# Using Twitter to Support Students' Design Thinking

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#### **Abstract**

The goal of the short-term study abroad course "International Perspectives on Biomedical Engineering Design" is to enable students to consider sociotechnical factors in designing clinically translatable solutions. In addition, comparison of healthcare systems in Europe and the United States enables students to see the impact of culture on healthcare because people in these locations have similar medical resources. Students seek to define an actionable problem statement that summarizes the needs and insights identified through interviews with healthcare professionals. Methods recommended for formulating actionable problem statements include creating a Madlib or want ad. However, such approaches did not resonate with our student group. In this presentation, we describe our experiences using Twitter as a method for students to succinctly write actionable problem statements that spur creative problem solving.

#### 1. Course Description

The goal of the course International Perspectives on Biomedical Engineering Design at The University of Texas at Austin (UT Austin) is to enable students to consider sociotechnical factors in designing clinically translatable solutions. Students learn human-centered design methods to understand the people for whom they are designing and to identify actionable problem statements.

In 2017, the course was offered in a "Maymester" format. A Maymester is a faculty-led study abroad program in which a group of UT Austin students take a course abroad taught by a UT faculty member. Maymesters are four-week, 3-credit courses that take place from late May to mid-June.

The 2017 course offering focused on the design of health information systems for supporting medical decision-making. Students explored the impact of culture on healthcare delivery and design of healthcare technologies through comparisons of Europe and the United States. The

class was hosted at Faculdade de Engenharia da Universidade do Porto.

## 2. Instructional Challenge

In the course International Perspectives on Biomedical Engineering Design, students plan, conduct, and interpret interviews with healthcare professionals from both Europe and the United States (via videoconferencing). They plan semi-structured interviews using techniques from human-centered design and readings on topics such the development of medical expertise, types of cognitive bias, and clinical decision-support systems. Through individual reflection and class discussion of the interviews with healthcare professionals, the students identify actionable problem statements pertinent to health information technologies.

The course utilizes The Bootcamp Bootleg, a design thinking toolkit provided to the community by the Stanford d.school [1]. In the define mode of Stanford's design process, the goal is to generate an actionable problem statement, also called a Point of View, that summarizes the needs of specific users and insights identified using empathize mode methods such as interviewing for empathy. The Bootcamp Bootleg suggests several methods for formulating actionable problem statements including creating a Madlib or want ad. Unfortunately, none of the suggested methods for formulating actionable problem statements resonated with our student group in 2017.

For example, after conducting interviews with two orthodontists, one from the United States and one from Greece, the students were asked to generate actionable problem statements using methods from The Bootcamp Bootleg. As shown by the examples in the left column of Figure 1, the students' efforts typically yielded statements that were unlikely to spark enthusiasm and cultivate ideation of possible solutions.

## 3. Proposed Use of Twitter

Since our 2017 cohort of students did not effectively use methods such as creating a Madlib to generate actionable problem statements, we explored another approach using Twitter. We challenged the students to write tweets that summarized problems and insights that they learned from the interviews with healthcare professionals. (Find us on Twitter at @PovPractice.) We hypothesized that the familiar casual format would help the students succinctly capture the emotional insights revealed through the interviews.

The students' attempts to generate actionable problem statements as tweets were more provocative and darkly humorous than their prior efforts had been (right vs. left columns of Figure 1). The edgy pop culture phrasing typical of tweets retained the students' surprise when the interviews revealed unexpected aspects of the professionals' experiences in healthcare. For example, contrast "An orthodontist needs to possess interpersonal skills in order to develop more meaningful relationships with patients" and "Dr. João needs to emotionally express himself and let the walls come down because the patient wants him to DTR."

As they gained experience conducting interviews and writing actionable problem statements as tweets, the students began incorporating more images into their tweets (Figure 2). Their increasingly visual tweets used pop culture icons like Oprah Winfrey and Overly Attached Girlfriend to quickly and humorously convey ideas.

#### 4. Summary

The impact of social media writing habits on education is often assumed to be negative. In contrast, we share an example of how the technical constraints and social conventions of a social media platform (Twitter) may help students express ideas with greater focus and higher emotional content.

An actionable problem statement should frame a problem in a way that inspires and intrigues. Our experience suggests that Twitter may be a useful tool in helping students generate actionable problem statements.

## Acknowledgement

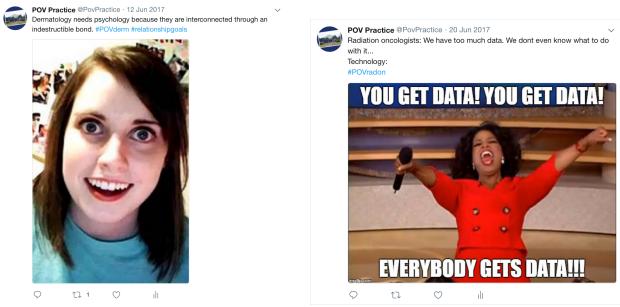
We thank the International Engineering Education office at The University of Texas at Austin for the opportunity to teach International Perspectives on Biomedical Engineering Design in the Maymester format. We deeply appreciate the support of our hosts at Faculdade de Engenharia da Universidade do Porto. We are indebted to the healthcare professionals who graciously volunteered their time to be interviewed by our students.

#### References

[1] https://dschool.stanford.edu/resources/the-bootcamp-bootleg

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**Figure 1.** Examples of students' efforts to generate actionable problem statements before (left column) and after (right column) they were advised to do so using Twitter. The students' tweets usually demonstrated better focus on specific users, needs, and insights relative to their initial attempts to generate actionable problem statements.



**Figure 2.** As the students gained experience interviewing healthcare professionals and generating actionable problem statements as tweets, they more frequently incorporated images.