

Solutionary Program Year 2 Pilot Evaluation

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Introduction

The Institute for Humane Education (IHE) is entering its third year of a three-year pilot to develop and test the Solutionary Program (SP), an academic program in which middle and high school students examine underlying social, ethical, and environmental problems, develop viable solutions, assess the impact of their solutions, and present their solutions in a public summit. IHE plans to expand the Solutionary Program to the public in the school year 2018/19.

Year 2 Pilot Evaluation

During Year 1 (2015/16 school year) IHE piloted with a small group of teachers already trained by IHE to provide feedback on: best formats for integration; application to lower grade levels; structure for the summit. The following take-aways from Year 1 informed Year 2's pilot: it is important during the pilot for IHE to provide personal support to the teachers; the participating schools need to have a supportive culture; teachers prefer to integrate the program into the classroom; the optimal grade levels for the program are middle and high school (6th to 12th).

The Year 2 pilot (2016/17 school year) included the following goals: implement the learning from the previous year's pilot; see how well teachers could implement the program with no previous IHE training; begin testing and co-creating the professional development materials for teachers; learn as much as possible for a successful expansion to 15 teachers and 10 schools and districts in the Year 3 pilot, which will focus on testing and refining the professional development tools, strategies, and resources for teachers to successfully implement the program.

Participating in the Year 2 pilot were five middle school teachers and three high school teachers in Maine's Portland region. This region was selected so that program director Barbara Fiore and executive director Sarah Speare, who live in Portland, could provide the personal support needed at this stage.

The schools were:

Lyman Moore Middle School

7th grade Social Studies (2 teachers)

Lincoln Middle School

6th grade Science (1 teacher)

Harrison Middle School

Library & Media Center, Gifted & Talented (2 teachers)

Casco Bay High School

11th grade Humanities (1 teacher)

Deering High School

Human Rights/Global Studies (1 teacher)

South Portland High School

Environmental Science (1 teacher)

Note: only the teacher participated, not the school

Each of the pilot teachers represented schools with positive and supportive school cultures. None had previous training from IHE, and all had experience with various types of project-based learning. IHE provided as much support as possible, including personal calls and visits, workshops, and virtual or in-person professional learning communities throughout the duration of the pilot.

A comprehensive guidebook to support the teachers was in development during the year. Barbara offered components and activities from it for teachers to test and provide feedback. The completed guidebook, an online course, and learning modules will be tested in Year 3.

The Year 2 participating teachers agreed to:

- participate in professional development sessions;
- implement the SP and participate in a culminating Solutionary Summit event;
- follow program guidelines, philosophy, and approach in the supporting IHE materials;
- participate in evaluation;
- document the classroom process;
- communicate regularly with IHE and other teachers in the cohort;
- participate in a reflective practice session post program.

IHE provided:

- professional development to kick-off the program;
- site visits during the school year to mentor, coach, and provide planning and implementing support;
- regular communications with IHE via phone, video chat, email;
- classroom resources to guide the SP process, including:
 - SP digital guidebook
 - *The World Becomes What We Teach*, a book by Zoe Weil
 - curriculum resources
 - classroom activities and lesson plans
- financial support: a \$500 stipend, and funds for transportation, and a substitute teacher;
- an independent program evaluator;
- coordination and planning of the Solutionary Summit event.

The teachers met their expectations, except for one teacher who decided her class was not ready to participate. She remained an active participant by advising and providing feedback during the pilot.

IHE provided all of its deliverables. The guidebook was made available to teachers in draft form through a shared Google-drive folder, and it was delivered to them in pieces. This impacted the depth of learning the teachers could receive and is reflected in the findings.

Methodology

The evaluator met with Barbara Fiore by phone to develop the evaluation questions for the Year 2 pilot study and to craft a research design to collect data to address the questions. Their discussion focused on several topics related to how best to prepare and support teachers as they implement the Solutionary Program with their students.

Based on the discussion, the two developed a set of evaluation questions, as follows:

Overarching question

When IHE trains a teacher to implement the Solutionary Program with students, what is the impact on students, the teacher, the school, and the community?

Specific evaluation questions

- How does a student's sense of agency evolve during the course of the Solutionary Program work?

- How does a teacher’s view of themselves as effective catalysts of learning evolve during the course of the Solutionary Program?
- How does the culture of the school evolve during the course of the Solutionary Program, in the eyes of students, teachers, and school leaders?
- What professional development is necessary, both prior to beginning and along the way, to support teachers in successfully implementing the Solutionary Program?
- How might IHE recruit subsequent cohorts of teachers to implement the Solutionary Program? Said differently, what incentives might motivate teachers to join a Solutionary Program cohort?

Addendum:

Include questions that invite teachers’ reflections on the nature and extent of any foundational knowledge a teacher needs to begin to implement the Solutionary Program. (For example: *How do I teach students how to identify root causes? And, How do I teach students to identify strategic leverage points?*)

It was decided that a good way to collect the data from the seven pilot teachers to address these questions would be to observe the training sessions and the professional learning community (PLC) meetings; to visit the schools and observe the students working on their projects; and to interview teachers and students during the visits.

The set of interview questions for the teachers were as follows:

1. How have you integrated the Solutionary Program (SP) into your curriculum?
2. In what ways has the SP had an impact on your students?
3. In what ways has the SP had an impact on the school? The community?
4. What kinds of foundational knowledge and PD work is necessary for you to successfully implement the SP with your students? (for example, how to teach students how to identify root causes, or, how to teach students to identify strategic leverage points)
5. What kinds of support along the way is necessary to successfully implement the SP?
6. How might IHE recruit teachers for future SP cohorts?
7. How have you seen yourself evolving during the SP work?

During the school visits to observe the students working on the Solutionary Program, the evaluator conducted interviews with the teachers and with a sample of their students. Analysis of the notes from these visits and interviews provided some answers to the evaluation questions, as reported in the *Findings* section below.

Findings

This section reports the results of the analysis of the interview data, organized by research question.

1. How does a student’s sense of agency evolve during the course of the Solutionary Program?

A group of middle school students in one school were enthusiastic in their sharing of what they perceived they had learned during their work so far on their solutionary projects:

“We learned to look for bigger issues once we identified a problem.”

“I learned what systems thinking means.”

“We learned a method for evaluating alternative solutions.”

“I learned what solutionary means. It means that your solution needs to do the most benefit and do the least harm to living things.”

Middle school students at a different school told the evaluator that the solutionary projects they were doing about the food system go beyond the projects they’ve typically done in science class, where the products usually were posters that they made to show what they had learned. This project takes it a step or two further. They have to identify a problem on their own that they are concerned about, and they have

to design a solution to that problem. But even more, they have to take it to yet another step, and that's educating others about the problem and convincing them to do something about it.

"We're learning way more from this project than we've ever learned from our regular science projects."

"We learned how to use the 'Five Why' exercise to get to the root causes of the problem we chose."

Several students in this school were researching problems with local bodies of water. For example, one student was concerned about the health of the fish in Portland Harbor. She planned to find out if there were farms in the area that might be contributing excess fertilizer to the runoff into the harbor. Another student wondered if the farms in the area around Portland's water supply, Sebago Lake, were contributing excess fertilizer runoff that might be causing algae blooms in the lake.

A third student was concerned about food waste in general, and, in particular, the waste in the produce section of the local supermarket. He wondered if they were throwing away the 'ugly food' that he had been reading about in his research. He planned to visit the local supermarket to talk with the produce manager as part of his solution.

A fourth student identified the issue of composting in the school, specifically that not enough food scraps were being contributed to the school compost bin. This student identified a two-pronged solution. First, educate the students (again) about the importance of composting food scraps, and second, establish a system of student monitors to make sure students are putting the items from their food trays in the proper locations, rather than rushing out after lunch and throwing everything in the trash.

All the students are happy with their projects for the Solutionary Program Summit.

"I like that I get to choose my own problem to look at and that I'm responsible to finding a solution. It's way better than just making a poster."

"I'll remember everything about this project. I usually forget what I learned from the other projects as soon as we move on to the next one."

After six of the ten students in this focus group interview left for another class, the evaluator engaged the remaining four in a conversation about the root causes of the problems that each of them had selected to explore. All four required more than a little coaching in the form of questions to consider as they struggled to get deeper in their analysis. This experience suggests to the evaluator that teachers will need more training and support in how to help their students do the challenging work of digging to find the root causes of the problems they identify to address in their projects. Indeed, as noted below, some of the teachers identified this as one thing for which they needed additional training. This was understandable, given they only had partial training in Year 2.

2. How does a teacher's view of themselves as effective catalysts of learning evolve during the course of the Solutionary Program?

A pair of teachers in one of the middle schools felt that they were making progress in learning how to implement the Solutionary Program.

"We're just kind of getting into it."

"It's good. It becomes more clear along the way."

A pair of teachers in one of the other middle schools had similar feelings: that they were making progress in understanding the work and how to implement it.

"We're becoming more comfortable with this."

“This is a good fit for us. It gives our students choice.”

“It’s a good direction for the students. It feeds their passions and their compassion.”

Another middle school teacher wasn’t sure he was getting the hang of it. He’s done some pretty serious project-based learning units in the past; for example, his students did a big service learning project in which they built a composting facility at the school and then organized the students to contribute their food scraps from the cafeteria to the compost bin. But the Solutionary Program, he noted, takes the students far beyond that. The end point has one big difference – that is, the students -- individually, or in their small teams -- determine the end point, the solution, after they had previously chosen a problem to work on. He’s still working on a way to organize a whole class to do individual projects like this, noting that the weekend before the evaluator visited he spent twelve hours planning for the project.

“The challenge for me is bringing two things together: organizing the process in the whole class to let the individual projects evolve organically.”

3. How does the culture of the school evolve during the course of the Solutionary Program, in the eyes of students, teachers, and school leader?

This evaluation question emerged from the planning discussion with Barbara as we explored how the Solutionary Program, when fully implemented, might impact a whole school, as seen in changes in the school culture. In retrospect, it’s a big leap to think that Solutionary Program pilot work might have a school-wide impact.

Nevertheless, there is some evidence that part of a foundation for at least a grade-level impact was laid this year. In one of the middle schools, the pair of participating teachers included the school librarian and the school’s teacher of the Gifted and Talented program. One of their ongoing joint projects has been the seventh grade “genius hour,” during which a select group of seventh graders meets with them once a week to work on projects of various kinds. This year the teachers introduced the students to the “five whys” exercise, a strategy to help student get to the root causes of problems they identify to investigate and to find solutions for.

This pair of teachers reported that the seventh grade science team begins the school year with a unit on systems, during which the students learn to think in terms of the larger systems into which the phenomena they will be studying later in the year are embedded. This method? Process? would provide a way to engage whole classes of seventh grade students in the Solutionary Program, by building on the systems lessons, perhaps with the ecosystems unit that the teachers use as their final unit for the school year.

4. What professional development is necessary, both prior to beginning, and along the way, to support teachers in implementing the Solutionary Program?

Given that these pilot teachers were selected because they had no previous IHE training, this evaluation question is one of the more important ones. If the Solutionary Program is to reach beyond its current small group of practitioners, it’s important to know what kind of training and support will equip teachers new to the solutionary work to be able to implement it well.

Barbara selected this particular group of pilot teachers because she knew that they had some degree of experience with project-based and service learning, so they would have some foundational knowledge of how to organize students to do projects.

One of the high school teachers incorporated the Solutionary Program into the flow of her class with no extra effort, because she teaches at an Expeditionary Learning high school, a complementary model. She has been at the school since its inception as one of its founding teachers. Learning in an Expeditionary

Learning school is similar to the format for the Solutionary Program, with the exception that the Solutionary Program requires that solutions do the most good and least harm for people, animals, and the earth.

This teacher noted additionally that support from the principal is automatic here because he was the driving force behind establishing this high school as a fully Expeditionary Learning school from its inception several years ago.

A middle school teacher with a substantial history of doing project-based kinds of teaching with his students, in the form of big service learning projects (as noted earlier in the description of his students creating a school composting area), had several suggestions for what kinds of professional development support would be needed to successfully implement the Solutionary Program with his students.

He noted that service learning was a foundational experience and that it provided a good background for taking on the Solutionary Program pilot, but he noted that this background alone was not nearly enough.

“I need a lot of training in systems, analyzing systems, thinking in a systems framework. Even with my background in doing service learning projects, that’s not enough. The solutionary framework is a lot more complex than that; it feels too complex for middle grade students. It’s too much to fit into the curriculum we’re required to do, so I need training to see how to fit it in so it doesn’t have to be an add-on that takes time away from the curriculum.”

In terms of what support might be helpful along the way as teachers are working on their Solutionary Program pilot, he said:

“We haven’t used our cohort well. We should have a PLC [professional learning community]. We need to find a way to do that.”

He went on to make several suggestions, knowing that this was a pilot from which the project leaders are committed to learning.

“Next time around the teachers will need a set of more grounded activities to walk through to learn the process. There needs to be much more clarity about the whole process. And we need more resources, like a completed guidebook. Oh yes, and the rubric to assess the quality of the students’ projects needs to be more middle-school-friendly.”

One of the pairs of middle school teachers at one of the Portland middle schools noted that in one way the Solutionary Program is a logical next step for their unit on global competencies. When they teach about global citizenship, students learn about the world, learn how to communicate, and learn how to take action on issues they care about. The Solutionary Program was seen as the logical next step for their students.

One of these teachers described in some detail what he needed to learn how to do, so he could implement a Solutionary Program with his students.

“I need to learn how to teach kids how to do good research. I need to learn how to teach kids how to reach out to other people to get information from them and to be comfortable when they do. I need to learn how to teach kids on a social level how to support each other on their project teams and how to keep the workload level across their team members.”

Evaluator: “Should this be part of IHE/Barbara’s training?”

“Yes! And on a personal level, I also need to become more comfortable guiding kids during relatively unstructured time.”

The other member of this pair was less experienced at doing any sort of project-based work and was very much following her colleague’s lead in the process. “[Teacher name]’s help is absolutely necessary for

me.” This teacher went on to list the kinds of training and resources that should be available for a teacher who did not have the close support of a colleague like she did.

“The middle part is a challenge organizationally. I would need to know all the details about the process ahead of time, and we didn’t have the guidebook. It’s hard to do this on the fly. I’d need to know how to manage the technology, how to work with the slow kids. A complete guidebook would need a detailed week-by-week approach, with lists of resources, and with some templates for forms that the kids could use. It would also be helpful to have visits from program staff to see what we’re doing and give us feedback.”

Finally, the pair of teachers who work with the Gifted and Talented students made a set of suggestions that reinforce those noted above.

- There needs to be a completed guidebook;
- The materials need to be middle-school-friendly;
- Kids need time to think more deeply during the project.

This pair of teachers also said they really appreciated the virtual meetings that Barbara hosted along the way, a comment that is contrary to one made earlier by another teacher that the cohort should have had more PLC meetings.

A brief aside is in order here: it was not without trying that few group meetings occurred. Barbara found it to be a great challenge to have the teachers all agree on a common meeting time. She held virtual and in-person meetings whenever she achieved a consensus on the time – which was infrequent.

5. How might IHE recruit subsequent cohorts of teachers to implement the Solutionary Program?

The teachers had few thoughts about how to incentivize new teachers to participate in the Solutionary Program. They were finding that their participation in this year’s pilot required a lot more time, commitment, and passion than they had initially expected, so their thoughts about recruiting new teachers were made in this context.

One pair of teachers noted that it would be especially helpful to see examples of projects that students had completed successfully in the solutionary framework. That would give teachers something they could see: some models, something to inform their vision about what they might be able to do, or more importantly, what their students might be able to do. Some extended this idea by suggesting that these models would also serve as a proof-of-concept that the Solutionary Program can work in a ‘real school.’ Another teacher said that teachers who are passionate about contemporary issues would be good candidates to invite to join the Solutionary Program.

The pair of teachers of the Gifted and Talented program responded:
“Seeing kids succeeding is inspiring. Why would a teacher not want to do this?”

Conclusion and Recommendations

The teachers’ and students’ responses to the evaluation questions presented above will come as no surprise to Barbara and the IHE team; rather, they will confirm what Barbara learned during her frequent visits to this group of teachers. Doing the Solutionary Program is complex and time-consuming, and in general, harder to do well than most other kinds of project-based teaching; but as one of the students articulated so clearly: “I’ll remember what I’m learning from this project. I forget what I learned from other projects as soon as we move on.”

There is much work to be done to be ready for the Year 3 pilot cohort in the 2017/2018 school year, and this evaluation is meant to guide Barbara and her colleagues as they make those preparations.

Additional recommendations by the evaluator for Year 3:

- Frame the work for the next cohort of teachers as going beyond just receiving the training and subsequently implementing the Solutionary Program and Summit; rather, frame the work as a collaboration between IHE and these teachers to develop the next generation of the guidebook, resources, materials, rubrics, and classroom strategies.
- Set the dates for a series of PLC meetings at the very first meeting of the new cohort, perhaps a series of half-day in-person Saturdays that are a requirement for being accepted into the cohort. I've seen this used successfully to elicit deep engagement from teacher-trainees in other projects I've evaluated.
- Finish the guidebook (of course!) to the degree possible, so it's ready for teachers to use, critique, add to, modify, and otherwise see as a living document -- as a travel companion for the journey they'll be taking during the year with their students.

Final Reflection From The Evaluator

Observing the presentations in one of the breakout rooms during the Solutionary Summit and at the plenary session after lunch, and recalling the school visits, classroom observations, and interviews with students and teachers as they worked on their projects, leads to the following reflection. Students learned a lot of skills as they worked on their respective projects, both hard skills like how to locate and evaluate online resources, and soft skills like how work collaboratively on a team project. This learning was not an outcome of direct instruction on the part of the teachers; rather, it was the result of the overall process of working through their project, from an initial choice of a problem to explore to the final presentation of a potential solution to the problem. Said differently, the Solutionary Program provided an overarching framework and a process to guide the students on their journey from problem selection to solution articulation. It was the students' experience throughout that process that supported their learning.

The Solutionary Program is one of the most powerful teaching strategies that I have observed. The program, as demonstrated in the data presented above, supports powerful student learning. Students report working harder on this project than on projects they've done in the past, and they report that their learning from this project will 'stick' because they *own* the learning; it was a project that they chose to pursue, because finding a solution to their problem was important to them.

Given the fact that the students' learning was not a result of direct teacher instruction, but of the process of working on their project, the professional development for teachers who wish to implement the Solutionary Program with their students will need to include a focus on re-framing the teachers' thinking about their role in the project. They will need to see themselves as facilitators and coaches, providing just-in-time kinds of support for their students; for example, teachers can remind their students how to do systems thinking, how to do root cause analysis, and how to craft solutions that do the most good and the least harm. This guideline, of course, assumes that a big part of the professional development includes training for the teachers in systems thinking, root cause analysis, and what the implications are of 'doing the most good and the least harm.'

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