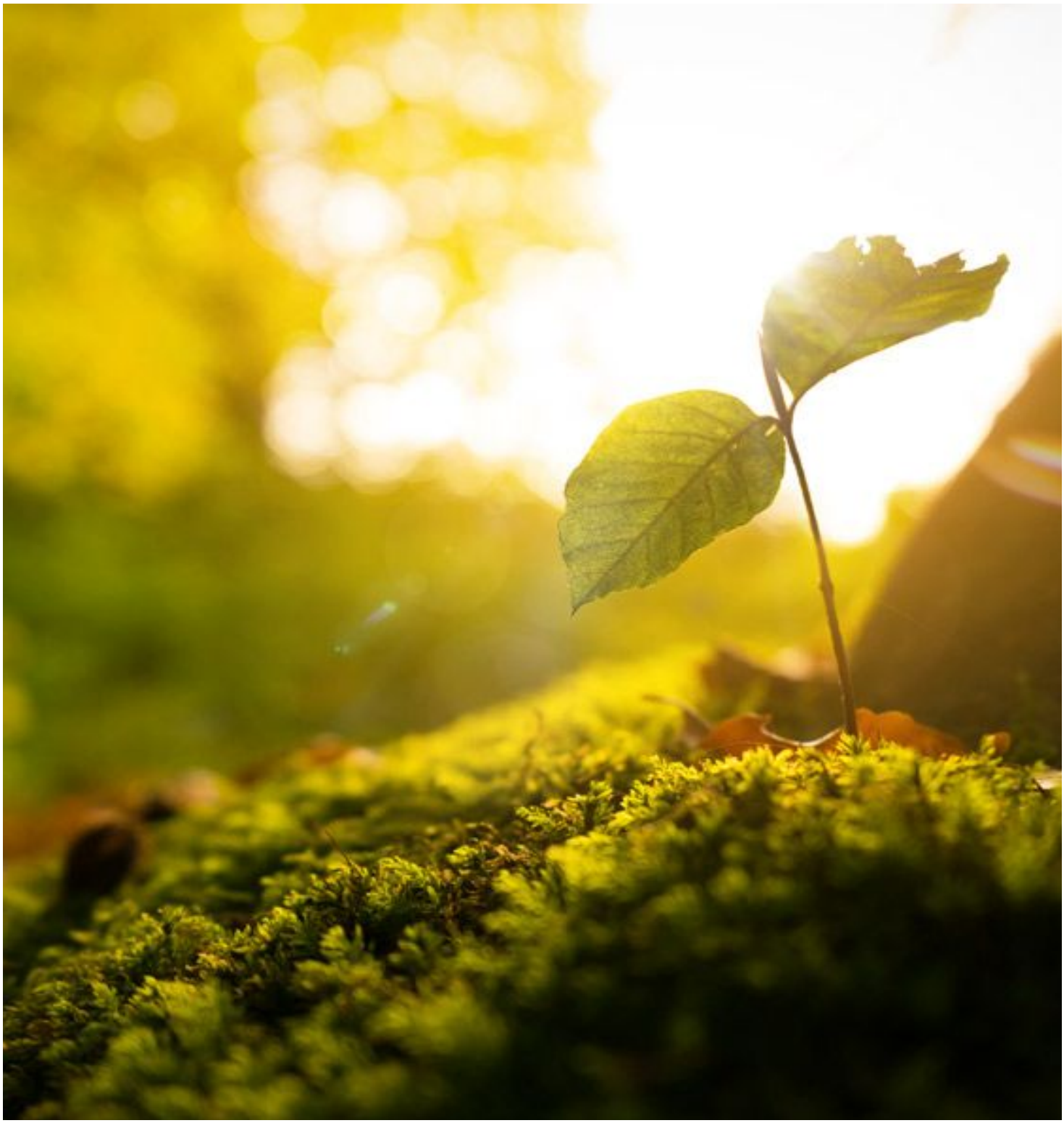
3.d | Volume 1 | DTS Fall Issue 1

SEEDS OF CHANGE

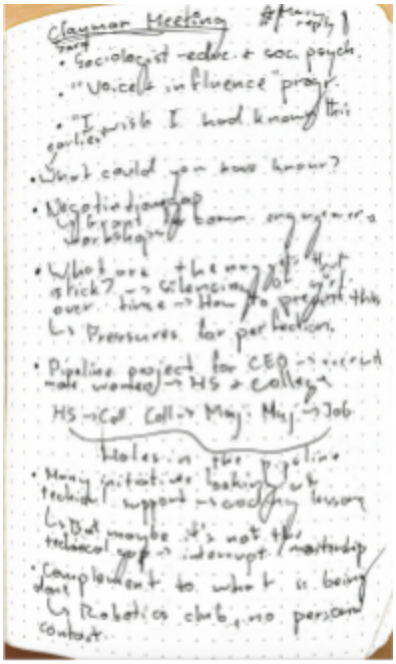


CONTENTS

1. Interviews and Insights

Sara | Leader of the Seeds of Change initiative at the Clayman Institute

Sara is the leader of our target program (Seeds of Change) within our community partner organization (Clayman Institute). We met with her to define how we could best help the program and to learn more about it. She noted that her most pressing needs were how to scale and how to handle logistical problems (e.g. organizing meetings) as the organization grew.


Page from our notes from the meeting with Sara

Key Insights:

- We learned about Sara's key motivation for starting Seeds of Change. She told us of a meeting with successful career women in STEM. One of them said "I wish I had known that earlier", referring to the social pressures and different sets of soft skills needed to stay in STEM in the long term.
- There are many initiatives focused on helping women with the hard skills of STEM, but much fewer focused on these soft skills, on emotional support, confidence-building, etc.
- The program has some similarities with Lean In, but has a different target audience.
- We learned about program logistics: mentor groups meet monthly, with 9 meetings in a year, and go through a curriculum built by the Clayman Institute. Groups comprise 6-8 high school girls led by a college woman in STEM.
- Sara shared the major challenges that Seeds of Change is facing: logistics and scalability. She mentioned difficulty and too much time spent coordinating meetings.
- We also learned that this scalability should not come at the expense of Stanford ownership of the program—she would prefer some degree of centralization.

Flora | Island Educator

Flora previously taught at The Island School in the Bahamas, which is an experiential semester-long program for high school students who are interested in marine biology. The students live, learn, and conduct research on an island and gain tangible experience by implementing scientific experiments of

their own. She explained that the presence of herself and other female teachers, mentors, and scientists had an encouraging effect on her female students. More than once, the girls would look back on their experience and say, “all my STEM teachers were women at the Island School. If they can do it, I can too.” Furthermore, she said that the adventurous aspect of the school, and the way it was subsequently marketed, allowed for girls to be interested in the program from the get-go. There was an aspect of self-selection happening in these programs. The girls that chose to leave their home context for a semester to swim with sharks and to do scientific field research in the Bahamas already had a solid proclivity towards STEM.

Key Insights:

- Experiential STEM learning allows for girls to imagine themselves in the field; this has a positive and encouraging effect on their willingness to engage in it.
- Having female role models had the effect of normalizing the idea of being a girl or woman who does STEM. It was not “weird” to be a girl interested in science; in fact, it was normal or even expected.
- How STEM learning programs are framed matters. How is the message of the program, and what it does, communicated to potential participants?

Ben | Science Teacher & Camp Administrator

Ben had two experiences that illuminate his experience teaching young women STEM.

First, he was a middle and high school biology and math teacher at a traditional public high school in Oklahoma. He found that the number of boys in his classes vastly outweighed the number of number of girls, at least until his most advanced classes. He noticed that the classroom environment was “macho” and did not provide the safest environment for girls. He and his corps of STEM teachers decided to try different tactics that allowed for a more welcoming structure. The strategies that worked best were to call out boys who exhibited overtly hostile behavior; to adjust language to words like “collaboration” and “empathy”; and to name the victories of female students overtly when their hard work was not being recognized by the class.

Second, Ben worked for a nonprofit that ran educational summer camps for high school students. He found that STEM programs experienced disparate enrollments between the genders; boys outnumbered girls in the programs by a four-to-one ratio. Furthermore, girls who did enroll in the STEM camp classes had a tough time due to their status as a minority. Camp administrators eventually decided to create girls-only STEM classes to provide a safe environment for the girls to learn and experiment. After one iteration of these classes, the camp found that they performed higher than the boys’ classes, and girls’ interest in the classes skyrocketed.

Key Insights:

- The environment in which girls are learning matters, especially in STEM classrooms that are dominated by boys. This includes the presence of other girls and women, words used to describe the process, and having boys understand their own role in creating welcoming environments.

Shreya | Leader of a Stanford women-in-CS mentorship organization

Shreya is a woman majoring in Computer Science at Stanford. She currently leads She++ (link), a mentorship organization where female CS majors at Stanford mentor and empower high school students to get more involved in CS. We interviewed Shreya to find out what lessons we could take from She++ to Seeds of Change and find how She++ carries out its outreach.

Key Insights:

- She++ gives high school participants who want to lead initiatives at their schools a "Starter Kit" with everything they need to know. The online toolkit exposes them to CS opportunities and helps them share this with other students. She++ checks in remotely with students who have been given the Starter Kit as needed.
- She++ combines remote and online support with an in-person conference on the Stanford campus for high school participants from all over the country.
- Like Seeds of Change, She++ includes support on the "softer" aspects of helping girls succeed in STEM—not just coding, but also leadership, confidence-building, and awareness of opportunities.

Beth | Leader of a women-in-STEM mentorship organization

Beth is the founder and leader of the California chapter of Million Women Mentors (MWM, link), an organization that shares a similar mission to Seeds of Change, and in California is also housed at a university. MWM pairs college and working women in STEM with younger women interested in STEM. Since Sara had asked us to pursue ideas for how to scale Seeds of Change, we looked at similar organizations that had already achieved scale. MWM is present in dozens of states, and as we would find out through the interview with Beth, has already created 60,000 mentor-mentee pairings in California alone. What lessons could we draw from MWM's success at scaling?

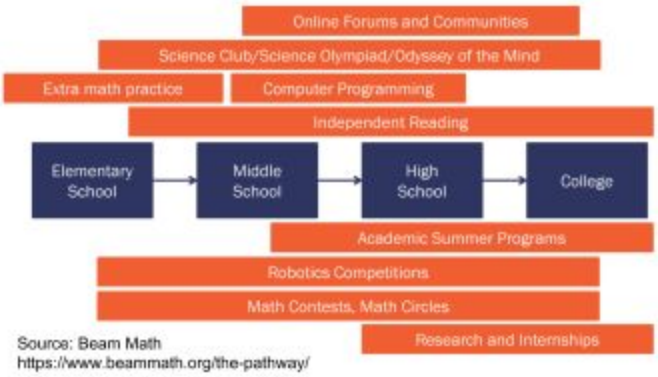
Key Insights:

- They have an ambassador program with past participants where women's organizations and educational institutions are encouraged to join. Ambassadors are all volunteers.
- Online tools for connecting mentors and mentees (such as MentorCloud) did not work well for MWM. They were poorly reviewed and not used by mentors and mentees.
- MWM's growth shows that fast expansion is possible: 66 thousand mentor pairings in less than two years. However, the program seems less intensive than Seeds of Change—mentors are not required to go through a specific curriculum.
- Schools showed concern on security issues when MWM was trying to get mentors in. Overcoming this required creating trust with school administrators.
- MWM bolstered outreach through newsletters and presence at student clubs at high schools and universities.
- Mentors often need tools and support. Many mentors did not know how to begin mentoring, so MWM had to offer them resources. This is good for Seeds for Change, since their program offers a very structured program of support and resources.

Lidiya | Currently in tech VC, mechanical engineer major in undergrad

Lidiya currently works for a leading technology venture capital fund on Sand Hill Rd. Growing up in Bulgaria, she was an active participant in physics and mathematics competition, and went on to major in Mechanical Engineering at Yale University. We interviewed her to learn more about the long-term career path for women with STEM backgrounds and to find out what early influences led her to stay in STEM and tech.

Key Insights:



- Like we had seen in one of our sources of inspiration (below), Lidiya's path in STEM through high school and college was successful partly because she had ample opportunities to participate in STEM beyond just one class or one mentor.
- She was active in science fairs, physics competitions, had multiple mentors, and many female friends who were also in STEM.
- This highlighted the importance of creating many opportunities for STEM immersion for girls. Successful mentorship must make many opportunities welcoming and open to them.

Shubham | Tech-Startup founder

We interviewed Shubham to understand what the gender disparity in the tech community— especially at a typical Silicon Valley startup— looked like. He offered insights into how his company recruits, the traits they look for in a new hire, and the problems he ha seen women face at his company.

Key Insights:

- Having a network of peers with similar interests in STEM is important. Most of the early hires were from the founders' school network. He said, "The best leads are in your network; we were pretty plugged into Stanford community."
- The company evaluates candidates based on their skills in technical expertise, taking initiative, showing flexibility, communicating clearly and demonstrating empathy towards co-workers and users. While technical expertise may take precedence over other characteristics, a candidate *must* be able to show their skills in the aforementioned domains to some extent.
- He claims that he is consciously trying to "tackle gender disparity at his company". Gender diversity is important to the company because it means that there is a "diversity of opinion". Furthermore, he argues that it is the responsibility of companies, as job providers, to ensure equality of opportunity to different people and groups.
- Women need to develop the confidence to voice their thoughts and concerns. Shubham noticed that women are less confrontational than men at his company— they are less willing to have conversations about their needs and the problems they are facing.

Sydney | Female graduate student in Computer Science

Sydney is a master's student in Computer Science (CS) at Stanford. She has been a teaching assistant and section leader for various computer science classes at Stanford and an active member of many advocacy groups for women in STEM on campus. She has also founded a startup in the past. She spoke to us about her journey to CS, the tech-atmosphere on campus and her high school and her experience mentoring female peers in STEM.

Key Insights:

- It is helpful to have a community of peers interested in STEM. Sydney mentioned that her first venture into CS was through a community of video-gamers that she was part of, who programmed (build modifications on) the games they played. Her friends encouraged her to join

the gaming community; she later went on to start her school's robotics club with these same friends.

- Many girls feel (and often exert on themselves) the pressure to conform to a specific stereotype of the kinds of people who work in STEM. Sydney claimed she pretended to be a male on the internet gaming community to get respected, since "showing any kind of femininity seemed like a weakness". Even when she came to Stanford, where the CS community was very welcoming, she "put pressure on [herself] not to be feminine".
- She thinks that the CS community welcomed her because she already had a lot of CS knowledge beforehand; this was not the case for her sister, who seems to be having a much harder time.
- Sydney thinks of the role of gender in her journey to CS only in retrospect. It could be that since her journey has been somewhat smooth and welcoming, she has never had to actively consider the impact of her being a woman in CS.

2. HMW/ Prototypes Round 1 : Journey of a Seed

What we did

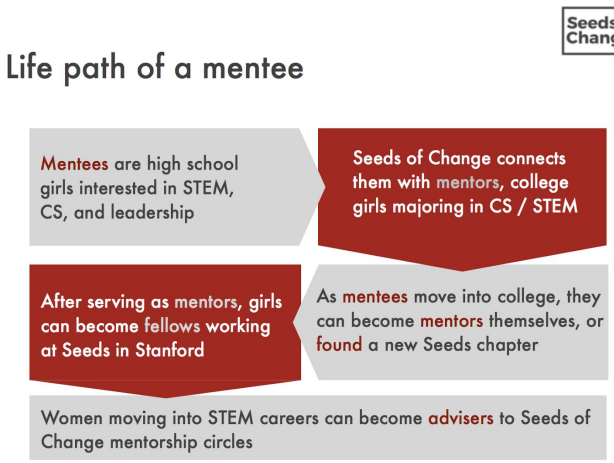
One of the insights that we gathered from Sara Jordan-Bloch, the Director of the program, was that if this pilot year of Seeds of Change was successful, they wanted to look into ways to grow. We were interested in the growth aspect— Seeds of Change seemed to already have the content and logistics of the program nailed down, we could, however, help them think about growth in the future. To that end, we generated the following how might we— trying to accomplish the opposite of what we hoped— to help brainstorm ideas:

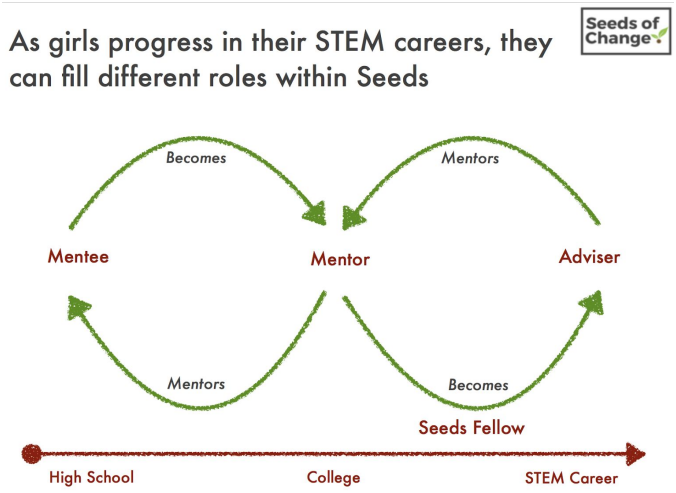
> How might we keep Seeds of Change as it is in is current size?
> How might we keep Seeds of Change from adding new people?

That lead to some interesting ideas. The idea is to grow, but if Seeds of Change cannot add more people, how might we get past participants of Seeds of Change to contribute in other capacities? This idea was exciting to us, and aligned with many of the insights we got from organizations like She++, in which many high school mentees becomes mentors in the future. We generated a host of ideas, and broke them down into three prototypes under the title, "Journey of a Seed".

The Life Path of a Mentee

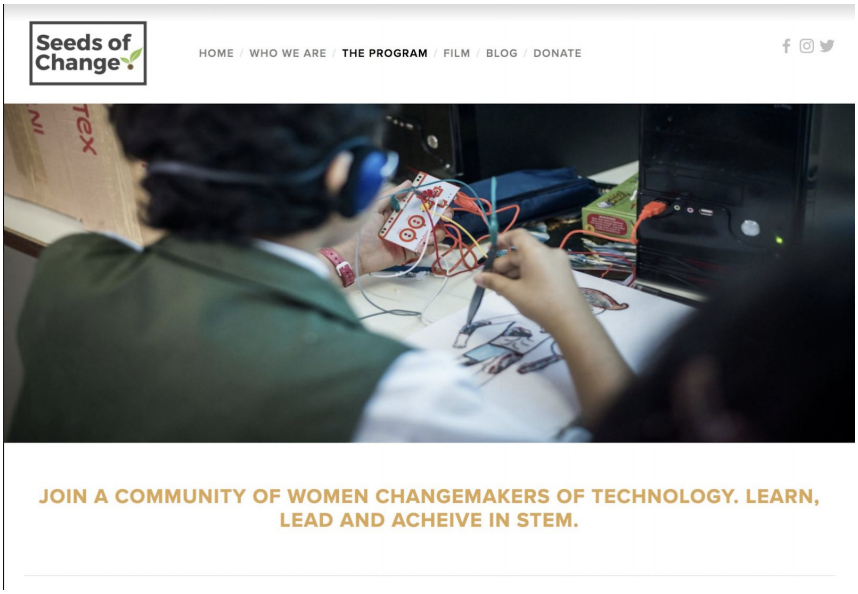
We presented this illustration, of the life path of a mentee, to students as a flyer. It was used to demonstrate how Seeds of Change can be a lifelong community, and how students can continue to give back and contribute to the communities as they transition from high school to college and then their careers.





Website Targeting

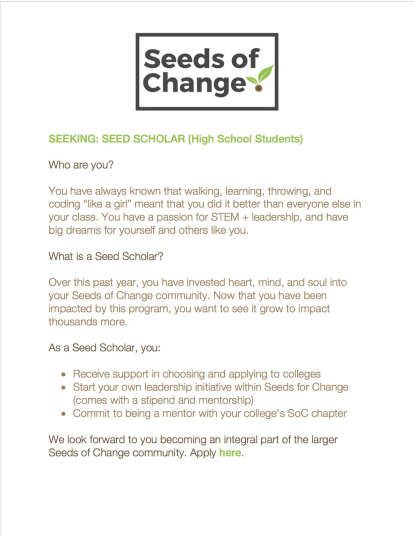
We inserted the illustration into a website template for Seeds of Change that explained what the program was to prospective participants. We emphasized how Seeds of Change can be a lifelong journey in different ways—through the illustration, through various questions in the FAQ, the form to submit, etc.



Descriptions of Roles

We generated creative descriptions of the different milestones of the Journey of a Seed, in the hope that this would help concretize the different roles and make it attractive for students to join.

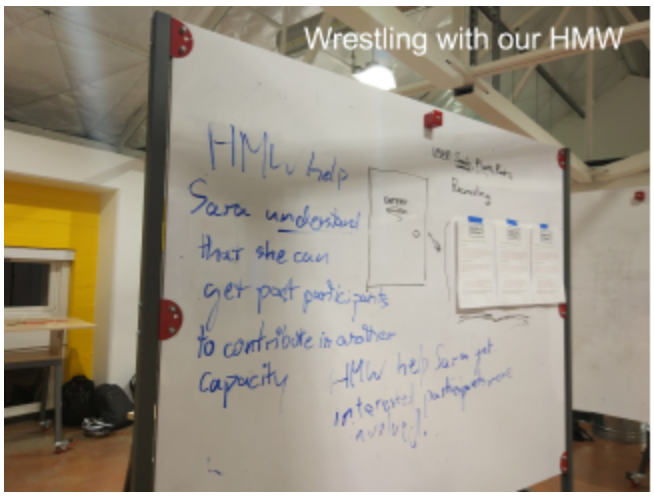
We presented this to women of different ages— undergraduates, masters students, and working professionals. Apart from suggesting minor "design" changes for the flyer, graphic and website, they said they understood the Journey of a Seed and would join Seeds of Change.



Why we transitioned

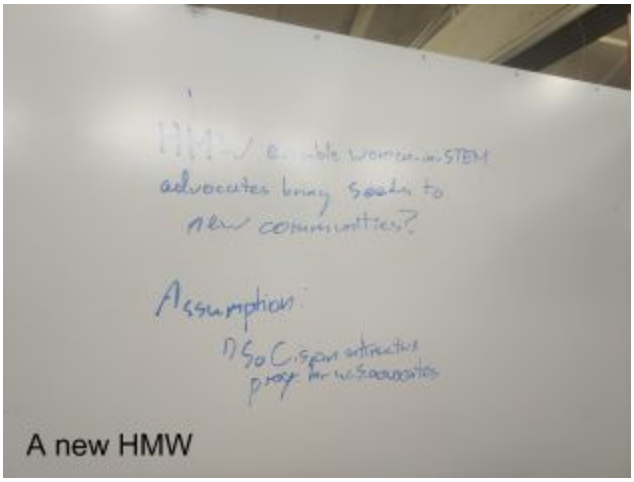
We were proud of our prototype. In class we started to unpack our testing results. But as we stared at these results, as we started listing them on a whiteboard, something started to feel off. Most of the feedback we received was aimed at our visual and detail design: fonts, wording, colors. We realized that we were not actually testing for anything. How did our testers "use" this abstract framework? We stared and stared at the whiteboard.

We took a step back from the whiteboard, literally and figuratively. What were we actually trying to solve with the "Journey of a Seed"? What was our "How Might We" again? We had been trying to think of how to help Seeds of Change grow. Instead, our implicit "How Might We" had somehow transformed into "How might we help Sara understand women's path through STEM to get former participants and STEM professionals involved in Seeds of Change?" Though potentially useful in the long term, this felt rather removed from the goal of growth that Sara had set for us. It seemed much more suitable for a report or an academic paper. Useful, yes, but not in the way we hoped.



We realized that although Sara was our direct "user" and client, she didn't necessarily have to be the actual user of our prototype. We could help her design something aimed at users relevant for her goal of scaling. For this, it now became clear, our existing prototype was not useful.

We panicked a little bit. So many meetings, interviews, testing, hours of prototyping, only to throw it all away? It was good that early that same day, at the start of our Design Thinking Studio class, we had done the activity where we had to be comfortable throwing our prototypes away. So we did just that, and scheduled a meeting to brainstorm new ideas on a simpler, streamlined "How-Might-We". We also committed to keeping our ideas grounded in the needs we had identified in our interviews



A new HMW


Toward a new prototype

3. HMW/Prototypes Round 2

Overall view

We didn't have to throw everything away after all. This framework to think about the "Journey of a Seed" was useful. We thought, assuming that this framework of the life path of a mentee is in place, is in place, how can a mentee transition from a mentor, or a mentor to Seeds Fellow? What might the Seeds of Change member, now a college freshman or a new working professional, participate in Seeds of Change in her new community? This lead us to the following question:

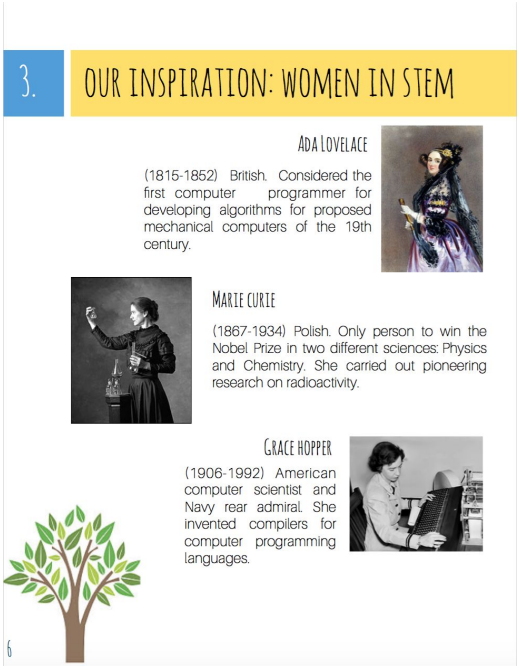
> How might we enable Seeds of Change evangelists who believe in the mission of Seeds of Change, to bring Seeds of Change to new communities?

Now we felt we have something more concrete—something to help students actually transition through the milestones we had proposed earlier. As before, after multiple rounds of brainstorming, we honed down to the idea of creating materials for a Seeds of Change evangelist to pitch Seeds of Change to a new community— perhaps in some kind of "information session". The assumption was that the evangelist (perhaps a past mentee or mentor) knew and believed in the program, knew of an audience or a community to bring it to, and simply needed help presenting the program to them to get them to participate.

We decided to build three prototypes— presenting the same content for the most part— but in different ways— a handbook, a video and a toolkit. We wanted to understand if people would use these materials and how easily the materials made it for them to make a pitch for Seeds of Change.

Handbook

This was a brief booklet where Seeds of Change ambassadors could find information to share about the program, along with important facts about women in STEM and famous female scientist examples to inspire an audience. The description of Seeds of Change was taken directly from Clayman's existing materials, but reformatted and reorganized to make it more readable and attractive.



Video

The video is the third of a theoretical set of five onboarding videos that train Seeds of Change ambassadors to pitch the program to interested participants.

https://www.powtoon.com/c/eQ2R5XQ4fDP/1/m

Toolkit

This was a box that could be delivered to Seeds of Change evangelists and contained everything that was needed to present— a personalized booklet with guided activities (see images below), post-its, markers, a "stack of cards for Women in STEM" used for the one of the activities.

4. Impact of solutions

To understand our impact, it is best to return to our main key insight and "How Might We": to allow for advocates of girls' STEM education to create new environments for girls to imagine careers in STEM and leadership, and to be supported in their exploration of this process. For this project, that meant brainstorming around ways to scale Seeds of Change and empowering SoC evangelists to communicate its vision to other interested stakeholders. We started our project thinking about how to best market this vision in various ways. After some iterations, however, we found that communicating passion is done best through experiential learning and creative interactions. This led us to create a multimedia toolkit that conveys both the nuts-and-bolts as well as the overarching ethos of the Seeds of Change program.

We imagine that the potential impact of this solution is to empower those who wish to do the empowering. The toolkit can give teachers, parents, neighbors, librarians, school administrators, and many other community stakeholders the ability to concretely share their vision for the Seeds of Change program. This is not for those who need to be convinced that this program will provide value for girls who want to pursue STEM and leadership. Rather, this toolkit is for those who want to see the program expanded to their own communities, and need a powerful way to communicate its importance. The resulting buy-in, we hope, will lay the foundation for new SoC chapters that will impact the lives of countless young STEM leaders.

5. Other ideas

Untested Idea: Interdisciplinary Collaboration for Seeds of Change

One idea that we explored in our initial "How Might We" process was how to help Sara better use resources elsewhere at Stanford to gather expertise on project-management skills that Clayman has not developed as fully due to its more research-oriented nature. For example, Seeds of Change could get support from business school students to build a better marketing strategy. CS students could help them design a powerful, visually appealing website. Visual design students could help with infographic design and outreach materials. And so on.

This was based on our interview with Sara, who noted that she needed help with the logistics of managing a growing program. It was also based on our perception of the Seeds of Change website, which contained important and necessary information but lacked a visual identity and outreach-oriented, attractive design. A useful comparison would be the She++ and Million Woman Mentor websites.

Our Point of View statement for this untested idea

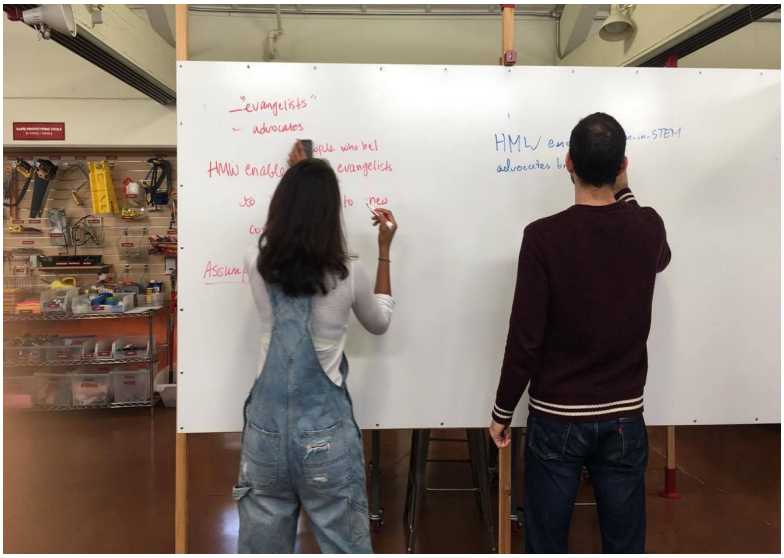
We'd like to explore ways to help Sara, a motivated women's advocate and leader, to better identify and communicate potential areas of growth for Seeds of Change because surprisingly there seems to be little inter-disciplinary collaboration.

Our How Might We's

How might we encourage Sara, women's advocate and leader, integrate resources from other disciplines into her program?

How might we make inter-disciplinary collaboration feel more like team sports?

6. Recommendations



- We think that the "Journey of a Seed" is a useful way of thinking about how to keep the participants engaged in the Seeds of Change program even after the mentorship program is over. It can also be helpful in making the Seeds of Change a strong community and sustain the culture that Seeds of Change is trying to advocate.

- In making Seeds of Change a lifelong journey, we are also making Seeds of Change a way women can identify and connect with each other. To that end, it may be helpful to create an "identity" around Seeds of Change, like having graduation stoles for Seed Scholars, Seeds of Change swag or Facebook profile filters for participants, featuring women from the community on social media or on a website.

- Our final prototype—including the video, toolkit, and handbook—can help Seeds of Change reach out to prospective partner schools and other universities that may want to get involved.

- Communication is key—Seeds of Change should make sure to concisely explain what its program is about and make its outreach materials visually appealing, intuitive, and inspiring.

- The content and activities suggested may actually be helpful in communicating the spirit of the Seeds of Change program— community, confidence, communication, etc.

7. Appendix

You'll find attached below designs of the various prototypes we built. They appear in the following order:

A. Journey of a Seed
    a. Life Path of a Mentee
    b. Website
    c. Creative role descriptions for various milestones

B. Materials for Informational Toolkit
    a. Handbook
    b. Toolkit instructions
    c. Video (https://www.powtoon.com/c/eQ2R5XQ4fDP/1/m)

Life path of a mentee

Mentees are high school girls interested in STEM, CS, and leadership

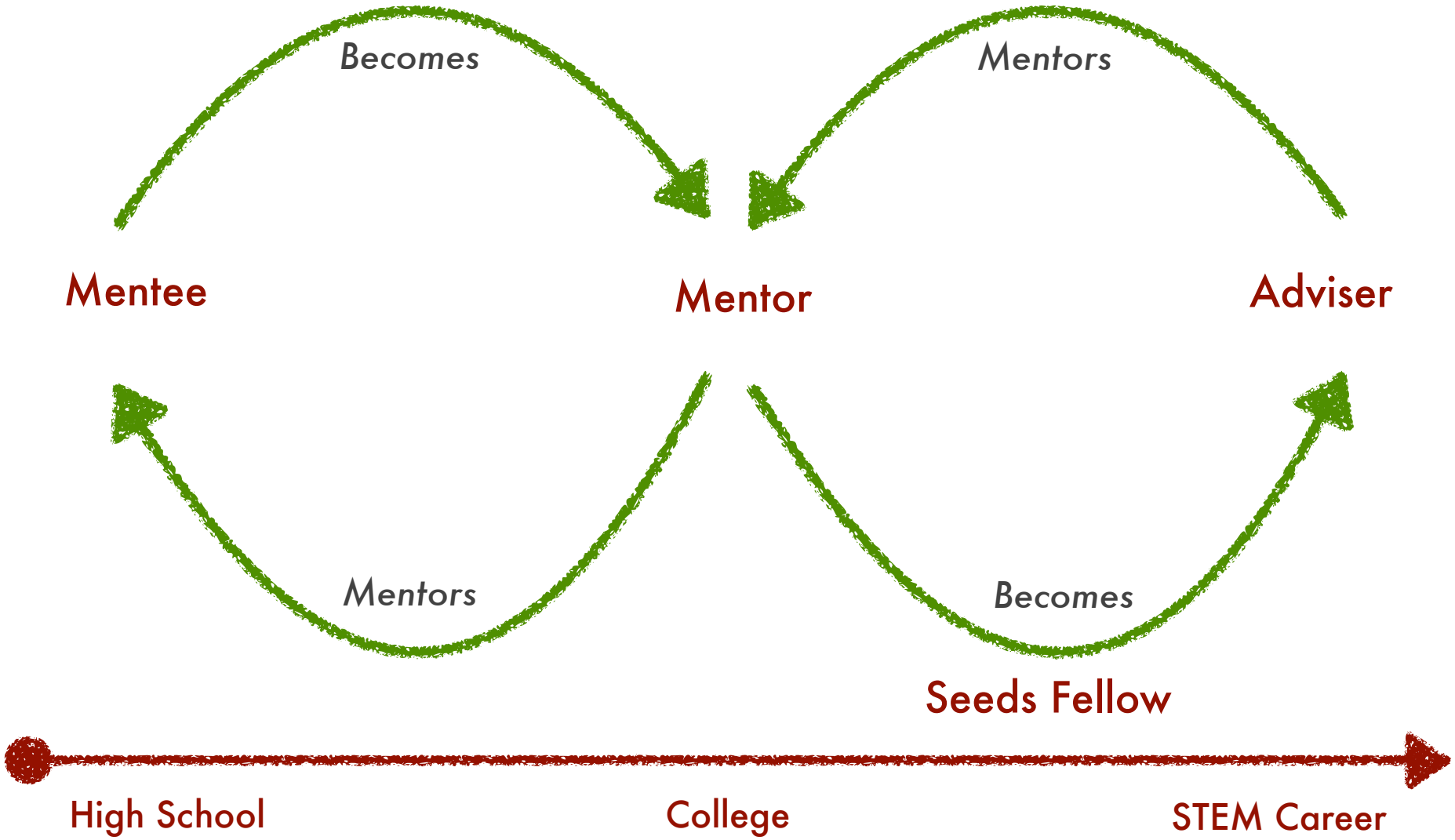
Seeds of Change connects them with mentors, college girls majoring in CS / STEM

As mentees move into college, they can become mentors themselves, or found a new Seeds chapter

After serving as mentors, girls can become fellows working at Seeds in Stanford

Women moving into STEM careers can become advisers to Seeds of Change mentorship circles

As girls progress in their STEM careers, they can fill different roles within Seeds



JOIN A COMMUNITY OF WOMEN CHANGEMAKERS OF TECHNOLOGY. LEARN, LEAD AND ACHEIVE IN STEM.

HIGH SCHOOLS: SIGN UP HERE

COLLEGE STUDENTS: SIGN UP TO BE MENTORS

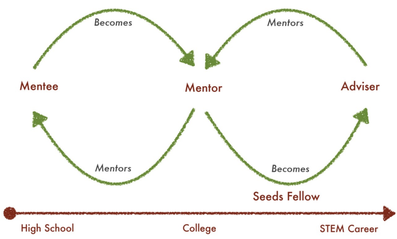
CHECK OUT THE UPDATED LAUNCH KIT

DEADLINE EXTENDED UNTIL OCTOBER 25

The 2017 Seeds of Change program has launched! Apply before October 25th to be applicable for this round!

Check out the biographies of our 2017 Seeds of Change class here .

The journey of a Seed



OUR VISION

Seeds of Change aims to encourage, support and sustain young women in computer science and engineering as they journey from high school through college and into successful careers in technology. We hope to equip young women with the knowledge and skills to effectively navigate critical transitions on their academic journey and to be resilient in the face of gender-based obstacles. For example, it would help the high school girl who loved math make the transition to college student majoring in engineering.

OVERVIEW

There will be 1,000,000 computer-related job openings by 2020. If current employment trends hold, only 26% of those openings will be filled by women. Engineering offers a bleaker number; women hold only 12% of the jobs.

How does one ready herself to pursue STEM studies and a career in the face of numbers like these? Technical skills and knowledge - while critically important - are not enough. Women's underrepresentation in STEM is due in large part to the presence of persistent stereotypes and gender bias. Seeds of Change is an initiative out of the Clayman Institute's Center for the Advancement of Women's Leadership at Stanford University. We partner with high school level STEM groups to provide innovative leadership training and support to students as they transition through high school and college to successful careers.

Seeds of Change connects Stanford STEM undergrads with high school level groups focused on STEM. Through a series of animated videos developed by our research team, as well as mentor-led and peer-driven discussion, the initiative plants a foundation of frameworks, knowledge, and skills for successful leadership in STEM careers. Participants will grow to recognize gender dynamics, and learn how to navigate environments impacted by gender bias and stereotypes.

IMPORTANT DATES

- **September 5, 2017 -** signups for Seeds of Chamnge program open
- **October 15, 2017 -** Training starts for mentors
- **October 25, 2017 -** signups for Seeds of Change program close
- **November 1, 2017 -** mentors assigned to high school cohorts
- **October 30, 2017 -** training ends for mentors
- **November 5, 2017 -** Bi-weekly sessions start with cohorts
- **TBA -** End of year retreat!

ELIGIBILITY

Applicants must meet the following requirements to be eligible for the Seeds of Change program:

- Currently enrolled in high school, or home-schooled at the high school level, with the intention of receiving a high school diploma or completing the GED within the next four years.
- Reside in Palo Alto, California, United States. territories.
- Interested in STEM.

If you have any questions or concerns, please let us know by emailing at pedersen@stanford.edu.

ADVISOR DETAILS

A #include Advisor is a motivated undergraduate, graduate student, or recent graduate in Computer Science or related technical fields. They are matched with a Seeds of Change cohort, who they will mentor and support throughout the program. Mentors will attend a training session, coach bi-weekly workshops for their cohorts, and serve as liason and field researchers for the Clayman Institute for Gender Studies.

FREQUENTLY ASKED QUESTIONS

Can boys participate in the program?

Yes! We encourage high school students of any gender to participate and college students/recent grads of any gender to be mentors.

There are alreafy so many programs for women and girls in STEM. What makes Seeds of Change different?

Seeds of Change is unique in its focus on leadership. Most existing programs to increase the pipeline of women in engineering and computer science focus on developing critical technical skills – and these are important. But we need to add another component: the skills, tools, support, and frameworks that young women need to navigate critical leadership transitions as they move from high school to college, chose a major, enter graduate school, and finally begin a technology career. It is at these transition points that we see ongoing attrition of women in computing and engineering.

What happens after the mentorship program finishes?

Your journey with Seeds of Change can go on for as long as you like! We think of Seeds of Change as a lifelong community of friends, mentors and coaches whom one can always go to and ask for advice. Once a mentre finishes the program or transitions to college, they can become mentors themselves or start a new Seeds of Chnage chapter in their university or surrouding high schools. After serving as mentors, girls can become fellows working at Seeds in Stanford. Finally, women moving into STEM careers can become advisers to Seeds of Change mentorship circles.

QUESTIONS?

Reach out to Kristine Pederson at kpederson@stanford.edu.

No technical experience is required to be a participant or mentor in the Seeds of Change program. We highly encourage students with no prior technical experience to get involved! Anyone who is interested in learning more about STEM is welcome to sign up.

Donate

SEEKING: SEED SCHOLAR (High School Students)

Who are you?

You have always known that walking, learning, throwing, and coding “like a girl” meant that you did it better than everyone else in your class. You have a passion for STEM + leadership, and have big dreams for yourself and others like you.

What is a Seed Scholar?

Over this past year, you have invested heart, mind, and soul into your Seeds of Change community. Now that you have been impacted by this program, you want to see it grow to impact thousands more.

As a Seed Scholar, you:

- Receive support in choosing and applying to colleges
- Start your own leadership initiative within Seeds for Change (comes with a stipend and mentorship)
- Commit to being a mentor with your college’s SoC chapter

We look forward to you becoming an integral part of the larger Seeds of Change community. Apply **here**.

SEEKING: PLANTING PRO (College Mentor)

Who are you?

You are probably reading this in your small breaks between your science labs, hack-a-thons, and coding side hustles. Integrating STEM + leadership into your college career hasn't always been easy as a young woman, but it's always 100% worth it.

What is a Planting Pro?

Are boys really better at math and science than girls? Hardly. Then why are there so few fellow women in your STEM major? You have a vision to change this dynamic by mentoring a new generation of high school girls to choose science and lead fearlessly.

As a Planting Pro, you:

- Lead discussion groups with high school girls using the innovate Seeds of Change leadership development curriculum
- Act as a role model to aspiring young Seed Scholars
- Receive mentorship from an industry advisor

We look forward to you becoming an integral part of the larger Seeds of Change community. Apply **here**.

SEEKING: ROOT CHAMPION (Industry Advisor)

Who are you?

You firmly believe that women are the future of STEM + leadership. Times have progressed, but you know that they need more seats at the table. You have paved the way for women to enter your field, and want to keep fighting the good fight.

What is a Root Champion?

You often reflect over your career as a woman leader in the STEM/CS industry and think, “Wow, I wish someone had told me this!” As a Root Champion, you mentor the next generation of women leaders to make serious impact in their professional circles.

As a Root Champion, you:

- Meet with a Seeds of Change college mentors once a month either in-person or through Skype
- Arrange inspiring site visits for younger women in the SoC community to imagine careers in STEM + leadership
- Connect your mentees to valuable internships and experiences

We look forward to you becoming an integral part of the larger Seeds of Change community. Apply **here**.

SEEDS OF CHANGE

THE HANDBOOK

1. INTRODUCTION: WHY WE DO THIS

> “We aim to provide young women and girls with a foundation of frameworks, knowledge, and skills so they will be prepared when they encounter gender dynamics. We want them to have the tools to recognize and handle those situations and peer networks to draw on for support

- Sara Jordan-Bloch, program founder and the Center's Director of Leadership Research and Programs

The Seeds of Change initiative provides innovative training and support to young women in STEM as they transition through high school and college to successful technology careers. Made possible by a three-year $1.5M gift from information technology leader VMware, the program addresses the glaring underrepresentation of women in computer science and engineering.

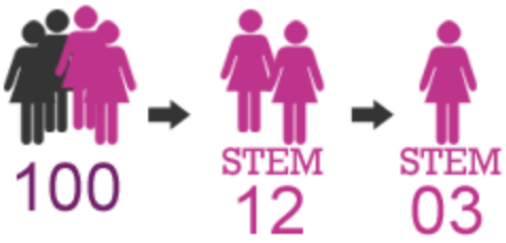
While women earn more than 50% of undergraduate degrees, they represent only 18% of computer science graduates. Moreover, among those women who earn degrees in technology-related fields, as many

as 40% eventually leave these areas for other occupations. As a result, only 26% of computing jobs are held by women. In engineering jobs, women account for only 12%.

Women's underrepresentation in these and other STEM fields is rooted, researchers say, in persistent stereotypes and unconscious gender bias. These forces influence women at multiple junctures in their academic and career journeys. Early on, girls receive less early encouragement than boys to pursue STEM studies. Later, those women who persevere in technology fields report feeling a lack of support and encouragement, particularly in terms of leadership opportunities.

Women comprise more than 20% of engineering school graduates, yet only 11% of practicing engineers are women

74% of STEM workers are male. Only 26% are female.



Of 100 female bachelor students, 12 graduate with a STEM major but only 3 continue to work in STEM fields 10 years after graduation.

Source: Million Women Mentors

HOW WE DO IT

2.

Seeds of Change partners Stanford undergraduates in technology disciplines with high school students interested in advancing the participation of women and girls in STEM, and provides an integrated curriculum of mentoring, training and skills development. The program's goal to is to establish and retain young women in technology fields, and create future women STEM leaders.

Seeds of Change will launch in September 2017 with 20 Stanford undergraduates and 80-100 students in grades 9 through 12. After a pilot phase, the Center plans to expand the program nationally. Technical skills and knowledge – while critically important – are not enough. Seeds of Change provides innovative training and support to young women as they transition through high school and college to successful careers.

Seeds of Change Leaders participate in leadership training and skills development, then impart what they have learned to area youth interested in the world of STEM. Leaders will:

1. Participate in a Stanford-designed leadership training course that builds competence, resilience and leadership strategies.

2. Join the Seeds of Change initiative as a paid employee and mentor high school students.

3. Impact the pipeline of women in STEM by training and becoming the industry's future innovators, inspirers, and influencers.

By planting a foundation of frameworks, knowledge, and skills, participants will grow to not only recognize the dynamics of gender, but they will a learn how to successfully navigate environments so impacted by them.

This is achieved by employing three core strategies: research-based education, a train- the-trainer model, and cohort-based learning

1. Research Based Education

Seeds of Change is firmly grounded in research

The Seeds of Change curriculum is grounded in academic research about how to effectively advance women's leadership and increases women's participation. This curriculum is brought to life in a series of animated videos designed by our researchers and curriculum designers, and put into action with the use of discussion guides and exercises to promote skills development.

2. Train-the-Trainer Model

Seeds of Change trains Stanford STEM undergrads who then impart that training to groups of high school students.

In their roles as Leaders, the undergrads deepen their own knowledge and understanding of the core content, empowering their leadership in and beyond their role in Seeds of Change. For the high schoolers, learning from students just a few steps ahead of them provides access to relatable and attainable mentoring relationships

3. Cohort-Based Learning

The group is a critical mechanism for learning

By hearing about and sharing experiences, participants gain insight into their own circumstances and experience diverse leadership models. This approach breaks feelings of isolation and provides support and encouragement.

3. Our inspiration: women in STEM

Ada Lovelace

(1815-1852) British. Considered the computer programmer for developing algorithms for proposed mechanical computers of the 19th century.

Marie curie

(1867-1934) Polish. Only person to win the Nobel Prize in two different sciences: Physics and Chemistry. She carried out pioneering research on radioactivity

Grace hopper

American computer scientist and Navy rear admiral. She invented compilers for computer programming languages.

Katherine Johnson

American mathematician who worked at NASA calculating the trajectory of spacecraft in the 1950s and 1960s.

Maryam Mirzakhani

(1977-2017) Iranian mathematician at Stanford University. Winner of the Fields Medal, the most prestigious prize in mathematics.

Komal Dadlani

Chilean biochemist who founded Lab4u, a science education company that uses smartphone apps as portable laboratories for physics, chemistry, and biology.

...and many more!

Help us inspire the next generation of women STEM leaders

To learn more about Seeds of Change visit
WOMENSLEADERSHIP.STANFORD.EDU/SEEDSOFCHANGE
Seeds of Change is made possible by the generous support of VMware

Stanford | **Center for the Advancement *of* Women's Leadership**
Clayman Institute for Gender Research

1 Kicking things off

5 MINS — INTRODUCTION

Here's a simple way to introduce Seeds of Change:

> "SEEDS OF CHANGE IS A TRAINING AND SUPPORT NETWORK TO HELP YOU NAVIGATE DIFFICULT SITUATIONS IN STEM

It's also good to give participants an idea of how this workshop was first created, and how they're a part of a larger movement for youth empowerment:

- SEEDS OF CHANGE IS A TRAINING AND SUPPORT NETWORK TO HELP YOU NAVIGATE DIFFICULT SITUATIONS IN STEM
- THE FIRST PROGRAM WAS PILOTED IN 2017 AT 5 SCHOOLS IN THE BAY AREA BY 20 STANFORD UNDERGRADUATES PURSUING STEM FIELDS
- BY JOINING SEEDS OF CHANGE, YOU WILL BECOME PART OF A LARGER COMMUNITY OF 100 HIGH SCHOOL AND UNDERGRAD WOMEN... AND THE NUMBERS ARE INCREASING AS WE SPEAK!!

10 MINS — PLAY "BIGGEST FAN"

This is a game to show students how it feels to be a part of a community which constantly supports them and cheers them on!

- Everyone partner up and play "rock, paper, scissors" until someone wins best two out of three.
- The loser becomes the winner's "biggest fan", cheering on and shouting the winner's name as loud as he/she can. The winner looks for another winner to play from another pair.
- Keep going until there are only 2 players left, with 2 huge crowds of their "biggest fans" cheering them on.

After the game, prompt them to reflect:

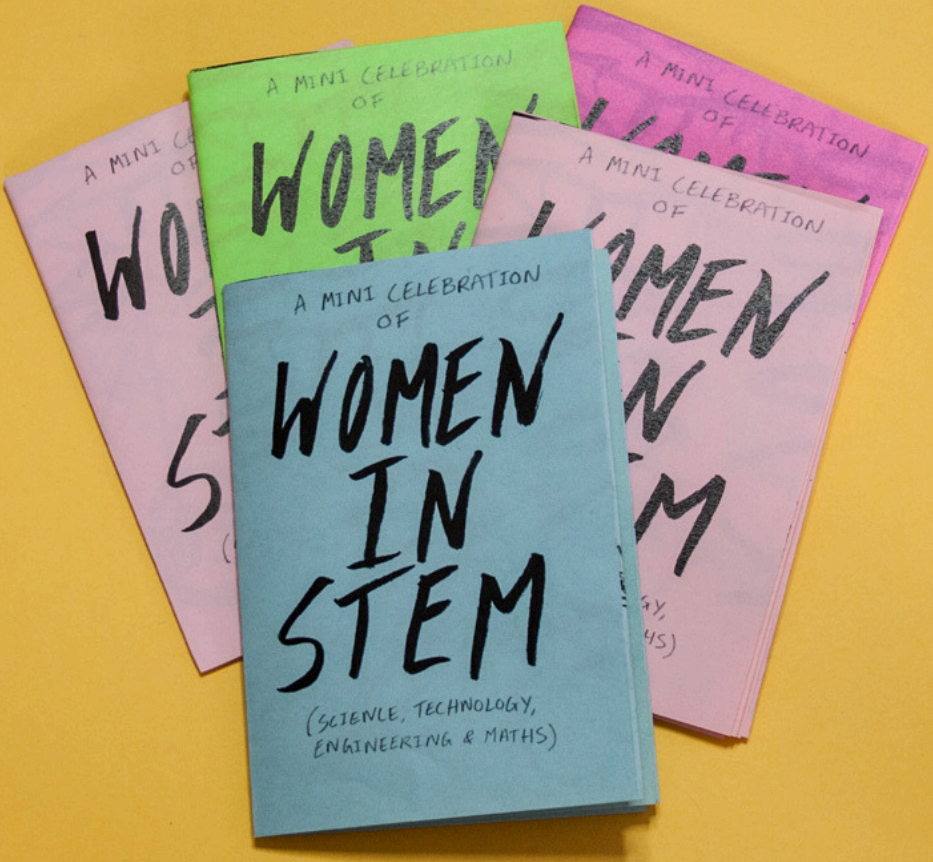
> "What did that feel like?

..... usually there are positive responses (like exciting, confident, pumped!)

After they share, take the opportunity to explain how Seeds of Change can enable them feel similarly:

> "That felt nice, didn't it? With Seeds of Change, you're also going to enter a community of peers who are going to constantly cheer you on and celebrate your successes, and perhaps more importantly, your failures!

2 CELEBRATING WOMEN



5 MINS

LOOKING FOR "SUCESS" STORIES

Students are given post-it notes and sharpies. They brainstorm as many people they know that are successful in STEM fields and write it down.

Brainstorming rules

- Everyone has a post it and a sharpie
- every time you think of someone, say it out loud and write it on the post it so there are few or no repeatitiions.
- have a lot of names? give some to a friend!

examples

- albert einstein
- isaac newton
- thomas alva edison
- leonardo da vinci
- charles babbage
- marie curie
- alexander graham bell
- mark zuckerberg
- neil armstrong
- marissa mayer
- archimedes
- stephen hawking

10 MINS

WHERE ARE THE WOMEN?

Now have two posters set up, labeled 'Men' and 'Women'. Ask the students to look at the names on the post-its and place it under each poster.

AFTER THE INITIAL BRAINSTORMING....

- TAKE A POST IT AND PUT IT UNDER 'MEN' OR 'WOMEN'.
- WHAT HAPPENS?

.....much fewer post-its in the women side.

> THIS DOESN'T MEAN THAT THERE ARE FEWER WOMEN THAN MEN. THERE ARE MANY BADASS WOMEN IN STEM, SOMEHOW THEY ARE LESS CELEBRATED OR FORGOTTEN FROM HISTORY. LET'S CELEBRATE THOSE WOMEN AND FILL UP THIS SPACE!!!

Ask students to pair up and hand each student a card from the :"women in stem" stack. Give them a minute to look over their card. One by one, ask each pair to share the woman on their card with the rest of the class and tape the card under the "women" poster. See this section slowly fill up.

In the end, add the card labelled "You" to this section and say:

> THIS COULD BE YOU NEXT!

3 STORIES ABOUT CHANGE

5 MINS

I WISH I KNEW THIS EARLIER...

> THERE'S A LOT OF INSTANCES IN LIFE WHEN I'VE BEEN LIKE "I WISH I KNEW THIS EARLIER....."

Facilitators: Share with everyone a "I wish I knew this earlier moment" that directly relates to the skills we are teaching in this workshop. For example, was there ever a situation you wished you could:

- NEGOTIATE BETTER?
- SPEAK UP AND MAKE YOUR OPINION BE HEARD?
- NOT FEEL LIKE A FAILURE AND INSTEAD GROW FROM YOUR MISTAKES?

The story will enable them to empathize with some of the difficult situations they may encounter as women in STEM and reflect on similar experiences in their own lives.

> HOW MANY OF YOU HAVE FELT YOU'VE BEEN IN SIMILAR SITUATIONS? WE KNOW IT IS HARD. **WE'VE ALL BEEN THERE.** WE'RE HERE TO SHARE SUCH EXPERIENCES AND LEARN HOW TO GROW FROM THEM.