

## **Chatbot Use in an Online English Composition Course: A Qualitative Study**

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## Table of Contents

Table of Contents .....	2
Chapter One: Introduction .....	3
Introduction.....	3
Statement of the Problem.....	4
Purpose.....	4
Research Questions .....	5
Limitations .....	5
Delimitations .....	5
Assumptions.....	5
Chapter Two: Literature Review .....	7
Introduction.....	7
Online Learning and Communication.....	7
Isolation.....	8
Chatbots .....	8
Summary .....	10
Chapter Three: Methodology .....	12
Introduction.....	12
Research Design.....	12
Population and Sample .....	13
Instrument .....	14
Procedures.....	14
References.....	16
Additional Resources from Project #1 .....	20
Appendix.....	22

## **Chatbot Use in an Online English Composition Course: A Qualitative Study**

### **Chapter One: Introduction**

#### **Introduction**

This study seeks to explore student and instructor perceptions of pedagogical chatbot use in an online undergraduate English Composition course. With the COVID-19 pandemic of 2020, many institutions of higher education, along with K-12 educational systems, moved to exclusively online courses to maintain social distancing and provide safe virtual spaces for learning and teaching (Burgess & Sievertsen, 2020). Before the hasty conversion to online education, there was already an increase in online learning in higher education with a rise in institutions providing online and blended courses and even full degree programs (Jarvie-Eggart et al., 2019).

While studies show that students enrolled in online courses actually prefer face-to-face courses, enrollment continues to increase (Tichavsky, 2015). This rise in registration may be attributed to increased availability through more course offerings, or because of convenience, online schedules offer students. Most students who work full-time or have lifestyles that require versatility appreciate the flexibility and opportunity online education affords (Berry, 2018). The asynchronous communication inherent in online courses provides flexibility, but there are also issues in communication (Kelly, 2017). These issues in communication can impact students' affective learning, motivation, and cognition (Baker, 2010). Moreover, students enrolled in online courses often feel isolated (Berry, 2018; Forbes, 2019; Huang, 2019) and can lose motivation. The lack of immediacy in asynchronous communication may be solved by the use of a pedagogical chatbot for the course.

## **Statement of the Problem**

The unavailability of instant access to the instructor leads to the impression of instructor absence and that the content must be self-taught (Tichavsky et al., 2015). Furthermore, students taking courses online may feel somewhat detached since they often work alone at a computer and have to wait more extended periods of time for feedback and responses than in a face-to-face course (Berry, 2018). Pedagogical chatbots may alleviate this issue by interacting naturally with learners and through scaffolding students' understanding much like educators do (Winkler, et al., 2020). While students enrolled in distance learning may feel isolated and prefer immediate feedback, research shows students prefer timely asynchronous communication over face-to-face meetings (Li, 2011). Pedagogical chatbots can offer instant feedback to questions while compiling a list of common inquiries for the instructor to act upon either through whole-class communication or revision of methodology.

Although studies do show mixed results for chatbot use in English language acquisition courses (Bii, 2013), the researcher found no studies presenting the perception of pedagogical chatbot use in English Composition courses. Particularly in the current pandemic climate where most courses are required to go fully online until social distancing is no longer required, a study to determine the perceived benefits of pedagogical chatbots is essential to the scholarship on online course communication. Such information may be used by higher education instructors to supplement or enhance their courses.

## **Purpose**

The purpose of this study is to explore student and instructor perceptions of chatbot use in an online undergraduate English Composition course. This qualitative study will use open-ended interview questions and saved chat transcripts to collect data. Moreover, this study will

follow an emergent, grounded theory design as espoused by Glaser to so as to identify emerging categories and generate substantive theory (2017).

### **Research Questions**

The following research questions drive this emergent, grounded theory, qualitative study.

1. What is the student perception of the use of chatbots in an online English composition course?
2. Why do students use chatbots in their online English composition course?
3. What is the instructor's perception of the use of chatbots in online English composition courses?

### **Limitations**

This study is limited by an absence of previous research that addresses the specific topic in a substantive manner. Additionally, data could only be collected remotely through phone interviews and email because of the nature of the student schedules. Another limitation is the biases of the participants and the researcher frame responses and questions. Finally, the Chabot used is a more basic chatbot, used to answer frequently asked writing and formatting questuons and will be have its own limitations.

### **Delimitations**

A delimitation that the study only considers the students in one online undergraduate course in an urban state university in New Jersey. Their experiences may not extend to students in other states or regions. The number of students in the course is 20, and that might also be a delimiting factor since results could vary with greater or fewer numbers of participants.

### **Assumptions**

The researcher assumes the participants will be honest and forthcoming in

their responses to the research questions. Another assumption is the participants in the online course will have sufficient experience with technology to use chatbots. Additionally, the researcher assumes she will find core theoretical concepts in the data to link and develop. The assumption is that this emergent, grounded theory analysis will produce “a substantive, conceptual theory with general implications” (Glaser, 2001). Finally, the researcher assumes the participants are willing to engage in the study.

## **Chapter Two: Literature Review**

### **Introduction**

In emergent grounded theory, creating a literature review prior to the study might add some constraints which could hinder the realization of emergent theory (Dunne, 2011). However, this proposal it important to understand the context of the limited research surrounding pedagogical conversation agents (chatbots). Some research indicate mixed success with pedagogical chatbot use in language learning classrooms (Bii, 2013). However, the literature is scant on practical pedagogical use in general studies, undergraduate courses. A review of the research literature indicates a need for scholarship in classroom AI, including chatbot utilization (Zawacki-Richter, 2019). Important information presented in this literature review reveal that students lose motivation when feeling confused or isolated. And while a chatbot cannot replace an instructor, the perceived benefits of a pedagogical chatbot merits further study. This is particularly relevant if it mitigates challenges undergraduates and their instructors face in online learning.

### **Online Learning and Communication**

There seems to be a hierarchy of modalities for success rates in online learning. In a recent study, face-to-face first year English courses, similar to what this study intends to research, achieved the highest passing rate with at-home, asynchronous video learning earning the most failures. (Bourdeau et al., 2018). This may be attributed to absence in interactivity. Research is concluding that in online courses, especially between student–instructor, interactivity is an important role in student satisfaction and resiliency (Croxtton, 2014). Blended courses, focusing on student transition and “comfort” with the online portion of the course are the most successful of online modalities (Futch et. al, 2016).

Communication is important to students. However, even in face-to-face courses students remain uncomfortable seeking assistance in face-to-face interactions with their instructors. In a fascinating study, Li et al. found that, when participants were offered face-to-face office time, virtual office hours, or an email-turnaround-time guarantee, the preference fell on the latter for communication (Li et al., 2011).

### **Isolation**

Because online courses are asynchronous and solitary, they can be isolating. Students participating in distance learning cite a perceived absence of instructor-student interaction as the main reason for face-to-face course preference. Lack of instant access to the instructor leads to the feeling of no instructor. This is coupled with a sense of teaching oneself the content (Tichavsky et al., 2015). Also, students perceive isolation because of the reduced pace and lack of instant response inherent in online learning (Berry, 2018).

Online students might also be disadvantaged by limited access during “office hours.” In face-to-face courses, access to the instructor is immediate and allows students to receive clarification about assignment content and execution. However, in distance learning, the instructor must define ranges of available hours to provide proper access for students to have their questions answered. Since an instructor must limit availability to specific days and times, some students will inevitably have conflicts with those hours of availability (Wingo et al., 2017).

### **Chatbots**

Chatbots are a novel technology. A chatbot, also known as a conversation agent, virtual assistant, or virtual agent, is a technology taking the form of mobile messaging, or as a computer or web program using natural language processing thereby simulating the conversation of a



human. These programs process natural voice or textual input and offer an appropriate response (Georgescu, 2018). Improvements in the technology abound, “AI-augmented machine learning has dramatically increased the accuracy of both automatic speech recognition (ASR) and related natural language processing (NLP)” (Alexander et al., 2019). As the NLP of chatbots increase, so will their implementation in education. This technology is already utilized on campuses of higher education: Georgia State’s “Pounce” or Winston-Salem State University’s “Winston” have both beneficially impacted the universities through an increase in student responses and student retention (Bendici, 2018).

Other studies illustrate the benefits of chatbot use in universities. In a flipped-classroom research study use of three types of chatbots used out of classroom, Huang et al. (2019) found that graduate students perceived chatbots to be helpful in warding off feelings of isolation. Though the synchronous capacity of chatbots is useful with preventing isolation, the study also concludes students find it challenging to perceive a chatbot as a human being. Huang et al. did not specify whether this is a positive or negative aspect of student discernment.

Song and Oh (2019) found a positive association between learner achievement and chatbot use. In a study that examines student participation in online courses and synchronous interaction with a conversation agent, the quality of student-chatbot conversation indicates a significant correlation with student achievement.

Meanwhilke, informal education use of chatbots are a rising trend. A structured review of the literature shows the current trend in the use and subsequent research of mobile pedagogical chatbots and a general use of pedagogical chabots for informal education applications (Hobert & Meyer von Wolff, 2019).

Though chatbots can be utilized to circumvent isolation and increase student achievement, it is important to examine the forms of chatbots that might be successful in formal education. There are two forms of chatbots Cunningham et al. (2019) find especially suited for education. An FAQ Chatbot might reduce an instructor's workload through interactive responses to learners' frequently asked questions while simultaneously addressing student needs, consequently reducing isolation and frustration. Another form is a quiz chatbot which implements an interactive assessment prompting students for justification for their responses to multiple choice questions. Along with addressing isolation, learners receive immediate feedback with the possibility of "tutoring" the student through misconceptions to final clarification (Cunningham et al., 2019).

### **Summary**

The reduced pace of communication in asynchronous distance learning proves frustrating for some college students. Online learning, though necessary for some and convenient for others, is de-motivating and isolating. As enrollment in online programs continues to increase, the achievement of enrolled learners is vital to the success of institutions of higher learning. Pedagogical chatbots may be successful tools to alleviate negative experiences and associations with asynchronous learning. While there is a void in research studies pertaining to practical pedagogical uses of conversation agents in education, the immediate and responsive nature of chatbots seems to address issues of where there is isolation, confusion, and a consequent loss of motivation.

This literature review highlights one of numerous objectives. The context presented in the above review can be used to extrapolate pedagogical chatbot use in an undergraduate English composition classroom will benefit learners and instructors. First-year composition courses are

challenging to start and necessitate a large expenditure of energy from instructors who must often offer feedback and guidance for each assignment. An absence of immediate feedback and the conversational shortcuts intrinsic in asynchronous learning necessitate even more outlay from instructors.

## **Chapter Three: Methodology**

### **Introduction**

The intention of this study is to explore the perceptions of students and the instructor of pedagogical chatbot use in an online undergraduate English Composition course. In order to generate substantive theory, this reflexive study will use a flexible, emerging design. Data will be accumulated through chatbot transcripts and through telephone interviews using the open-ended interview questions listed in the appendix.

The following research questions drive this emergent, grounded theory, qualitative study.

1. What is the student perception of the use of chatbots in an online English composition course?
2. Why do students use chatbots in their online English composition course?
3. What is the instructor's perception of the use of chatbots in online English composition courses?

### **Research Design**

The researcher is interested in the use of pedagogical chatbots in order to solve an issue with perceptions of isolation found inherent to online courses. Rather than have a set theory to disprove, this study is driven by the currently unknown perceptions of the chatbot use in the English Composition classroom. Using an emergent grounded theory model acknowledges the researcher's bias while allowing the data collected to drive the resulting theory. Open coding prevents limitations and affords the constant comparative method Glaser states is essential to emerging of theoretical coverage and saturation (Glaser, 2004).

Of course, it is necessary to address validity of a qualitative methodology with open-ended interview questions. The questions are structured and while the interviewer is recoding the

exchange, she will create memos, noting ideas about the interviews and the categories. This is an important process to grounded theory as it helps to shape the analysis of extensive data (Creswell & Guetterman, 2019; Glaser, 2004). Detailing and coding the information accessed through interviews and the chatbot transcripts help to develop the themes that are then applicable to other populations. According to Creswell, “the value of qualitative research lies in the particular description and themes developed in a context of a specific site” (2018). This amount of detail affords the generalizability of the study.

### **Population and Sample**

The target population for this study includes one online English Composition (writing) course in New Jersey City University, an urban university situated in the northeast of the United States. At the time of this proposal, the makeup of the class is unknown and the average class size is 25. The sample size is convenience sampling that is dependent upon the course roster and the option of the students to participate. The instructor will not know which students opted to participate in the study to avoid any preferential treatment. Consent forms will be required with parents/guardians signing for students under eighteen.

According to datausa.io’s (n.d.) college profile, 2017 acceptance rate is 91.9% with a full enrollment of 8283 students, 67% of whom are full time. The 2017 data show that students enrolled at New Jersey City University in full-time undergraduate and graduate programs are broken down as follows: 36.4% Hispanic or Latino, 25.3% White, 21.4% Black or African American, 7.62% Asian, 1.77% two or more races, 0.483% Native Hawaiian or other Pacific Islanders, and 0.338% American Indian or Alaska Native. The majority of undergraduates are Hispanic or Latino female (24.5%), Hispanic or Latino male (16.2%), Black or African American female (14.7%).

## **Instrument**

There are two instruments for data collection. One instrument is the chatbot transcript which will be downloaded at the end of the course. This transcript records the dialog between the user and the chatbot. The transcripts will be coded with ongoing memo taking and re-coding. The second instrument is a set of interview questions used to elicit open-ended responses from phone interviews. These questions will be pilot tested with 5 students. The pilot test is integral to the study as it establishes the validity of the questions and will be used to revise the instrument (Creswell, 2015). The questions are attached as Appendix.

## **Procedures**

This study requires several steps.

- Fall 2020: Meet with Dr. Fish (instructor at NJCU) and Dr. Wilkinson (instructor and English Composition Coordinator at NJCU) at the convenient location of Five Guys on West Side Avenue in Jersey City for working lunch meeting to discuss the feasibility of the project, including chatbot questions, timing, and access.
- Fall 2020: Obtain permission from Dr. Fisch, online English Composition instructor, to conduct the research in one of her virtual English compositions classrooms with a goal of Spring 2021 as semester of implementation.
- Fall 2020 Compose sample consent forms (include in IRB packet) for instructor, under-age students and of-age students. This is required of the IRB process at NJCU. Samples are available through their department.
- Fall 2020 Compose data collection instruments (interview questions) paying special attention to wording and validity, which is essential to the credibility of the study (Creswell & Cresswell, 2017).

- Fall 2020 Pilot the instrument and incorporate revisions (include in IRB packet with sample chatbot transcript)
- Fall 2020 Compose and submit IRB application as one packet to RB@njcu.edu and cc kresch@njcu.edu. Note: *review takes 4-6 weeks.*
- Upon IRB approval, coordinate with Dr. Fisch to determine which courses are available for study.
- Fall 2020 Develop chatbot (snatchbot.me) with Dr. Fisch, including frequently asked questions and guidelines for writing in her courses.
- Fall 2020: Test chatbot with five colleagues and students to ensure workability.
- Spring 2021: Implement chatbot use in course, troubleshooting issues which arise as needed.
- Spring 2021: Week four of semester, schedule interviews. Take memos. Download chatbot transcript to coincide with interview.
- Spring 2021: Week five of semester, begin interviews. Take memos. Download chatbot transcript to coincide with interview.
- Spring 2021: Week six of semester, end interviews. Take memos. Download chatbot transcript to coincide with interview.
- Spring 2021: Weeks seven-sixteen of semester, code interviews using open coding
- Spring 2021: Weeks ten and eleven, research emerging themes and amend the research to literature review
- Spring 2021: Weeks seven-sixteen of semester, using open-coding, review and revisit the data to find emerging themes and analyze the data

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### Additional Resources from Project #1

- dataues.io, n.d.. <https://datausa.io/profile/university/new-jersey-city-university>
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## Appendix

### Open-ended Interview Questions

Instructor:

1. Tell me about your experience using the chatbot?
2. In what ways did your interactions with the students differ from previous years?
3. In what ways was using the chatbot beneficial?
4. In what ways was using the chatbot not helpful?
5. What is your overall impression of the chatbot in this class?

Student:

1. Tell me about your experience using the chatbot?
2. Why would you use the chatbot?
3. In what ways was using the chatbot beneficial?
4. In what ways was using the chatbot not helpful?
5. What is your overall impression of the chatbot in this class?
6. How does the chatbot effect how you feel about the course?