Assignment P5 (Summer 2020)

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1 QUESTION 1 - COMPUTER SCIENCE PROMPT

1.1 Positive Effect

The one positive outcome of the OMSCS program form which I have benefited a lot is the Flexibility of the program. By flexibility, I mean,

1. The students can review the content whenever they want because it is always available.
2. They can take the exams at their convenience (Within a time window).
3. The students need not run between different buildings to go to their class, instead they can do it anywhere with a proper internet connection.

For a new mother like me, it is very difficult to leave the baby at home and go to the campus. If that were the case, I'd have to discontinue my course. But the OMSCS program gives me the flexibility of watching the course videos sitting right beside my daughter.

All courses have an exam window within which we need to take an exam. The student can take it whenever they want irrespective of the day and time (within the exam window). If it were on-campus exams, there would be a time and place set for the exam and students would not have the flexibility.

People from all over the world can take advantage of this flexibility and pace their progress based on their time zones.

1.2 Negative Repercussion

The main drawback of the OMSCS program is not being able to communicate face to face with professors and TAs and classmates and build social relations with peers.

Since everything is done online, the student cannot build rapport with the professors and fellow classmates. The on-campus classes helps students interact with one another and exchange ideas and also facilitates friendships. It also has an advantage of getting direct and immediate feedback from the professor and students can directly approach the professor for any form of guidance. But this

is not possible in the OMSCS program.

Even though there are platforms like Piazza, Slack etc for communication, it still doesn't have the same effect as an on-campus class. Many students refrain from posting on Piazza and Slack and hence miss out on many things. Posting questions on Piazza or Slack will get us the answers we want but it will not be immediate.

1.3 Redesigning the OMSCS program

The main positive effect of the OMSCS program is the fact that people anywhere on the globe can pursue it without issues. So we need to continue supporting this aspect of the program by uploading all the course contents and deadlines to help the student pace their schedule.

However, we need to redesign the program in a way that students get to interact directly with the professor, TAs and fellow classmates. While there are efforts done to bridge this gap (Piazza discussions, Group Projects etc.) it still doesn't match the classroom experience. To resolve this, a TA can be selected from each timezone and they can conduct Office Hours every week in their respective time-zones where the students can ask questions. There should also be a mechanism where students can arrange a meeting with a professor by looking at the professor's calendar to have a 1-1 discussion.

2 QUESTION 2 - COMPUTER SCIENCE PROMPT

2.1 Area

The area I have selected is Apple and their proprietary apple device chargers. As the only Apple device user at home, it is very frustrating when everyone else reuse chargers while I have to use only the chargers that suit Apple devices. I feel there is political motivation behind this design decision.

2.2 Stakeholders

This section describes the stakeholders and their motivations.

1. **Apple**
   (a) If users cannot use universal chargers (such as widely available chargers of Android phones from LG, Samsung etc.), they have to buy the Apple chargers. So the first motivation is profit.

(b) To be exclusive.
(c) Apple claims that standardizing the charger now would create a lot of waste as lot of people already have the apple chargers(Lightning plug).
(d) Apple says that the widely used USB Type-C connector would be too thick for the iPhones. Hence they want to use their own proprietary chargers.

2. **EU** - The EU is pushing for a universal charger as they claim it is harmful for the environment as the old chargers create a lot of waste annually. Whereas, reusing the same charger can reduce waste.
3. **iPhone Users** - The users want to be able to use the widely used chargers to charge their phones. If the users run out of charge, they will not be able to use the most common and widely available charger.
4. **Third Party manufacturers manufacturing chargers for iOS devices** - Their only goal is to make profit by selling third party chargers which costs less than the original Apple iPhone chargers.

2.3 Motivations affecting the design

1. Apple designed chargers such that iPhones could charge only using them. So the **profit** aspect is affecting the design of chargers.
2. Apple made sure not to cover damage caused by third party accessories in their warranty so people would buy the Apple's original chargers. This is also done for **profit** so that people only use the original Apple chargers.
3. However, the third party manufacturers can get their products certified by the developer and put the MFi logo on the product(Made for iPhone)so that users will buy it without hesitation. This allows Apple complete control over their product ecosystem. This design came from the motivation of Third Party manufacturers to make profit.

3 QUESTION 3

3.1 Paper-1

Paper's Title : *Considering Parents in Coding Kit Design: Understanding Parents' Perspectives and Roles*

Author List : Junnan Yu, Chenke Bai, Ricarose Roque

3.1.1 *Summary*

In this paper the authors perform a study on parents role and involvement while their children are playing with the coding kits. Coding kits are toys that enable children to experience programming and develop interest in that field.

The study performs interviews of 18 parents who have child/children between the ages of 3-9 years who have used the coding kits. After speaking to the parents, the authors were able to analyze and format the data into 4 parts - Parents' Expectations, Parental Roles, Perceived Benefits and Concerns.

Parents' Expectations: Parents wanted their children to learn programming and develop interest so that they can pursue it in future, some just wanted their children to experience programming and have fun and not to be afraid of technology, few just wanted the kids to have fun with the coding kits and wanted children to play with the kit independently and also collaborate with siblings.

Parental Roles

1. **Spectator** is where the parents just act as an audience.
2. **Scaffolder** is where parents ask questions to make the children think
3. **Bystander,** is where parents are not involving in the play.
4. **Logistics Supporter** is where parents just help with setting up and battery changes, recharging etc.
5. **Enforcer** is where parents set play time and intervene when siblings start fighting
6. **Gatekeeper** is where parents first try and then decide of they want to introduce kids to the gadget.
7. **Teacher** is where parents teach their children how to use the kit.
8. **collaborator** is where parents play together with the children.
9. **Executor** is where parents perform tasks that the children ask them to do.
10. **Dominator** is where parents take over the play from children.

Perceived Benefits Some of the perceived benefits that were identified were : many parents who were not familiar with coding started to like it and improve their familiarity, it helped the family come together and play , helped improve their children's problem solving skills and helped them to learn to handle emotions.

Concerns Some parents were not concerned with their kids playing with coding kits while some parents reported some concerns. Some parents felt annoyed by the amount of noise coming from the coding kits. Some were worried that the children might break the toy and some were worried about the kit's durability. Some parents mentioned that their kids were not really benefiting from the kits.

Implications The future development of the coding kits should take into consideration all the above data and come up with designs of kits that help the parents play their roles and bridge the gap between expectations and come up with solutions for their concerns and also addition of features to keep the children engaged and also design to enhance sibling play (collaboration).

3.1.2 *Reason for Selection*

I selected this paper because it mainly uses the principle of "understanding users" - primary, secondary to come up with a better design. This paper focuses not only on the child (primary stakeholder) but also on the secondary stakeholder - parents who are indirectly affected. I also selected this paper because I have a kid who is 1.5 years and in a couple of years I will be introducing her to some coding kits. I was interested in knowing about the kits from a parent's perspective.

3.2 Paper-2

Paper's Title : *Why Johnny Can't Unsubscribe: Barriers to Stopping Unwanted Email*

Author List : Jayati Dev, Emilee Rader, Sameer Patil

3.2.1 *Summary*

This paper explains the hardships the users have to face while performing a simple task of unsubscribing.

Authors conducted interviews with 18 participants and discussed about unsubscribing from unwanted emails. Participants felt that their privacy is not maintained as they are unable to set clear boundaries. They felt that the process of unsubscribing is very poorly designed and difficult. They also said that the process is intentionally made tough. The participants also fear of subscribing to unwanted sites during the process of unsubscribing. The participants also mentioned that there is no clear way to know if the process was successfully completed.

Implications: To overcome these issues authors suggest the following three ideas.
1. Standardize the Process of Unsubscribing - use of design patterns to bring in consistency in the process. Some part of the process can be automated.
2. Follow Good User Interface Design Principles - redesigning landing page to just contain a toggle for subscribe-unsubscribe and provide confirmation.
3. Allow Users to Set Clear Boundaries - users should be able to decide what emails they want and in what frequency.

3.2.2 *Reason for Selection*

I selected this paper mainly because it discusses how this task of unsubscribing has become so difficult because it does not follow certain principles and does not keep the user in mind. The paper also concludes on the same note that the UI should be redesigned by following design principles. I also selected this paper as I go through this problem of unsubscribing from unwanted emails almost everyday. The process is really frustrating. I wanted to know how this problem can be solved and how the process could be made easy using the HCI principles.

4 QUESTION 4

4.1 Paper-1

Paper's Title : *Understanding Context in Children's Use of Smartwatches for Everyday Science Reflections*

Author List : Sharon Lynn Chu, Brittany Garcia, Beth Nam

4.1.1 *Summary*

Authors in this paper believe that smartwatches can be used as a platform to promote situated learning of science for children. Since smartwatches is very common with children these days and they are worn by the children, we can make use of the context to help children learn as learning takes place more effectively when it is applied in a meaningful context. Usually to establish context, teachers use VR in classrooms or take children out for field trips. But these methods come with limitations. Hence this paper explains how smartwatches can be used for this purpose.

Authors explain that smartwatches provide different types of components for

in-situ studies. Real context, digital context, formal science knowledge the child already has and imaginary context. All these interact with one another in all combinations to make learning possible.

For experiment, authors used ASUS Zenwatch 2 loaded with ScienceStories, a custom developed smartwatch application that allows a user to orally record science reflections anytime anywhere.

The research paper answers 4 questions: 1. When do elementary school-aged children reflect about science in their everyday life using the smartwatch - before school, after school and before bedtime. 2. In what kinds of authentic everyday contexts do elementary school-aged children reflect about science using the smartwatch? - This was mainly concerned with location of the usage of smartwatch. 3. What motivates elementary school-aged children to reflect on science during their everyday experiences using the smartwatch? - students see something and want to record, students purposefully perform some action and record the findings. 4. How do elementary school-aged children reflect on science in everyday contexts using the smartwatch? - based on real context, digital context, imaginary context.

After gathering all the above data, authors say that smartwatches provide the best utilities, including context to make learning possible for kids.

4.1.2 *Reason for Selection*

I selected this paper because this paper used the concept of "context" to facilitate learning. This is a very important data inventory item while designing an interface. It was really interesting to see how context could be leveraged to facilitate learning.

4.2 Paper-2

Paper's Title : *Housewives or Technophiles?: Understanding Domestic Robot Owners*

Author List : Ja-Young Sung, Rebecca E. Grinter, Henrik I. Christensen , Lan Guo

4.2.1 *Summary*

In this paper, authors study about the demographics and the usage pattern of Roomba users. A survey was created and posted on Craig's list and roombare-

views.com to collect the data about usage patterns, ownership details etc. The results were as follows: the users were equally distributed in gender, their ages were between 18-19, most of them had undergraduate and graduate degrees. It was used with people living alone, people with or without kids and people with pets.

The study also revealed that people buy Roomba looking at it's ads, good reviews , others after watching friends and family using , for convenience, price and sales. People also give and receive it as gifts during special occasions.

With Roomba, the frequency of cleaning has increased. Since it is automatic, users can run it even when they are not at home or are busy with other tasks. Some participants admitted that they do additional cleaning after Roomba is done cleaning as Roomba doesn't do good job with pet hair and cleaning corners. To run the Roomba, people made some modifications to their homes like rearranging furniture, moving the cables etc. Many users named it, gave it a gender, played with it, talked, bought costumes for the robot to build relationship with it. The sales of the robot keep increasing every year.

Using the user demographics data, the usage pattern and the relationship humans build with it, changes can be made to improve the functionality of Roomba to further increase its sales.

4.2.2 *Reason for Selection*

I selected this paper because the paper extensively focuses on the user to better improve the interface (here, robot). The paper does a deep dive into knowing how user interact with the robot and the user demographics. With the extensive data collected, the designers can make improvements to it. I also selected this paper as I wanted to know the human's relationship with the Roomba. I was really surprised to know that people name the robots.