Student-Led Internship Program: Project-Based Learning, Amplified

How many of us had grand ideas for projects as teenagers? We were fascinated by these things but lacked the time, resources or expertise to achieve what we envisioned in our minds. The opportunity to delve into those ideas, to play around with what it means to take something from an abstract thought and transform it into a tangible creation, is what our student-led internship program is all about.
In traditional education, everything is highly structured. There are benchmarks, boundaries, and metrics that are set to ensure that students put at least a minimal amount of effort into the work.

We believe that when students are involved in work that is deeply engaging to them, they will hold themselves to higher standards, achieve more than even they anticipate and create, design and execute things that many adults would not consider teens able to do. At foundry10, we think that teens are often underestimated, and that when given the freedom to explore areas of interest, with support and few boundaries, terrific things happen. The evidence speaks for itself.

Foundry10 has been running student-led internships for the past 2 years, and over 125 local teens have seen their visions come to life. In each internship, we interview each individual three times: at the very beginning, in the middle and right at the conclusion of the internship. These interviews cover a range of topics but their primary purpose is to understand how the structure and model of our internships creates a valuable learning experience for teens. Though we realize that not everyone has the flexibility to run an internship model like ours, we have learned some really important things through our work with teens over the past couple of years that we think transcend the model itself.

The Pitch
Having students pitch their own ideas for a project is not only empowering, in and of itself, it is a valuable learning experience. Even if one student is the biggest creative director, we ask them to apply with a group of interested team members. Prospective interns need to convince others on the team that this is a worthwhile exploit. In pitching the idea to our team there is also an entrepreneurial aspect to thinking about what would be interesting to pursue and having to justify its value to external parties. In addition, many of the students have pursued projects that have an element of social good, whether it be a large community event, a drone that helps monitor crowd control, a website for trans youth or even a film that highlights gentrification. The skills involved in presenting ideas in a professional and organized manner, asked of kids as young as

12 years old, is an impressive and ultimately useful set of tools to have for future educational and work pursuits.

The Team

Although students are excited to pursue projects of their own design and under their own control, they are also excited to work collaboratively with their peers. We have found, repeatedly, that it is students in peer groups of similar interests who come to us with ideas for projects. We have occasionally tried to pair groups of students who didn't know each other together, but have found that most often, students know who they work well with and can identify the strengths and challenges of their teammates very effectively. We do not assign group roles, but rather the teams themselves decide on their organization and determine whether or not it is working to their satisfaction. Some have asked us if that really works and we have found, repeatedly, that it does. We do chat with students about their group's progress and how they feel they are doing. Often they already know what needs to be fixed and rarely have we been called upon to intervene.

The Open Structure

The biggest shock each time a new intern group comes to foundry10 the first time is that we do not tell them what to do. We provide a mentor for them approximately 5 hours per week (during a 20 hour week) and the rest of the time they are on their own. The mentors are given strict instructions to not guide the project, they are simply there to answer questions or support the development of certain skills. Students have told us that this was the biggest shock. Often in schools, students are told they will be given responsibility, but inevitably some of that weight is carried by the instructor or there are enough guidelines that it is not hard to follow the steps. We feel like motivated students, with a safety-net of support will quickly figure out what works and what does not, and we largely just want to get out of their way.

Occasionally we have students who have had very little experience being heard in their lives and almost no experience with the type of intellectual freedom we emphasize at foundry10. In those instances, we do provide a bit more scaffolding to increase the sense of self-efficacy so that students feel comfortable being vulnerable and putting themselves out there in a situation where they could potentially fail. We work with the group to help them find their own structures and then help them scaffold so they are more independently functional.

The Failure

Truly, we aren't pleased with the progress of any internship till the interns fail and hit roadblocks. This is another pivotal point in the program where they realize that no one is going to solve the problem for them. Often, this is because they are trying things that not many other people are doing. Here, they learn to hustle and iterate. This is often where they will begin to connect with additional professionals in their fields. Interacting with adult professionals in fields of their interest is extremely empowering and helps them to grasp potential career pathways. Adults also model their own problem solving, or in many cases, don't have a complete answer, so students have to take what they can get from interviews, websites, forums and then play around. Though the struggle can be frustrating, one of our favorite things to observe are the plentiful "ah-ha" moments when they finally figure something out. We have students who will stay well beyond their internship hours trying to puzzle through a challenge. Contrast this to traditional homework where the engagement isn't necessarily there and the problem solving seems forced. Students in the internships are willing to invest massive amounts of time and energy into making their idea work and getting stuck is just part of that process. In fact, we have had many instances where, as the adults, we felt compelled to offer a bit more assistance because a student was really stuck. However, nearly every time, our offers were rebuffed because genuinely, the students wanted to solve the problems themselves.

It is important to note, however, that we do work with the mentors to ensure that students are spending time on worthwhile aspects of their projects. One flaw we sometimes see in the project based learning model is when students, left to their own devices, spend large amounts of time on things that experts in their field would say were not worthwhile endeavors. The interesting part of learning isn't struggling just to login to the site that will allow you to program; that is a hang-up that wastes time and causes frustration. Developing AI to respond dynamically to inputs is a struggle that has value in both problem solving and computational skills.

In one series of internship interviews, we specifically asked students if they wanted us to help them more and they emphatically said "no". The fact they are treated as responsible adults, encouraged to try and fail, and to set their own parameters for success is part of what draws kids to this experience. A common comment we hear from interns is, "I can do things here I cannot do anywhere else."

The Day

Students are given long, uninterrupted periods to do their work. Whether they are here for 3 hours or 8 hours, their time is their time when they are here. This is a key element. How often in a teen's life do they get extended periods of time to really hone in on something? They decide when they want to take breaks. If we are going to interrupt them, for interviews or a short meeting, we always let them know in advance so we can set the expectation. They can use headphones, or not. They can work at a desk, or not. They can work alone, or not.

On rare occasions we have had to chat with a group where we felt they were taking too much time away from their projects. But again, when given the responsibility of freedom in a professional environment, the vast majority of students not only rise to the occasion, they exceed their initial expectations for what they thought they were capable of.

Reflection...what did I really learn?

At times in education, we make the mistake of having students participate in experiences that we don't take the time to explicitly reflect on, which therefore minimizes the connections they can make and perhaps their own sense of skill and competency. Our interviews serve a dual purpose. They help us to assess the relative value of the student experience, help us focus in on specific elements of learning, and give us an overview of how well the student feels the internship is going. At the same time, the interviews ask students to recall and specifically reflect on what they have learned, how they know they have learned it, and how they have overcome struggles. This metacognitive reflection allows them to organize, reflect and make forward facing predictions about their progress.

In addition to concrete skills such as sewing, soldering and programming, students allude to the interpersonal and professional skills they have developed. Time management, containing the size and scope of a project, overcoming team challenges, public speaking and project management skills are regularly referenced as some of the most valuable aspects of the internship experience.

Critical Panel of Experts

An area of interest to us as researchers are novice versus expert differences. Whenever possible, we like to explore the intersection between novices and experts in a field. For experts, watching students approach projects and problem solving in an open format is often quite different than how they learned. At the same time, the experts often comment on how much they wished they had had the chance to learn and explore their

topics in this way. The interns regularly ask their mentors questions that the mentors have to pause and really think about. The mentors also model real-world problem solving, thinking strategies and critical thinking. Interns are able to observe and replicate elements of their mentor's thought processes and approaches.

At the end of their internship experience, interns are given the opportunity to present their work in front of a panel of experts in their field of interest. These are great opportunities for the students to not only share what they created, but to discuss their process, get feedback from people who really know their stuff, and ask questions about the experts' own careers and progression. When we talk with interns they feel that getting feedback from people who are experts in the field is both really important and a rare thing to get. The teens don't just want someone to tell them their project is "good" they want to hear specific, timely, knowledgeable feedback that will help them in their futures. The panels are also a great first networking opportunity for many students and we enjoy bringing these communities together

We are constantly iterating on our internship model and asking different questions to explore new ideas about learning. This coming year, we are particularly interested in our after school model, which provides less overall time for students to work, but allows access to a larger group of students. In addition, through our work with schools, we are exploring ways to make key elements of the internship program available to students enrolled in more traditional settings.