

HCI Research Proposal Selection

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MI 101: Understanding Media and Information

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Introduction

Lately, I've found myself stumped on certain questions from quizzes and assignments in my classes. My notes can help me with some of the work, but a moderate amount of the material is just too confusing to me. I've been turning to the internet software ChatGPT, created by company OpenAI, to aid me in my academic excursions. In fact, I find tons of people around me in lecture halls and in study rooms using this software. In this paper, I'm beginning the stages of planning a research project on student's usage of this software. I'm becoming curious about whether my usage of this software is actually beneficial to me or if it is detrimental to my learnability. This curiosity has inspired this research, as I aim to discover answers to my question: how does the usage of ChatGPT impact the academic performance and learnability skills generated by students? I want to unpack the link between students' ability in a classroom and how it relates to ChatGPT. I believe this software is seeing increasing importance in our world today and, as it is so new, I'm interested in discovering more about its impact on students such as myself. The future is utterly unpredictable, but with research such as this study I aim to design, the technologies and environments we reside in can become clearer.

Previous Research & Theory

Although this software has only been in the spotlight in recent years, there are previous research studies conducted on its usage in classroom environments. A paper titled "What Is the Impact of ChatGPT on Education? A Rapid Review of the Literature" dives into understanding how artificial intelligence has developed to the point it currently is at and puts a focus on ChatGPT. The paper questions how ChatGPT is used in different subjects within educational manners and what the potential benefits or issues there are. The researchers conducted a "rapid

review approach”, which allowed them to save time and energy. They scanned scholarly forums like Google Scholar to gather a large number of articles and journals on ChatGPT. Using this, they looked for general reception of the software, looking for either positivity or negativity regarding its use. The findings were that ChatGPT is reported to have great benefits to students and teachers, serving as assistants, aiding in preparation for class or providing recommendations regarding learning the content (Lo, 2023). On the flip side, there is a consensus for serious concern over plagiarism or even generating inaccurate and false information. It concludes by calling for immediate action in preventing a strain in academic performance and credibility.

Another paper, titled “ChatGPT in higher education: Considerations for academic integrity and student learning”, also explores the usage of AI and observes ChatGPT specifically in higher education spaces. The paper tries to discover what measure ChatGPT is disrupting the educational environment. The researchers conducted a systematic search finding keywords related to the software throughout articles and newspapers, ranging from the US to Australia. Similarly to the previous paper observed, the researchers found a sentiment of embracing the software to benefit in teaching, but strong concerns over academic integrity and students avoiding work (Sullivan, Kelly, and McLaughlan, 2023).

Lastly, the paper “Impact of ChatGPT on Learning Motivation: Teachers and Students' Voices” embarks on a statistical analysis to discover the perceptions of ChatGPT students and teachers have in relation to its use for learning motivation. The researchers sent out a survey to a sum of 80 teachers and students to respond and learn of their feelings regarding the software. The survey was sent to a mix of male and females, from those who had low teaching experience to high, and required all to have a general understanding of how ChatGPT. The results they found were that the software has the potential to encourage others in learning, but also could

restrain learning as it requires new methods of approaching the material (Ali, Shamsan, Hezam, and Ahmed, 2023).

All together, these previous research papers come together on claims of the potential in the future for ChatGPT, with ability to aid in comprehension and the development of new ways of learning, but raise serious threats to academic integrity and learnability. It is also evident that there is not enough research done on measuring just exactly how much the software can impact the learning environment, which is why in this paper I aim to plan out a study to gather new information. These papers help guide my research in understanding what needs to be further explored; how I need to examine student's reaction to the software and measuring how accurately they succeeded. I will be using a similar random mix of individuals as these studies observed. An important part of this study is understanding a media theory that I feel most strongly connects the usage of ChatGPT, which is the theory Uses and Gratifications. We can use this to further understand why students might use this software and how it could impact their performance. This theory discusses that people choose to engage with the media that benefits them most for a variety of reasons: in this case, we can connect Uses and Gratifications to an individual's need to complete a task or have assistance on an assignment or test. In the classroom environment, students who find themselves struggling with work will turn to media that aids them in their need to complete the assignment or test, and that media that helps them is ChatGPT.

Methods

Research Design

The research study I have planned will utilize a mix of qualitative and quantitative methods. To begin, there will be a controlled experiment (a quantitative method) that sets two groups of students into an in person classroom environment with the purpose of completing two tests. The tests will consist of general questionnaires regarding numerous basic subjects in school, allowing for a wide range of knowledge to be demonstrated. There will be two groups of people: one group who uses ChatGPT on the first but not on the second, and the other will not use ChatGPT on the first but will on the second. Following the tests, students will be called into private interviews (a qualitative method) that last roughly 10 minutes to discuss their feelings and impressions of the tests that were completed. The study itself will take around two hours, splitting each test part into roughly an hour of time for each. Students upon participating in the study and being interviewed will receive credit on SONA. Students will be merely given the test and told to complete it independently while the researchers leave the room, only coming back for the interviews.

Sample

The target population of this study will be MSU students, specifically, freshmen or first year students. I'd aim to gather a total of 40 students, splitting it into 20 students per group. My rationale behind this decision is to not get too many students to waste their time and take too long to conduct all the interviews, but still have enough to be able to observe trends and patterns in the responses and performance on the tests. I will put the signup for this study up on SONA for students to sign up for with the time and place readily available. I will stop recruiting students once I reach around this number, ensuring that I have a consistent number of students in each group to create balance.

Measurements

My proposal that I'm asking is most certainly inspired by the studies cited earlier in this paper, helping guide my thoughts and understanding of how ChatGPT impacts educational environments through learnability and maintaining academic integrity. The questions asked during the tests won't be extremely complicated questions, but a scattering of subjects that require some amount of thinking and previous knowledge to gauge whether or not they perform better or not using ChatGPT. The questions I will ask during the interviews are developed by myself and aim to understand the emotions the students are feeling and their perception of the software. Things like: "How hard did you find the tests to be?", "What parts were difficult and which were easier?", "Have you used ChatGPT and if so, how did you feel about it?", "Did you find ChatGPT to be helpful?", and "Did you feel more comfortable with the material with or without the software?". These questions will guide me to understand how the students felt both using and not using the software, aiding in learning more about the usage of the software and its impact on the students and approach to their academic studies.

Expected Results

Based on my own speculations combined with the observed concepts appearing in the academic papers I have cited, I believe that the group of students who use ChatGPT first will find themselves struggling more without it and enjoy using it, while the group of students who used ChatGPT second will feel better about the work as they worked with the material without the software first. The interviews will show students feeling more frustrated with the material once they aren't allowed to use the software, while the students who were allowed it on the second test will feel more comfortable with what they were learning. These results will ultimately link to the bigger question I have asked regarding learnability and academic integrity.

Students who utilize ChatGPT as a tool will come away with a better experience and find themselves to feel as though they are learning better, compared to the students who used ChatGPT entirely on their first test. The students who used it on their first test will report feeling more lost and struggling with the work on the second. This demonstrates evidence of where ChatGPT can find its place in the academic sphere, predominantly benefiting students and teachers as a tool and not as a sole reliance upon learning. This research can be taken further to unpack even more factors that play into the usage of the software, observing more demographics of people and specific subjects. This research will impact anyone in an academic environment, such as teachers, students, or administrators. It will force academic spaces to consider ChatGPT's place in the classroom, at what length it can be used, and impact students in their decision to engage with material and learn better.

Future Plan

To spread the findings of my research, I can turn to online forums such as Reddit and post to specific communities that would find what I have discovered interesting. Subreddits like r/ChatGPT or r/ArtificialIntelligence can help spread my findings and generate discussion. If the opportunity comes to me, I'd love to share my research and discuss it on podcasts of all sorts, perhaps engaging with the local student-run radio station, Impact 89.9 FM, as their main demographic is anyone in the area and my findings strongly resonate with students at MSU. I believe this study could lead to many other studies that could be tested, testing numerous factors that I didn't account for that I will detail below.

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Limitations

There are a lot of limitations to this study we can observe. Most notably is a time constraint. The study could last much longer, going over numerous days to fully engage students and observe how they truly act in a genuine class environment, but I did not have the time and resources to allow for this length to happen without wasting students' time. The study also only accounts for (and impacts) students; specifically, MSU freshmen. The study does not observe how adults or younger children work with the software. I believe the result will attempt and mostly succeed at addressing my claim regarding ChatGPT and its impact. There are numerous factors that I did not test for in this study, such as socioeconomic class and how it relates to students educational opportunities and academic performance or look at more specific numbers relating to academic performance such as grades and GPA. It is also very possible to create a much larger study that lasts for a much longer amount of time, creating perhaps an entire lecture and class that helps students learn more about the software and observe their usage of it. With a longer, more complicated study, I can test more variables and factors I did not account for in this study that I have mentioned. Overall, this research had numerous limitations, but it could lead to more studies being created to test ChatGPT even further.

References

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