

Where There is No Engineer

“Designing for Community Resilience” - Forced Migration

Irish Aid Development Education Design Challenge 2017/2018

Project:	<i>TIDE</i>	
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Abstract: please insert a short (250 word) abstract which explains your concept and how you would envisage it being implemented.

Over half the displaced population are women, and they are suffering both physically and mentally. Girls are dying from a lack of resources, knowledge and awareness about menstruation. They do not have access to sanitary products or underwear. Instead they use cloths, leaves, rags, or tin cans. ‘TIDE.’ is a menstrual tool kit designed for displaced women. The tool kit includes four reusable sanitary pads, a washing device, underwear and infographic instructions, to avoid language barriers. One kit will be supplied per woman, and it will last for approximately 6.25 years, to be used during each menstrual cycle. When not in use, the pads can be stored within the washing device.

The ‘TIDE.’ menstrual toolkit is designed to provide a reusable and universal solution for refugee women. Along with this, it also creates a safe environment within refugee camps for women to learn about menstruation. The aim of this community aspect is to address the taboo issues associated with menstruation, while providing an education to all those who are displaced from home.

How it’s implemented:

Depending on the location of the refugee camp/provision site, the raw materials for the toolkit will be sourced locally. A safe area will then be setup, or augmented from the existing women friendly areas, on site, for the making and distribution of the toolkits. Women will then be introduced to or made aware of this area.

Program Theme: Please select the program theme under which your project / concept is being submitted by placing an “X” in the appropriate column. (note you can select more than one thematic area)

1. Climate Resilient Infrastructure	
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2. Self Supply Water and Sanitation	X
3. Community Participatory Health	X
4. On and Off (Micro) Grid Energy Systems	
5. Food Security	
6. Applying Big Data in the Community	

In the following sections you are asked to provide a concise description of your concept and how it would work in practice (Maximum 5 pages). You can insert tables, graphs, photos, drawings to illustrate your concept as appropriate.

Objective (What you are planning to do):

Describe your overall idea / concept and approach. Identify the alternative options considered during the design process and a justification for the selected technology, approach and/or process.

(a) Our idea of a menstrual toolkit is to empower forced migrating women to be able to learn about and be in control of their own menstrual health, no matter where their home is.

For women living in refugee provisions they face extreme risks effecting both their mental and physical well-being.

“On any given day, more than 800 million women between 15 and 49 have their period. However, globally 1.25 billion women do not have access to a toilet or supplies during menstruation, according to the charity WaterAid.” (1)

They are subject to sexual and gender based violence (SGBV) within the camp, meaning they are afraid to use the toilet for fear of being attacked. They have not got access to basic necessary supplies during their periods, such as underwear or sanitary towels. Women are forced to use any materials they can find, such as leaves, cloth rags and even tin cans. This results in women getting infections, such as urinary tract infections or vaginal bacteriosis. The lack of sanitary supplies can also stop women from walking around the camps because of the stigma surrounding menstruation and the risk of leakages.

Our approach with this project was about developing a toolkit which accommodates for the variety of different cultures being forced to migrate. This concept provides a full system. The toolkit was developed not only to provide a sustainable and reusable solution for menstruation, but to develop an educational community and learning system for girls, women and anyone else who wants to advocate for these basic human rights. ‘TIDE.’ addresses any problems that a displaced woman might encounter during her menstrual cycle; from reducing time in the gender neutral toilets to providing a method of safely washing their reusable pads, reducing the chances of infections. We focused on selecting easily accessible materials, that we tested, and being culturally aware of the different practices different women may associate with menstruation.

How it works: b) Identify the alternative options considered during the design process and a justification for the selected technology, approach and/or process.

Originally, we looked at ways of adapting current solutions used in our own society such as pads, tampons or moon cups (<https://www.mooncup.co.uk/>), to suit those forced into migration. We began developing various prototypes. Our initial focus was on material and technology testing.

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We began running material tests early on in the project. We purchased a range of easily accessible materials, and tested them against a regular disposable sanitary towel, which acted as a control for the comparison. We used animal blood, sourced from the butcher, to complete the tests. The blood was dropped onto the materials in controlled amounts and left to dry. We then began washing the materials to see how they would wash. Each material was evaluated using a Pugh matrix based on the criteria needed to develop a sanitary product.

Technology Testing.



Pugh Matrix.

Criteria	Pads	Map	Surgery Mask	Cohesive Support Bandage	Bib	Sponge Cloth	Micro. Cloth	Duster	G. Liner	Carpet	Sponges	Loofah Hemp Set	Gloves	Cloth
Absorbency	0	-1	-1	-1	-1	0	0	0	-1	0	-1	-1	-1	0
Ease of wiping	0	1	1	-1	1	0	1	0	0	1	0	0	0	0
Leakage	0	-1	0	-1	0	-1	0	-1	-1	-1	-1	-1	0	-1
Stain removal with water	0	1	1	-1	1	0	1	1	1	1	1	0	0	1
Sum of positives	0	2	2	-2	2	0	2	1	1	2	1	0	0	1
Sum of negatives	0	-2	-1	-2	-1	-1	0	-1	-2	-1	-2	-2	-1	-1
Total	0	0	1	0	1	-1	2	0	1	1	-1	-2	-1	0

From this we learned that no one material would satisfy all the properties required. Therefore, we knew a layering of different materials would be necessary. We then conducted a task analysis. A task analysis is the dissection of the task of changing a sanitary pad from start to finish. We analysed each action to understand not only the amount of steps and risks involved, but also to identify any pain points with the process. Our aim is to reduce the number of steps within the process while also reducing any audible noise related to the tasks and reducing the risk of contamination. From this we learned that changing a disposable pad is a 102-step process, in which women can be heard and seen using menstrual products. This goes against cultural beliefs as well as increasing the risk of them being subject to SGBV. These were all issues our solution tackles.

We met with displaced women from around the world through three organizations. Mosney - a Direct provision centered located in Co. Meath, Doras Luimní - an independent NGO which supports migrants living in the Midwest region of Ireland and AkiDwa (Swahili for sisterhood) - a national network of migrant African woman living in Ireland. Through the discussion of individual experiences, common challenges and cultural norms we gathered recurring insights and developed our project around these findings. From these meetings, we learned that most migrant women do not use internal products, like tampons. They must also package their menstrual products before washing or disposing of them, ensuring they do not touch any blood. They informed us that they do not always have access to underwear or education about menstruation. We realized from this that developing a reusable pad alone would not be a sufficient solution to the ongoing crisis sanitary problems.

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Therefore, we decided to develop a full toolkit, equipped with underwear, reusable pads (instead of internal products) and a washing device. We used our existing research into materials to develop a list of suitable materials to make up the three layers in the reusable pad. Each layer of the pad has a different material which serves a different function. The materials used in the pad can vary depending on what materials may be sourced in different countries.

The top layer is the dry layer that sits against the skin. This layer can be made from most knitted fabrics as they allow liquid to pass through while keeping a dry feeling against skin. For example, cotton jersey, nylon, polyester etc.

The middle layer is the absorbency layer. This layer retains the liquid and can be made from most natural materials. For example, bamboo fleece, cotton, flannel, hemp etc.

The bottom layer is the leak-proof layer. It also acts as a cover to package the pad when not in use, to prevent the user from touching any blood. It can be made from perforated polyurethane laminate, any laminated fabrics and even plastics.

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Figure 1: Pad Prototyping

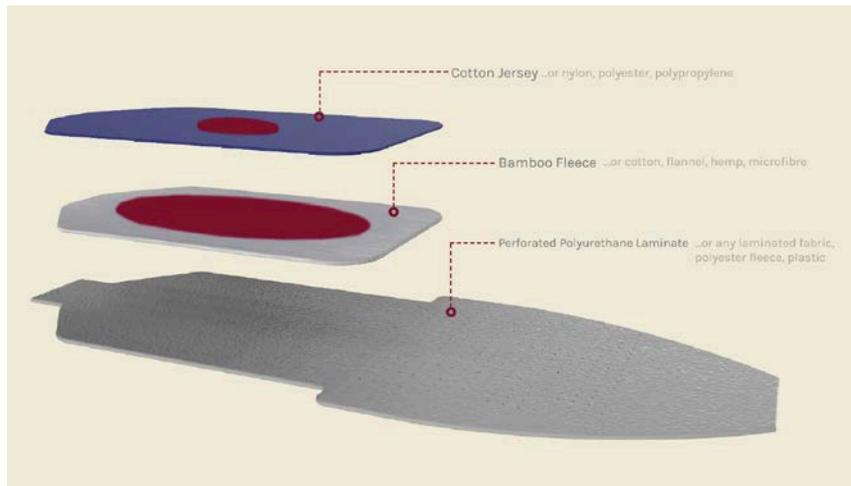


Figure 2: Pad Final Concept

We then began developing a simple handheld washing device. We prototyped the device so that the used pad could sit in a cage within the housing of a device. The cage will allow water to pass through without allowing the used pad to move freely, meaning that the water passes through the pad flushing out the blood. The user simply places the pad into the cage, screws the device shut, puts water into the device in from the opening at the top and shakes. This process is repeated until the pad is cleaned. This design eliminated the need for any power sources or mechanisms.

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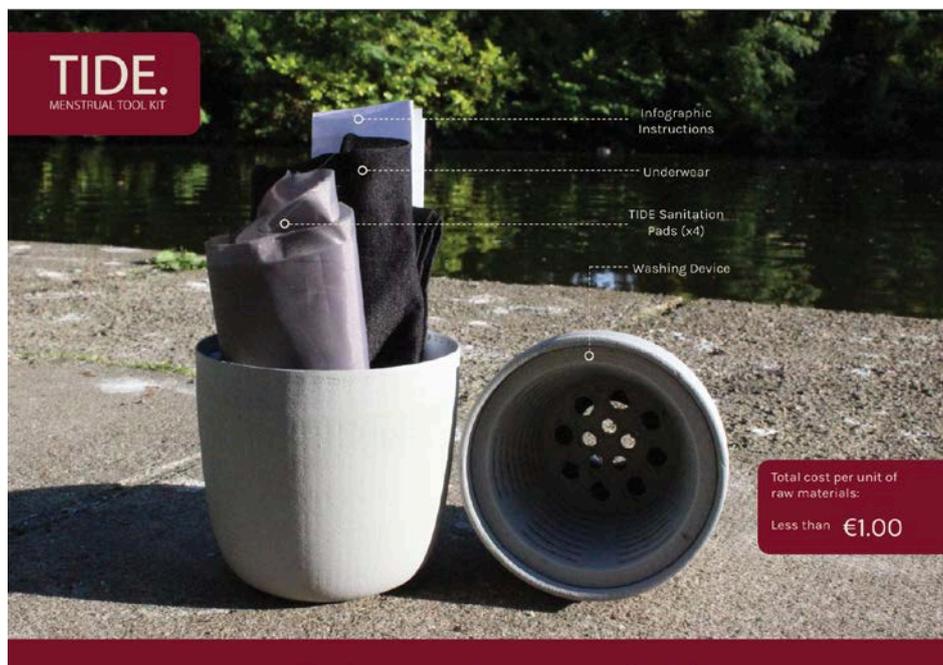
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Figure 3: Prototyping the washing device

Our final concept of the ‘TIDE.’ Menstrual toolkit was driven by the process in which it was designed. The toolkit caters to every aspect of the menstrual cycle. It respects the users privacy and need for discretion, while also encouraging open communication and education about menstruation.



Background (Why you are doing it): Key questions to address in this section include the following:

- What problem are you trying to solve?

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We are trying to tackle the challenge of a period for those who have been forced to flee their home. The specific needs of women and girls in emergencies still tend to be over looked and not seen as a priority. We want to bring attention to this matter to improve the quality of supplies and general health of women in refuge. We also want to improve the knowledge and understanding of menstruation of women, girls and even men in this situation.

- Is the solution already available (product / service/ knowledge)?

The only other alternative solution specific to forced migrant women during their period is a dignity kit. These kits are given to refugee women and contain only one packet of disposable pads. On average it is recommended that women use 30 pads per cycle, meaning this packet will only last one cycle. This kit is more expensive and is a short-term solution.

There are currently programs occurring in camps dedicated to educating refugees on sanitation and health. There are also women-friendly areas, which aim to provide safe spaces for refugee women. However, there are currently no programs or spaces dedicated specifically to menstrual health.

- What makes your idea different?

‘TIDE.’ Menstrual toolkit is unique to other ideas because it caters for every need a woman may have during her menstrual cycle. It considers everything from washing and wearing, to educating and breaking down stigmas. The focus of this toolkit is on providing women with the ability to manage their menstrual health themselves. It is to remove any additional worries a woman may have during this difficult time.

It is reusable. The planned implemented system provides an opportunity to breakdown any taboo issues with this topic, meaning women and girls can learn from one another and form a community. It focuses on keeping women safe by reducing the amount of time they must spend in the toilet, ensuring they have means to clean their pads, and ensuring they have the supplies and resources necessary to manage their menstrual cycle.

Expected Results (who wants them and how will they use them)

- What will be the expected results from your concept?

We hope to reduce the amount of women contracting infections and illnesses, who are suffering both physically and mentally. We want to return basic humans rights to women who have been forced to flee their homes, by providing basic necessary supplies that all women need. With this toolkit and system, we expect communities to develop, encouraging an education and open dialogue about menstruation.

- Who will use your product / service and how?

Women and girls forced into migration will use the ‘TIDE.’ toolkit. The communities developed around this toolkit will provide services which will be open to anyone, both men and women, willing to advocate for the discussion and education of menstruation.

- What further development will be needed before the service / knowledge is market ready ?

Further testing will be needed both of the washing device and the pad. Currently the washing device will be 3D printed. We hope to use more locally sourced materials, such as wasted water bottles, but we need

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to tackle the issues surrounding discretion and privacy with a see through bottle.

We would also like to get more women using these pads to receive more feedback. As of now it has only been used by three women (ourselves and a friend). We also have been trying to reach out to different camps located in different countries. However, we need help making contact with those in these camps. We have been in contact with women in Nepal who have provided us with useful information about available materials, but need more information from specific countries about accessible materials etc.

Community Participation

- Outline briefly how you would envisage the community could participate in the various stages of your concept from design through to final implementation.

How it works for the refugee women:

Women will come to the tent and receive the raw materials to make the reusable sanitary pads. They will sew the pads together in this area. Our hope is while they sew, a sense of community can be established in which an open dialogue about menstruation can be encouraged. In this community women can learn about menstruation and sanitary health, and be productive with their time.

How it works for the refugee men:

Men who wish to help this cause can participate in the community. They can come to learn about menstruation and sanitary health. This is important for those who may be travelling with a daughter or wife, who is suffering.

In time, we hope the community will take charge of this system. They will be responsible for making the pads and spreading the awareness about both menstruation, and where to go to find out about it.

You are welcome to bring along additional supporting material produced over the course of the design initiative (photos, videos, scale models, laboratory testing etc.). Supporting material should be carefully selected by students and should only be included if it enhances the reviewer's ability to understand your concept.

References

1. **Pujol-Mazzini, Anna.** For refugee women, periods a dangerous, shameful time. *Reuters*. [Online] March 8, 2017. <https://www.reuters.com/article/us-womens-day-refugees-periods-feature/for-refugee-women-periods-a-dangerous-shameful-time-idUSKBN16F1UU>.