Powderhouse Studios, the school

A design overview

This is a design document. It aims to (a) provide an overview of a new, district high school proposed in Somerville under Massachusetts' Innovation Schools legislation: Powderhouse Studios, and (b) outline the legal, regulatory, and policy autonomies the design of Powderhouse Studios requires.

This is *not* a legal document *nor* even a comprehensive design document. Schools are complicated. Concisely capturing their design (much less supporting legal and regulatory details) is daunting. Those seeking more detail may refer to the Design section of Powderhouse's site.

In this overview, we should be sure to adhere to one of Powderhouse' basic tenets: learning does not happen by communicating or transmitting information, but when people actively invent, discover, and

construct their own understanding. In that spirit, we aim to bring the reader along for the design process in this overview. We hope the design is not simply described, but understood.

To that end, this overview is organized as follows:

☐ **Introduction** — We begin with this introduction, providing the context for how Powderhouse Studios fits into Somerville Public Schools, whom it will serve, and the big ideas animating its design. We also include an overview of programs at Powderhouse and a brief fact sheet answering ten of the most frequently asked questions we receive.

☐ **Purpose** — What are the vision and mission for Powderhouse Studios?

☐ **Work & learning** — What work will youth do? What will they learn? This includes details regarding grades and evaluation, the profile of Powderhouse graduates, and other pedagogical aspects of Powderhouse Studios.

☐ **Organizing & developing youth** — Whom is Powderhouse Studios for? How do families enroll, and how are they organized once they arrive? This includes details regarding Powderhouse's enrollment lottery, mixed-age cohort model, and competency-based evaluation.

☐ **Organizing & developing faculty** — What kind of faculty are required to manage youth and their creative work? This includes details regarding licensure, evaluation, professional development.

☐ **Resource management** — How are resources managed to support youth? This includes details regarding schedule, location, and budget.

☐ **Expert systems & support** — What experts and systems support faculty working with youth from Somerville's full range of backgrounds, aptitudes, and interests? This includes details regarding special education and English Language Learner (ELL) support.

☐ **Governance & continuous improvement** — How will Powderhouse Studios be governed and its improvement managed? This includes details regarding Powderhouse's evaluation, authorization, and oversight.

☐ **Autonomies & district operations** — Operationally, how will Powderhouse Studios' autonomies be embedded within the district? This includes details regarding finances, schedule, staffing, and other operational details enabled by Powderhouse's Innovation School autonomies.

Introduction

We begin with three, basic questions whose answers must be understood to understand Powderhouse:

1. How does Powderhouse Studios fit into Somerville Public Schools?
2. Whom will Powderhouse Studios serve?
3. What's the big idea behind Powderhouse Studios?

How does Powderhouse Studios fit into Somerville Public Schools?

Powderhouse Studios will be a new Somerville Public School. As an in-district middle- and high-school, we've carefully designed Powderhouse to benefit Somerville *as a whole district*. Throughout Powderhouse's development, District staff and community members have identified four primary ways to do this:

1. ☐ **Advancing equity** — Public education is a tool for advancing social, economic, and racial justice. Powderhouse's weighted enrollment lottery guarantees those who enroll in Powderhouse will mirror the socioeconomic, demographic, and academic profile of youth in Somerville Public Schools (including the proportion of youth with special education or English language learning needs).

2. ☐ **Increasing individualization** — Youth come to school with vastly different needs, interests, and contexts. This means no one school can serve everyone equally well. Powderhouse Studios offers another option which may be a better fit for some while reducing the load on other schools in the district. Existing options in the District each have their strengths and focuses, and Powderhouse Studios would be complementary to these.

3. ☐ **Saving money** — Each year, for students in grades 8–12, Somerville's budget is reduced by special education outplacements (~$3M in 2012), charter school enrollment (~$3.5M in 2017), and independent school and homeschooling enrollment (~$650,000 in 2017). This is in addition to some number of families who leave (or don't move to) Somerville each year in search of particular school options. For each of these groups, Powderhouse has something to offer to keep some families in-district. The Superintendent has committed to ensuring existing programs are not negatively affected, and conservative financial models of this impact indicate Powderhouse will save the district money in the longer term. In the short term, Powderhouse's outside fundraising from organizations like XQ, the Barr Foundation, and others can offset the startup and design costs of opening.

4. ☐ **Supporting school redesign and pedagogical innovation** — The Innovation School legislation offers districts many opportunities for redesigning school. Powderhouse's design also features a unique focus on computation, narrative, and design. These threads represent capacities Powderhouse Studios could offer to others through professional development, shared curricula and programming, cross-registration, and so on.

Whom will Powderhouse Studios serve?

For Powderhouse Studios to contribute in these ways it must be a force for equity and integration in the district. Too many new schools, schools-within-schools, and other opt-in programs suffer from

selection bias (mostly despite good intentions), meaning these new options selectively pull students for whom existing options may already be working quite well. This stratifies schools and hurts districts.

Powderhouse Studios is *neither* enrichment *nor* remediation. We believe it is a moral imperative for public school to be socially, racially, economically, and academically integrated. Powderhouse is committed to being a part of a just and equitable vision for Somerville. Powderhouse's weighted enrollment lottery *guarantees* enrollment will mirror Somerville youth socioeconomically, demographically, and academically. Supported by the district, it is Powderhouse's responsibility sufficiently broad and diverse interest to enable that lottery to run. Fortunately, even looking at the first dozens of families pre-registered at the time of this writing, we've been able to more than accomplish this.

The youth who will *especially* benefit from time at Powderhouse Studios (and those whom our enrollment outreach efforts will target) are those who would benefit (a) from a smaller, more intimate social setting, and/or (b) from spending much more time working on hands-on projects of their own design. These cut across all sorts of socioeconomic, demographic, and academic backgrounds.

What's the big idea behind Powderhouse Studios?

We're working to create a tightly knit environment where small groups of youth work on increasingly ambitious projects of their own creation, grounded in three, unique toolsets: computation, narrative, and design.

To accomplish this, Powderhouse Studios' design is inspired by highly functional and creative workplaces. Great workplace share certain characteristics, whether they're artist studios or commercial kitchens or research labs. People work together in mixed-age and -expertise teams. Their work has a real audience. Work is often multidisciplinary. People work in large, contiguous blocks of time. They pitch, frame, critique, and document their work and the work of their colleagues for a wide range of audiences. Successful teams know how to iterate and prototype effectively to deal with uncertainty and ambiguity.

These contexts have a lot to teach us about managing learning, and we believe the best way to prepare youth for this kind of work is to practice it. Powderhouse Studios aims to combine lessons from creative work with those from the best school designs from around the world.

So, there is no one, big idea behind Powderhouse Studios. It's the combination of thousands of small design decisions. But, there are themes. Here are the biggest:
1. **Constructionism** — People grow best when they are learning, learn best when they are creating, and create best when they are making things which matter to them, doing something authentic with whatever you're learning. This happens best when creating something public and tangible which matters to you.
2. **Thinking about thinking** — Learning how to learn requires thinking about thinking. This metacognition is essential for youth and staff both to become expert in.
3. **Self-efficacy** — But learning to learn requires more than just thinking. Self-knowledge and self-management are essential skills. Developing these requires working more and more independently over time, and this requires thoughtful scaffolding, especially for youth.

4. ☐☐☐**Computation, narrative, and design** — Representing ideas for machines (computation), representing ideas for people (narrative), and making things for others (design) are fluencies which allow us to connect to a wide variety of backgrounds, interests, and aptitudes. These fluencies cut across programs and projects at Powderhouse, creating a shared vocabulary for discussion and critique of work.

What will Powderhouse Studios look like?

Powderhouse Studios will enroll 30–40 youth aged 13–15 each year. This mixed-age cohort sticks together for their entire time with Powderhouse. Each cohort is managed by a team of five staff who stay with that cohort. Staff bring their own personal and professional backgrounds to the development of multidisciplinary projects and programs with youth. Through programs, projects, and direct mentorship, youth uncover interests and pursue them. Staff work with youth to deepen projects and manage connecting projects to a mixture of personal, professional, and academic goals.

An evocative schedule for a program — Youth transition from mostly facilitated to mostly independent work. This transition is at the core of Powderhouse's model, and shows up both within and across programs.
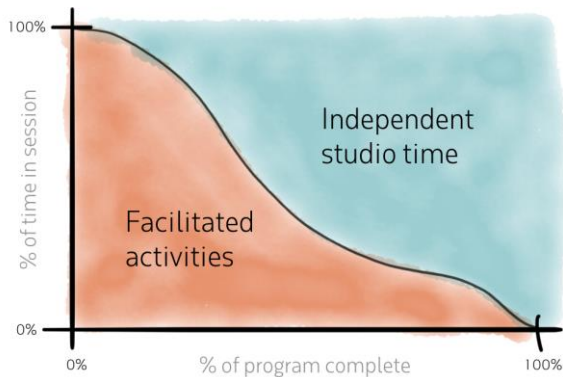
Programs are run like studios or seminars, with workshops spread throughout which (a) introduce tools and ideas germane to the program's theme and (b) help people brainstorm and scope projects of their own. Some youth may articulate a project on day two of the program, some on day twenty-two. Programs are designed so that as soon as someone has an idea for a project, they can begin pursuing it, while ensuring that until someone does have an idea for a project, there's plenty of good and deep work to do.

When youth identify a project, they also articulate what would make the project a success in two ways: (1) what would make the project itself good?, and (2) what are they hoping to get out of doing the project?

As people articulate and pursue their projects, they also document and reflect on their experience, analyzing and re-casting the ideas they're engaging through exhibition and critique. By the end of a program, dozens of projects emerge which are united thematically, but explore wildly different ideas through completely different perspectives. They are tied together intellectually and creatively though, making it possible for people to exhibit, collaborate, and critique together.

This program—which the Powderhouse team has run many times over the years, with all ages of participants—shares a lot in common with the day-to-day of Powderhouse Studios:
1. The focus of programs isn't to cover material, it's to help launch projects exposing people to deep ideas and skills while offering off-ramps to pursue individualized projects. These projects' individualization mean different people engage different ideas and skills (which staff might not predict ahead of time).
2. Programs are tied together by big ideas which cut across many disciplines.
3. Computation, narrative, and design figure prominently in the work people do.

Programs happen within a simple schedule. Days are organized into morning, lunch, and afternoon. Youth spend most of their time in:

1. Multidisciplinary seminars designed by faculty,
2. Studio time pursuing projects developed in those seminars,
3. And small group tutorials with staff.

As time goes on, more and more of the projects someone tackles come from their own interests, rather than staff programs. As those interests grow in scope alongside youth's capacity for self-management, projects may eventually take the form of internships, co-ops, or cross-registrations at other institutions. No matter what the project though, staff coach youth to deepen and broaden their work. A project which may have started out as "just" an art installation grows, sprouting essays and presentations and websites supporting additional analysis, reflection, exhibition, and explanation.

Youth meet with staff daily and weekly with staff to document work they've done and plan the work they're going to do next. This also allows staff to identify ideas and skills useful to projects and develop responsive, small group workshops targeting these.

Shifting schedules at Powderhouse — Youth initially spend most of their time in facilitated seminars, eventually shifting to more and more independent projects, which may take the form of community-embedded projects like internships.
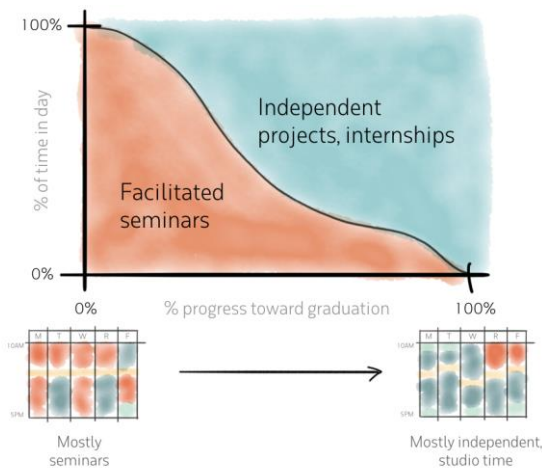
Individualized Learning Plans (ILPs) support this process, capturing personal, professional, and academic goals (including coverage of traditional standards). Progress toward these goals defines the bulk of Powderhouse's graduation requirements. The ILP acts as a dashboard allowing staff, youth, and families to see what people have worked on alongside what they've yet to engage. This lets staff and families work together to manage youth's growth (including their progress toward graduation).

This is the crux of Powderhouse's design: youth do good projects, staff work with them to document what they learn, and then help youth define new projects. It's not so different from how real work is managed. And that's part of what we believe is essential about it. Not only will youth develop needed skills and domain expertise, they'll learn something even more important: how to learn and manage work.

Essential facts about Powderhouse Studios

1. **Is Powderhouse Studios a public school? How will it be governed?** — Yes! Powderhouse Studios is another district school like any other. It is authorized by the School Committee, overseen by the Superintendent and district working group, and all funding for the school stays in-district. It just has some more flexibility under Massachusetts' Innovation Schools legislation.

2. **Whom will Powderhouse Studios serve? Who is the ideal student for Powderhouse Studios?** — Powderhouse Studios will enroll 30–40 youth between aged 13–15 each year. Youth outside that age range may register after coordinating with Powderhouse and Somerville

Public Schools. Powderhouse's weighted enrollment lottery guarantees its enrollment will match the socioeconomic, demographic, and academic profile of youth in Somerville (including proportion of youth with special education or English language learning needs). Ideal candidates are people who would *especially* benefit from either (a) a smaller and more intimate social environment, and/or (b) spending more time on hands-on projects of their own design.

3. **What's the basic idea behind how people learn at Powderhouse Studios?** — We believe people grow best when they are learning, learn best when they are creating, and create best when they are making things which matter to them. Powderhouse Studios takes its inspiration from how the very best places people work and create (like research labs and artist studios) are organized. We aim to translate lessons from these places to the design of a great work environment for youth. That means people spend most of their time working on increasingly large scale, multidisciplinary projects. Our model combines this with the belief that making tangible things outside of yourself (whether a presentation or an art installation) is one of the best ways to understand something and support talking about your understanding of something.

4. **How will you make sure people learn everything they need to in school?** — Faculty are organized into multidisciplinary teams who stay with their cohort for their entire time at Powderhouse. This team, along with youth and their families, develop Individualized Learning Plans containing a mixture of personal, professional, and academic goals (including coverage of traditional academic standards). As youth work on projects and programs, staff help map their work back onto these goals and standards. This allows staff to guarantee youth cover everything they need to while allowing for significant individualization of what, when, and how people learn.

5. **What are the graduation requirements for Powderhouse Studios? Will there be grades at Powderhouse Studios?** — To graduate, youth must (a) complete a 1,000-hour scale project successfully, (b) cover Common Core Math and English Language Arts standards, (c) secure an MCAS Competency Determination by passing grade 10 Math, ELA, and Science MCAS tests or completing an MCAS-Alt portfolio as applicable, (d) secure admission to a postsecondary institution and/or job, and (e) elect to graduate, along with their families. Grades will be optional, though evaluation and critique will not. Families and youth may opt-in to grades on a per-project basis or retrospectively as needed. Faculty and families will work together to extend youth's Learning Plan goals to ensure individualized needs are met, including additional academic standards (*e.g.* history, science), transition plan goals, and similar.

6. **Will people still be able to transfer to traditional schools or attend traditional colleges?** — Yes! As people work through projects, programs, and occasional classes, staff support youth mapping work onto a mixture of personal, professional, and academic goals (including traditional academic standards). This mapping will allow Powderhouse to generate detailed, traditional transcripts for those seeking to transfer or attend postsecondary institutions. This mapping (and the overall transferability of Powderhouse experiences) will be an element of District oversight at Powderhouse. Admissions officers at institutions ranging from MIT and Harvard to UMass and Tufts to Oberlin and University of New Hampshire have expressed excitement about our model and about hearing from Powderhouse graduates.

7. **How will specialized services like special education and English Language Learner support be provided?** — With the full resources and support of Somerville's Special Education department. Youth at Powderhouse will receive all the specialized services and support that they would in any other Somerville school. There will be special education and English Language Learning site coordinators on staff, who will work with the district and outside experts to develop professional development for other Powderhouse staff. This training will be designed to use Powderhouse's scheduling and curricular flexibility to enable a broader array of individualized options for support.

8. **Where will Powderhouse Studios be? What's the schedule for youth and staff?** — Powderhouse Studios will be the anchor tenant in [the mixed use redevelopment](#) of [1060 Broadway](#) between Davis and Teele Squares. Powderhouse will be open year-round, with staff working 8AM–5PM and youth 10AM–5PM (with morning supervision and breakfast programming in addition to extracurricular options available for participation in team sports and similar). Days will be broken into morning, lunch, and afternoon blocks.

9. **Has anything like Powderhouse Studios been tried before?** — In parts, but not as a whole. Powderhouse's emphasis on computation, narrative, and design is unique. But most of the rest of its design (*e.g.* a focus on projects, multidisciplinary teams of staff managing a cohort of youth through case-management, site-based budgeting and autonomies within a district, and so on) are common across many of the highest performing public and private schools in the country, including places ranging from the Harlem Children's Zone to High Tech High to Avalon School.

10. **Where can I find out more about Powderhouse Studios?** — You can read more at [powderhouse.org](#). Powderhouse's team is *always* interested in meeting with those with questions or concerns, and may be reached at [contact@powderhouse.org](#).

Purpose

We believe learning is one of the most important things you can work on today. We also believe that as a society we dramatically underinvest in learning (and learning about learning). We envision a world where that underinvestment is reversed. We envision a renaissance, an explosion of new ideas and models inventing the future of learning.

Our mission is to reunite learning and living, enriching the capacity of real work and real life to support difficult intellectual and creative journeys. In our work as a school, this means we support people's transitions from *students* (recipients of information) into *independent investigators* (people pursuing their own questions and problems with vigor and skill). In our work as an organization, this means we aim to become a world-class center for research and design in learning by developing tools, materials, people, and policies which enrich the capacity of everyday life to support deep intellectual and creative work.

Work & learning

As we imagine it, transformation from a "student" into an "independent investigator" entails tackling projects of increasing scale and scope. These will be managed through what we call *the project cycle*:
1. Identify a deep question or problem personally meaningful to you.
2. Develop a project engaging that problem or question, identifying an authentic audience for your work.
3. Rustle up the resources (*e.g.* textbooks, mentors, tools, skills, *etc.*) you need.
4. Manage yourself and those resources to iterate on and finish that project on-time and under-budget.
5. All while documenting, reflecting, and critiquing the project and your own experience doing it.
6. And culminating in the delivery and exhibition of your project to an authentic audience.

We believe all real work goes through this cycle, whether a principal investigator in a research lab or a finger-painting toddler.

Where does work come from?

Projects come from everywhere: staff-designed programs, youth's personal projects, internships, and community partnerships (including cross-registration with other academic institutions). Faculty steward youth's experiences, fertilizing the soil, ensuring youth access intellectually rich, meaningful work appropriate to their backgrounds, interests, and aptitudes.

One of the primary ways faculty will fertilize the soil is through the development of their own *programs of study*. Like a research agenda or artist statement, a faculty member's program of study is a multidisciplinary line of inquiry framing the work to which they invite youth and colleagues. These programs of study unify staff's work over time, and connect the programs and projects they do with youth.

Those programs and projects are some of the first places youth identity and pursue projects of their own. The nature of this work (and Powderhouse's longer day and year) ensure youth are given all the

time they need to do their work at Powderhouse, making homework unnecessary. (Furthermore, research demonstrates that homework as typically practiced adds very little value pedagogically while forcing youth to depend on time, resources, and support they may not have outside of school.)

Powderhouse's flexibilities also allow participation in extracurricular activities themselves to be treated as projects. A longer (and more flexible) day and year allow youth to cross-register into extracurricular programming or other academic options (*e.g.* varsity football at Somerville High School or courses at Harvard Extension School) outside of Powderhouse. As with any project, faculty will have the opportunity to deepen youth's extracurricular engagements with work outside of those (*e.g.* through additional, related projects).

What makes work good?

Given Powderhouse's mission, the two most important characteristics of good work are (a) how good the work itself is, and (b) how effectively doing the work promotes independence. *Independence* is the primary measure of progress toward graduation, and is defined along dimensions including timescale of projects undertaken, coverage of Individualized Learning Plan goals, college and career readiness, and so on.

This progress is made primarily through projects, but also through cross-registration, internships, and other experiences. Throughout, faculty work in tightly-knit, cross-functional teams to manage people's progress toward graduation. These teams also steward project *quality* through studio critique and mentorship.

Outside of Common Core and MCAS, there isn't mention of specific, academic content. This is because Powderhouse's individualized model requires an emphasis on *skills* over canon and *depth* over breadth.

Skills over content

School typically aims to cover the same material (*e.g. Hamlet*, the quadratic equation) across many people. The breadth of background, interest, and aptitude Powderhouse Studios accommodates requires foregoing consistency in favor of *skills*. For example, while many approaches to English literature might guarantee exposure to Shakespeare, Powderhouse's approach may not. Instead, capacities like quantitative analysis, critical thinking, and narrative reasoning are emphasized.

Four, primary capacities ground most projects and programs at Powderhouse:
1. **Computation** — Representing ideas for and with machines, primarily through programming.
2. **Narrative** — Representing ideas for people through storytelling across multiple media. This includes traditional prose, but will also include everything from visual communication to branding.
3. **Design** — Understanding the arrangement and relationship of various elements and iteratively developing new arrangements to effectively and elegantly solve problems, especially for others.
4. **Self-efficacy** — Knowing oneself and how to manage oneself (including one's time and emotions).

Depth over breadth

Schools often aim to cover a great breadth of material. Powderhouse's individualized approach requires prioritizing *depth* over breadth to make enough time to accommodate individual interests.

One place this emphasis shows up is in documentation of and reflection on work. Telling the story of projects (and the people doing them) is one of the primary ways Powderhouse develops people's capacity for revision, reflection, and critique, alongside other metacognitive and social-emotional learning (SEL) skills core to Powderhouse's focus on self-efficacy. This emphasis on depth, documentation, and reflection also provides the material required to map the work people do back onto the mix of personal, professional, and academic goals defining progress toward graduation.

Evaluating work

Grades are optional at Powderhouse Studios, but evaluation and critique are not. Undertaking a project will always involve defining quality and success, both:
- **as a project**: *i.e.* how should the project's output be judged, independent of its educational context?
- and **as a learning experience**: *e.g.* what did someone learn? Which standards and Individualized Learning Plan goals did they cover? How did they grow? What personal, professional, and academic goals were developed by the work?

Youth and/or families may request grades retrospectively. Staff will use the annotations in youth's Individualized Learning Plans to develop these grades.

Organizing & developing youth

Integration is core to the Powderhouse Studios vision. We believe one of the sacred trusts of public education is the opportunity and responsibility to bring people together, connecting home, work, and public life in people's first experiences learning from and around others.

We take the mandate to work with *everyone* in Somerville very seriously. Powderhouse's design maintains a deep commitment to integration along every dimension, especially social, economic, racial, and academic. This is reflected in our weighted enrollment lottery and inclusive, mixed-age cohort model.

There are no grade levels at Powderhouse. Instead, each year, Powderhouse will enroll 30–40 youth between the ages of 13–15. (Youth outside this range may register to enroll with Powderhouse Studios and Somerville Public Schools Central Office coordination. Up to 20% of enrollment may come from out of district, pending negotiation of financial and logistical arrangements between Somerville and sending districts.)

Youth enter as a mixed-age cohort, and remain in that cohort for their time at Powderhouse (though with faculty and family coordination, youth may switch cohorts and participate in programs and projects in other cohorts). Your cohort is simply your social and organizational home base.

This structure requires significant rethinking of the recruitment, development, and evaluation of youth.

Recruiting youth

Anyone in Somerville may register to enroll at Powderhouse. Those out-of-district must coordinate sending district's School Committee and Somerville's to make the financial and logistical arrangements.

Enrollment at Powderhouse Studios is governed by a weighted lottery which ensures enrollment mirrors demographics of Somerville's youth. Designed in coordination with the district, the lottery guarantees at least 50% of youth enrolled:
1. have historical MCAS scores or attendance rates below their cohort's median.
2. match the socioeconomic and demographic profile of youth their age in Somerville. This includes distribution of (a) gender identity, (b) special education status, (c) English Language Learner level, (d) ethnicity, and (e) family income, defined by quarter-multiple of the poverty line.

This guarantees a sufficiently broad and diverse registration of interest. Powderhouse Studios will work with the district to generate this interest through channels including K–8 in- and after-school, vacation, and summer programs; referral programs through Somerville Family Learning Cooperative (SFLC) liaisons and guidance counselors; and direct outreach. Throughout this, two factors will be emphasized as core to whom Powderhouse is best for: (1) a smaller, more intimate social experience, and (2) much more time working on hands-on projects of youth's own design.

Developing youth

At Powderhouse, the work youth do is driven by their Individualized Learning Plan (ILP). This captures a mix of personal, professional, and academic goals, including those defining progress toward graduation. The personal and professional goals will be co-developed with youth and their families, and will include a variety of developmental goals (including social and emotional elements, drawn initially from the Student Performance Framework (SPF) developed by the XQ Institute and CREDO), individualized as appropriate.

These goals will be used by faculty in an ongoing way to manage youth's work. The ILP will inform, but rarely constrain, what youth work on. Its purpose is twofold:
1. Act as the place where individualization is managed by staff meeting regularly as a team, with youth, and with families.
2. Document how work maps back onto youth's personal, professional, and academic goals, supporting logistics like generating transcripts and measuring progress toward graduation.

The Individualized Learning Plan is intended to summarize the entirety of what "development" looks like for someone at Powderhouse, and progress on this plan is the primary way youth are evaluated.

Evaluating youth

Evaluation at Powderhouse is fully competency-based, including but not limited to standardized tests, surveys, and critique. There are two kinds of audience for evaluation at Powderhouse Studios, and these audiences map onto two kinds of evaluation:

1. **Young people themselves** should primarily be concerned with the *quality of work*. Of course, they are also concerned with their development, especially postsecondary options.
2. **Others in the life of a young person invested in their growth and development** — Specifically: families, Somerville Public Schools, the Massachusetts Department of Elementary and Secondary Education, employers, and postsecondary institutions. These parties are primarily concerned with the *quality of development*, *e.g.* what skills has someone developed? How mature are they? What grade level are they testing at?

Qualitative evaluations will be performed by appropriate experts. *e.g.* critiques of work will be performed by panels comprising a mix of staff, youth, and outside domain experts. The selection and direction of this panel will be driven by the goals a young person set for their project at the outset. The primary quantitative data collected will include results from MCAS, SAT Suite, ACCESS, CREDO SPF, and appropriate special education evaluations.

Organizing & developing faculty

Doing work differently requires developing and organizing faculty differently. Faculty will be organized into tightly-knit, cross-functional teams managing youth on an individualized, case-by-case basis. Within these teams, staff are differentiated by *area of responsibility*, one of:

1. **Program design** — Developing programs supporting youth's pursuit of their own, deep projects, ensuring programs support the intellectual, academic, and creative goals of Powderhouse in a fully inclusive and universally designed context.
2. **Project management** — Helping youth scope, manage, and document projects, keeping them on-time, under-budget, and aligned with Individualized Learning Plans, developing youth's capacity for self- and resource management and project documentation.
3. **Youth advocacy** — Bringing all the social, emotional, and cultural elements of youth's lives into the awareness and management of Powderhouse Studios along with coordinating non-academic services and supports for youth.

Managing an area of responsibility does *not* mean a staff member is entirely responsible for the work in that area. Instead, staff are responsible for ensuring that work gets done (and done well). In practice, this means they curate and create (1) tools and systems to support their area of responsibility, and (2) professional development experiences to support their colleagues' capacity in their area of responsibility.
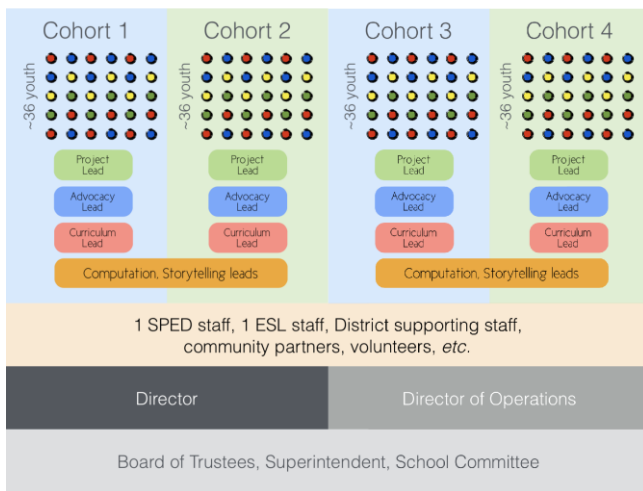
Powderhouse's organization of staff — Three, core faculty work with each cohort of ~36 youth. Domain leads in computation and narrative work with every two cohorts. Inclusion and cultural competency leads (alongside two co-directors) support all four cohorts.

Faculty's work in their role is defined by what we call **Core Capacities**. Instead of subject-matter instructors, every faculty member acts in six capacities, as a

1. **tutor** developing youth's fluencies in computation, narrative, and design.
2. **mentor** coaching and advocating for youth.
3. **manager** designing and administering programs, projects, and school operations.
4. **researcher** pursuing their own creative and intellectual work.
5. **anthropologist** seeking to understand the social, emotional, and cultural landscape driving engagement of youth and staff individually and Powderhouse as a whole.
6. **epistemologist** seeking to understand how people think and learn across different domains and create new supporting tools, materials, and experiences.

These staff are further supported by a range of experts in computation; narrative; inclusion and special education; language learning; and social, emotional, and mental health.

Shifts like these require significant redesign of how recruiting, developing, and evaluating faculty.

Recruiting faculty

As part of Somerville Public Schools under the Innovation Schools legislation, Powderhouse Studios has received relief from Massachusetts' regulations regarding educator licensure (with some caveats ensuring proper background for special education and English Language Learning educators). This licensure flexibility allows Powderhouse to recruit staff from diverse and non-traditional backgrounds into Somerville Public Schools. Remaining employed as faculty requires staff:

1. Successfully complete Powderhouse's fellowship and residency program
2. Successfully complete a Digital Literacy and Computer Science certificate program (included in Powderhouse's fellowship and residency year).
3. Pass the Massachusetts Tests for Educator Licensure (MTELs) for Communications and Literacy Skills (01)
4. Pass the MTEL and secure provisional licensure in Mathematics (Secondary, 09) **or** English (07)
5. Obtain their RETELL/SEI endorsement

6. And secure "faculty status," a peer-evaluation endorsement driven by their work at Powderhouse.

This allows Powderhouse to rethink its approach to talent, pulling from a wider, more diverse pool of candidates to fill multidisciplinary teams. However, the mix of skills Powderhouse's faculty roles require aren't currently targeted by programs in graduate schools of education. This requires rethinking the development of staff both when they join and as they grow within Powderhouse.

Developing faculty

Just as a PhD or MFA requires significant time and domain expertise, so too will faculty development for Powderhouse Studios. Powderhouse has and will continue to work with a wide variety of experts to develop materials and experiences for both (1) its fellowship and residency year and (2) ongoing professional development. These materials and experiences will focus on:
1. Each of the [Core Capacities](#) central to the definition of Powderhouse faculty's roles.
2. Collaborative capacities intended to make staff effective collaborators with various support systems. We call these **Connecting Capacities**. They will include but are not limited to special education advocacy, restorative practices, Sheltered English Immersion, and family engagement.

Evaluating faculty

Faculty at Powderhouse design and implement their systems of evaluation, working with Powderhouse's co-directors to develop evaluation along five dimensions:
1. **Core capacities; area of responsibility** — [These](#) define the core of faculty's work.
2. **Connecting capacities** — [These](#) enable collaboration with specialists.
3. **Cohort performance** — Cohorts will be academically and demographically integrated, and overall evaluation will play a role in evaluating *teams* of faculty.
4. **Organizational contribution** — Beyond work faculty are directly responsible for, there are many ways to contribute to the overall health and function of Powderhouse Studios as an organization, especially administratively. These contributions will be explicitly incorporated into faculty's evaluation by peers and co-directors.
5. **Peer, youth, and family satisfaction** — The primary source of information regarding faculty performance will be those best positioned to understand their efficacy: peers, youth, and families. This will involve a mix of qualitative and quantitative reporting designed in coordination with staff.

Resource management

At Powderhouse, our emphasis on highly individualized, multidisciplinary projects emphasizing computation, narrative, and design requires we organize and manage resource differently, as well. This section outlines some of the most important elements of our approach to resource management.

Time

Powderhouse's schedule emphasizes large, contiguous blocks of time; work over longer durations than typical schoolwork; and much more staff planning and coordination. This means a longer day; year-round calendar; and flexible, competency-based attendance policies.
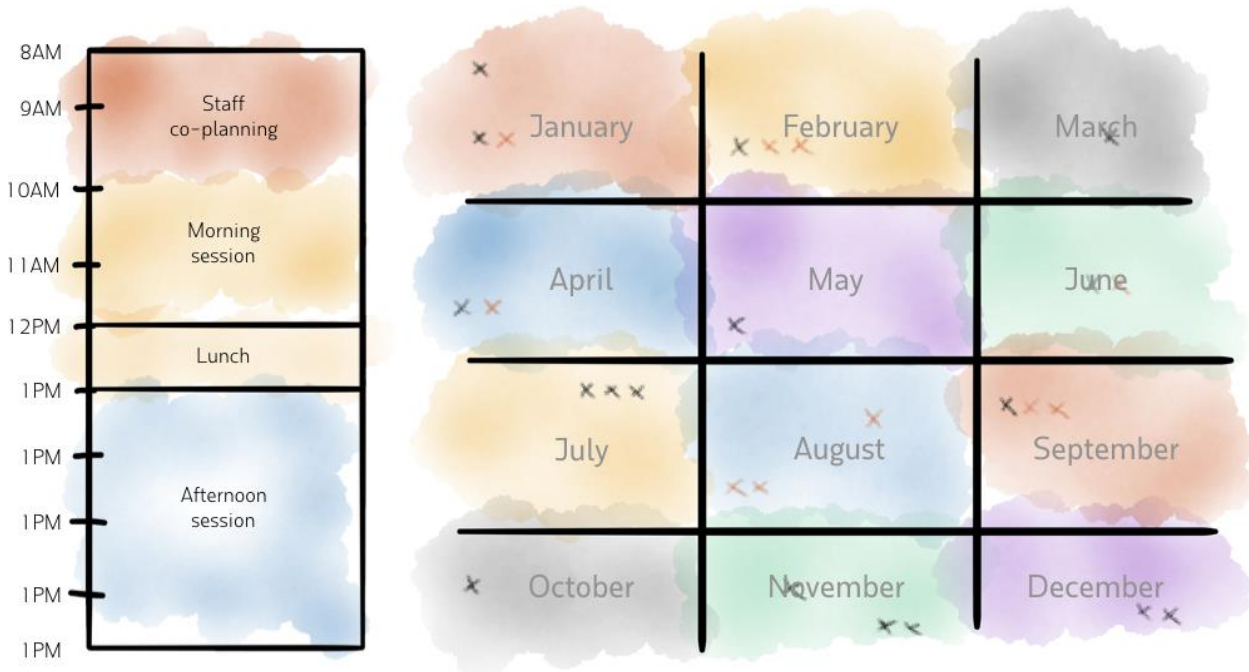

Daily and yearly schedules at Powderhouse — Days are organized into morning and afternoon blocks across 10AM–5PM for youth. Powderhouse Studios is open year-round (except for typical holidays and occasional facilities maintenance). Youth and families may work with Powderhouse to develop flexible daily and yearly schedules to reflect their needs.

Staff work 8AM–5PM, youth attend 10AM–5PM. In coordination with faculty, individual families may adjust the calendar to reflect concerns like family travel and summer schedules. Days are split into morning, lunch, and afternoon. Initially, youth spend most of their time in structured programs and project studio time. Over time, youth shift to more, and more independent, projects.

Space

Powderhouse Studios will be housed at 1060 Broadway as the anchor member of the mixed use re-development of the erstwhile Powder House Community School. Alongside several dozen residences (including a mix of artist live/work studios, senior units, and affordable units), there will be a restaurant, bodega, City park, community function hall, and community workshop.
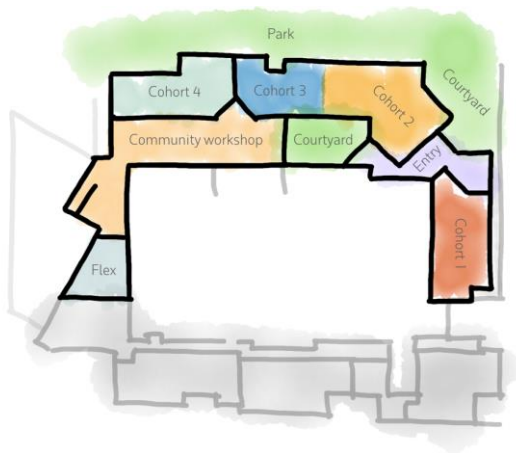
Overall floor plan for Powderhouse Studios — Powderhouse's campus will have an event space (not pictured), flex space, and community workshop, all open to the community. These will be in addition to cohort spaces mixing open plan studios and small breakout rooms.

Typical floor plan for a single cohort at Powderhouse — Each cohort's space will look slightly different, but all feature large open space for group work surrounded by a variety of small, breakout spaces for small groups and individuals (in addition to a kitchen and offices).

Each cohort will have ~2,500 square feet of space, split between large group space, small breakout rooms, and kitchens. These will be in addition to a function hall and community workshop designed and administered by Powderhouse Studios in coordination with the MIT Media Lab's FabFoundation.

The design and redesign of Powderhouse's campus will be an ongoing part of youth and staff introductions to design, fabrication, and prototyping. Powderhouse is working with Studio MLA, Supernormal, and the Massachusetts School Building Authority to develop tools and materials to support these experiences for youth and staff.

Money

Budgeting and procurement for Powderhouse Studios looks different institutionally and individually. Differences at the institutional level are covered in the Budget section of this design overview. Individually, custom, multidisciplinary projects require custom, multidisciplinary tools, supplies and experiences. Because details of these projects are not known ahead of time, Powderhouse's purchasing and procurement processes must be very lightweight. This will be implemented as a stipend system within Powderhouse. In coordination with City and District finance directors, Powderhouse Studios will develop fiscal controls for this stipend system, enabling flexible and transparent purchasing for individual youth, projects, staff, and cohorts.

Technology

Powderhouse Studios' approach to managing technology is driven by two emphases:
1. The use of automation to lighten administrative loads, including tools to support accounting, attendance management, mapping of work within their Individualized Learning Plans, and so on.
2. The creation and use of new tools to support multidisciplinary projects grounded in computation, narrative, and design.

To these ends, every staff member and young person will receive a phone, tablet, and laptop. These will be complemented by cohort- and school level investments in tools supporting programming, fabrication, and prototyping with multiple media. Collectively, these tools will be matched by programs developing youth and staff capacity with these tools so that the creation of new infrastructure at Powderhouse Studios may also become one of the kinds of projects youth and staff pursue.

Community resources & programming

One of Somerville's biggest opportunities is Greater Boston itself, where you can find a world-class collection of resources, partners, and specialists of all stripes. Much of Powderhouse's design aims to make Powderhouse Studios permeable to these resources.

One of the primary responsibilities of Powderhouse Studios' co-directors and its associated non-profit is to develop the partnerships and arrangements required to ensure staff and youth have access to all the resources they need. There is no one recipe for this; however, local businesses, universities, and community organizations will figure prominently through partnerships. Some of these (with institutions like MIT, Harvard, Lesley, Tufts, and others) are already in place through the work Powderhouse has begun in the design of its fellowship and residency program.

Families

Youth's families are involved in Powderhouse in two, primary ways: (a) as community members, with their own backgrounds, skills, and aptitudes to bring to mentorship and project work, and (b) as essential voices in developing youth's Individualized Learning Plans. Powderhouse's staffing schedule and family engagement plan sets aside significant time for 1:1 family communications to coordinate both of these kinds of engagement.

Expert systems & support

One of school's primary challenges is meeting everyone where they are, regardless of context, background, interest, or aptitude. Powderhouse's model broadens the role of faculty, but inevitably, outside expertise will be required. This presents an opportunity—through training and professional development—to make staff more effective partners for these outside experts. This section summarizes some of the most important, and where appropriate mentions elements of Powderhouse's approach to programming and staffing these functions. In some of these areas, Powderhouse will have experts on staff supporting youth and faculty; these specialists are referred to as *domain leads*.

Physical health & wellness

Informed by a school nurse and outside experts as appropriate, physical health and wellness will appear throughout programming at Powderhouse Studios, variously through programs around food, nutrition, and cooking; sex education; and development of workshops around institutional programs like eye exams, vaccinations, and dental hygienist visits.

Social & emotional health

On the individual level, youth and staff will develop programming focused on self-knowledge and self-management as part of articulating goals within the Individualized Learning Plan. These will be informed by CREDO's Student Performance Framework (SPF), which will also be used as part of the evaluation of social and emotional health. Initial versions of these components will be developed by Powderhouse staff and outside experts as part of our fellowship and residency program.

Powderhouse Studios will employ at least one Licensed Clinical Social Worker (LiCSW) or Certified Adjustment Counselor. This staff member will be responsible for developing and coordinating faculty in each cohort responsible for youth advocacy. Together, this group will design Powderhouse's approaches to self-efficacy, restorative practices, and non-violent communication. These staff will also be responsible for coordinating district and outside services and supports as they relate to the social and emotional health of youth as individuals and cohorts as a whole.

Inclusion, accessibility, & special education

At the core of Powderhouse Studios is an embrace of individuals and their differences. Everyone—staff, youth, and families—are touchpoints for our approach to embracing individuality.

At least one staff member at Powderhouse Studios will be a licensed special educator acting as as a domain lead focusing on inclusion, accessibility, and special education. This will include acting as a case manager, service provider, and inclusion facilitator. An essential part of this role will be to grow Powderhouse's capacity to identify, embrace, and support individual difference. This includes those differences typically associated with special education, and as such, this role includes support of active inclusion facilitation. The inclusion domain lead will provide support for teams, families, and the community to implement best educational practices for students within the least restrictive environment to develop customized programming fit to youth's needs and interests. This entails both (a) coordinating district and outside services to provide individualized support for youth at Powderhouse, and (b) developing youth, staff, and family fluencies and values in these contexts. Their role in coordinating district and outside services will guarantees access to the same range of district support for special education as at any other Somerville Public School, and these supports will be able to leverage Powderhouse's flexible schedule and curricular model to develop customized programming fit to youth's needs and interests.

Cultural competency & English language learning

As in Powderhouse's approach to inclusion, all youth and staff represent touch points for cultural competency, family engagement, and ELL. As such, cultural competency, identity work, and ELL support come together in programming focused on youth and staff's roots and identity, and continues throughout Powderhouse's approach to family engagement.

At least one staff member at Powderhouse Studios will be certified to teach English Language Learners (ELLs), and all staff will secure a Sheltered English Immersion endorsement. As a domain lead focusing on cultural competency, family engagement, and English language learning, their job will be to grow Powderhouse's capacity to articulate, appreciate, and work across cultural differences (including and especially language differences). This means developing the programming for both youth and staff

in these areas, and will also entail coordinating relevant district services and support. This will guarantee youth access to the same range of ELL support as at other schools in Somerville, and these supports will be able to leverage Powderhouse's flexible schedule and curricular model to develop customized programming fit to youth's needs and interests.

Guidance

Powderhouse's individualized approach extends to connecting youth to co-ops, internships, and eventually postsecondary pathways to college and career. Postsecondary transitions are treated as a project unto themselves, making significant time and resources available for staff to support youth in this work.

This will involve individualized programming and mentorship around college and career, including hands-on experiences with college and career options through cross-registration, dual enrollment, internships, and co-ops. Powderhouse Studios will be partnering with college admissions and career counseling organizations to develop these and related programming and supports for youth, families, and staff.

Computation, narrative, and design

Computation, narrative, and design are common languages shared across programs and projects at Powderhouse Studios, much as writing figures prominently across subjects in traditional academic settings. At Powderhouse, computation, narrative, and design will be folded into programming through a mixture of workshops and small group support. Because design is a perspective and activity that cuts across many domains and fluencies, there won't be a single program or staff member devoted to this, but a thread of experiences introducing people to design across multiple media.

A computation and narrative domain lead will be paired with every two cohorts of youth. These domain leads will be responsible for (a) developing the fluency of staff and youth in computation and narrative, and (b) supporting staff and youth in making computation and narrative core elements of programs and projects they develop, respectively.

Governance & continuous improvement

Powderhouse Studios would be authorized by the Somerville School Committee as a Somerville Public School under the Innovation School legislation. Integrating such a different model with a district has taken a great deal of planning and design. Executing and evolving that integration will take thoughtful governance and continuous improvement.

Governance
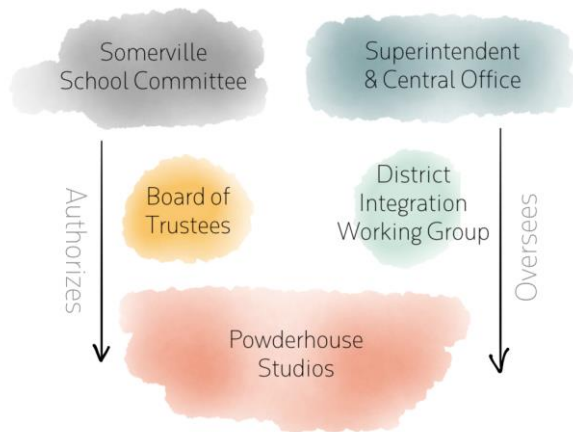
As a district high school, Powderhouse Studios would be authorized and overseen by Somerville's Superintendent and School Committee. The School Committee would be responsible for reviewing Powderhouse's performance along statutorily defined dimensions, namely (a) attendance, (b) safety and discipline, (c) promotion, graduation, and dropout, (d) MCAS, (e) progress in areas of academic underperformance, (f) progress among subgroups of students, including low-income, limited English-proficiency, and special education, (g) reduction of achievement gaps.

To oversee its work, Powderhouse Studios will also establish two governing bodies:
1. A Board of Trustees focusing on the quality of learning Powderhouse supports and the in-school policies and operations within the jurisdiction of the co-directors.
2. And a District Integration Working Group (historically referred to as a Steering Committee) focusing on Powderhouse's role in the district, operationalizing Powderhouse's autonomies, and eventually documenting Powderhouse's district-wide impacts.

Continuous improvement

Powderhouse Studios will also maintain an Innovation Plan Committee. This Committee will be responsible for reviewing, revising, and re-authorizing Powderhouse's Innovation Plan before it comes to the School Committee, folding in changes to the Innovation Plan as Powderhouse grows, matures, and learns. This will form the basis for Powderhouse's School Improvement Planning process.

Autonomies & district operations

Districts (and schools) are complex. With a model as autonomous and different as Powderhouse's, ensuring smooth integration with district operations requires care. A design overview can only outline such considerations. We do so by describing Powderhouse's *autonomies* under the Innovation School legislation, along with a high-level description of how these autonomies will be operationalized where appropriate. But by their nature, these are detailed considerations. The reader is referred to the Powderhouse's design materials (including and especially the approved Innovation Plan) for further detail. Developing the policies and workflows to operationalize these autonomies in full (and reporting out on these) is the bulk of the District Integration Working Group's role leading up to Powderhouse's launch.

Curriculum

Powderhouse's fully competency-based approach defines graduation in a curriculum-agnostic way, which requires complete curricular autonomy to implement. Standards-coverage and a Competency Determination (either *via* portfolio submission or MCAS testing) are the primary ways particular *content*

guarantees are made at Powderhouse. To develop these skills and coverage in a fully-individualized way, staff need the ability to develop and pursue curricular experiences in the form of programs, projects, and cross-registrations across a wide variety of subjects in a wide variety of ways. These aren't known ahead of time, and are not amenable to traditional unit and lesson planning, since *how* and *when* someone learns is not known, even if some of *what* people will learn over time is.

Budget

Subject to all applicable statutes and regulations, like a pilot school, Powderhouse will have autonomy over its site-based budget in procuring services, supplies, offering stipends, and other such spending necessary to implement the flexibility of its model. This autonomy will always be deployed in coordination with (and full transparency to) city and district finance personnel, and will integrate with the district's typical audit schedule and similar workflows.

Powderhouse Studios' per capita budget will be defined and managed in accordance with the Innovation School legislation and its Innovation Plan, meaning, *e.g.* that Powderhouse Studios will receive the same per capita as other Somerville Public Schools for its operating budget. Powderhouse Studios will maintain a 501(c)(3)-eligible nonprofit corporation for the purposes of research, design, training, and development work supporting Powderhouse Studios.

Under the Innovation Schools legislation, Powderhouse Studios received relief from Chapter 30B of the Massachusetts General Law, governing procurement. Powderhouse Studios will be working with city and district finance personnel to operationalize its flexible purchasing and procurement system, leveraging this relief if needed.

School schedule and calendar

Highly-individualized, multidisciplinary projects require larger, more flexible blocks of time. And, they require work over longer periods of time. To accommodate this, Powderhouse Studios will be open 230–244 days each year, depending on the particular holidays and facilities maintenance schedule in a given year. Staff's days will run 8AM–5PM 220 days each year, with staffing schedules staggered to provide coverage. Youth will attend 10AM–5PM on a schedule determined in coordination with their families.

Powderhouse Studios will have autonomy in defining these schedules. Operating schedules for the coming year will be finalized and communicated to families and the district during the summer season each year. Staffing within and across cohorts will be managed collegially, allowing teams to dynamically re-balance schedules reflecting the needs of different programs and projects.

Staffing

Under the Innovation School legislation, the Department of Elementary and Secondary Education granted Powderhouse Studios relief from Massachusetts requirements for educator licensure. Powderhouse Studios will hire *at least* one ELL and SPED certified staff member, along with *at least* one Licensed Clinical Social Worker or Certified Adjustment Counselor. Specific requirements for staff

certification currently contemplated by Powderhouse's carve-out from the Unit A Somerville Teachers Association contract may be found in [the section on recruiting faculty](#) in this overview.

Powderhouse Studios will have full autonomy in its hiring, subject to the provisions of its yet-to-be ratified carve-out. Powderhouse Studios' co-directors will be responsible for the design and disposition of all roles, including staffing, stipends, substitutes, and contractors and contracted services.

Professional development

Powderhouse Studios staff will maintain access to the same range of professional development opportunities as other Somerville Public Schools. Because of its unique model, Powderhouse Studios will also have full autonomy in developing, pursuing, and accrediting additional professional development opportunities for its staff.

School district policies

The Innovation School statute's mention of "school district policies" as an area of autonomy is something of a catch-all. Districts have a wide variety of policies, covering everything from graduation requirements to fur-bearing animals. By their nature, they are impossible to summarize in broad strokes. The reader is instead referred to the Innovation Plan for details regarding autonomies from these policies.