



Giving a SH*T: Design for a Better World 2018 Toilet Design Thinking Class Report

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Conducted by Wish for WASH under the auspices of the Paideia School

Compiled, written and edited by Anya Smith- Roman, Hill Belfi, Tanvi Suresh, Jasmine Burton and Katie Isaf

BACKGROUND

2.3 million people worldwide do not have access to basic sanitation facilities.¹ Wish for WASH (W4W) is a social impact company focused on bringing innovative solutions to global sanitation. However, it is important to note that sanitation problems are of importance both locally and globally, as there are sanitation issues in our own backyard.

Atlanta itself, along with other major cities of the world, is approaching a water crisis as the population continues to grow and droughts become more common. There is an increasing need to reduce our water usage, and current household toilets are an enormous drain on our shrinking clean water supply.²

This was the train of thought that Magnus, a teacher at the Paideia School, had when he approached W4W, curious about a collaboration between the two organizations.

Magnus has a five-year plan to develop a fully “off grid”, sustainable tiny home to be put up for rent in the Decatur area; this home will be created by students in different phases over the course of five years during various “Short Term classes” at Paideia.

Meanwhile, the W4W team has been conducting composting research to develop our latest prototype: combining Wish for WASH’s SafiChoo toilet model with a composting process to create a sanitation system that produces zero waste.

The Paideia School granted our W4W team with the opportunity to conduct this composting research in Magnus’ backyard as well as leading the first of several short-term classes contributing to this tiny home project.

The resulting course, “Giving a S*: Design for a Better World,” is centered around design thinking and sustainability with the goal of having two prototypes of a composting toilet by the end of the 18-day class.** The key part of this design challenge is that the composting toilets the students’ design should be a toilet that a family in Decatur (potentially Magnus’ own family) would be willing to use.

*The following, brief report is a documentation of the methodology, implementation, and reflection process associated with this pilot of the short term course “Giving a S***.” with 8 high school students.*

1 <http://www.who.int/news-room/fact-sheets/detail/sanitation>
2 <http://observer.com/2018/02/los-angeles-atlanta-miami-and-san-francisco-are-running-out-of-water/>



Members of the Wish for WASH team on the first day of the course

METHOD

“Giving a S***: Design for a Better World” is based on the **DEEP Design Thinking methodology: Discover, Empathize, Experiment, Produce.**³ This process was used by the Wish For WASH team to create the curriculum and by the students to investigate, design, and build their composting toilet prototype over the duration of the course.



Design thinking is a process applicable to any field of work by placing an emphasis on designing with people who need the product as opposed to designing something away from the situation that ultimately does not fit the actual needs of a community.

W4W began the process of creating the curriculum by first having our team learn more about the design thinking process from high schoolers at Mount Vernon Presbyterian School involved in the Innovation Diploma.⁴ Members of this program are well versed in design thinking and have created and facilitated dozens of design challenges. By working with these high schoolers before developing our own curriculum, we accomplished two goals:

- 1. Gaining guidance experience on design thinking and**
- 2. Gaining feedback from people in the age range of the users of the course we were creating.**

The Innovation Diploma team took the W4W team through the entire DEEP Design Thinking process in a 90 minute introduction to design thinking session called a “Flashlab.” After the session, the team of design thinking experts talked with the W4W team about the process of creating the Flashlab and tips for creating a larger scale design challenge to facilitate with high schoolers.

A key learning moment gained from the Innovation Diploma team was that design

thinking is human-centered problem solving, and therefore, it requires having a specific user to design with in order to meet their needs. This means that the most important job a creator of a design challenge has is to make sure the user is very clear to the designers (students in this case) and that there are multiple times for the designers to interact with the user. Due to this insight, the W4W team then met with the Paideia teachers in charge of the course to discuss who would be the user of this toilet design challenge; following this meeting, the curriculum was adjusted to allow for multiple moments for the students to interview users.



³ <http://deepdesignthinking.com/>
⁴ <http://www.mvifi.org/idiploma/>



Ali Hatch



Jasmine Burton



Will Johnston



Becky Byler

Additionally, times were set up for experts in the field of sustainability and composting toilets such as **Will Johnston**, the Executive Director of Tiny Homes Atlanta, **Ali Hatch**, an Industrial Designer who built and lived in a treehouse with her husband and used a compost toilet, and **Becky Byler**, a PhD in Biomedical engineering and Masters of Public Health candidate at Yale University to be able to speak with the students. **Jasmine Burton**, Founder and President of Wish for WASH, acted as the global sanitation instructor for the course. A field trip was originally planned so that the designers could interact

with current models of composting toilets and spatially visualize all of the components and their sizes and purpose; unfortunately, however, the field trip was canceled at the last minute due to a scheduling conflict.

In the future, there would be a field trip scheduled as we realized how much it would have benefited the student designers. Similarly, a field trip to Georgia Tech was scheduled and did take place in the end. This trip was meant to give students a glimpse at what future phases of the process would look like if they were to continue to build out their prototypes with more desirable materials. All of these interactions with people outside of the class were meant to really drive home the point that this is a real world problem and to gain more insights from people deeply involved in the field of composting toilets in some way.

From here, the W4W team went through a series of rounds of prototyping and gaining feedback from different audiences on their opinions of our curriculum. The curriculum was given to teachers who utilize design thinking, environmental

experts, and other members of the Paideia community to assess if the curriculum could meet the WASH goal of teaching sustainability concepts through the process of a design challenge and whether it was on par with Paideia teachers' vision of the partnership.

The curriculum went through a minimum of four different prototypes before the course began, and even during the course, there were then pivots based on how the students were doing on a more day by day status.

The W4W team intentionally used the design thinking process for developing the curriculum by first having interviews followed by prototyping different curriculums, and then gathering feedback on each rendition from key experts and users.



Paideia students headed to Georgia Tech for the Design/Engineering Field Trip



Paideia students touring the Georgia Tech biomedical engineering shop with Wish for WASH

PILOTING WITH PAIDEIA

What

The pilot course with Paideia School lasted 18 days over the month of May 2018, including one shortened day, which was only an hour opposed to the usual two hour class. **The course, entitled, “Giving a S***: Design For a Better World,” gave students the opportunity to learn more about sanitation, sustainability, the goals of Wish For WASH, and the design thinking process through a three week design challenge to build a prototype of a composting toilet suitable for service in Decatur, GA.**



Why

The purpose of creating this course was to better inform students about the reality of the water crisis the world is facing in the near future and to give them the tools and opportunity to do something about it. Paideia and Wish For WASH mutually benefited from this partnership as the Paideia students got to learn about Georgia Tech, engineering and design careers, the design thinking methodology, and gain knowledge about sustainability topics while the Wish For WASH team got to spread the organization’s message while also collecting valuable insights for their own composting toilet design work. The deeper hope was that the student’s’ designs of composting toilets could also be taken to the next level of production in the future to be able to go inside of a tiny home being designed by a different teacher and class at Paideia.

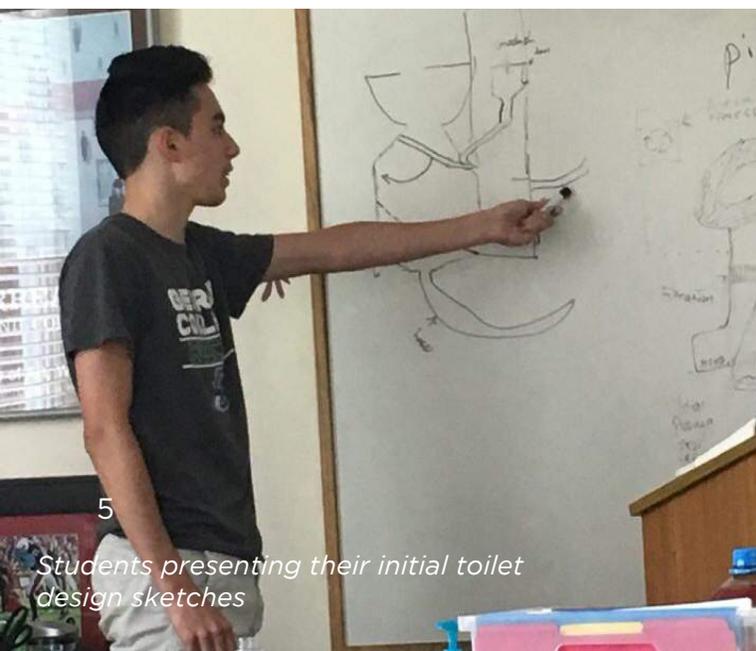
Instructional Learning Points

Key takeaways based on the pilot class with Paideia on how we could revise the curriculum for an even better course include the following:

- The user for the design challenge needs to be understood and decided earlier in advance in order to assure more interactions between the user and the student designers; **too many users can confuse what needs the product is trying to meet and what the design constraints are.**
- **Before the class begins, the W4W team should do a site visit to better understand the cultural norms and academic expectations of the school.** For example, at Paideia there are no bells and students it is a norm for students to have autonomy and leave for the bathroom at anytime; a better pre-class understanding of this norm would have enabled W4W to more effectively express the course expectations such as needing to work and communicate as project teams to work through the toilet challenge.
- **The discovery/research phase could be more interspersed throughout the course rather than all upfront.** This would allow for students to start

talking with people and start experimenting faster. Ultimately, this would allow for more time to test prototypes with users. **The research could have also been more focused with the students being given guiding questions or general topics to specifically look into which could help speed up the research process time.** Emphasizing the importance of doing research outside of class or preparing a mock textbook could also address this issue so that students have more knowledge at their disposal.

- **Ideally, we would have liked more time to focus on deliverables, such as what higher resolution prototyping would look like (3D printing, modeling, etc.), as well as the creation of more time to work on crafting quality pitches. These pitches could be stories and slide deck designs that are fun and engaging yet professional.** The end of course- toilet concept pitches also would have been elevated if the W4W instructors had more effectively communicated the value of incorporating a sketch of the toilet prototype in the final presentation. *In the future, W4W would like to incorporate a Computer Aided Modeling (CAD) workshop using a software such as Fusion to enhance the prototyping capabilities of the students.*
- **In the future, W4W would aspire to ensure that the student design teams have more clear roles within their project teams** so that every team member feels like they had a specific responsibility and leadership skill to share with the team.
- **In the future, W4W plans to solidify external engagements** such as identifying speakers, securing field trips, and planning an end-of-course panel to ensure a better logistical course flow.
- **In the future, W4W plans to coordinate internal team roles** in advance to ensure that lectures are prepared and practiced ahead of time to ensure a better logistical course flow.
- **In the future, W4W plans to schedule more flexibility at the end of the course schedule** to ensure that the student designers have the chance to reflect upon this experience and give verbal feedback to the instructors.



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Students presenting their initial toilet design sketches



Students presenting their initial toilet design sketches

SURVEY FEEDBACK FROM STUDENTS

The Wish For WASH team gained ample positive feedback from the students in the class in the post course survey. The majority of students stated that they enjoyed the class and thought it was well paced and would recommend it to other students; as one respondent wrote,

“Yes, I would recommend this class because I think that it would be good for someone to experience especially if they are interested in the design thinking process. It would be a great way to learn and improve on their team work, organization, and even design skills.”

The student responses also showed that a majority of the class felt like they ended the course feeling confident to talk about sustainability and design thinking.

Many students appreciated the course because it was “very hands on” and “taught me a lot about a topic that I wouldn’t probably know anything about at all.” The favorite part of the course varied greatly from researching different kinds of toilets, to prototyping, to simply the general experience of “getting to know my teammates and instructors” in a way that doesn’t always happen in a traditional class.

When asked what could be improved about the course, most comments by students regarded pacing and more clarification as to the goals of different days. There was some confusion around who the specific user was, which the facilitators also noted as something upon which we could improve. A few students also mentioned that they wished there was more time for the second half of the process, the experiment and produce phases. They wanted to “start building” sooner, and W4W - rooted in the Georgia Tech community - recognizes the merit in that request because building sooner could have allowed more time for testing,

failing, and iterating. The W4W team now has a better idea of how to pace the course to effectively relay sanitation specific information on both a local and global level, lead design- thinking teachings, and facilitate the DEEP Design Thinking process within an 18 day timeframe.

The final question of the survey asked, “How would you describe Human Centered Design or Human Centered Problem Solving to someone?” and there seemed to be some concerning confusion with this question. The majority of students were spot on in their descriptions, such as “to develop a product with emphasis on the needs and wants of the person who will be using it.” However, a couple of students said that they didn’t know what human-centered design was or they didn’t remember learning it. **This feedback reveals that perhaps throughout the course there should be more moments of reminding students that design thinking is human centered problem solving rather than just one big day at the beginning of the course devoted to talking about what design thinking is and why it matters.**

Overall student feedback was very positive and reassuring that the course was both fun and engaging while also being informative about sustainability initiatives and the design thinking process.

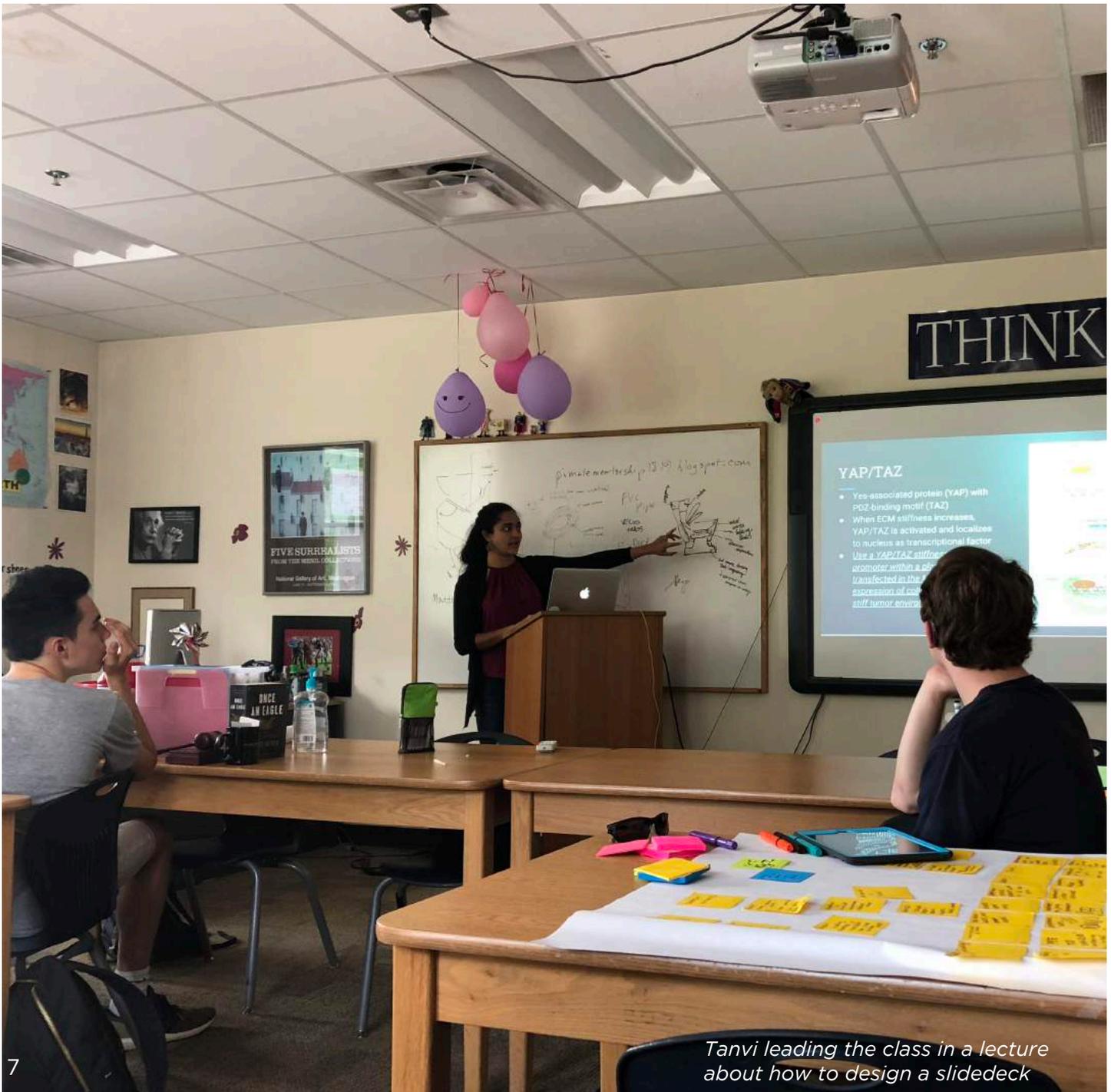


Students presenting their toilet prototypes on the last day of class

NEXT STEPS

Moving forward, the W4W team intends to integrate learnings from this pilot course from curriculum edits to a more streamlined facilitation plan. Inline with the iterative nature of design thinking, we intend to test the 2.0 version of the course with another cohort of high school students with a more balanced focus on both conceptualizing and prototyping. As we hope to continue our work

with the Paideia community, we will also take into account that students from the first version of our course may enroll again. *We hope that both this course as well as the students that complete the course effectively add to the movement of integrating a design thinking and iteration to innovation related to global grand challenges such as sanitation.*



Tanvi leading the class in a lecture about how to design a slidedeck



www.wishforwash.com

jasminekburton@wishforwash.com

#everybodypoops

