"From Start to Finish": Chatbots Supporting Students Through Their Student Journey.

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Abstract. Chatbots are starting to be acknowledged as a tool to support online students. Research tends to focus on specific tasks chatbots can carry out, but few have looked at how chatbots can be implemented to support students through their student journey. We set out to close this research gap and carried out two studies to understand how chatbots can support online students through their student journey. In study 1, we interviewed three student counselors with an objective to map out the student journey and identify different challenges in the different phases. In study 2, we interviewed eight online students to understand what challenges they are facing. Based on these results we present a preliminary roadmap exemplifying how chatbots can be used to support online students through their student journey.

Keywords: Chatbots, Education, Student journey.

1 Introduction

Online learning has become popular over the years [1]. While this form of education offers flexibility and availability making it possible for more people to study, it has some drawbacks. Stoebe [2] states that "online students are often not academically or technologically prepared to begin their programs. They often struggle with balancing the demands of work, college, and their personal lives." Literature reviews also reveal that online students have challenges related to time management, understanding the material, difficulties with the technological setup, or lack of interaction with teachers and other students [3]. This is further reflected in the retention rates which is around 10% for online courses [4].

The problems with online learning have spiked interest in making digital tools to mitigate some of the challenges that online students are facing [5, 6]. Online learning platforms where students can access material and talk to other students "is a staple", but other types of technologies are also emerging – such as chatbots.

Chatbots are software programs capable of communicating with the user through natural language [7]. Chatbots have become popular over the years and are now frequently implemented in sectors such as customer service [8], therapy [9], and education [10].
In education, we see that chatbots can support students in several ways and researchers have tended to focus on three main areas: (1) chatbots aimed to solve a specific task such as helping students evaluate their classes [11] or answer practical questions [12], (2) chatbots aimed to help with learning by serving as a tutor [13] or as a collaborative partner [12], and (3) to understand chatbot requirements [14].

What becomes prevalent is that little consideration has been given to understand how chatbots can support the students through their whole student journey. We define the student journey as the phases students go through from the moment they contact the school for the first time to handing in the exam at the end of the semester.

Within the field of service research this is similar to customer journeys: "the processual and experiential aspects of service processes as seen from the customer viewpoint" [15]. Customer journeys are often visualized through a map [16] and the objective is to understand how customers experience their interaction with a service provider [16]. This approach provides knowledge that is beneficial when service providers want to design the interactions customers have with their service or improve existing design [16, 17]. While this approach is often used in consumer contexts, it is highly relevant in an educational setting [17]. Fallast and Vorbach [17] states that "we see a direct analogy to institutions of higher education: students are seen as "customers". The institution of higher education is seen as a "service organization" (p, 124). Investigating the student journey as a tool when designing chatbots would provide more knowledge as to when and how chatbots are needed, yet no study to our knowledge has done this.

This paper seeks to close this research gap and takes a student journey approach to understand how chatbots can support online students. This work is preliminary but contributes with valuable knowledge that can guide designers if they seek to develop chatbots that proactively support students. This paper addresses the following research question:

**RQ1:** How can chatbots support online students through their student journey?

### 1.1 Paper Structure

In the following, we will present two case studies aimed to uncover the student journey and the different needs and challenges students have in the various phases. These results are then used to create chatbot concepts aimed to tackle the different challenges in a proactive manner.

### 2 Method, Study 1

In the first study, we interviewed three counselors to understand how the student journey would typically look. The counselors were all female and worked at the same school - a school providing online education (referred to as the OS). The counselors were recruited by contacting the school asking for relevant people to talk to.
We conducted individual interviews with the counselors. The objective was to map out the student journey, as well as uncovering student needs, goals, and challenges as perceived by the counselors. The interview guide was semi-structured and consisted of questions such as: which phases does a student typically go through? What do they need in the different phases? How do they get help? The interviews were audio-recorded, and a detailed journey was then created based on the interviews. The final journey was validated by having one counselor provide feedback.

3 Results, Study 1

The student journey consisted of seven phases, four that occurred before the students are enrolled in their program, and three that occurred after the students have started their education. Figure 1 offers a simplified version of how this journey looks.

What is prevalent is that the counselors experience that students have challenges of practical and emotional nature. Practical problems often include issues with finding information, study technique and preparing for exams, as well as understanding the system guiding the financing of their studies. Emotional problems, however, are more related to stress, motivation, and ability to cope with student-related issues.

4 Method, Study 2.

In the second study, we investigated challenges as perceived by the students. The sample consisted of eight students. The participants were 31 years on average (range from 20 – 48). Seven identified as female, and one as male. Six had been a student for one year or more, while the last two had been a student for less than six months. The participants were recruited by having the counselor from the first study sending out an email about the study to their students.

The interviews focused on (1) general experience with being a student as well as (2) how they experienced one of the different phases identified by the counselors. The interviews were semi-structured, and the interview guide included questions such as:

Fig 1. A simplified version of a student journey depicting phases, challenges, and goals.
what questions did you have when you approached your exam? What has been challenging so far? How could the OS support you better?

The interviews were audio-recorded and transcribed. We used an inductive thematic analysis to uncover overreaching themes in the dataset.

5 Results, Study 2

Based on the interviews with the students, we identified the following 5 main challenges.

Challenge 1: Lack of practical information. Several of the participants experienced challenges related to lack of practical information, information that was given too late, or information that was difficult to access or find.

“They could have provided us with the information earlier in addition to having step-by-step explanations to make it easier to understand and less messy.”

Challenge 2: Lack of contact with others. The participants talked about how being an online student can make it difficult to create relationships with others, that being the school, teachers, counselors, or other students. This could cause a sense of loneliness or a feeling of not being seen.

“It’s strange to be a student and not have anyone to talk not – neither students nor teachers.”

Challenge 3: Motivation. The participants stated that it can be difficult to stay motivated for a prolonged period of time. Some argued that lack of motivation was due to a sense of being invisible which was often attributed to little counseling.

“I have finished and handed in one essay every week, but it is difficult to stay motivated.”

“The OS can help me stay motivated by keeping in touch and checking in on me.”

Challenge 4: Study technique. Several of the participants noted that it can be difficult to understand how to read the curriculum and prepare for exams. This entails, among other things, (1) how to structure the day, (2) how to read efficiently, and (3) how to prioritize.

“I did not know how to do it (study), where should I begin?”

Challenge 5: Difficulties asking for help. Several experienced it as difficult to ask for help, often because they did not want to be a burden, and noted that online interaction created a higher threshold for asking.

“The threshold for asking is higher online than it would have been if we have classes in a physical space. I feel like ”oh well, should I bother him with an email” in a way.”
6 Discussion

The results from the two studies indicate that online students face challenges at different levels, ranging from individual, institutional, and group level - all of which overlap nicely with existing literature [3].

**Individual level.** We see that students have several challenges of a practical nature ranging from how to read the curriculum, write essays, prepare for exams, or understanding where to apply for financial means and signing up for exams. It is also prevalent how they can have more emotional challenges such as asking for help if needed, staying motivated, or coping with stress.

**Institutional level.** Some of the challenges were also related to the institution (the OS), such as the OSs ability to provide or make information accessible or understandable, the OSs ability to follow up and establish a relationship with the student (teacher – student, or the counselor – student relationship) and/or lowering the threshold of asking for help. The results indicate that students can easily feel alone and disconnected.

**Group level.** The results also demonstrate how the students as a group face challenges. That is, it can be difficult to find other students to collaborate with. This could, for some, facilitate a sense of loneliness.

6.1 How can Chatbots Support Online Students?

**What type of chatbots are needed to support online students?** The results showcase several challenges that are appropriate for a chatbot to tackle. Based on the findings, we propose the following three roles that a chatbot can take to help mitigate some of the problems online students are facing: (1) an Assistant-bot, (2) an Educator-bot, and (3) a Social-bot. See Table 1 for a description of tasks.

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<th>Type of chatbot</th>
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| **the Assistant-bot**<br>*Objective: Be the main contact point* | • Pay attention to the student's activity levels  
• Remind them about deadlines  
• Answer practical questions  
• Check-in and help them cope if needed |
| **the Educator-bot**<br>*Objective: Serve as a (simple) teacher* | • Track study progression and award the students  
• Help with study techniques and preparations  
• Answer questions related to the curriculum  
• Help improve learning by providing quizzes, flashcards, etc. |
| **the Social-bot**<br>*Objective: Help students connect with other students* | • Setting up groups of students that study the same  
• Setting up weekly meetings with other students and teachers  
• Help identify other students to interact with |
By doing so, the Assistant-bot will help solve challenges at individual and group level by making information more accessible, provide a stronger sense of "being seen", as well as lowering the threshold of asking for help. The Educator-bot can help solve challenges at individual and institutional level by helping the student stay motivated and help the student understand how to be efficient. While the Social-bot can solve challenges at group level by connecting students.

**When should the chatbots help?** We also used the results to make a roadmap showcasing how chatbots can be implemented throughout the whole student journey. Figure 2 below highlights how students have various needs and goals, and how different chatbots could be implemented to always be one step ahead to mitigate challenges that might arise.

![Fig. 2. Roadmap portraying how chatbots can be implemented at various phases in the student journey.](image-url)

7 **Final Remarks and Future Plans**

We investigated how chatbots can support online students through their student journey. We have identified how this journey can look in addition to the challenges students have in the different phases. This allowed us to make a roadmap highlighting where and how chatbots can help online students. This work is preliminary. We plan to make prototypes and test out chatbots that take the three distinct roles presented in the paper to better understand how students perceive getting support from such chatbots.

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References