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GIFTS: User Identity Cards to Facilitate Human-Centered Design Activities

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Introduction

This GIFTs paper presents a card deck of user identities, or simplified personas, that students can use for introductory engineering design projects or in-class activities. Each of the thirty-two cards represents a unique user, and the attributes of each user were deliberately chosen to present an overall diverse set of identities and characteristics across the entire deck. Students draw cards randomly and then complete the project or classroom activity with the person on their card as the intended user for their design. Initial student feedback suggests that using this card deck to complete their project increased students' experience designing for persons unlike themselves — a key element of the engineering profession.

Motivation

Many incoming first-year engineering students cite a desire to help people as one of the reasons they chose to major in an engineering discipline [1]. Additionally, first-year engineering courses often aim to introduce students to the idea of human-centered design. Teaching human-centered design in the first year takes on numerous and varied formats ― from talking about universal design in class to providing service-learning opportunities and ranging from year-long projects to small classroom activities. Most agree it would be beneficial for students to engage with real, external clients in engineering design projects. However, it can be difficult and time-consuming to recruit sufficient users for large first-year class sizes, and challenging to find diverse user groups with problems that are "right-sized" for the skill set of a first-year engineering student. Such difficulties are exacerbated when the project or activity is short in duration e.g., one class period or one week. For these reasons, the authors sought to develop a simplified method for introducing students to the practice of designing for a user who is unlike themselves in some way.

Inspiration for this solution was taken from industry where it is common for companies to develop personas in order to better understand how a user might use, perceive, or interact with their designs [2].

Objectives

This card deck was created to provide an easy and adaptable way for first-year students to gain exposure to designing for users who have a different lived experience. Using the card deck provides each student with a randomized user profile to design for, reducing some of the logistical difficulties of working with real-life clients ― especially for smaller projects or activities that are executed during a single classroom session ― while also reducing the likelihood that the student chooses to simply design something for themselves. The deck is designed with the intention of providing a diverse set of users, potentially prompting student discussion regarding how the differences in user profiles impacted their design choices.

Implementation

Card description and design considerations

The card deck contains thirty-two unique user profiles. Each is presented on a card that fills half of an 8 ½" x 11" sheet of paper. The format is similar to, and inspired by, other card decks like decks of values, design heuristics, etc. (e.g., [3], [4]). The cards display the user's name, a photograph, age, race and ethnicity, disability status, hometown, occupation, family status, hobbies, and one additional piece of information about their living situation (e.g. attending evening classes). An example of two cards from the deck is shown in Figure 1.

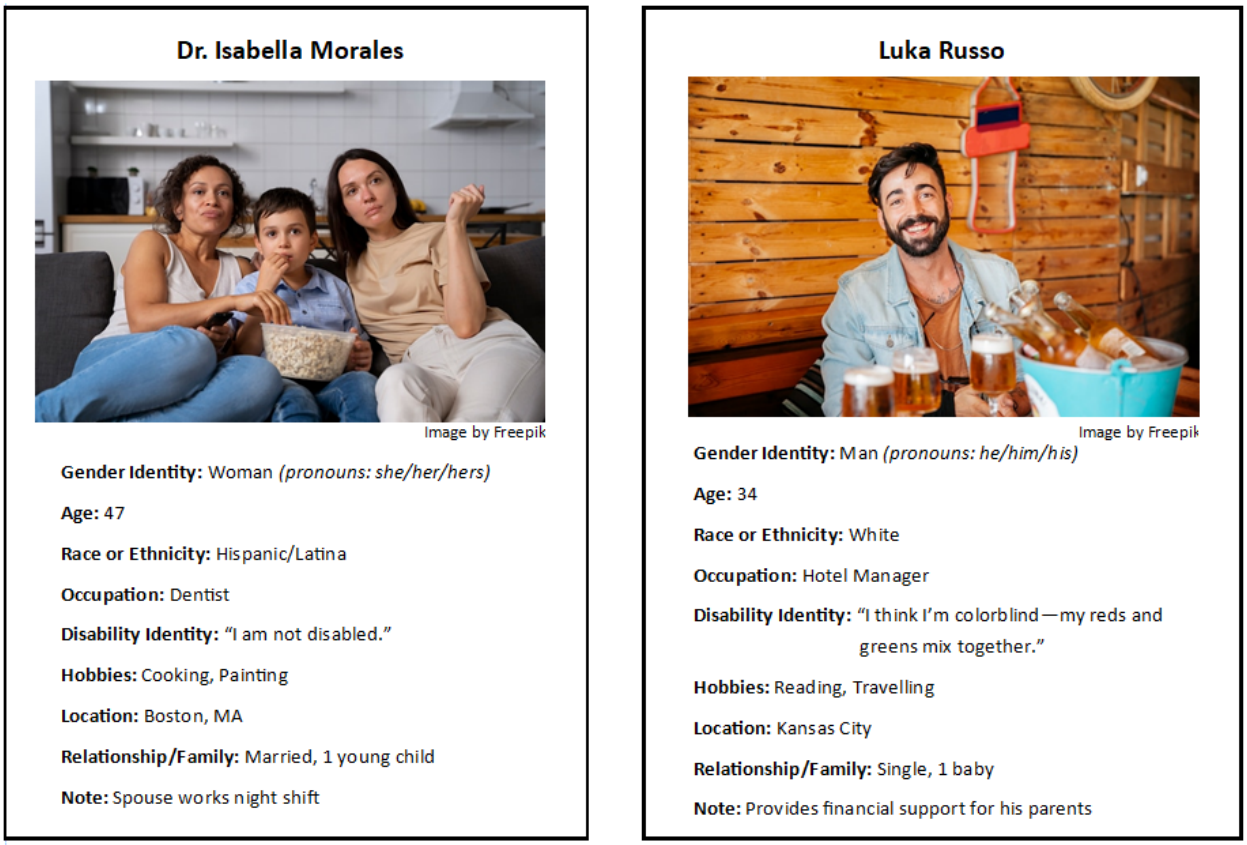

Figure 1: Two example user cards from the deck.

The user profiles intentionally portray a diversity of identities and lived experiences: ages range from twenty to sixty-one (deliberately chosen to be older than most first-year students), racial and ethnic identities were distributed to approximately match or exceed the diversity of races and ethnicities in current US census data (and exceed the racial and ethnic diversity of the authors' institution), and no occupations or locations are repeated within the deck. Disability identities are presented as personal quotes to subtly highlight the natural variation in personal identification among seemingly homogeneous groups. User locations are largely in the United States, utilizing towns with a wide range of population sizes. However, five of the thirty-two users are in major cities outside of the US.

The images were intentionally chosen to provide potential additional information about the

user that is not in the written list. For example, the image of Dr. Isabella Morales in Figure 1 shows two adult women with a child. This matches the information given that she has one child — but it is uncertain which woman in the photo is Dr. Morales and unclear if the other woman is her wife, her sister, or a friend. The students are encouraged to list and justify any assumptions they make about the user from the photo — in this example, a student might write "I assume Dr. Morales identifies as queer and is married to the other woman in the photo." In other cases, the photo depicts a person with a visible disability or using a mobility assistance device which is not mentioned in the written list. The student may or may not choose to pick up on these inclusions.

Classroom Implementation

These cards were created and piloted during a two-week introductory design project in a common first-year engineering course at Northeastern University (a private R1 institution). Students initially chose two cards at random from the deck to look at, then kept one as their assigned user. They were required to research at least two aspects of their users' lives they were unfamiliar with and complete an empathy map, reflecting on what their assigned user thinks, feels, hears, sees, and does on an average day. The research and empathy map activities were submitted in a short report one week after the project was introduced.

Students were then tasked with designing a low-fidelity prototype of a pocket-sized object that would be useful to that person. Students are explicitly instructed to try to design this object to be useful for their assigned user, but not so uniquely designed for that person as to be un-marketable to a wider audience. There are strict size and material limitations for the project, but the type of object designed is completely up to student discretion. Students have made games, planners, info cards, measuring devices, etc. They present and test these prototypes in class, having the opportunity to see a breadth of solutions stemming from one common project prompt, partially due to the diversity among users in the card deck.

While this short design project can be replicated in many other first-year engineering classrooms, the card deck was intentionally designed to be quite general such that it can be useful in numerous and varied design activities — even those that only last one class period.

Assessment

This card deck has been used alongside the design project for two semesters. Preliminary student feedback was collected as part of an anonymous, general mid-term survey administered by the instructor. Each semester the survey contained several questions about various aspects of the course and was not limited to feedback regarding this card deck or the related project. Over the two semesters combined, 143 students responded to this question out of 153 total students who completed the project (for a response rate of 93%).

The results of the survey question are depicted in Figure 2. These results suggest that most students felt this activity (completing the project with the user cards) helped them practice designing for someone who was unlike themselves, with 85% of students responding that it helped them a little or a lot. Note that the question does not differentiate between the cards and

the connected project. It is therefore difficult to analyze the extent to which any dislike of the project may have impacted the overall student response. For example, anecdotal written feedback from the same survey suggests that some students were displeased with the perceived 'arts and crafts' nature of the project, since students were severely limited in allowable materials and no CAD of any kind was allowed. These setiments this may have contributed to a negative answer as much as the efficacy of the cards themselves.

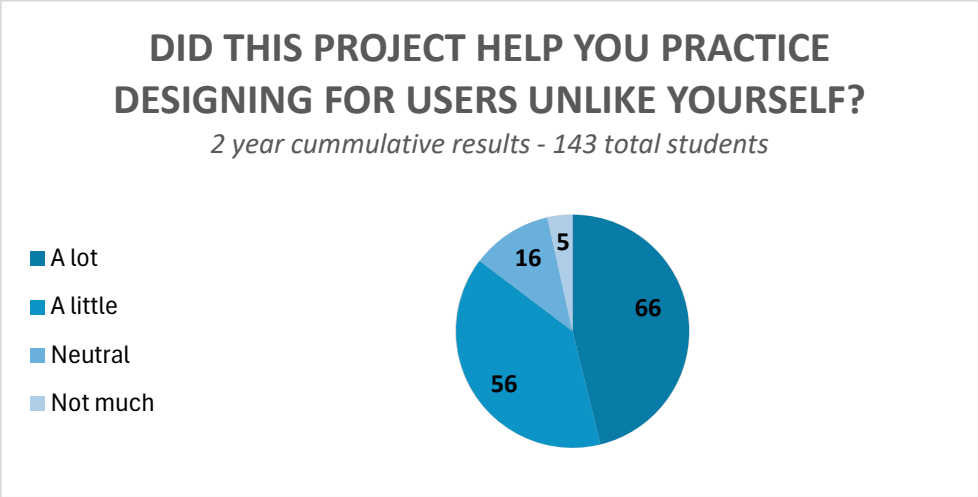

Figure 2: Student feedback on the efficacy of the project related to designing for different users.

It is worth noting that students regularly, and understandably, expressed some discomfort in making assumptions about the users, although fictitious. When these discomforts are raised in class discussions and/or privately with the instructor, they can be used to further a few of the learning goals in interesting ways. Firstly, this discomfort can motivate improved research — prompting students to consider where they might look to find information directly from people with the same identity attributes they're currently trying to learn about. These student concerns have also seeded insightful classroom discussions about the variations in lived experience and preferences within a given identity group. This ultimately allowed the class to gain a firmer and more practical understanding of how engineers must work to make their designs as universal as possible while simultaneously accepting that, in most cases, creating a truly universal design is not possible. To further address these concerns, the instructor explicitly reminded students that, in a professional context, using "personas" like this is merely a first step and additional testing would be required before any design is finalized.

References

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