603 CMR 2.07(1) no more than once a year.

    Our autonomy over staffing means this won't be the case, but if we've misunderstood that, we'd like an exemption from this. Obviously, not because we're not interested in assessing and ensuring the quality of our math teachers, but because we'd like to be in control of that assessment *unless* we miss our performance goals repeatedly. *Until* then, we'd like to avoid wasting staff's time.

2. Each school district seeking approval for a vocational technical education program shall demonstrate that the program has been planned in consultation with the following advisory committees [. . .]

    Since the Innovation Plan (and hence the vocational technical education program it entails) was not developed with these advisory committees in mind, we'd like a waiver from this requirement.

3. [The program of study shall] be based on the applicable Vocational Technical Education Framework and the Massachusetts Curriculum Frameworks;

Related, the autonomies of the Innovation Plan supersede those of the VTEF and MCF. While there are strong vocational threads in this Innovation Plan, by virtue of, well, it being innovative, many of these have not yet been reified in state and national frameworks.

4. [The program of study shall] meet National Occupational Program Approval Standards as set forth in "Guidelines for Vocational Technical Education Programs and Educator Licensure;"

   Ibid.

5. [The program of study shall] meet state board/agency approvals, accreditation association approvals as set forth in the "Guidelines for Vocational Technical Education Programs and Educator Licensure;"

   Ibid.

6. be scheduled so that vocational technical shop instruction, if scheduled as a full school day, does not exceed ten consecutive full school days. Shop instruction scheduled for ten consecutive full school days or less must be scheduled for at least the same number of full school days of academic instruction before beginning another schedule of shop instruction.

   "Shop instruction" & "instruction" blur in many of the academic cases the SSA will be confronting, e.g. computer science. Safe & competent operation of 'shop' equipment will drive preparation, but the split between preparation and practice makes less sense in the STEAM Academy context.

7. A Program of Studies including both academic and technical programs and courses [. . .] a copy shall be provided to each student and parent/guardian.

   The Program of Studies will be deeply individualized. Broad descriptions of expected student development will be straightforward, but a generalized Program of Studies doesn't make sense for the SSA's approach. We'll be providing extensive information on the SSA's approach, and each student will work to create a variety of plans for their own self-development in collaboration with their Advisory.

8. (a) All personnel in the vocational technical education program including academic teachers shall have an appropriate educator license in accordance with the requirements set forth in 603 CMR 4.00 and 7.00.

   The SSA's autonomy in staffing precludes this, a need exacerbated by the mismatch between the cutting-edge nature of the SSA's programming and the current draft of the vocational technical educator licensure regulations.

9. 603 CMR 7.00 Regulations for Educator Licensure and Preparation Program Approval

Ibid.

10. (b) Each approved program shall: be supervised by a person holding a Vocational Technical Cooperative Education Coordinator license or Vocational Technical Teacher license in the cooperative education program area;

    Ibid.

11. 4.07: Types of Vocational Technical Teacher Licenses, Requirements for Licensure, and Licenses Issued

    Ibid.

12. 4.08: Types of Vocational Technical Administrator Licenses and Requirements for Licensure

    Ibid.

13. 4.09: Types of Vocational Technical Cooperative Education Coordinator Licenses and Requirements for Licensure

    Ibid.

14. Candidates shall demonstrate that they meet the Standards 1) by passing the written and performance tests required for the preliminary license and, 2) as part of the preparation for the professional license.

    Ibid.

15. (b) Non-licensed substitute teachers and teacher (instructional) aides shall be supervised by an appropriately licensed vocational technical teacher while serving in a vocational technical laboratory and shall not be allowed to supervise students using hazardous equipment.

    The SSA's heavy integration with the community means we will be relying on a long tail of community partners for mentorships, co-ops, internships, and other support. These individuals will go through a vetting and training process specific to their context, but many contexts (e.g. regular lunches for students with industry mentors, a la Boys & Girls Club) are expressly inappropriate to impose SSA full-time staff supervision.

16. (e) Persons with special expertise related to the vocational technical area of instruction who can strengthen the vocational technical education program may be employed without a vocational technical teacher license. Such persons shall work in concert with, and under the direct supervision of, an appropriately licensed vocational technical teacher at all times.

    Ibid. regarding issues of direct supervision.

17. Schools shall condition admission on a student having been promoted to the grade that they have been admitted to enter.

The SSA's lack of age segregation and focus on personalized projects renders traditional grade separations and notions of prerequisites less coherent. Student admission will be conditioned on staff, family, and administration agreement that the SSA is better than other options available to the student, modulo our commitments to equity.

18. [Each approved program shall:] enroll only those students who are enrolled in an approved vocational technical education program and who have demonstrated the acquisition of the knowledge and skills in the applicable Vocational Technical Education Framework and the Massachusetts Curriculum Frameworks associated with at least one and one half years of full time study in the vocational technical cooperative education program area, and in no case enroll students earlier than midway through the junior year;

Ibid; also, a primary premise of the SSA is that the vocational paradigm not only does not compete with academic content, but can enhance it. Artificially limiting access to it by age or narrowly constraining it to pre-defined State Frameworks cuts off many of the advantages this plan is specifically designed to leverage.

19. (c) Each school shall have a code of conduct which shall include standards and procedures for suspension and expulsion of students in accordance with M.G.L c. 71, Âğ 37H. The code shall be published in the Student Handbook and a copy shall be provided to each student, parent/guardian. Expulsion for reasons not included in the code shall not be allowed.

Ultimately, we trust people over protocols. Promulgating a code of conduct no-one will read in a Student Handbook no one uses and encouraging a legalistic approach to the letter of the 'law' are counterproductive to the creation of a healthy culture. The first line of defense in student discipline will be their Advisory, then the Principal, then the combination of these in collaboration with students' families. We are still exploring the option of a peer committee and honor code as might be found at many colleges.

20. (d) Each school with postsecondary vocational technical education programs shall develop and implement an admission policy for the postsecondary programs. The policy must be approved by the Department prior to implementation.

We would like to retain the same autonomies over enrollment, admission, and design for postsecondary programs as we seek in our secondary programs. Combined with the heavy integration of local college students and community members, we'd like the freedom to admit and award credit in the pursuit of the best experience possible for learners at the SSA. We are happy to submit descriptions of our admissions policy and process to the Department, and *in the event of missing our performance or equity goals repeatedly*, undergo approval.

21. (e) Each school that admits postgraduate students shall develop and implement an admission policy for the postgraduate openings. The policy must be approved by the Department prior to implementation.

    Ibid.

22. [Each approved program shall:] be offered only during time not scheduled for academic classes during the school year, and may include summer programs;

    The whole premise of the SSA blurs the distinction between 'vocational' and 'academic' in deep ways; the design of a STEAM program doesn't accommodate a zero-sum approach to these domains, as though they were independent.

23. [Each approved program shall:] provide students the opportunity to acquire knowledge, and develop skills not acquirable in a school-based setting but acquirable in a work-based setting;

    Ibid. regarding the elucidation of 'work' v. 'school' uses—*especially* given the prominence of knowledge work in the SSA's focus.

24. [Each approved program shall:] provide students with continuous supervision by the employer;

    Given that a primary focus of the SSA is scaffolding the executive function of students and effecting their full transition to independent investigators, constant supervision cannot be a fundamental constraint. Of course, this is modulo requirements of safety (expressed variously as the Advisory's good judgment, the SSA's insurance policy, etc.)

25. (2) A licensed teacher in that approved vocational technical education program area shall provide continuous supervision at the job site.

    Ibid.

26. The agreement shall include the skills to be acquired by the student. The employer shall agree to meet all applicable requirements of state and federal labor laws and regulations including, but not limited to, those addressing worker compensation insurance, equal employment opportunity and occupational safety and health;

    If we are to push tight integration with work opportunities at places like Google, we can't be asking employers to enumerate all the skills someone will develop. Part of this—the part mapping back to the Common Core—is the job of the SSA. And while we understand and empathize the concerns around child labor driving the employer's agreement to labor laws, the SSA will act as student's legal employer in these situations, and as such we'd like prospective partners specifically waived from these concerns.

27. [Each approved program shall:] provide a safety and health orientation specific to the site for all employee-students; and

    Again, we empathize with the need to ensure student safety, but this needn't take the form of an orientation—*especially* in many of the knowledge work sectors.

28. (5) The superintendent of each school system shall require employers who recruit new employees in and through the schools of that district to sign a statement that the employer complies with applicable federal and state laws prohibiting discrimination in hiring or employment practices.

    Ibid.

29. (1) In order to receive vocational technical education program approval, the Superintendent shall submit an application to the Commissioner that demonstrates the labor market outlook for the program and compliance with the approval criteria.

    In the event that program approval is required (given that we're requesting a waiver from *prior* approval, this would mean that the SSA has missed its performance or equity goals repeatedly), we'd like the *principal*, not the Superintendent, to be in charge of this.

30. (c) The Superintendent shall submit a corrective action plan to the Department for programs that are under review. The Department will monitor progress in meeting the goals of the plan. If, after one year under review, a program has not made satisfactory progress, its approval may be revoked.

    Ibid.

31. (2) Outcome II - Upon the development of the Certificate of Occupational Proficiency Assessment System, the percentage of vocational technical education students who receive a Certificate of Occupational Proficiency.

    We think that we should be held to *outputs* of our education, and "a certificate" is much less important than a paying job, strong letters of recommendation, and so on. We're happy with the other two outcomes defined, and would add many of our own, but are wary to make 'certification' a primary goal.

32. (5) Only those students who are enrolled in an approved vocational technical education program and who have demonstrated those academic, technical and employability competencies associated with at least one and one half years of full time study in the vocational technical education program project area, and in no case shall students be allowed to participate in such projects without a minimum enrollment of at least one year in the vocational technical program.

Given how deeply the vocational and academic programs will be integrated at the SSA, the one-year preparation requirement is a real obstacle. The students' Advisory will be the primary mechanism by which students' autonomy and engagement will be scaffolded.

33. (9) Public Record. Each school district shall maintain as a public record, in a central location or in each school, a list of all staff members whose employment is governed by 603 CMR 4.00, indicating the role in which each is employed and the credential that authorizes such employment.

Because of our staffing autonomy, maintaining a list of the 'appropriate credential' is incoherent. We'd like a waiver only from that part of this requirement.

34. (2) The superintendent or designee shall review the issue and provide the parent with a timely written decision within 15 days of the request, unless extenuating circumstances require a delay.

We'd like the principal to be the first line of defense in these situations, unless the issue is with SSA administration. Which is to say, we'd like a letter to first go to the principal and for the principal to respond before opening up the superintendent to parents' queries.

35. (2) The parent shall submit a written request to the superintendent for review of the parent's allegation. The request for review shall provide the basis for the parent's allegation, including the name(s) of the school district employee(s) involved and a description of the actions that the employee(s) took or failed to take that resulted in willful and repeated violations of M.G.L. c. 71A. Except in extenuating circumstances, the parent shall submit the request within 30 calendar days of the last incident at issue. The superintendent shall provide the school district employee with a copy of the written request within 10 calendar days after it is filed and in advance of the meeting with the superintendent.

Ibid.

36. (1) A parent who is dissatisfied with the final local decision on an issue arising under M.G.L. c. 71, §32A may submit a written request for review to the Commissioner, within 15 days of the date of the final local decision. The written request shall specify the basis on which the parent alleges the school or school district has not met the requirements of M.G.L. c. 71, ' 32A and shall include a copy of the final local decision and any other relevant correspondence. The parent shall send a copy of the written request to the superintendent of schools or, in the case of a charter school, to the charter school leader.

The SSA principal should be able to, too

37. 603 CMR 13.00: Certification of Supervisors of Attendance

The SSA won't have truancy officers, and it does not seem it is a legal requirement that we do so. In the event that it is, we'd like this responsibility to rest with the Social Worker role in the Advisory, and to be free of the training and paperwork constraints accompanying their statutory role as "supervisor of attendance."

38. (1) Core academic teachers who provide sheltered English instruction to English learners in school districts, including charter schools and education collaborative, must earn an SEI Teacher Endorsement as set forth in 603 CMR 7.00 and this section. Principals, assistant principals, and supervisors/directors supervise or evaluate such teachers, must earn an SEI Teacher Endorsement or SEI Administrator Endorsement as set forth in 603 CMR 7.00 and this section.

Every SSA staff will be bilingual and trained in English immersion and support. *Unless* the SSA is missing its performance or equity goals, we'd like autonomy over the requirement that staff earn a particular endorsement.

39. (3) Starting on July 1, 2016, any core academic teacher who is assigned to provide sheltered English instruction to an English learner shall either hold an SEI Teacher Endorsement, or is required to earn such endorsement within one year from the date of the assignment. Any school district that assigns an English learner to a core academic teacher who has a year to obtain an SEI endorsement, shall take all reasonable steps to ensure that such English learner is assigned to core academic teachers with an SEI endorsement in subsequent school years.

Ibid.

40. (4) Starting on July 1, 2016, no principal, assistant principal, or supervisor/director shall supervise or evaluate a core academic teacher who provides sheltered English instruction to an English learner unless such principal, assistant principal, or supervisor/director holds an SEI Teacher Endorsement or SEI Administrator Endorsement, or will earn either endorsement within one year of the commencement of such supervision or evaluation.

Ibid.

41. (1) These rights shall be the rights of the student upon reaching 14 years of age or upon entering the ninth grade, whichever comes first. If a student is under the age of 14 and has not yet entered the ninth grade, these rights shall belong to the student's parent.

We'd like these rights to begin at age 12.

42. (2) If a student is from 14 through 17 years of age or has entered the ninth grade, both the student and his/her parent, or either one acting alone, shall exercise these rights.

Ibid.

43. (1) All public schools in the Commonwealth shall admit students without regard to race, color, sex, gender identity, religion, national origin, or sexual orientation. This includes, but is not limited to charter, elementary, secondary, trade, regional vocational-technical schools and selective academic high schools.

    We're sure there's some reconciliation between this and processes aiming to increase and ensure minimum types and distributions of diversity, but given that half our students will be identified as "struggling" and the other half will be lotteried in through a weighted process matching Somerville High Schools socioeconomic and demographic profile, contravening this is necessary if we're to hit our equity goals.

44. (3) A public school shall not schedule students into courses or units of study on the basis of race, color, sex, gender identity, religion, national origin or sexual orientation.

    We believe that authentic, deep integration across social, ethnic, gender, and other cultural and economic lines is essential to a functioning republic. We'd like to reserve the right to pursue such scheduling processes *with the goal of ensuring diversity*.

45. (1) Guidance counselors and other personnel shall represent to students a broad spectrum of education and career opportunities. School personnel shall not present race, color, sex, gender identity, religion, national origin or sexual orientation as limiting factors in career determination.

    To suggest that issues of culture and gender should not impinge on discussions of future economic and cultural options is laudably naive. Minimally, we'd like to discuss with students the effect of the gender pay gap, industry norms for child care and maternity leave, and so on. But truly, this should be left up to the good judgment of the adults in the students' lives.

46. (3) Each school shall provide equal opportunity for physical education for all students. Goals, objectives and skill development standards, where used, shall neither be designated on the basis of sex, nor designed to have an adverse impact on members of either sex.

    If qualifying times for the Olympics are gendered, we think our standards of satisfactions for student health can reasonably be as well.

47. (1) Advantages and privileges of public schools include all extra-curricular activities made available, sponsored or supervised by any public school. No school shall sponsor or participate in the organization of outside extra-curricular activities conducted at such school that restrict student participation on the basis of race, color, sex, gender identity, religion, national origin or sexual

orientation. 603 CMR 26.06 (1) does not prohibit school committees from allowing use of school premises by independent groups with restrictive membership.

> Much of the SSA's focus is on making science a cultural activity. In some cases, that will involve supporting traditional minorities' own identification with a skill or domain—e.g. a 'girls only' electronics club. We of course empathize with the equitable and egalitarian spirit which we're sure motivates this statute, but we think it can get in the way of effecting *real* equity.

48. Schools may post or print information regarding private restricted scholarships as long as no preferential treatment is given to any particular scholarship offered and as long as the school does not endorse or recommend any such scholarship nor advise or suggest to a particular student that he or she apply for such a scholarship.

> Ibid. We can't be asked to *avoid* helping our students succeed if we are to provide the personalized care and attention we promise.

49. (1) Prior to the beginning of each school year, every school committee shall establish school year schedules for each of the public schools under its supervision and control, based on the particular learning needs of students within each school. In determining the school year schedule for each school, the school committee shall be guided by the student learning time plan recommended by the school council for each school, and shall attempt to maximize high quality teaching, learning, and professional development opportunities.

> The SSA will have scheduling autonomy, and the SSA principal will have the ultimate responsibility for the schedule.

50. (2) Notwithstanding the minimum school year requirements set forth in 603 CMR 27.03 and 27.04(2), at the discretion of the school committee the scheduled school year for the graduating senior class of a high school or vocational/technical school may conclude, and the school graduation may be held, up to twelve school days before the regular scheduled closing date of that school.

> In a competency- or mastery-based advancement scheme, absolute time constraints on graduation are incoherent. We'd like control over this process.

51. (2) Upon the written request of a school district, the Commissioner of Education may, in his discretion, grant a waiver of the minimum school year requirement set forth in 603 CMR 27.03(3) in situations where an emergency or extraordinary circumstance forces the closing of one or more of the district's schools.

> We'd like the SSA Principal to be able to make this request on behalf of the SSA.

52. 33.04: Filing of Reports

    As far as we can tell, this creates paperwork that does nothing to ensure student safety. We will, *of course*, go to every length necessary to ensure a safe and welcoming environment for students, free of hazing. But until a pattern of negligence appears, or minimally a parental complaint, we think that this is a waste of teacher and administrator time.

53. (1) Procedures. Public education programs shall develop written procedures regarding appropriate responses to student behavior that may require immediate intervention. Such procedures shall be annually reviewed and provided to school staff and made available to parents of enrolled students.

    Ibid.

54. (2) Required training for all staff. Each principal or director shall determine a time and method to provide all program staff with training regarding the school's restraint policy. Such training shall occur within the first month of each school year and, for employees hired after the school year begins, within a month of their employment.

    Ibid; we'd like to only *have to* offer this training at the beginning of a staff's hire, not every year.

55. (1) In accordance with G.L. c. 71, Âğ 38G, educators working in a Massachusetts public school must obtain approval of their proposed professional development plans from their supervisors by the timelines set out in 603 CMR 44.05 (2), and 44.06 (2). Licensed educators working in schools other than Massachusetts public schools are encouraged to seek such approval.

    Our staffing & professional development autonomy should obviate the need for such a setup. Unless a staff members *results* are failing, we think that dictating the process of approving PD plans will generate needless paperwork and transform an exciting process—defining your goals for self-development—into a burden.

56. [(4) Approval of professional development plans of mathematics teachers in low-performing mathematics programs shall be subject to the following additional requirements: (a) A supervisor shall not approve or sign the professional development plan of any mathematics teacher in a low-performing mathematics program until that educator takes the Mathematics Content Assessment. However, if no Mathematics Content Assessment is offered between the first date the educator is required to take the Mathematics Content Assessment, pursuant to the Under-Performing Schools and Districts Regulations, 603 CMR 2.05, and the last date on which the approval or signature may be granted, the supervisor may approve or sign the professional development plan of an educator who has not yet taken the Mathematics Content Assessment.

57. In considering whether a professional development plan is consistent with the educational needs of the school and/or district and whether the plan is designed to enhance the ability of the educator to improve student learning, pursuant to 603 CMR 44.04 (1)(b), a supervisor must determine that the professional development plan addresses weaknesses identified by the Mathematics Content Assessment. (c) In the event that a school's mathematics program is classified as a low-performing mathematics program after approval of the educator's professional development plan, the educator shall take the next Mathematics Content Assessment offered by the Board. (d) In the event that a mathematics teacher who was not previously teaching in a school with a low-performing mathematics program goes to work in school with a low-performing mathematics program, that teacher will not have to take the Mathematics Content Assessment until the school's mathematics program is classified as low-performing based on the results of an MCAS mathematics test administered while the teacher is employed at the school. (e) In biannual reviews conducted pursuant to 603 CMR 44.04 (2), a supervisor must withdraw approval of the professional development plan of any educator who has not taken the Mathematics Content Assessment offered by the Board, unless no Mathematics Content Assessment is offered between the time such Assessment was required of the educator, pursuant to 603 CMR 2.05 (2), and the time of the biannual review. A supervisor must also withdraw approval of any professional development plan that fails to address weaknesses identified by the Mathematics Content Assessment.](http://www.doe.mass.edu/lawsregs/603cmr44.html?section=all)

    Given our staffing autonomy, we'd like this process to be within our control *unless* there exists significant cause to suspect a staff member's capacity or performance.

58. (2) Before the Department deems the license inactive, it shall notify the educator in writing that the Department intends to deem the license inactive and of the educators right to request a hearing before the Commissioner in accordance with M.G.L. c. 30A and 801 CMR 1.00: Adjudicatory Rules of Practice and Procedure. This notice shall operate as a notice of the action and does not operate as an order to show cause.

    We'd like to ensure the principal is notified, as well.

59. School committees shall establish evaluation systems and Performance Standards for the evaluation of all teachers that include all of the principles of evaluation, set forth in 603 CMR 35.00–35.11. School committees may supplement the standards and indicators in 603 CMR 35.03 with additional measurable performance standards and indicators consistent with state law and collective bargaining agreements where applicable. The district

shall adapt the indicators based on the role of the teacher to reflect and to allow for significant differences in assignments and responsibilities. The district shall share the Performance Standards with teachers employed by the district.

The SSA's heterodox, heavily project-based work means we'd like autonomy over the selection, training, and evaluation of teachers.

60. School committees shall establish evaluation systems and performance standards for the evaluation of administrators that include all of the principles of evaluation, set forth in 603 CMR 35.00–35.11. School committees may supplement the standards and indicators in 603 CMR 35.04 with additional measurable performance standards consistent with state law and collective bargaining agreements where applicable. The district shall adapt the indicators based on the role of the administrator to reflect and allow for significant differences in assignment and responsibilities. The district shall share the performance standards with all administrators.

Ibid.

61. (1) School committees shall adopt either the Model System designed and regularly updated by the Department, or a locally developed system that is consistent with these principles. The evaluation system shall include the evaluation cycle set forth in 603 CMR 35.06.

Ibid. This includes the reporting systems accompanying the process.

62. (7) The superintendent is responsible for ensuring that all evaluators have training in the principles of supervision and evaluation. All evaluations should be free of racial, sexual, religious, and other illegal discrimination and biases as defined in state and federal laws.

We'd like the principal of the SSA to be in charge of this for the evaluators the SSA employs, given how heterodox many of the materials and artifacts for evaluation will be.

63. (8) Extended Day and Extended Year. Costs for extended day or extended year services shall be eligible only if such services are specified on the student's IEP, and shall be calculated in accordance with 603 CMR 10.07 (6) or 603 CMR 10.07 (7).

Given the year-round nature of the SSA, we'll already be building in 'extended' programming, and the costs for those services should not need specification in a student's IEP, given their participation in an ELT context.

Exemptions and Variances from 603 CMR

1. Each vocational technical school district and agricultural school shall employ a vocational technical superintendent and vocational technical principal licensed pursuant to 603 CMR 4.00.

   The SSA is an independent technical institute and vocational school; however, the unique content, focus, and modality of the SSA means that current licensing practices and regulations are far from catching up. In concert with the unusual staffing structure and the SSA's autonomy in hiring, we'd like to be able to hire, independent of nominal licensing status or credentials.

2. (1) Procedures. Public education programs shall develop written procedures regarding appropriate responses to student behavior that may require immediate intervention. Such procedures shall be annually reviewed and provided to school staff and made available to parents of enrolled students.

   We think that good people trump good protocols. This does not mean that we will *not* have written procedures or guidelines; however, they will not be a recipe concocted and reviewed annually.

3. (3) In-depth staff training in the use of physical restraint. At the beginning of each school year, the principal or director of each public education program or his or her designee shall identify program staff that are authorized to serve as a school-wide resource to assist in ensuring proper administration of physical restraint. Such staff shall participate in in-depth training in the use of physical restraint. The Department of Elementary and Secondary Education recommends that such training be at least sixteen (16) hours in length.

   Every staff member will receive training and instruction in proper physical constraint; however, there will be no centralized program staff to serve as school-wide resource. We will be working with community partners and organizations to ensure this background is well-provided.

4. Whenever possible, the administration of a restraint shall be witnessed by at least one adult who does not participate in the restraint.

   There are many situations where the best interest of the student means that a non-public encounter is preferable, even if a public encounter is possible. We acknowledge those are likely to be charged situations, but we think staff should be making decisions that are best for the restrained student, not the best for our insurance policy.

5. The program staff member who administered the restraint shall verbally inform the program administration of the restraint as soon as possible, and by written report no later than the next school working day. The written report shall be provided to the principal or director of the program or his/her designee, except

that the principal or director shall prepare the report if the principal or director has administered the restraint. The principal or director or his/her designee shall maintain an on-going record of all reported instances of physical restraint, which shall be made available for review by the Department of Elementary and Secondary Education, upon request.

In all cases, the principal is responsible for interviewing and drawing up the report. We want these [hopefully rare] situations to be treated as a facilitator or investigator might. Not only do we not want to burden teachers with paperwork, we want the principal to take full responsibility for the chain of events and avoid any appearance of impropriety due to the chain of authorship in drafting the report.

6. (1) On or before October 1 of each year, the principal or headmaster of every secondary school shall file a report as required by M.G.L. c. 269, Âğ 19 with the Bureau of Student Services.

This seems to be paperwork for paperwork's sake. If there is ever a hazing problem, we'll happily commit to these protocols, but in the meantime we think that this represents nothing but unnecessary friction for school staff.

7. (2) If a student is from 14 through 17 years of age or has entered the ninth grade, both the student and his/her parent, or either one acting alone, shall exercise these rights.

We'd like students to be able to exercise these rights immediately upon entry into the SSA, regardless of age.

8. (3) If a student is 18 years of age or older, he/she alone shall exercise these rights, subject to the following. The parent may continue to exercise the rights until expressly limited by such student. Such student may limit the rights and provisions of 603 CMR 23.00 which extend to his/her parent, except the right to inspect the student record, by making such request in writing to the school principal or superintendent of schools who shall honor such request and retain a copy of it in the student record. Pursuant to M.G.L. c. 71, section 34E, the parent of a student may inspect the student record regardless of the student's age.

We'd like the default to be that the student has exclusive rights unless expressly *relinquished* by the student.

9. (2) The superintendent of schools or his/her designee shall be responsible for the privacy and security of all student records that are not under the supervision of a school principal, for example, former students' transcripts stored in the school department's central administrative offices or student records of school-age children with special needs who have not been enrolled in a public school.

We'd like the principal to be entirely responsible for all documentation created and maintained by the SSA. Because we plan to be building such an extensive system of documentation, curriculum

mapping, and record-keeping, putting folks outside of the SSA in charge of this creates unnecessary friction.

10. (2) During the time a student is enrolled in a school, the principal or his/her designee shall periodically review and destroy misleading, outdated, or irrelevant information contained in the temporary record provided that the eligible student and his/her parent are notified in writing and are given opportunity to receive the information or a copy of it prior to its destruction. A copy of such notice shall be placed in the temporary record.

    Rather than this be a regular activity on staff's part, we'd like it to be an on-demand service offered when students and/or families seek it out. We'll be building systems that let students suggest edits and have those approved by staff to handle this.

11. (3) The temporary record of any student enrolled on or after the effective date of 603 CMR 23.00 shall be destroyed no later than seven years after the student transfers, graduates, or withdraws from the school system. Written notice to the eligible student and his/her parent of the approximate date of destruction of the record and their right to receive the information in whole or in part, shall be made at the time of such transfer, graduation, or withdrawal. Such notice shall be in addition to the routine information letter required by 603 CMR 23.10.

    Because of our interest in longitudinal assessment and measurement, we'd like to keep these temporary records indefinitely, *provided student and parent consent to waive the seven year period*.

12. (4) In accordance with M.G.L. c 71, section 87, the score of any group intelligence test administered to a student enrolled in a public school shall be removed from the record of said student at the end of the school year in which such test was so administered.

    Similarly, we'd like this to be up to the student and/or their family.

13. (4) Access of Third Parties. Except for the provisions of 603 CMR 23.07(4)(a) through 23.07(4)(h), no third party shall have access to information in or from a student record without the specific, informed written consent of the eligible student or the parent.

    Because the line between "third party" and "educational service provider" will be so blurry at the SSA, we'd like to put this power in students' hands—that is, the student needn't provide informed written consent, they can simply share the records themselves.

14. (b) Upon receipt of a court order or lawfully issued subpoena the school shall comply, provided that the school makes a reasonable effort to notify the parent or eligible student of the order or subpoena in advance of compliance.

    We'd like to reserve the right to [lawfully] contest a subpoena, even if lawfully issued.

15. (g) Authorized school personnel of the school to which a student seeks or intends to transfer may have access to such student's record without the consent of the eligible student or parent, provided that the school the student is leaving, or has left, gives notice that it forwards student records to schools in which the student seeks or intends to enroll. Such notice may be included in the routine information letter required under 603 CMR 23.10.

    We'd like the student and/or family to consent to this, given that there will be no non-consensual transfers, we see no reason for this to right to be taken from students and families.

16. (h) School health personnel and local and state health department personnel shall have access to student health records, including but not limited to immunization records, when such access is required in the performance of official duties, without the consent of the eligible student or parent.

    Ibid.

17. (2) The eligible student or the parent shall have the right to request in writing deletion or amendment of any information contained in the student record, except for information which was inserted into that record by an Evaluation Team. Such information inserted by an Evaluation Team shall not be subject to such a request until after the acceptance of the Evaluation Team Educational Plan, or, if the Evaluation Team Educational Plan is rejected, after the completion of the special education appeal process. Any deletion or amendment shall be made in accordance with the procedure described below.

    We see no reason for Evaluation Team's materials to get special treatment here. We'd like this to be a matter for students and families to work out with the principal and their teachers.

18. (1) In the event that any decision of a principal or his/her designee regarding any of the provisions contained in 603 CMR 23.00 is not satisfactory in whole or in part to the eligible student or parent, they shall have the right of appeal to the superintendent of schools. Request for such appeal shall be in writing to the superintendent of schools.

    Before appealing to the Superintendent, we'd like this appeals process to pass through the principal at the SSA.

19. Structured learning time shall mean time during which students are engaged in regularly scheduled instruction, learning activities, or learning assessments within the curriculum for study of the "core subjects" and "other subjects." In addition to classroom time where both teachers and students are present, structured learning time may include directed study, independent study, technology-assisted learning, presentations by persons other than teachers, school-to-work programs, and statewide student performance assessments.

Because of the broad community integration and project-based curricula at the SSA, we'd like to expand the definition of "structured learning time" to include those activities which may be optional—specifically, all activities undertaken with the *intent to learn* as agreed upon by staff and student. Some of these may be optional and highly personalized, but we see no reason that—if educational—these should not contribute to "structured learning time" broadly.

20. (1) Prior to the beginning of each school year, every school committee shall establish school year schedules for each of the public schools under its supervision and control, based on the particular learning needs of students within each school. In determining the school year schedule for each school, the school committee shall be guided by the student learning time plan recommended by the school council for each school, and shall attempt to maximize high quality teaching, learning, and professional development opportunities.

    Because of the personalization and individual attention which will be part of every student's experience, the autonomy for defining and managing the schedule for the SSA will fall under the purview of the SSA and its families.

21. Time which a student spends at school breakfast and lunch, passing between classes, in homeroom, at recess, in non-directed study periods, receiving school services, and participating in optional school programs shall not count toward meeting the minimum structured learning time requirement for that student.

    In particular, "non-directed study periods, receiving school services, and participating in optional school programs" are likely to be central to many SSA students' educational development, and as such, these activities will count as "structured learning time."

22. (2) Notwithstanding the minimum school year requirements set forth in 603 CMR 27.03 and 27.04(2), at the discretion of the school committee the scheduled school year for the graduating senior class of a high school or vocational/technical school may conclude, and the school graduation may be held, up to twelve school days before the regular scheduled closing date of that school.

    The SSA uses a system of mastery and competency based assessment and advancement. As such, we'd like control over the scheduling and planning of graduation/conclusion/matriculation in light of this, without framing it in terms of time invested. Instead, the staff heading up the relevant cohorts will make a decision together with the principal.

23. (k) structured learning time schedule

    Given how multifaceted and integrated learning time will be, mandating this be documented ahead of time cuts against the grain of the SSA's personalization, meaning we're seeking exemption from this requirement, supplanting it with the retrospective, curriculum mapping process.

24. (12) Each school district or municipality which reports student transportation expenses shall maintain the lease contract, bid specifications and responses to the bid in support of reported student transportation expenditures.

    The SSA's individual, stipend based approach to transportation for some students precludes the bid approach—we'll be working with students to secure and ensure their own modes of transport.

25. (8) Extended Day and Extended Year. Costs for extended day or extended year services shall be eligible only if such services are specified on the student's IEP, and shall be calculated in accordance with 603 CMR 10.07 (6) or 603 CMR 10.07 (7).

    The SSA will be operating a significantly extended, year-round program, and as such these costs should be covered accordingly as during the traditional school year.

26. No person shall be eligible for employment by a school committee as a supervisor of attendance unless he has been granted a certificate by the Board of Education.

    Because of the high touch, team-driven approach of staff to ensuring family engagement and full awareness of students' issues, we'd like to certify at least one staff member in each cohort as a supervisor of attendance.

27. No exemption under the 603 CMR 13.02 shall be granted by the Board of Education to candidates for appointment in any city or town subject to the provisions of M.G.L. c. 31 and the rules made thereunder if the Civil Service Commission has certified three or more persons to the School Committee of said city or town who have met all the requirements of 603 CMR 13.02 for the position of supervisor of attendance.

    Ibid.

28. (2) The parent shall submit a written request to the superintendent for review of the parent's allegation. The request for review shall provide the basis for the parent's allegation, including the name(s) of the school district employee(s) involved and a description of the actions that the employee(s) took or failed to take that resulted in willful and repeated violations of M.G.L. c. 71A. Except in extenuating circumstances, the parent shall submit the request within 30 calendar days of the last incident at issue. The superintendent shall provide the school district employee with a copy of the written request within 10 calendar days after it is filed and in advance of the meeting with the superintendent.

    We'd like for the parent to first go through the principal and wait a minimum of seven days before submitting a written request to the superintendent.

29. (1) Core academic teachers who provide sheltered English instruction to English learners in school districts, including charter

schools and education collaborative, must earn an SEI Teacher Endorsement as set forth in 603 CMR 7.00 and this section. Principals, assistant principals, and supervisors/directors supervise or evaluate such teachers, must earn an SEI Teacher Endorsement or SEI Administrator Endorsement as set forth in 603 CMR 7.00 and this section.

> Because every staff member will be trained in a second [germane] language and because we'll be offering staff-wide training in SEI/ELL support in partnership with community organizations, we'd like to manage our own personnel's preparation in these areas.

30. (3) Starting on July 1, 2016, any core academic teacher who is assigned to provide sheltered English instruction to an English learner shall either hold an SEI Teacher Endorsement, or is required to earn such endorsement within one year from the date of the assignment. Any school district that assigns an English learner to a core academic teacher who has a year to obtain an SEI endorsement, shall take all reasonable steps to ensure that such English learner is assigned to core academic teachers with an SEI endorsement in subsequent school years.

> Ibid.

31. (4) Starting on July 1, 2016, no principal, assistant principal, or supervisor/director shall supervise or evaluate a core academic teacher who provides sheltered English instruction to an English learner unless such principal, assistant principal, or supervisor/director holds an SEI Teacher Endorsement or SEI Administrator Endorsement, or will earn either endorsement within one year of the commencement of such supervision or evaluation.

> Ibid.

32. Each school district requesting approval of a vocational technical education program shall demonstrate that the program meets the following approval criteria

> Because the vocational program is being instantiated under the Innovation School statute, the Board/Department is not involved.

33. (c) Each school district seeking approval for a vocational technical education program shall demonstrate that the program has been planned in consultation with the following advisory committees

> Ibid.

34. (a) Each vocational technical school district and agricultural school shall employ a vocational technical superintendent and vocational technical principal licensed pursuant to 603 CMR 4.00.

> Our staffing autonomy, irrespective of nominal credentialling or licensure, precludes this.

35. (b) Each school district that conducts five or more approved vocational technical education programs in public comprehensive high schools must employ a licensed vocational technical supervisor/director of vocational technical education to plan and supervise the programs.

    Ibid.

36. include related instruction that shall be primarily taught by licensed vocational technical teachers in the specific program area. Academic teachers may assist in the delivery of related instruction components when their particular expertise will enhance the instruction;

    Ibid.

37. (a) All personnel in the vocational technical education program including academic teachers shall have an appropriate educator license in accordance with the requirements set forth in 603 CMR 4.00 and 7.00.

    Ibid.

38. (b) Non-licensed substitute teachers and teacher (instructional) aides shall be supervised by an appropriately licensed vocational technical teacher while serving in a vocational technical laboratory and shall not be allowed to supervise students using hazardous equipment.

    Ibid.

39. (e) Persons with special expertise related to the vocational technical area of instruction who can strengthen the vocational technical education program may be employed without a vocational technical teacher license. Such persons shall work in concert with, and under the direct supervision of, an appropriately licensed vocational technical teacher at all times.

    Ibid.

40. (d) The school shall develop and implement a comprehensive safety and health plan to safeguard the safety and health of all students and school personnel. The regulations of the Occupational Safety and Health Administration (OSHA) governing work sites shall serve as the minimum standards for safety in the vocational technical education program. The plan should include provisions for safety inspections of all facilities, safety training for all students and staff and the use, storage and disposal of toxic and hazardous materials.

    For many of the vocational focuses we're developing, OSHA standards and even the notion of a 'worksite' are poor matches. It is our job to ensure students are safe, but that does not require incurring the paperwork costs of full OSHA compliance.

41. include a comprehensive safety and health plan, which includes safety training for all students and staff;

    Ibid.

42. meet National Occupational Program Approval Standards as set forth in "Guidelines for Vocational Technical Education Programs and Educator Licensure;"

    Our curricular autonomy and the Innovation School legislation preclude this.

43. meet state board/agency approvals, accreditation association approvals as set forth in the "Guidelines for Vocational Technical Education Programs and Educator Licensure;"

    Ibid.

44. be scheduled so that vocational technical shop instruction, if scheduled as a full school day, does not exceed ten consecutive full school days. Shop instruction scheduled for ten consecutive full school days or less must be scheduled for at least the same number of full school days of academic instruction before beginning another schedule of shop instruction.

    Given our curriculum, the line between 'technical shop instruction' and 'academics' is quite blurry. As such, we'd like to be exempt from this prohibition.

45. (b) A Program of Studies including both academic and technical programs and courses and the admission policy shall be published and a copy shall be provided to each student and parent/guardian.

    The individualized nature of the SSA's programming (not to mention its comparative novelty) mean that a traditional "Program of Studies" is an inappropriate document for capturing the SSA experience for families. We'll be setting up extensive

46. (d) Career guidance and placement services shall be provided to each student and shall include assessment of all vocational technical students to determine individual vocational technical and academic aptitude, interest and learning styles and assistance with the development of a four-year career plan based on the assessments. Services shall be provided to assist each student in making the transition to the workforce, postsecondary education and apprenticeship programs.

    The notion of a 'four year career plan' is poorly matched to the realities of many students' futures now, especially in the deeply technical fields the SSA will be focused on. We plan to maintain significant relationships with alumni, guiding and connecting them as they move through their first postsecondary experiences. We simply don't want this to necessarily be encoded as performative paperwork, the 'four year plan.'

47. A description of the Exploratory Program;

Because the SSA won't be organized in terms of traditional career tracks—and because our seminars will be structured around organizing questions, not specific skills—the notion of an "Exploratory Program" is incoherent.

48. A Review Process and an Appeal Process. A process at the school district level for students and parents/guardians to review and appeal the decision to deny the student admission to the school or program shall be included.

We'd like this process to first pass through appeal to the principal.

49. (c) Each school shall have a code of conduct which shall include standards and procedures for suspension and expulsion of students in accordance with M.G.L c. 71, Âğ 37H. The code shall be published in the Student Handbook and a copy shall be provided to each student, parent/guardian. Expulsion for reasons not included in the code shall not be allowed.

Establishing a culture involves establishing a code of conduct, but the form, format, and tone of a "Student Handbook" insures that it is not taken seriously. We don't plan to expel or suspend students, but to develop individualized interventions responsive to specific student issues that retain intellectual, emotional, and social depth. This cannot be codified into a Student Handbook or Code of Conduct, because it puts people ahead of protocol.

50. (d) Each school with postsecondary vocational technical education programs shall develop and implement an admission policy for the postsecondary programs. The policy must be approved by the Department prior to implementation.

The SSA's autonomy in defining enrollment processes—as captured by this Innovation Plan—obviates the Department's approval.

51. (e) Each school that admits postgraduate students shall develop and implement an admission policy for the postgraduate openings. The policy must be approved by the Department prior to implementation.

Ibid.

52. (a) Vocational Technical Cooperative Education Programs must be approved by the Department prior to implementation.

The primary role of internships, co-ops, and community integration in the SSA's Innovation Plan means not only that this is built into the Innovation Plan's approval, but that those offerings will be constantly changing and growing in a way that makes ongoing approval incoherent.

53. be supervised by a person holding a Vocational Technical Cooperative Education Coordinator license or Vocational Technical Teacher license in the cooperative education program area;

Obviated by SSA Staffing autonomy.

54. enroll only those students who are enrolled in an approved vocational technical education program and who have demonstrated the acquisition of the knowledge and skills in the applicable Vocational Technical Education Framework and the Massachusetts Curriculum Frameworks associated with at least one and one half years of full time study in the vocational technical cooperative education program area, and in no case enroll students earlier than midway through the junior year;

    Obviated by SSA's enrollment autonomy.

55. be offered only during time not scheduled for academic classes during the school year, and may include summer programs;

    Obviated by SSA scheduling autonomy.

56. provide students with continuous supervision by the employer;

    In many cases, the co-op and internship opportunities that students will be participating in will involve projects taking them far afield—apprenticing as a machinist involves very different schedules and patterns than apprenticing as a designer. In many cases, that may involve students working on employer projects under the supervision of SSA staff and volunteers, meaning 'continuous supervision' won't make sense.

57. provide a written agreement between the school, employer, student and parent/guardian delineating the conditions of the employment including, but not limited to, hours, wages and time-off. The agreement shall include the skills to be acquired by the student. The employer shall agree to meet all applicable requirements of state and federal labor laws and regulations including, but not limited to, those addressing worker compensation insurance, equal employment opportunity and occupational safety and health;

    Because the line between advising, mentoring, and employing will be significantly blurred by the SSA, imposing the tax/friction of drawing up a written contract for every iteration should be avoided.

58. provide a safety and health orientation specific to the site for all employee-students;

    Many of the vocational sites for SSA work will not require such orientations because unlike many traditional vocational programs, the SSA vocational education is not focused exclusively on endeavors requiring specialized equipment. This obviates per-site, comprehensive orientation programs..

59. (1) In order to receive vocational technical education program approval, the Superintendent shall submit an application to the Commissioner that demonstrates the labor market outlook for the program and compliance with the approval criteria.

The SSA's vocational focus does not track easily down to line-item BLS codes, and much of what accounts for the gaps in vocational training—e.g. software engineering—is due partially to the delay and relative inflexibility with which vocational programming can respond to needs and opportunities in the market. The relevance of the labor market outlook to the SSA's vocational technical education program is subsumed by the SSA's approval by the School Committee.

60. (4) Substantial changes in any approved program shall be approved in writing by the Commissioner prior to implementation.

The governance authority here, in the SSA's setup, lies with the School Committee.

61. Specific minimum outcome standards as percentages for each outcome will be set by the Board every three years.

The governance authority to set these minimum outcomes for the SSA sits with the Board of Trustees and School Committee.

62. (2) A licensed teacher in that approved vocational technical education program area shall provide continuous supervision at the job site.

Obviated by SSA staffing autonomy.

63. (5) Only those students who are enrolled in an approved vocational technical education program and who have demonstrated those academic, technical and employability competencies associated with at least one and one half years of full time study in the vocational technical education program project area, and in no case shall students be allowed to participate in such projects without a minimum enrollment of at least one year in the vocational technical program.

Many of the co-op and internship opportunities the SSA is considering are appropriate for novices in ways that traditional vocational education programs might not have had to deal with. Regardless, the metric of "one and one half years of full time study" is clearly inappropriate for many of the opportunities, even relatively straightforward ones like web development. Employers, students, and SSA staff will be working closely to make sure projects and relationships are scoped appropriately and managed to the benefit of both employers and students.

64. Requirements for Licensure, 4.07-4.09

Obviated by SSA staffing autonomy.

65. (d) (for teachers) - evidence of the possession of Massachusetts and/or national professional government or industry issued licenses or certifications required by the government or industry to work in the technical program area and by the Department to teach in the vocational technical program area as set forth in "Guidelines for Vocational Technical Education Programs and Educator Licensure."

Ibid.

66. 44.05: Provisions applicable to licenses renewed before July 1, 2016

    Because the SSA's professional development will often take forms very different from traditional PD courses, we won't be relying on the PDP system. Between this and our staffing autonomy, the licensing/employment requirements stemming from the incorporation of PDPs into the state regulations are incoherent.

67. 44.06: Provisions applicable to licenses renewed on or after July 1, 2016

    Ibid.

68. (e) statement, signed under penalties of perjury, that the candidate has successfully completed the requisite number of PDPs under a professional development plan.

    Ibid.

69. reasonable documentation that validates the completion of each activity and the number of points accrued.

    Ibid.

70. record log of completed license renewal activities, that at a minimum includes the topic and type of professional activities completed, the dates of such activities and the number of points completed.

    Ibid.

71. For the renewal of a Professional Vocational Technical Teacher license, professional development points (150 points) must be earned in a minimum of four areas

    Ibid.

72. For the renewal of a Professional Vocational Technical Administrator or Professional Vocational Technical Cooperative Education Coordinator license, professional development points (150 points) must be earned for the primary license. Professional development must include an additional 30 PDPs in the area of any additional educator license to be renewed.

    Ibid.

73. Vocational Technical educators employed in a Massachusetts public school must obtain approval of their proposed professional development plans from their supervisors by the timelines set out in 603 CMR 4.12(8)(e).

    Ibid.

74. Approval of a plan shall be based on whether the PDPs in the plan are consistent with the educational needs of the school and/or district

Ibid.

75. (1) Except as provided in 603 CMR 44.07, each license shall be valid for five years, and may be renewed for successive five year terms upon the successful completion of the requisite number of PDPs as set forth in 603 CMR 44.05 (1) and 44.06(1) within a particular five year active period, based on a professional development plan that is designed to improve teaching and student learning and that is approved, if required, by the educator's supervisor.

Ibid.

76. (1) In accordance with G.L. c. 71, Âğ 38G, educators working in a Massachusetts public school must obtain approval of their proposed professional development plans from their supervisors by the timelines set out in 603 CMR 44.05 (2), and 44.06 (2).

Ibid.

77. (b) Approval of a plan shall be based on whether the 80% of the PDPs in the plan that are subject to supervisor approval are consistent with the educational needs of the school and/or district and whether the plan is designed to enhance the ability of the educator to improve student learning, and is based on evidence that it contributes to increased student achievement and growth.

Ibid.

78. (2) A supervisor shall review each individual professional development plan at least every two years. A supervisor shall review the professional development plan of any educator new to the district or school within three months of the educator's beginning employment in the new position.

Ibid.

79. (4) Approval of professional development plans of mathematics teachers in low-performing mathematics programs shall be subject to the following additional requirements

Ibid.

80. A supervisor shall review each individual professional development plan at least every two years.

Professional development plans at the SSA may not take the IEP-style format often seen in traditional contexts. The relationship will be much more like that between managers and team members in corporations. The only time the SSA guarantees these will be formalized is in the case of consistent underperformance.

81. (1) Criteria for Candidacy for the Certificate of Occupational Proficiency In order to qualify as a candidate for the Certificate of

Occupational Proficiency in a specific vocational technical education program, a student must possess a portfolio containing at a minimum a competency profile demonstrating the acquisition of the knowledge and skills associated with at least two years of full-time study in the program, as well as a career plan, safety credential and a resume.

Safety credentials are irrelevant to much of the SSA's preparation.

82. (2) Criteria for Receiving the Certificate of Occupational Proficiency In order to receive the Certificate of Occupational Proficiency, a student must qualify as a candidate for the Certificate of Occupational Proficiency, have acquired a state competency determination for high school graduation, and be in good standing to graduate from the high school in which he/she is enrolled. The student must receive a passing score, as determined by the Commissioner, on the written test and the performance test for the Certificate of Occupational Proficiency.

83. Regulations for Educator Licensure and Preparation Program Approval

Obviated by SSA Staffing autonomy.

84. The school district shall provide training to all school district staff, including general and special educators, administrators, and paraprofessionals, on the requirements of special education.

The SSA will be in charge of this because of the variety of ways in which the SSA's non-traditional approach requires we bring in special education experts to develop programming and capacity specific to the SSA's context.

85. The school district shall provide such staff training in analyzing and accommodating diverse learning needs of all students in the general education classroom.

Ibid.

86. The school district shall provide such staff training in methods of collaboration among teachers, paraprofessionals, and teacher assistants to accommodate diverse learning needs.

Ibid.

87. (a) Instructional support. The principal shall implement the plan developed and adopted by the district to ensure that efforts have been made or will be made to meet the needs of diverse learners in the general education program.

Obviated by SSA's autonomies; we will develop and implement our own plan for meeting the needs of diverse learners.

88. An educational assessment by a representative of the school district, including

This assessment will be performed by SSA staff or an expert third party, designated by the SSA principal.

89. Public funding of independent education evaluations

    We'd like the flexibility to make these assessments freely available, funding permitting. We will provide for *at least* as much support as the sliding scale described herein.

90. The IEP shall be completed using the standard IEP format provided by the Department.

    In collaboration with the Department of Special Education in Somerville, we'd like to reserve the option of developing our own IEP formats which accommodate and recognize many of the non-traditional aspects and flexibilities of the SSA more effectively.

91. (c) For any student approaching graduation or the age of twenty-two, the Team shall determine whether the student is likely to require continuing services from adult human service agencies. In such circumstances, the Administrator of Special Education shall make a referral to the Bureau of Transitional Planning in the Executive Office of Health and Human Services in accordance with the requirements of M.G.L. c. 71B, Âğ 12A through C (known as Chapter 688).

    We'd like to reserve the option to make other, appropriate referrals, where the determination of what is appropriate is managed by a combination of the student's advocate, the SSA principal, and the director of special education in Somerville.

92. The evaluation system shall include the evaluation cycle set forth in 603 CMR 35.06.

    Obviated by the SSA's staffing and evaluation autonomy; we'll be designing our own system.

93. The evaluation cycle shall include self-assessment addressing Performance Standards established through collective bargaining or included in individual employment contracts.

    Ibid.

94. The evaluation cycle shall include goal setting and development of an Educator Plan.

    Ibid.

95. The evaluation cycle shall include a summative evaluation, in which the evaluator determines an overall rating of educator performance based on the evaluator's professional judgment and an examination of evidence that demonstrates the educator's performance against Performance Standards and evidence of the attainment of the Educator Plan goals. The educator shall have the opportunity to respond in writing to the summative evaluation.

    Ibid.

96. For any experienced educator who receives an evaluation rating of Unsatisfactory, the district shall place the educator on an Improvement Plan. The educator shall receive a summative evaluation at the end of the period determined by the evaluator for the Plan.

    Ibid.

97. A teacher without professional teacher status, an administrator in the first three years in a position in a district, or an educator in a new assignment, may be placed on a Developing Educator Plan. The educator shall be evaluated at least annually.

    Ibid.

98. Additional evidence relevant to one or more Performance Standards, including, but not limited to: Student feedback collected by the district, starting in the 2013-2014 school year.

    Ibid.

99. Additional evidence relevant to one or more Performance Standards, including, but not limited to: Staff feedback (with respect to administrators) collected by the district

100. Each educator shall receive one of four ratings on each Performance Standard and overall.

     Ibid.

101. Professional teacher status, pursuant to G.L. ch. 71, Âğ 41, should be granted only to educators who have achieved ratings of proficient or exemplary on each Performance Standard and overall. A principal considering making an employment decision that would lead to professional teacher status for any educator who has not been rated proficient or exemplary on each Performance Standard and overall on the most recent evaluation shall confer with the superintendent of schools by May 1. The principal's decision is subject to review and approval by the superintendent.

     Obviated by the SSA's staffing autonomy.

102. (1) Student Performance Measures as described in 603 CMR 35.07(1)(a)(3-5) shall be the basis for determining an educator's impact on student learning, growth, and achievement.

     Obviated by our staffing and evaluation autonomy and the governance system setting up our local accountability.

103. At least two state or district-wide measures of student learning gains shall be employed at each school, grade, and subject in determining impact on student learning, as follows

     Ibid.

104. (3) Based on a review of trends and patterns of state and district measures of student learning gains, the evaluator will assign the rating on growth in student performance consistent with Department guidelines

Ibid.

105. (4) For an educator whose overall performance rating is exemplary or proficient and whose impact on student learning is low, the evaluator's supervisor shall discuss and review the rating with the evaluator and the supervisor shall confirm or revise the educator's rating. In cases where the superintendent serves as the evaluator, the superintendent's decision on the rating shall not be subject to such review. When there are significant discrepancies between evidence of student learning, growth, and achievement and the evaluator's judgment on educator performance ratings, the evaluator's supervisor may note these discrepancies as a factor in the evaluator's evaluation.

Ibid.

106. (5) Notwithstanding 603 CMR 44.05 and 603 CMR 44.06, any core academic teacher, principal, assistant principal, or supervisor/director supervising or evaluating a core academic teacher, who fails to earn an SEI endorsement by the time designated for his or her cohort established pursuant to 603 CMR 14.07(2), will not be eligible to renew his or her license until such educator earns an SEI endorsement. Provided however, in accordance with 603 CMR 14.07(2), upon a showing of hardship, the Department may grant an educator an extension of time beyond the date designated for his or her cohort to earn an SEI endorsement.

Ibid.

Supporting Documents

The Somerville STEAM Academy — An Innovation School Prospectus

last revised July 18, 2012

drafted by A. Resnick (principal, sprout & co.) and G. Nadeau (co-founder, Somerville Children's Network).

Any questions or concerns should be directed to Alec Resnick at alec@thesprouts.org.

This prospectus sets down a vision for a new kind of a school—an Innovation School[1] within Somerville High School called the Somerville STEAM Academy. A collaboration between the Mayor's Office, the Somerville Public Schools, the Somerville Children's Network, and sprout & co. , the Somerville STEAM Academy as proposed is a project based high school opening in Fall 2013 to ~50 Somerville students. The curricular focus will be on unifying art and science through an integrative focus on computing.

This prospectus is just barely a first step. Most details and design decisions will be fleshed out during the design phase by an Innovation Plan Committee. But only the approval of the Superintendent, School Committee, and Teacher's Association can get us there.

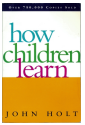
§

Contents

[1] The Massachusetts Innovation Schools Initiative provides for in-district, charter-like schools.

Executive Summary

> "It is only in the presence of loving, respectful, trusting adults . . . that children will learn all they are capable of learning . . . The tinkerers, dissectors, and manipulators will only drive children into artificial behavior; if not actual deception, evasion, and retreat."
> — John Holt, *How Children Learn*



What would it take for Somerville to become the best place to live, work, play, and raise a family? Whatever your answer, we need *first-class learning opportunities made equitably available* to achieve our ambitions. Though Somerville is known nationally for its municipal innovation, the performance and reputation of the Somerville School System has lagged despite a demonstrated commitment to change.[2] While confronting poverty and equity challenges rivaling those of Gateway Cities like New Bedford[3], we sit at a nexus of world-class educational institutions, a vibrant arts scene, and a diverse community. We are situated to reinvent urban education like few (if any) other cities in the United States. Ideas born here stand to have national impact; *we've the chance to become a national hub for innovation in urban learning and teaching*.

[2] Although voted best-managed city, Somerville is in the **top 10%** in *per capita* school budget and **bottom 10%** in MCAS performance.

[3] *e.g.* 65% of Somerville students are on free or reduced lunch.

The Somerville STEAM[4] Academy (SSA) will be Somerville's next step on a path toward educational excellence and equity for its families. The SSA's focus on structural *and* curricular innovation will offer an opportunity to foster constructive disruption *within* and *alongside* the existing school system, avoiding the top-down design processes and adversarial dynamics dooming many reform efforts and instead offering a workable path forward.[5] Through partnerships with institutions like MIT and ties to an expanding base of innovative community organizations like Parts & Crafts and Artisan's Asylum, the SSA will help make community-driven approaches to education, enrichment, and student support possible for all Somerville Schools.

[4] **STEAM** ≡ **S**cience, **T**echnology, **E**ngineering, **A**rts, and **M**athematics

[5] The Massachusetts Innovation School Initiative make transformative experiments possible while keeping funding in the district, close to those who know Somerville best. The SSA will be headquartered at Somerville High School, issue Somerville High School diplomas, and work closely with Somerville High School teachers to ensure design and staffing decisions fully benefit from their accumulated experience.

The mission of the SSA is simple: to cultivate learners' scientific curiosity & the hands-on capacity for creative, independent investigation & engineering required to follow through on that curiosity. The SSA's design and operation will be defined by three, core themes implementing that mission:

- Autonomy and the executive skills supporting it are increasingly essential in creative knowledge work. The SSA's focus on **collaborative, hands-on projects** is motivated by the recognition that we all must become lifelong learners capable of managing ourselves, our projects, and our collaborations.

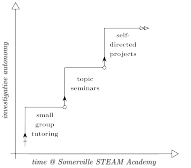
- COMPUTING PRINCIPLES—not simply technology, but the ideas behind algorithms, networks, data processing, and so on—are becoming fundamental to modern intellectual and economic life. The integration of simulation and computational environments will ensure **fluency in computational thinking and programming**, just as current models are designed to ensure written fluency.

- CRITICAL CREATIVITY refers to the capacity to integrate technical and artistic modes in reflection and critique. The SSA's cross-disciplinary themes and project-based curricula will emphasize the skill to which Steve Jobs traced Apple's success: **the ability to integrate technology and the liberal arts**.

THE SSA IS A NOVEL, HYBRID MODEL combining project-based curricula, computing technology, and a distributed community integration to enable a **personalized, mastery-based** process which works forward from learners' interests. Three academic modes (small group tutoring, topic seminars, and self-directed projects) will structure cross-disciplinary themes like biomechanics and computational art. These modes will scaffold students' growth from a traditional classroom environment to self-directed investigation.[6] The SSA will also be a **center for professional development opportunities for all Somerville educators** offerings workshops around new technologies, an environment for prototyping curricula, and funded time for co-planning and reflection.

BUT 'NOVEL' DOES NOT MEAN 'SHOT IN THE DARK:' the SSA combines several, successful models to fit Somerville. The Harlem Children's Zone's community integration and emphasis on equity, High Tech High's project-driven curricula and emphasis on professional development, the industry partnerships and emphasis on technological fluency of NYC's Academy for Software Engineering, and TechBoston Academy's emphasis on a a nurturing environment. Even the innovation hub strategy uniting school and community is inspired by the original innovation hub: Xerox PARC.

AS A JOINT PROJECT between sprout & co., the Somerville Children's Network, the District, and the City, collaboration defines the SSA. We are applying for $450,000 from the Gates Foundation[7] to support the the SSA's design process. The Mayor's Office has committed to matching $300,000 of that support. It's exactly that type of commitment which demonstrates there is something new and exciting here in Somerville. We hope this prospectus will start the ball rolling toward a future Somerville can be proud of.



Differentiated modes will comfortably transition students from traditional contexts to autonomous investigation.

[6] Note that "self-directed" *does not mean solitary*—collaboration is a natural mode for learners and co-teaching will be emphasized.

From TechBoston Academy to High Tech High, the SSA brings together components of several, innovative models to fit Somerville's unique situation.

[7] via Wave iii(a) of EDUCAUSE's Next Generation Learning Challenge

Public Statement

The City of Somerville is committed to becoming the best place to live, work, play, and raise a family. Without equitably available, first-class educational opportunities, we cannot realize those ambitions. The Somerville STEAM Academy (SSA) will be a high school (opening Fall 2013 to ~50 students grades 9–12) founded on a novel model unifying artistic & scientific modes with immersive, project-based curricula emphasizing computational thinking. We hope the SSA will be one of many steps making Somerville a world class hub of innovation in urban teaching and learning, pioneering a replicable model for constructive disruption of school-as-it-is.

Innovation School Vision, Mission, and Statement of Need

> "Visions give people a direction and inspire people to act, and a group of inspired people is the most powerful force in the world. If you're a young person setting off to realize a vision, or an old person setting off to fund one, I really want it to be something worthwhile."
> — Bret Victor, "A Brief Rant on the Future of Interaction Design

Our vision Somerville Public Schools struggle with the same urban challenges of intense poverty, linguistic diversity, and social mobility facing many other communities. But Somerville has a unique set of human and organizational resources which enable us to not just solve our own problems and become a first-class district but to pioneer innovations with national relevance. More artists *per capita* than anywhere besides New York City, proximity to world-class educational institutions, and a burgeoning sector of innovative community organizations inspire our vision of *Somerville transformed into a world-class center of innovation in urban learning & teaching.*

Our mission The SSA's mission grows from a recognition that as a society, we task school with the responsibility of reconciling the social and economic demands of the 'real world' with the creative and developmental demands of raising happy, empowered children. But, the real world is in a state of constant disruption driven largely by continually accelerating technological progress. And while the future is unclear, we know the capacity to independently integrate the creative and technical will be key.

The Somerville STEAM Academy is dedicated to equipping learners not just with the necessary scientific and artistic *training*, but the investigative, independent *mindset* needed to thrive. Bud Cadell summed it up well: you need to find the intersection of what you do well, what you want to do, and what you can be paid to do. For

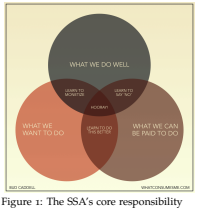


Figure 1: The SSA's core responsibility is the reconciliation of the real world's social and economic demands with the creative and developmental demands of raising happy, empowered children.

the SSA, that focus translates into a simple mission: *to cultivate learners' scientific curiosity & the hands-on capacity for creative, independent investigation & engineering required to follow through on that curiosity.*

Why Somerville? Equity is an expected challenge in a community as diverse as Somerville. While closing the achievement gap needs to be our first priority, those efforts cannot come at the expense of the rigor or excellence of the educational opportunities available in Somerville.[8] While Somerville Public Schools have demonstrated an admirable capacity to come together and diligently work to improve, if a school system as committed as ours struggles, it is clear that new models acknowledging Somerville's unique challenges and opportunities are needed.

Despite a median income greater than Massachusetts and above the national average, nearly **65% of Somerville Public School students receive free- or reduced lunch**,[9] making "preparing students for the 21st century" all the more challenging. Fortunately, compared to Gateway Cities[10] with similar school populations, Somerville's density, proximity to world class educational institutions, and vibrant community of creative businesses—offers much greater room to innovate. We are in a unique position to prototype the future of urban learning. Massachusetts' Innovation School Initiative now makes it possible to develop a path forward for Somerville, one free of the acrimony and adversarialism associated with past experiences with the charter model.

To avoid an ever-tightening spiral of declining enrollment and the increasingly challenging academic, social, and economic consequences of our stark achievement gap, Somerville must re-imagine school from the ground up. But really, we must go beyond "imagining" and focus on *prototyping novel solutions on the ground*. We think the Somerville STEAM Academy (and the team behind it) is the R&D high school needed to do that.

[8] Otherwise we will end up right back where we started: in the midst of increasing gentrification and social stratification accompanied by declining enrollments.

[9] as reported by Somerville School News in 2009

[10] a group of 24 former mill cities struggling with the transition to a knowledge economy—they have a population 35,000–250,000, and below-average household incomes and educational attainment rates.

How Will Autonomy & Flexibility Be Used?

> "I would suggest that one reason education reform has not worked is that it almost always treats these dimensions [of curriculum and organization] as separate . . . Curriculum reformers try to put new curriculum in an otherwise unchanged system but ignore the fact that the old curriculum really suits the system and reverts to type as soon as the reformers turn their backs. Similarly, when reformers introduce new forms of management of the old approach to knowledge and learning, the system quickly snaps back to its state of equilibrium."
> — Seymour Papert, "Perestroika and Epistemological Politics"

Curriculum The Somerville STEAM Academy's curriculum will focus on the integration of creative and technical modes of expression and investigation. The future of creative knowledge work is dominated by collaborative teams communicating and solving open-ended design problems crossing disciplinary boundaries. The SSA will develop the executive and analytic skills students will need to embrace the uncertain future, regardless of what the domains or tools *du jour* may be.

This ambition is reflected in the SSA's cross-disciplinary curricular themes like biomechanics & computational art which will in turn leverage sophisticated computational toolkits and environments like *Mathematica*, Processing, and Arduino. In every subject, the focus will be students' growth into independent investigators.[11]

Achieving and documenting parity between these themes and the Core Curriculum will be one of the primary responsibilities of SSA administration; it will *not* be a concern of teachers or students (whose job, after all, is to learn & explore deeply together). Any additional instructional attention required will be provided for by SSA tutoring services.

Mathematica et al exemplify a burgeoning class of accessible toolkits enabling an unprecedented breadth and depth of computational explorations.

[11] At the SSA, students will eventually be in charge not only of project management, but ancillary activities like online project documentation as well.

Instruction The SSA's mission emphasizes learner autonomy. Developing students' ability to manage themselves and their investigations will be a priority. To do this, three tiers of instructional support will **scaffold the transition from traditional classroom contexts to self-directed collaboration and investigation**: (i) small group tutoring, (ii) topic seminars, and (iii) self-directed projects.

The majority of instructional time will *eventually* be devoted to immersive, long-term projects managed by students and mentored by a combination of teachers and community members. These projects will be complemented by two other modes: ongoing topic seminars introducing students to particular subject domains and toolsets, and small group co-teaching and tutoring. The small group teaching and tutoring will create a familiar environment for students with

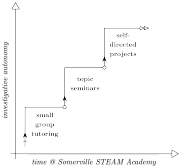


Figure 2: Instructional options at SSA will be differentiated to comfortably transition students from traditional contexts to self-directed investigation.

additional flexibility & intimacy. Over time, students will seek this close-range instruction less and less, eventually relying primarily on topic seminars, personal projects, and self-directed projects.

Assessment Assessment's purpose is to help us do right by our students. That means assessment structures should enable teachers and students to make better decisions about how to support and work with one another. Structures like MCAS are a fact of life, but they are not useful when considering an individual student's intellectual and emotional development.

"Not everything that can be counted counts, and not everything that counts can be counted."
— Albert Einstein

The SSA's focus on developing an individual's capacity for scientific and creative exploration at a pace and in a direction personalized for each student means standardized testing cannot provide feedback at high enough resolution to usefully inform the design of tools, materials, and projects. So of course while MCAS performance will be an aggregate metric we attend to, the SSA will need higher fidelity methods to get the feedback needed to make the most of our time with students. That fidelity and depth will be provided by an anthropological assessment program complementing the SSA's project-based curricula and focus on learner autonomy.

This anthropological assessment program will create new staff positions responsible for interviewing students and supporting the documentation of their projects, unifying work across self-directed projects, topic seminars, and small group tutoring. Project-based curricula often pose a challenge for traditional assessment. Assessment at the SSA will embrace the multifaceted nature of project work. The anthropological assessment process will map student and teacher work to the Common Core, document competency, and inform the design of future projects and topic seminars on a student-by-student basis to ensure that everyone—in a personalized and self-paced way—covers the required material. Any remaining gaps or issues will be addressed in ongoing small group tutoring sessions throughout the year.

Schedule & Calendar Real projects don't fit into a single period. Creativity and innovation are hard to schedule. Building a school which accommodates the organic structure and pace of creative knowledge work requires flexibility. The Somerville STEAM Academy will operate year-round, with curricular and professional development happening in parallel with student projects, topic seminars, and tutoring.

"To be effective, every knowledge worker . . . needs to be able to dispose of time in fairly large chunks. To have small dribs and drabs of time at his disposal will not be sufficient even if the total is an impressive number of hours. . . . Moreover, because knowledge work cannot be measured the way manual work can, one cannot tell a knowledge worker in a few simple words whether he is doing the right job and how well he is doing it."
— Peter Drucker, *The Effective Executive*

The nature of the project-based curricula and the prominent role of mentorship and community connection in the SSA means both teachers and students will be found working on their projects and

classes outside of traditional class hours.[12] This will present a unique challenge for the SSA: much of the school experience is social, and a coherent social fabric is key to a healthy learning community.

To address this, the SSA will work closely with students, teachers, and community mentors to develop a plan allowing them to choose the timing and distribution of their vacation time. The SSA will work closely with students to ensure the availability of their peers' social support and academically relevant mentorship and job opportunities throughout the year. This arrangement requires further study and elaboration; its details (and their framing within state requirements) will be fleshed out during the design phase of the Innovation School process.

Staffing Policies and Procedures The SSA is committed to creating a path forward for all Somerville teachers and students. We will rely on and work closely with Somerville teachers and make capitalizing on their expertise and experience a top priority. The SSA's focus on community integration and partnership also means we will be able to contract with providers from the community, bringing in mentors from local businesses and organizations, relying on significant family and community outreach to establish the level of transparency and accessibility to which the SSA is committed.

Professional Development At the SSA, teachers will be expected to be investigators just as students are. Acknowledging that the future is uncertain and that the ability to manage yourself and your peers in creative and open-ended investigations is central, professional development will be *an equal priority* to student development. The long-term success of students, the SSA, and Somerville Public Schools as a whole requires ongoing commitment to the development of the best teachers and learners.

Going beyond this, the SSA will function as a center for professional development, enrichment, and prototyping for teachers *throughout* Somerville. Among other offerings, the SSA will provide workshops introducing teachers to new technologies, room to try out new pedagogies in a reflective environment, funded time for co-planning and reflection, and a venue and organization to bring interesting speakers to the area. Not only will teachers be encouraged to prototype new materials for the benefit of their own students, but the SSA will explicitly support teachers' efforts to share and spread their material, helping them develop content and potentially branching out into learning microbusinesses through infrastructure like udemy[13]

All this stems naturally from the dual ambition to make Somerville

[12] That said, the minimum total time involved will not exceed State requirements.

[13] an online infrastructure letting people build and sell courses online. Their stated goal is "to disrupt and democratize education by enabling anyone to learn from the world's experts."

a world-class hub of innovation in education and the recognition that that requires doing the hard work to provide a path forward for *all* Somerville teachers.

District Policies and Procedures Especially in innovative startups, clear and accountable leadership is key. While hierarchy excels at maintaining predictability and repeatability by simplifying planning and control, the rigors of hierarchy waste most of creative people's potential to contribute. Reconciling these competing pressures requires the SSA's structure be very flat—there will be no deans or middle management. The principal will be in charge and completely accountable for preventing and managing any issues that arise. The chain of accountability will flow directly from student to teacher to principal.

Cross-disciplinary, project-based curricula are a poor match for traditional departments organized by subject. Instead, the SSA will feature working groups responsible for ensuring excellent service to teachers along cross-cutting concerns like technological infrastructure, professional development, community outreach, etc. Quarterly, the various groups at SSA will be reviewed by teachers and students, and it will be the principal's responsibility to design and enact policies addressing issues raised.

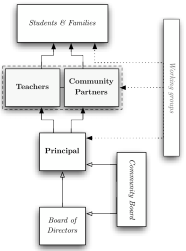


Figure 3: The principal will be held solely responsible for ensuring SSA's success and will be reviewed quarterly by the Community and SSA Boards. Working groups responsible for cross-cutting concerns like IT will play a support role. Outside of these structures, there will be no hierarchy at the SSA.

Budget The SSA's focus on technologically enabled, project-based curricula means material and technology costs will be larger than normal. Similarly, the SSA's professional development budget will be larger than normal to accommodate teachers' ongoing investigations (which we expect will often require ancillary training, hardware, or software). While the innovations for which the SSA will be responsible will require greater discretionary spending in the prototyping and design stages, these budgetary details will be fleshed out in the course of the Innovation School design process.

Capacity of Applicant Group

sprout & co. The Somerville Children's Network approached sprout about the prospect of starting an Innovation School within Somerville High School. Shaunalynn, Michael, and Alec have between them nearly two decades of combined experience teaching, designing curricula, coordinating professional development, and creating hardware and software tools to support learning STEM content. They have been intimately involved in the startup and management of a variety of organizations ranging from the HONK! Committee to nublabs (an educational technology startup) to Camp Kaleidoscope (a science and arts summer camp) to sprout & co. itself. Each has a strong

N.B. This prospectus was drafted by Alec Resnick (principal at sprout & co.) and Greg Nadeau, co-founder of the Somerville Children's Network.

technical background and has collaborated closely with teachers and administrators in professional development, teaching, and managerial contexts. And since starting sprout, each has managed teams of volunteers of all sizes in designing and coordinating educational programs.

In founding sprout, our primary motivation was to transform the way we think about learning and research. We chose Somerville as a place to live *and* work for a host of reasons ranging from its diversity to its tightly knit communities to its social and economic challenges to its proximity to world-class educational institutions. We started with the conviction—which has only grown—that Somerville has the ingredients to become a world-class locus of educational innovation. When we were approached about the prospect of starting an Innovation School, we felt the opportunity was a natural fit for all involved and that—with help from existing teachers and Somerville families—sprout & co. would be up to the task.[14]

[14] Of course, there are gaps in our background—notably in public sector legal and financial management. That said, we're confident that we can address these gaps through prudent hiring and collaboration.

Somerville Children's Network (SCN) A 501(c)3 non-profit, the Somerville Children's Network (SCN) is dedicated to making Somerville the best possible urban place to live, work, play, and raise a family. SCN's BBQ co-op events have connected families across Somerville and build the foundation for many of the community efforts currently underway. Over the past ten years, SCN has raised funds providing hundreds of hours of pre-school indoor play spaces, after school clubs such as Not Just Lego, and family-oriented activities such as Somerville Youth Build and Sail.

Greg Nadeau, SCN co-founder, is a manager at PCG with over seventeen years of experience leading state longitudinal data systems: eight on the public side as Chief Information Officer of the Massachusetts Department of Education, and ten in the private sector consulting with private companies, education organizations and state governments. Mr. Nadeau served on the Board of Directors of the School Interoperability Framework Association (SIFA) and as an expert consultant to the Council of Chief State School Officers (CCSSO). In 2001, Mr. Nadeau created and led the US Open e-Learning Consortium, a 14-state USED-funded project. The primary objective of the consortium was to harvest released high-stakes, assessment items to create a pool for low-stakes interim assessments. Mr. Nadeau has directed successful statewide education data projects in Massachusetts, South Carolina, Pennsylvania, Rhode Island, Illinois, and Utah, and participated in projects with dozens of other states. From 2009–2011 he successfully led CCSSO's State Core Model project and he currently leads the team developing the CEDS Logical Model for the National Center for Education Statistics.

Proposed Development & Establishment Timetable

The time leading up to the opening of the Somerville STEAM Academy will manifest its focus on community-driven, rapid prototyping processes. After this prospectus is submitted, the Superintendent will convene a screening committee[15] who will approve or reject the prospectus within thirty days assessing whether the prospectus: (i) presents a sound and coherent plan for improving school performance and student achievement; (ii) supports or enhances existing educational efforts in the district; and (iii) reasonably can be expanded into a comprehensive innovation plan.

Upon prospectus approval, sprout & co. will convene the Innovation Plan Committee (IPC)[16] as well as a Community Board, comprising representative members—both students *and* families—from the Somerville community.

[15] comprising "the superintendent or a designee, a school committee member or a designee selected by the school committee and a representative from the leadership of the local teacher's union"

[16] minimally (i) the applicant; (ii) the superintendent or designee; (iii) a school committee member or designee; (iv) a district parent, (v) a district principal; and (vi) two district teachers.

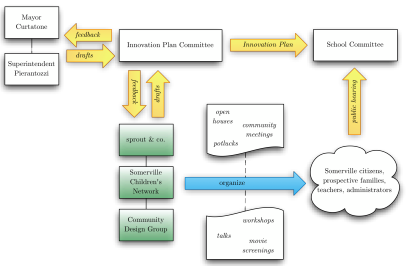


Figure 4: The Innovation Plan design process will emphasize community engagement and lo-fi prototyping activities like workshops and talks. sprout & co. will organize the process and work closely with the Innovation Plan Committee to create drafts of the plan shared with the community, City, and District in a continuous feedback loop.

In parallel with the development of the Innovation Plan, sprout *et al* will coordinate a series of workshops and events meant to concretely expose families in Somerville to the questions, issues, and options being discussed and incorporated into plan drafts. The draft of the Innovation Plan, along with discussions around it, will be hosted publicly using systems like Google Docs. A Community Design Group comprising representative community members will provide short-order input on drafts and facilitate the community engagement and feedback process.

As portions of the Innovation Plan are solidified, sprout will coordinate an ongoing series of Somerville STEAM Academy "SneakPeeks" in partnerships with families and community organizations. These

"SneakPeeks" will take the form of film screenings, workshops, and open houses serving three functions:

1. provide the design team concrete feedback on the proposed Innovation Plan by putting people in touch with prospective staff and characteristic educational experiences
2. connect the design team directly to the community, facilitating honest, authentic community engagement and providing ample room for discourse
3. publicize the school and begin recruitment of students and staff

At this time, sprout will also being the hiring process, bringing in potential hires to run SneakPeeks and take part in the process of drafting and discussing the Innovation Plan. After the Innovation Plan is finalized, the public hearing held, and School Committee approval obtained, SneakPeeks will be in full swing and enrollment interviews will begin. This interview process will be mandated to produce a pool which will be able to constitute an inaugural class reflecting Somerville High School's demographic profile. This pool will be entered into a lottery which will determine the SSA's inaugural class. In the summer before the SSA's Fall 2013 opening, enrolled students will begin their preparation in the form of internships, focused workshops, and social events preparing the social and academic fabric for the Fall 2013 launch.

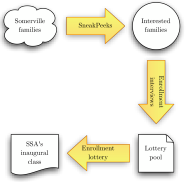


Figure 5: SSA enrollment process will comprise (i) public SneakPeeks to ensure community engagement, (ii) an interview process, and (iii) an enrollment lottery, creating a pool guaranteed to match Somerville High's demographic profile.

Tentative schedule

June 2012 prospectus submitted · screening committee convened · prospectus approved

July 2012 Innovation Plan Committee convened · Community Design Group meetings begin

Fall 2012 SneakPeeks begin · Community Board convened · curriculum & assessment materials developed · Innovation Plan v1, v2 · facilities selected · budget finalized · teacher approval

Winter 2012 student recruitment begins · operations & teaching staff hired · professional development begins · Innovation Plan v3

Spring 2013 students recruited · professional development continues · Innovation Plan finalized

Summer 2013 professional development continues · workshops introducing students to staff and curriculum · Innovation Plan Public Hearing · School Committee authorization.

June 2013 Enrolled students begin internships, workshops. · Social events, movie screenings, field trips coordinate throughout the summer. · Professional development and curriculum finished.

Fall 2013 **The Somerville STEAM Academy opens!**

Summer 2014 First national news coverage of Somerville High School for innovation in urban learning and teaching.

Summer 2017 First SSA class graduates, school-wide MCAS performance in the top ten percent of the state.

Fall 2018 Second and third small-school model Innovation Schools open in Somerville, inspired by transformations pioneered by the SSA

Spring 2020 Three out of four students are in an Innovation School environment weekly.

Fall 2020 "The Somerville Model" is taught at education schools around the country after enormous success in Somerville publicized by reports from the Kaufmann Foundation and McKinsey & Company

Administrivia

Statements of Commitment

By signing this document, I acknowledge that I have read the provisions of the Massachusetts' Innovation School statute G.L. Chapter 71, Section 92 – Innovation Schools, and the Somerville STEAM Academy Innovation School proposal, and that I approve of our proposal and the opportunity to participate in the Massachusetts' Innovation School initiative.

N.B. Applicant resumes are enclosed at the end of this prospectus.

- Shaunalynn Duffy 
- Michael Nagle 
- Alec Resnick 
- Greg Nadeau 

G.L. Chapter 71, Section 92 – Innovation Schools

Section 92

(a) An Innovation School shall be a public school, operating within a public school district, that is established for the purpose of improving school performance and student achievement through increased autonomy and flexibility. An Innovation School may be established as a new public school or as a conversion of an existing public school. A student who is enrolled in a school at the time it is established as an Innovation School shall retain the ability to remain enrolled in the school if the student chooses to do so.

(b) An Innovation School may establish an advisory board of trustees. An Innovation School shall have increased autonomy and flexibility in 1 or more of the following areas:

(i) curriculum;

(ii) budget;

(iii) school schedule and calendar;

(iv) staffing policies and procedures, including waivers from or modifications to, contracts or collective bargaining agreements;

(v) school district policies and procedures; and

(vi) professional development. An Innovation School shall receive each school year from the school committee the same per pupil allocation as any other district school receives. An Innovation

School may retain any unused funds and use the funds in subsequent school years. An Innovation School may establish a non-profit organization that may, among other things, assist the school with fundraising. A district shall not reduce its funding to an Innovation School as a result of the school's fundraising activities.

(c) An Innovation School established under this section shall be authorized by the local school committee and shall operate according to an innovation plan, which shall articulate the areas of autonomy and flexibility under subsection (b). To the extent practicable, the innovation plan shall be based on student outcome data, including, but not limited to:

(i) student achievement on the Massachusetts Comprehensive Assessment System;

(ii) other measures of student achievement, approved by the commissioner, as appropriate;

(iii) student promotion, graduation rates and dropout rates;

(iv) achievement data for different subgroups of students, including low-income students as defined by chapter 70, limited English-proficient students and students receiving special education; and

(v) student attendance, dismissal rates and exclusion rates. An Innovation School shall operate in accordance with the law regulating other public schools, except as the law conflicts with this section or any innovation plans created thereunder.

(d) An Innovation School is a school in which:

(i) faculty and leadership are primarily responsible for developing the innovation plan under which the school operates and leadership is responsible for meeting the terms of the innovation plan; or

(ii) an external partner is primarily responsible for developing the innovation plan under which the school operates and the external partner is responsible for meeting the terms of the innovation plan.

(e) Nothing in this section shall be construed to prohibit:

(i) the establishment of an Innovation School as an academy within an existing public school;

(ii) the establishment of an Innovation School serving students from 2 or more school districts; provided, however, that all of the provisions of this section are met by each school district;

(iii) the simultaneous establishment of 2 or more Innovation Schools as an Innovation Schools Zone within a school district; or

(iv) the establishment of an Innovation School as a virtual public school that provides instruction to students through distance learning, including online learning programs and courses, subject to regulations adopted by the board of elementary and secondary education.

(f) The following shall be eligible applicants for the purposes of establishing an Innovation School:

(i) parents;

(ii) teachers;

(iii) parent-teacher organizations;

(iv) principals;

(v) superintendents;

(vi) school committees;

(vii) teacher unions;

(viii) (viii) colleges and universities;

(ix) non-profit community-based organizations;

(x) non-profit business or corporate entities;

(xi) non-profit charter school operators;

(xii) non-profit education management organizations;

(xiii) educational collaboratives;

(xiv) consortia of these groups; and

(xv) non-profit entities authorized by the commissioner. Private and parochial schools shall not be eligible to operate an Innovation School.

(g) The local school committee, local teacher's union and superintendent of the district shall follow a process, consistent with this subsection and subsections (h) to (o), inclusive, for which an existing district school may be converted to an Innovation School or by which a new Innovation School may be established within the district. This process shall require that an eligible applicant proposing to establish an Innovation School prepare a prospectus regarding the proposed school. The prospectus shall include, but not be limited to, a description of:

(i) whether the school will be a new school or a conversion of an existing school;

(ii) if the school is a new school, the proposed location of the school;

(iii) if the school is a conversion of an existing school, the school that is being proposed for conversion;

(iv) the external partners, if any, that will be involved in the school;

(v) the number of students the school is anticipated to serve and the number of staff expected to be employed at the school;

(vi) the overall vision for the school, including improving school performance and student achievement;

(vii) specific needs or challenges the school shall be designed to address;

(viii) (viii) a preliminary assessment of the autonomy and flexibility under subsection (b) that the school will seek;

(ix) why such flexibility is desirable to carry out the objectives of the school;

(x) anticipated components of the school's innovation plan;

(xi) a preliminary description of the process that shall be used to involve appropriate stakeholders in the development of the innovation plan; and

(xii) a proposed timetable for development and establishment of the proposed school.

(h) Upon completion of the prospectus under subsection (g), an eligible applicant shall submit the prospectus to the superintendent, who shall within 30 days convene a screening committee consisting of the superintendent or a designee, a school committee member or a designee selected by the school committee and a representative from the leadership of the local teacher's union. The screening committee shall review the prospectus for the purpose of determining whether the prospectus:

(i) presents a sound and coherent plan for improving school performance and student achievement;

(ii) supports or enhances existing educational efforts in the district; and

(iii) reasonably can be expanded into a comprehensive innovation plan. In the case of a new school, the committee will prepare an impact statement describing how the new school will affect

the children and faculty in the district. Within 30 days of receiving a prospectus, the screening committee shall decide, on the basis of a two-thirds vote, to accept or reject the prospectus, or return the prospectus to the eligible applicant for revisions. If a prospectus is rejected or returned, the screening committee shall submit a detailed explanation for the decision to the applicant. A prospectus that is rejected or returned may be revised and resubmitted for subsequent consideration.

(i) Upon the acceptance of a prospectus by the screening committee under subsection (h), the applicant shall form an innovation plan committee of not more than 11 individuals within 30 days. The purpose of the innovation plan committee shall be to:

(i) develop the innovation plan described in subsection (c);

(ii) assure that appropriate stakeholders are represented in the development of the proposed Innovation School; and

(iii) provide meaningful opportunities for the stakeholders to contribute to the development of such school. The size and composition of the innovation plan committee shall be determined by the applicant; provided, however, that the committee shall include:

(iv) the applicant;

(v) the superintendent or a designee;

(vi) a school committee member or a designee;

(vii) a parent who has 1 or more children enrolled in the school, or in the case of a new school, from the district;

(viii) a principal employed by the district; and

(ix) 2 teachers employed by the district. The applicant shall select the parent from among nominees submitted by parent-teacher organizations in the district. If the district does not contain a parent-teacher organization or if the organization does not submit nominees, the applicant shall select the parent from among volunteers in the area or community the proposed school is expected to serve. The applicant shall select the principal and 1 teacher from among volunteers in the district and 1 teacher from among nominees submitted by the local teacher's union.

(j) Upon the formation of the innovation plan committee in subsection (i), the committee shall develop the innovation plan for the proposed Innovation School. The purpose of the innovation plan shall be to comprehensively articulate the areas of autonomy and flexibility under subsection (b) that the proposed school will use. The innovation plan shall include, but not be limited to:

(i) a curriculum plan, which shall include a detailed description of the curriculum and related programs for the proposed school and how the curriculum is expected to improve school performance and student achievement;

(ii) a budget plan, which shall include a detailed description of how funds shall be used differently in the proposed school to support school performance and student achievement;

(iii) a school schedule plan, which shall include a detailed description of the ways, if any, the program or calendar of the proposed school will be enhanced or expanded;

(iv) a staffing plan, which shall include a detailed description of how the school principal, administrators, faculty and staff will be recruited, employed, evaluated and compensated in the proposed school and any proposed waivers or modifications of collective bargaining agreements;

(v) a policy and procedures plan, which shall include a detailed description of the unique operational policies and procedures to be used by the proposed school and how the procedures shall support school performance and student achievement; and

(vi) a professional development plan, which shall include a detailed description of how the school may provide high-quality professional development to its administrators, teachers and staff. In order to assess the proposed school across multiple measures of school performance and student success, the innovation plan shall include measurable annual goals including, but not limited to, the following:

- student attendance;
- student safety and discipline;
- student promotion and graduation and dropout rates;
- student achievement on the Massachusetts Comprehensive Assessment System;
- progress in areas of academic underperformance; and
- progress among subgroups of students, including low-income students as defined by chapter 70, limited English-proficient students and students receiving special education;
- reduction of achievement gaps among different groups of students. A majority vote of the innovation plan committee shall be required for approval of the innovation plan.

(k) The provisions of the collective bargaining agreements applicable to the administrators, teachers and staff in the school shall be considered to be in operation at an Innovation School, except

to the extent the provisions are waived or modified under the innovation plan and such waivers or modifications are approved under subsections (l) and (m).

(l) In the case of a school conversion, upon completion of the innovation plan in subsection (j), the applicant shall submit the innovation plan to teachers in the school that is proposed for conversion for approval by secret ballot within 30 days. A two-thirds vote of the teachers shall be required to approve the plan. Upon approval of an innovation plan by the applicable union members the plan shall, within 7 days, be submitted to the school committee. If a two-thirds vote is not achieved, the innovation plan committee may revise the innovation plan as necessary and submit the revised plan to the teachers for a subsequent vote. In the case of a new school, upon the completion of the innovation plan in subsection (j), the applicant, a local union and the superintendent shall negotiate waivers or modifications to the applicable collective bargaining agreement necessary for the school to implement the innovation plan. Upon the conclusion of the negotiations, the innovation plan shall be submitted immediately to the school committee. If the negotiations have not resulted in an agreement within 40 days, either party may petition the division of labor relations for the selection of an arbitrator. The division shall select an arbitrator within 3 days of the petition from a list submitted by the parties. The arbitrator shall conduct a hearing within 14 days of the arbitrator's selection. The arbitrator shall consider the parties' positions and the needs of the students in the district. The arbitrator's decision shall be consistent with the contents of the innovation plan developed by the applicant. The arbitrator shall, within 14 days of the close of the hearing, submit a decision which shall be final and binding on the parties.

(m) Upon receipt of an innovation plan regarding an Innovation School, a school committee shall hold at least 1 public hearing on the innovation plan. After the public hearing, but not later than 60 days after the receipt of the innovation plan, the school committee shall, on the basis of the quality of the plan and in consideration of comments submitted by the public, undertake a final vote to authorize the Innovation School for a period of not more than 5 years, subject to subsection (n). Approval of the majority of the school committee as fully constituted shall be required to authorize an Innovation School. If the approval is not obtained, an innovation plan committee may revise the innovation plan and:

(i) in the case of a new school, submit the revised plan to the school committee for a subsequent vote; or

(ii) in the case of a conversion, submit the revised plan to the teachers in the school that is proposed for conversion for a vote, pursuant to subsection (l); provided, however, that the plan meets the requirements for approval under subsection (l), submit the revised plan to the school committee for a subsequent vote. A school committee shall vote on a revised plan submitted pursuant to this subsection within 60 days of the receipt of such plan and contract.

(n) All Innovation Schools authorized under subsection (m) shall be evaluated by the superintendent at least annually. The superintendent shall transmit the evaluation to the school committee and the commissioner of elementary and secondary education. The purpose of the evaluation shall be to determine whether the school has met the annual goals in its innovation plan and assess the implementation of the innovation plan at the school. If the school committee determines, on the advice of the superintendent, that the school has not met 1 or more goals in the innovation plan and that the failure to meet the goals may be corrected through reasonable modification of the plan, the school committee may amend the innovation plan as necessary.

After the superintendent assesses the implementation of the innovation plan at the school, the school committee may, on the advice of the superintendent, amend the plan if the school committee determines that the amendment is necessary in view of subsequent changes in the district that affect 1 or more components of the plan, including, but not limited to, changes to contracts, collective bargaining agreements or school district policies; provided, however, that an amendment involving a subsequent change to a teacher contract shall first be approved by teachers at the school under the procedures in subsection (l). If the school committee determines, on the advice of the superintendent, that the school has substantially failed to meet multiple goals in the innovation plan, the school committee may:

(i) limit 1 or more components of the innovation plan;

(ii) suspend 1 or more components of the innovation plan; or

(iii) terminate the authorization of the school; provided, however, that the limitation or suspension shall not take place before the completion of the second full year of the operation of the school and the termination shall not take place before the completion of the third full year of the operation of the school.

(o) At the end of the period of authorization of an Innovation School approved under subsection (m), the leadership of the school may

petition the school committee to extend the authorization of the school for an additional period of not more than 5 years. Before submitting the petition, the leadership of the school shall convene a selection of school stakeholders, including, but not limited to, administrators, teachers, other school staff, parents and external partners, as applicable, to discuss whether the innovation plan at the school requires revision and to solicit recommendations as to the potential revisions. After considering the recommendations of the stakeholder group, the leadership of the school and the applicable superintendent shall jointly update the innovation plan as necessary; provided, however, that a proposal regarding a new waiver or exemption from the local teacher's union contract shall be approved by teachers at the school, under subsection (l). Approval of the majority of the school committee as fully constituted shall be required to extend the period of authorization of an Innovation School. If the approval is not obtained, the leadership of the school and superintendent may jointly revise the innovation plan and submit the revised plan to the school committee for a subsequent vote. If the school committee does not extend the authorization of the school, the leadership of the school may seek the authorization from the board of elementary and secondary education. The board shall vote on the requested extension within 60 days of its receipt for approval of such extension.

(p) The commissioner of elementary and secondary education shall, to the extent practicable, be responsible for the following:

(i) the provision of planning and implementation grants to eligible applicants to establish Innovation Schools;

(ii) provision of technical assistance and support to eligible applicants;

(iii) the collection and publication of data and research related to the Innovation Schools initiative;

(iv) the collection and publication of data and research related to successful programs serving limited English-proficient students attending Innovation Schools; and

(v) the collection and dissemination of best practices in Innovation Schools that may be adopted by other public schools. The board of elementary and secondary education shall promulgate regulations necessary to carry out this section. Annually, the commissioner shall report to the joint committee on education, the house and senate committees on ways and means, the speaker of the house of representatives and the senate president on the implementation and fiscal impact of this section.

Somerville Public Schools
Education • Inspiration • Excellence

Tony Pierantozzi, *Superintendent of Schools*
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tpierantozzi@k12.somerville.ma.us · www.somerville.k12.ma.us
T 617-625-6600 x6005 · **F** 617-666-1130

June 25, 2012

Mr. Alec Resnick
339R Summer Street
Somerville, MA 02145

Dear Mr. Resnick:

Thank you for submitting the Somerville High School STEAM Academy Innovation School Prospectus. A screening committee comprised of School Committee Chair Paul Bockelman, Somerville Teachers Association President Jackie Lawrence and me was convened within 30 days of the submission of the Somerville High School STEAM Academy Innovation School Prospectus. The screening committee voted unanimous approval of the Somerville High School STEAM Academy Innovation School Prospectus. Congratulations!

The next step in the approval process is as follows:
"Within 30 days of screening committee approval, the applicant creates the innovation plan committee, on which there can be no more than 11 members."

In a Comprehensive High School as complex as Somerville High School, knowledge of the workings of the school will be important for the development of the Innovation Plan. The Screening Team recommends that you consider maximizing the number of Somerville High School Professional Staff on the Planning Team. Please contact the Somerville High School Headmaster, Mr. John Oteri, (617-625-6600, 6111) to discuss a process for determining Planning Team representatives.

I have enclosed the Six Steps to Approval document from the Executive Office of Education for your information and use as you continue through the process.

If I may provide any assistance to you throughout the process, please do not hesitate to contact me.

Thank you.

Sincerely,

Tony Pierantozzi
Superintendent of Schools

Cc: Somerville School Committee
Mr. John Oteri
Mr. Anthony Ciccariello
Ms. Jackie Lawrence
Central Office Administrative Team

Innovation School Laws & Regulations

Innovation School Statute

Section 92.

a An Innovation School shall be a public school, operating within a public school district, that is established for the purpose of improving school performance and student achievement through increased autonomy and flexibility. An Innovation School may be established as a new public school or as a conversion of an existing public school. A student who is enrolled in a school at the time it is established as an Innovation School shall retain the ability to remain enrolled in the school if the student chooses to do so.

b An Innovation School may establish an advisory board of trustees. An Innovation School shall have increased autonomy and flexibility in 1 or more of the following areas:(i) curriculum; (ii) budget; (iii) school schedule and calendar; (iv) staffing policies and procedures, including waivers from or modifications to, contracts or collective bargaining agreements; (v) school district policies and procedures; and (vi) professional development. An Innovation School shall receive each school year from the school committee the same per pupil allocation as any other district school receives. An Innovation School may retain any unused funds and use the funds in subsequent school years. An Innovation School may establish a non-profit organization that may, among other things, assist the school with fundraising. A district shall not reduce its funding to an Innovation School as a result of the school's fundraising activities.

c An Innovation School established under this section shall be authorized by the local school committee and shall operate according to an innovation plan, which shall articulate the areas of autonomy and flexibility under subsection (b). To the extent practicable, the innovation plan shall be based on student outcome data, including, but not limited to: (i) student achievement on the Massachusetts Comprehensive Assessment System; (ii) other measures of student achievement, approved by the commissioner, as appropriate; (iii) student promotion, graduation

rates and dropout rates; (iv) achievement data for different subgroups of students, including low-income students as defined by chapter 70, limited English-proficient students and students receiving special education; and (v) student attendance, dismissal rates and exclusion rates.

An Innovation School shall operate in accordance with the law regulating other public schools, except as the law conflicts with this section or any innovation plans created thereunder.

d An Innovation School is a school in which: (i) faculty and leadership are primarily responsible for developing the innovation plan under which the school operates and leadership is responsible for meeting the terms of the innovation plan; or (ii) an external partner is primarily responsible for developing the innovation plan under which the school operates and the external partner is responsible for meeting the terms of the innovation plan.

e Nothing in this section shall be construed to prohibit: (i) the establishment of an Innovation School as an academy within an existing public school; (ii) the establishment of an Innovation School serving students from 2 or more school districts; provided, however, that all of the provisions of this section are met by each school district; (iii) the simultaneous establishment of 2 or more Innovation Schools as an Innovation Schools Zone within a school district; or (iv) the establishment of an Innovation School as a virtual public school that provides instruction to students through distance learning, including online learning programs and courses, subject to regulations adopted by the board of elementary and secondary education.

f The following shall be eligible applicants for the purposes of establishing an Innovation School: (i) parents; (ii) teachers; (iii) parent-teacher organizations; (iv) principals; (v) superintendents; (vi) school committees; (vii) teacher unions; (viii) colleges and universities; (ix) non-profit community-based organizations; (x) non-profit business or corporate entities; (xi) non-profit charter school operators; (xii) non-profit education management organizations; (xii) educational collaboratives; (xiv) consortia of these groups; and (xv) non-profit entities authorized by the commissioner. Private and parochial schools shall not be eligible to operate an Innovation School.

g The local school committee, local teacher's union and superintendent of the district shall follow a process, consistent with this subsection and subsections (h) to (o), inclusive, for which an existing district school may be converted to an Innovation School or by which a new Innovation School may be established within the district. This process shall require that an eligible applicant proposing to establish an Innovation School prepare a prospectus regarding the proposed school. The prospectus shall include, but not be limited to, a description of: (i) whether the school will

be a new school or a conversion of an existing school; (ii) if the school is a new school, the proposed location of the school; (iii) if the school is a conversion of an existing school, the school that is being proposed for conversion; (iv) the external partners, if any, that will be involved in the school; (v) the number of students the school is anticipated to serve and the number of staff expected to be employed at the school; (vi) the overall vision for the school, including improving school performance and student achievement; (vii) specific needs or challenges the school shall be designed to address; (viii) a preliminary assessment of the autonomy and flexibility under subsection (b) that the school will seek; (ix) why such flexibility is desirable to carry out the objectives of the school; (x) anticipated components of the school's innovation plan; (xi) a preliminary description of the process that shall be used to involve appropriate stakeholders in the development of the innovation plan; and (xii) a proposed timetable for development and establishment of the proposed school.

h Upon completion of the prospectus under subsection (g), an eligible applicant shall submit the prospectus to the superintendent, who shall within 30 days convene a screening committee consisting of the superintendent or a designee, a school committee member or a designee selected by the school committee and a representative from the leadership of the local teacher's union.

The screening committee shall review the prospectus for the purpose of determining whether the prospectus: (i) presents a sound and coherent plan for improving school performance and student achievement; (ii) supports or enhances existing educational efforts in the district; and (iii) reasonably can be expanded into a comprehensive innovation plan. In the case of a new school, the committee will prepare an impact statement describing how the new school will affect the children and faculty in the district. Within 30 days of receiving a prospectus, the screening committee shall decide, on the basis of a two-thirds vote, to accept or reject the prospectus, or return the prospectus to the eligible applicant for revisions. If a prospectus is rejected or returned, the screening committee shall submit a detailed explanation for the decision to the applicant. A prospectus that is rejected or returned may be revised and resubmitted for subsequent consideration.

i Upon the acceptance of a prospectus by the screening committee under subsection (h), the applicant shall form an innovation plan committee of not more than 11 individuals within 30 days. The purpose of the innovation plan committee shall be to: (i) develop the innovation plan described in subsection (c); (ii) assure that appropriate stakeholders are represented in the development of the proposed Innovation School; and (iii) provide meaningful opportunities for the stakeholders to contribute to the development of such school. The size and composition of the innovation plan

committee shall be determined by the applicant; provided, however, that the committee shall include: (i) the applicant; (ii) the superintendent or a designee; (iii) a school committee member or a designee; (iv) a parent who has 1 or more children enrolled in the school, or in the case of a new school, from the district; (v) a principal employed by the district; and (vi) 2 teachers employed by the district. The applicant shall select the parent from among nominees submitted by parent-teacher organizations in the district. If the district does not contain a parent-teacher organization or if the organization does not submit nominees, the applicant shall select the parent from among volunteers in the area or community the proposed school is expected to serve. The applicant shall select the principal and 1 teacher from among volunteers in the district and 1 teacher from among nominees submitted by the local teacher's union.

j Upon the formation of the innovation plan committee in subsection (i), the committee shall develop the innovation plan for the proposed Innovation School. The purpose of the innovation plan shall be to comprehensively articulate the areas of autonomy and flexibility under subsection (b) that the proposed school will use. The innovation plan shall include, but not be limited to: (i) a curriculum plan, which shall include a detailed description of the curriculum and related programs for the proposed school and how the curriculum is expected to improve school performance and student achievement; (ii) a budget plan, which shall include a detailed description of how funds shall be used differently in the proposed school to support school performance and student achievement; (iii) a school schedule plan, which shall include a detailed description of the ways, if any, the program or calendar of the proposed school will be enhanced or expanded; (iv) a staffing plan, which shall include a detailed description of how the school principal, administrators, faculty and staff will be recruited, employed, evaluated and compensated in the proposed school and any proposed waivers or modifications of collective bargaining agreements; (v) a policy and procedures plan, which shall include a detailed description of the unique operational policies and procedures to be used by the proposed school and how the procedures shall support school performance and student achievement; and (vi) a professional development plan, which shall include a detailed description of how the school may provide high-quality professional development to its administrators, teachers and staff.

In order to assess the proposed school across multiple measures of school performance and student success, the innovation plan shall include measurable annual goals including, but not limited to, the following: (i) student attendance; (ii) student safety and discipline; (iii) student promotion and graduation and dropout rates; (iv) student achievement on the Massachusetts Compre-

hensive Assessment System; (v) progress in areas of academic underperformance; and (vi) progress among subgroups of students, including low-income students as defined by chapter 70, limited English-proficient students and students receiving special education; (7) reduction of achievement gaps among different groups of students.

A majority vote of the innovation plan committee shall be required for approval of the innovation plan.

k The provisions of the collective bargaining agreements applicable to the administrators, teachers and staff in the school shall be considered to be in operation at an Innovation School, except to the extent the provisions are waived or modified under the innovation plan and such waivers or modifications are approved under subsections (l) and (m).

l In the case of a school conversion, upon completion of the innovation plan in subsection (j)„ the applicant shall submit the innovation plan to teachers in the school that is proposed for conversion for approval by secret ballot within 30 days. A two-thirds vote of the teachers shall be required to approve the plan. Upon approval of an innovation plan by the applicable union members the plan shall, within 7 days, be submitted to the school committee. If a two-thirds vote is not achieved, the innovation plan committee may revise the innovation plan as necessary and submit the revised plan to the teachers for a subsequent vote.

In the case of a new school, upon the completion of the innovation plan in subsection (j), the applicant, a local union and the superintendent shall negotiate waivers or modifications to the applicable collective bargaining agreement necessary for the school to implement the innovation plan. Upon the conclusion of the negotiations, the innovation plan shall be submitted immediately to the school committee. If the negotiations have not resulted in an agreement within 40 days, either party may petition the division of labor relations for the selection of an arbitrator. The division shall select an arbitrator within 3 days of the petition from a list submitted by the parties. The arbitrator shall conduct a hearing within 14 days of the arbitrator's selection. The arbitrator shall consider the parties' positions and the needs of the students in the district. The arbitrator's decision shall be consistent with the contents of the innovation plan developed by the applicant. The arbitrator shall, within 14 days of the close of the hearing, submit a decision which shall be final and binding on the parties.

m Upon receipt of an innovation plan regarding an Innovation School, a school committee shall hold at least 1 public hearing on the innovation plan. After the public hearing, but not later than 60 days after the receipt of the innovation plan, the school committee shall, on the basis of the quality of the plan and in

consideration of comments submitted by the public, undertake a final vote to authorize the Innovation School for a period of not more than 5 years, subject to subsection (n). Approval of the majority of the school committee as fully constituted shall be required to authorize an Innovation School. If the approval is not obtained, an innovation plan committee may revise the innovation plan and: (i) in the case of a new school, submit the revised plan to the school committee for a subsequent vote; or (ii) in the case of a conversion, submit the revised plan to the teachers in the school that is proposed for conversion for a vote, pursuant to subsection (l); provided, however, that the plan meets the requirements for approval under subsection (l), submit the revised plan to the school committee for a subsequent vote. A school committee shall vote on a revised plan submitted pursuant to this subsection within 60 days of the receipt of such plan and contract.

n All Innovation Schools authorized under subsection (m) shall be evaluated by the superintendent at least annually. The superintendent shall transmit the evaluation to the school committee and the commissioner of elementary and secondary education. The purpose of the evaluation shall be to determine whether the school has met the annual goals in its innovation plan and assess the implementation of the innovation plan at the school. If the school committee determines, on the advice of the superintendent, that the school has not met 1 or more goals in the innovation plan and that the failure to meet the goals may be corrected through reasonable modification of the plan, the school committee may amend the innovation plan as necessary. After the superintendent assesses the implementation of the innovation plan at the school, the school committee may, on the advice of the superintendent, amend the plan if the school committee determines that the amendment is necessary in view of subsequent changes in the district that affect 1 or more components of the plan, including, but not limited to, changes to contracts, collective bargaining agreements or school district policies; provided, however, that an amendment involving a subsequent change to a teacher contract shall first be approved by teachers at the school under the procedures in subsection (l).

If the school committee determines, on the advice of the superintendent, that the school has substantially failed to meet multiple goals in the innovation plan, the school committee may: (i) limit 1 or more components of the innovation plan; (ii) suspend 1 or more components of the innovation plan; or (iii) terminate the authorization of the school; provided, however, that the limitation or suspension shall not take place before the completion of the second full year of the operation of the school and the termination shall not take place before the completion of the third full year of the operation of the school.

o At the end of the period of authorization of an Innovation School approved under subsection (m), the leadership of the school may petition the school committee to extend the authorization of the school for an additional period of not more than 5 years. Before submitting the petition, the leadership of the school shall convene a selection of school stakeholders, including, but not limited to, administrators, teachers, other school staff, parents and external partners, as applicable, to discuss whether the innovation plan at the school requires revision and to solicit recommendations as to the potential revisions. After considering the recommendations of the stakeholder group, the leadership of the school and the applicable superintendent shall jointly update the innovation plan as necessary; provided, however, that a proposal regarding a new waiver or exemption from the local teacher's union contract shall be approved by teachers at the school, under subsection (l). Approval of the majority of the school committee as fully constituted shall be required to extend the period of authorization of an Innovation School. If the approval is not obtained, the leadership of the school and superintendent may jointly revise the innovation plan and submit the revised plan to the school committee for a subsequent vote. If the school committee does not extend the authorization of the school, the leadership of the school may seek the authorization from the board of elementary and secondary education. The board shall vote on the requested extension within 60 days of its receipt for approval of such extension.

p The commissioner of elementary and secondary education shall, to the extent practicable, be responsible for the following: (i) the provision of planning and implementation grants to eligible applicants to establish Innovation Schools; (ii) provision of technical assistance and support to eligible applicants; (iii) the collection and publication of data and research related to the Innovation Schools initiative; (iv) the collection and publication of data and research related to successful programs serving limited English-proficient students attending Innovation Schools; and (v) the collection and dissemination of best practices in Innovation Schools that may be adopted by other public schools. The board of elementary and secondary education shall promulgate regulations necessary to carry out this section. Annually, the commissioner shall report to the joint committee on education, the house and senate committees on ways and means, the speaker of the house of representatives and the senate president on the implementation and fiscal impact of this section.

[Subsection (q) added by 2011, 68, Sec. 74 effective July 1, 2011. See 2011, 68, Sec. 221.]

q A school committee operating an Innovation School that is a virtual public school may vote to allow students who do not

reside in the district to enroll in the virtual public school pursuant to section 12B of chapter 76; provided, however, that the vote and policy is consistent with department of elementary and secondary education regulations governing enrollment at such schools; provided further, that any student enrolled in a virtual public school shall have no right to attend any other school operated by that school committee. Notwithstanding subsection (b), an Innovation School that is a virtual public school may receive each school year from the school committee less than the same per pupil allocation as any other district school receives.

[SUBSECTION (R) ADDED BY 2011, 68, SEC. 74 EFFECTIVE JULY 1, 2011 UNTIL OCTOBER 27, 2011. DELETED BY 2011, 142, SEC. 17. SEE 2011, 68, SEC. 221.]

r Failure by a school district to transfer funds to an Innovation School, as required in subsection (b) shall result in a deduction of the amount therein from the home school district's chapter 70 per pupil allotment for the following fiscal year.

Innovation School Regulations

48.01: SCOPE, PURPOSE, AND AUTHORITY

1. Purpose. The purpose of 603 CMR 48.00 is to provide uniform rules and procedures governing the establishment of innovation schools.

2. Authority. 603 CMR 48.00 is promulgated under the authority of M.G.L. c.69, s.1B; c.71, s.92.

48.02: DEFINITIONS

As used in 603 CMR 48.00, unless the context clearly requires otherwise, terms shall have the following meanings:

- ACADEMY. An innovation program situated within an existing public school. The academy operates different instructional and other programs from the school in which it is situated. The academy will be included in the reporting of the school within which it is situated for the purposes of enrollment, accountability, and other school-level determinations. Students in innovation academies will receive a program code from the Department of Elementary and Secondary Education to facilitate monitoring of outcomes of the initiative.

- BOARD. The Board of Elementary and Secondary Education or a person duly authorized by the Board.

- COMMISSIONER. The Commissioner of Elementary and Secondary Education or his/her designee.

- DEPARTMENT. The Department of Elementary and Secondary Education.

- ELIGIBLE STUDENT. A person eligible to enroll in a Massachusetts public school who is under the age of 22 and who has not attained a high school diploma or its equivalent.

- HOME DISTRICT. The municipal or regional school district that is fiscally responsible for an eligible student's enrollment in a virtual innovation school.

- INNOVATION PLAN. An educational and operational plan for the administration of an innovation school, established pursuant to M.G.L. c.71, s.92(c).

- INNOVATION SCHOOL. A school or academy authorized by a local school committee under the provisions of M.G.L. c.71, s.92.

- INNOVATION SCHOOLS ZONE. Two or more innovation schools operating within a particular school district in accordance with certain factors described in 603 CMR 48.04(2).

- LEAD DISTRICT. Among two or more school districts sponsoring a single innovation school, the school district that is responsible for coordinating the formation of a screening committee. The lead district will be the district that will host the proposed innovation school and whose policies, including, but not limited to, transportation and discipline of students, will be in effect at the proposed innovation school, unless clearly stated in the approved innovation plan.

- SPONSORING DISTRICT. A municipal or regional school district responsible for authorization and oversight of an innovation school.

- TEACHER. For the purposes of a vote to approve conversion to an innovation school or academy, any person working half-time or more in a school or school district under a license listed in 603 CMR 7.04(3)(a), (b), or (d).

- VIRTUAL INNOVATION SCHOOL. An innovation school whose students receive 80 percent or more of their academic instruction on-line at a location other than a public school building. Public schools where on-line courses are offered as an adjunct to classroom instruction shall not be considered virtual innovation schools.

48.03: General Provisions

1. ADMINISTRATIVE BULLETINS. The Board and the Department may, from time to time, issue administrative bulletins to interpret, implement, and provide guidance on 603 CMR 48.00.

2. NON-DISCRIMINATION. Innovation schools shall be open to all eligible students, on a space available basis, and shall not discriminate on the basis of race, color, national origin, creed, sex, ethnicity, sexual orientation, mental or physical disability, age, ancestry, athletic performance, special need, or proficiency in the English language or a foreign language.

3. COMPLIANCE WITH LAWS AND REGULATIONS. As provided in M.G.L. c. 71, s. 92(c), a school committee, or committees in the case of innovation schools approved by multiple districts, that approves an innovation plan shall ensure that the innovation school operates in accordance with all laws regulating other public schools, except as the law conflicts with M.G.L. c. 71, s. 92(c) or any innovation plans created thereunder. School committees shall take particular care to ensure compliance with laws and regulations protecting the health, safety, and well-being of students and governing the compulsory attendance of school-age children.

   If an innovation plan committee is proposing an innovation plan that may conflict with laws (including regulations) governing other public schools, the committee shall, before presenting the plan to the school committee for approval, request approval from the Commissioner for any provision in the plan that may conflict with such laws. The Commissioner's approval shall be based on his determination that the plan is consistent with 603 CMR 48.03 (2) and with the state's obligations under the education clause of the Massachusetts Constitution, Mass. Const., pt. II, ch. V, s. II, as defined by a court of competent jurisdiction, and that the provision in the plan that may conflict with such laws is necessary to advance the mission or educational programs of the innovation school. If the Commissioner does not approve the proposed provision in the plan, the innovation plan committee may ask the Board to review the matter and the Board shall make the final decision.

4. WAIVERS. Upon the written request of the Commissioner, the Board may waive any provision of 603 CMR 48.00 for good cause.

48.04: Specific Provisions

1. INNOVATION SCHOOL SERVING TWO OR MORE SCHOOL DISTRICTS. If an eligible applicant, as identified in M.G.L. c.71, s.92(f), seeks to establish an innovation school that will serve students from two or more school districts, the superintendents of those districts shall jointly decide which district will be the lead district for purposes of the innovation school. The applicant shall prepare a prospectus for the proposed school and submit it to the superintendent of the lead district. The prospectus shall be reviewed by a screening committee convened by the su-

perintendent of the designated lead district and constituted of individuals from the lead district. If the prospectus is accepted by two-thirds of the screening committee, the applicant shall form an innovation plan committee.

The applicant may compose the innovation plan committee of individuals, as identified in M.G.L. c.71, s.92(i), from any of the sponsoring districts, including the lead district, whose students will be served by the proposed innovation school.

The innovation plan must specify the tuition arrangement between the sponsoring districts.

The innovation plan must be submitted for approval to the school committees of each sponsoring district that will be served by the proposed innovation school. Each sponsoring district's school committee must separately approve the submitted innovation plan in order for the innovation school to be authorized or re-authorized. The innovation plan may specify the procedure by which an innovation plan may be revised and re-submitted for approval if one or more sponsoring district school committees reject the initial innovation plan.

2. INNOVATION SCHOOLS ZONE. A school district may establish an Innovation Schools Zone, whereby the school district operates two or more innovation schools in accordance with common instructional themes or areas of focus, or in accordance with other factors as approved by the local school committee.

3. SCREENING COMMITTEE'S CONSIDERATION OF A REVISED PROSPECTUS. If the screening committee returns the prospectus to the eligible applicant for revisions, the applicant may submit a revised prospectus to the screening committee for consideration. Within 30 days of receiving a revised prospectus, the screening committee shall decide, on the basis of a two-thirds vote, to accept or reject the prospectus, or return the prospectus to the eligible applicant for further revisions.

4. INNOVATION PLAN APPROVAL PROCESS FOR CONVERSION SCHOOLS AND ACADEMIES.

In the case of converting an established program into an academy, the innovation plan must include a description of the teachers in the school to whom the innovation plan will be submitted for approval. Two-thirds of votes cast by the teachers in that election shall be required to approve the innovation plan. In the case of proposing a new program as an academy, the applicant shall follow the process laid out in M.G.L. c.71, s. 92(l) for establishing a new school.

In the case of a school conversion or the conversion of an established program into an academy, the innovation plan shall describe the process and schedule for seeking approval of the innovation plan by the teachers who must approve the plan. The

innovation plan shall describe the process for conducting the vote, including absentee voting. The innovation plan shall ensure that the process allows the teachers sufficient time to review and consider the plan before the vote. The applicant, the school district, and the local teacher's union shall coordinate to carry out the process described in the innovation plan. A teacher on approved leave from the school at the time of the election may vote in such election. A teacher who is retiring or who knows that he/she will not be employed at the school the following year shall not vote in such election. Two-thirds of votes cast by the teachers in that election shall be required to approve the plan.

5. REPORTING REQUIREMENT. The superintendent of a sponsoring district must notify the Commissioner within 30 days of the sponsoring district school committee's authorization or reauthorization of an innovation school. The superintendent shall include a copy of the approved innovation plan in the notification to the Commissioner.

6. AMENDMENTS TO INNOVATION PLANS. An applicant may amend an operating innovation plan during its 5-year authorization period. If the proposed amendment would directly affect the major autonomies established in the existing innovation plan, the applicant/operator must follow the innovation school approval process laid out in M.G.L. c.71, s.92(i)-(m), beginning with the innovation plan committee and continuing through to final school committee approval. In the case of any other revision to the plan, the applicant shall provide notice to the teachers and the district superintendent of the revision, and the district superintendent shall note the change in his/her annual evaluation of the innovation school, which shall be transmitted to the district school committee(s) and the Commissioner pursuant to M.G.L. c.71, s.92(n). Any proposed amendment to the operating innovation plan that would require a new waiver or exemption from the teacher contract shall be approved by teachers at the school, pursuant to M.G.L. c.71, s.92(l) and 603 CMR 48.04.

7. FAILURE BY A SCHOOL DISTRICT TO SUPPORT AN AUTHORIZED INNOVATION SCHOOL. The operators of an authorized innovation school who encounter any failure by a sponsoring district or districts to support the school, including, but not limited to, failure to provide the autonomies and flexibilities approved in the school's innovation plan, may petition the Commissioner for the selection of a mediator or an arbitrator. The Commissioner shall select a mediator or an arbitrator within 3 days from a list submitted by the parties. If a mediator is selected, the mediator shall conduct a mediation session with the parties within 14 days of his/her selection. If an arbitrator is selected, the arbitrator shall conduct a hearing within 14 days of his/her selection. If a mediator is selected, the mediator shall strive to reach a consensus consistent with the contents of the innovation plan developed

by the applicant, and then notify the Commissioner of that resolution. If an arbitrator is selected, the arbitrator's decision shall be consistent with the contents of the innovation plan developed by the applicant. The arbitrator shall, within 14 days of the close of the hearing, submit a decision to the parties and the Commissioner that shall be final and binding on the parties. The costs of the mediation or arbitration shall be borne by the parties.

48.05: Virtual Innovation Schools

1. ENROLLMENT. The innovation plan for a virtual innovation school shall specify the manner in which a student may apply for admission to such school, and the criteria that will be used to select students for admission. A virtual innovation school may give preference in enrollment to students residing in the sponsoring district. No school district or school shall compel a student to enroll in a virtual innovation school. Students may not enroll directly in a virtual innovation school through the inter-district school choice program established under M.G.L. c.76, s.12B. Nothing in 603 CMR 48.00 shall prohibit a virtual innovation school from enrolling out-of-state students pursuant to M.G.L. c.71, s.6A.

2. ENROLLMENT LIMITS. The following enrollment limits shall apply to virtual innovation schools:

   a Each school shall have a maximum enrollment of 500 students.

   b For schools that have no admissions criteria other than grade level, at least 25% of the enrollment shall be from the sponsoring district.

   c For schools where enrollment is targeted to serve a specialized student population, such as students with medical conditions that interfere with school attendance or students who have been temporarily or permanently excluded from public school attendance, at least 10% of the enrollment shall be from the sponsoring district.

   d No district shall be required to pay tuition for students attending virtual innovation schools in other districts for more than 2% of its total district enrollment.

   e Districts shall not be responsible for tuition payments for students enrolled in excess of these limits.

   f If the virtual innovation school is established by the school committees of two or more districts, the combined enrollment of all sponsoring districts shall be used to calculate the limits imposed by 603 CMR 48.05(2)(b) and (c).

3. CURRICULUM, INSTRUCTION AND ASSESSMENT. The innovation plan for a virtual innovation school shall provide for:

   a a curriculum aligned with the Massachusetts curriculum frameworks;

b administration of required state-wide assessments in a proctored environment consistent with test administration guidelines;

c student participation recordkeeping to monitor attendance and demonstrate compliance with the student learning time requirements in 603 CMR 27.00;

d student access to appropriate computer equipment, telecommunications services, and related technical support, to be provided by the sponsoring district as needed;

e student access to, and guidance on the use of, library and digital media resources;

f guidelines for age-appropriate oversight of student participation by parents, guardians, or other adults, along with appropriate training for such oversight.

4. EDUCATORS. All educators leading classes or providing educational administration services in a virtual innovation school shall hold a current Massachusetts educator license appropriate to their assigned duties. Said educators may be employed through the sponsoring district, through another Massachusetts public school district, through an educational collaborative, or through a contract with an educational management organization. The school's innovation plan shall provide for periodic individual teacher conferences, via teleconference or in-person meetings, with students and students' parents or guardians.

5. GUIDANCE SERVICES. The school's innovation plan shall provide all enrolled students with appropriate access to guidance services, including but not limited to future school and career planning, monitoring of the student's overall academic progress, and facilitating student and family support services as needed. Appropriate information and guidance shall also be provided to students considering enrolling in a virtual innovation school to assist in their decision.

6. SPECIAL EDUCATION SERVICES. The sponsoring district shall be responsible for the provision of all services required by the individualized education programs (IEPs) of students enrolled in a virtual innovation school.

7. PROCUREMENT OF EDUCATIONAL MANAGEMENT SERVICES. A sponsoring district may contract with an educational collaborative established pursuant to M.G.L. c.40, s.4E or with and external partner, including a for-profit or non-profit corporation for the provision of all or part of the instructional and technical services required for the operation of a virtual innovation school. Contracts with a for-profit or non-profit corporation, other than an educational collaborative, shall be subject to the procurement requirements of M.G.L. c.30B.

8. FUNDING. The sponsoring district shall annually set the per pupil tuition rate for students enrolled in a virtual innovation school, provided that said rate shall not exceed the maximum tuition rate permitted under M.G.L. c.76, s.12B, and provided further that said rate shall apply to students residing in the sponsoring district and students residing in other Massachusetts districts. Tuition payments shall be prorated for students enrolled for less than a full year. In addition to said per pupil tuition rate, the costs of additional services required by a student under an individualized education program shall be paid by the student's home district pursuant to the provisions of 603 CMR 10.07. Tuition payments shall be made quarterly.

9. REPORTING REQUIREMENTS. Virtual innovation schools shall comply with all reporting requirements established by the Department for public schools, and shall also submit such reports specifically relating to virtual innovation schools as the Department may require. The Department shall establish a separate school code for each virtual innovation school, notwithstanding that the administration of said school may be part of or shared with another district school.

Regulatory Authority: M.G.L. c. 69, §1B; c. 69, §§1J and 1K, as amended by St. 2010, c. 12, §3; c. 71, §38G.

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