

# Generative AI: Is Authentic Qualitative Research Data Collection Possible?

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**Qualitative Inquiry; Access Denied?**

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# Presenters

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# Introduction

Research data authenticity is a concern within the doctoral community

Legitimacy of data collected by doctoral candidates

Speed at which chatbots rolled out and learning occurs

Application and risks to humanity (Browne, 2023; Hart, 2023)

Imposter study participants is not new in doctoral research (see Roehl & Harland, 2022)

Ethical considerations and the generation of research data by chatbots

Implications in the broader academic community

Data integrity in qualitative research may be at risk



# State of Doctoral Research & University Guidelines

Open AI-ChatGPT, December 2022

Higher Education's response

Committees

Assignments

Student Use Policies

Student Code of Conduct

Distribution July/August 2023 or later

Missing...

Graduate School

Doctoral Programs and Data Collection



# Framework of Inquiry

## The Stages of Policy Framework

Understanding types of policy change, the

Agenda setting

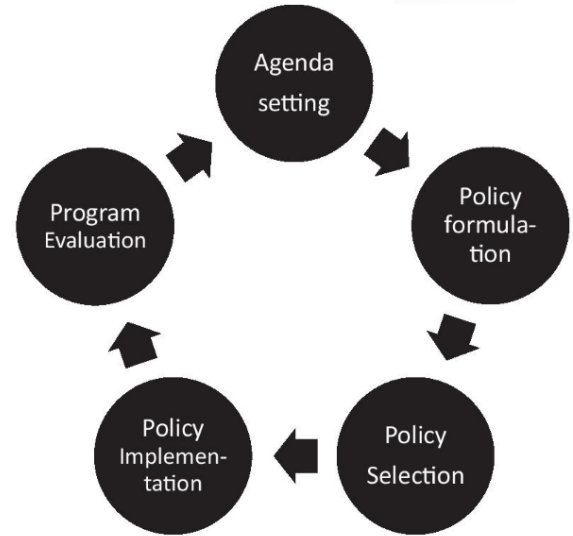
Policies, documentation-changes needed

Implementation process

Outcomes

Reevaluation of process, feedback sought

Updating when needed or appropriate



McNutt & Hoefler, 2021, p. 134.

# Research Questions



How does the availability of generative AI platforms, such as Chat GPT, create a threat to the validity of new research at the doctoral level?

What are the implications of using generative AI, such as Chat GPT, for the creation of new research data at the doctoral level and beyond?

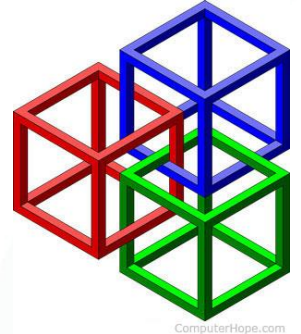
# Process

Qualitative methodology

Examined how various chatbots responded to the same interview questions used to obtain data in a previously published study

Custom instructions with specific demographic parameters

Examine how generative AI developed data and the speed at which responses were provided



# Data Sampling and Collection

Data derived from interview questions asked of human participants from a previously published study

The specific detailed responses and the actual interview questions using human participants were not published in the peer-reviewed article; therefore, AI did not have access to the data

Used Open AI ChatGPT, Google Bard, and Microsoft Bing

Asked same questions to each AI platform to generate responses

Compared generated data to original 'human participant' responses looking for commonalities





# Generating Qualitative Research Data and Findings

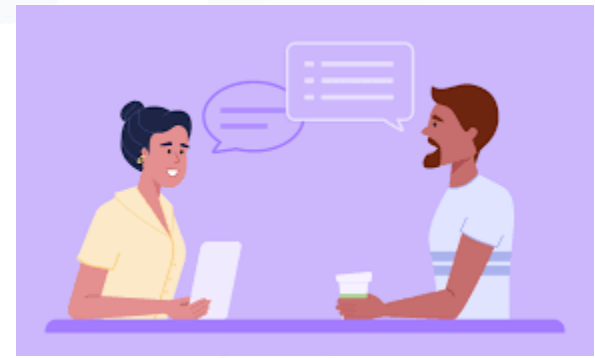
## Interview/Response Length

In-person interviews averaged 60 minutes

ChatBots less than 15 minutes

Used Open AI ChatGPT, Google Bard, and Microsoft Bing

Focused on ChatGPT



# Qualitative Research Findings

*What type of technology do you use in the classroom?*

Human Participant Interview:

OK, um, the types of technology that we use in the classroom? Well there are two different types of technology that we have um those would be those that the student bring. And also the technology that is provided by the school. In our department we have uh-huh, cows those are computers on wheels and those are big carts that have 35 computers on 'em and we share those amongst all the different teachers within the biology department. And those have to be reserved between each of the teachers and we mainly use them I instead of on days when we need to do bigger types of projects. We also have in my classroom, I got a grant for some tablets, so I have eight tablets that are used in the classroom one for each lab station and those tablets are connected to TI, so, Texas Instruments program where we can attach different kinds of probes and also the calculators. In that grant, I also got eight calculators to go with tablets and so that's another type of technology we have. Then, I have a smart board that I use and I use that often with my computer to share [content with students]. And then students are able to bring in their own smartphones and there are times that students are allowed to use those in class.



# Qualitative Research Findings



*ChatGPT (first GAIP data set FL):*

In [my high school science classroom](#), I use a variety of technology to enhance the learning experience for my students. Here are some of the key technologies I [regularly incorporate](#): (ChatGPT lists 10 different types of technology, with a response, inclusive of mobile devices and laptops, the first listed technology is presented below).

1. Interactive Whiteboard: I have an interactive whiteboard that allows me to display and annotate content from my computer, making it easier to explain [complex](#) scientific concepts and engage my students in discussions.

I believe that integrating technology into my teaching helps make science more engaging, relevant, and accessible to my students, preparing them for the digital age and future STEM careers.

# Qualitative Research Findings



*ChatGPT (second GAIP data set FL):*

Given your background as a high school educator with 11 years of experience, it's likely that you've encountered and used a variety of educational technologies. However, the specific technologies you use can depend on factors such as your subject area, teaching style, and the resources available at your school. Here are some common types of technology that educators often incorporate into their classrooms. (ChatGPT lists 10 different types of technology, with a response, ).

- 1. Interactive Whiteboards:** Tools like SMART Boards or Promethean Boards can make lessons more interactive and engaging.

Given the **dynamic** nature of technology in education, it's essential to stay informed about new tools and trends that may benefit your teaching approach and your students' learning experiences. Additionally, the technology **landscape** may vary depending on the resources and policies of your school or school district.

# Qualitative Research Findings



*ChatGPT (third GAIP data set FL):*

In my high school science classroom, I find technology to be a valuable tool for enhancing the learning experience. Over the years, I've incorporated various technologies such as interactive whiteboards, tablets, and educational apps to engage students and make complex concepts more accessible. Virtual simulations and online resources have proven to be effective in illustrating scientific phenomena that may be challenging to replicate in a traditional lab setting. However, I also believe in maintaining a balance and ensuring that technology complements, rather than replaces, hands-on experiments and interactive discussions. Overall, integrating technology thoughtfully has helped create a dynamic and interactive learning environment for my students.

# Qualitative Research Findings



*ChatGPT (third GAIP data set CL):*

Oh, I'm all about incorporating technology into my science classes! It's been a game-changer over the years. I use interactive whiteboards to engage students visually, and I've got a set of tablets for them to conduct virtual experiments and simulations. It really brings the subject matter to life.

For assessments, I've moved away from traditional paper exams and started using online platforms. It not only saves paper but also allows for **more dynamic and** immediate feedback. Plus, I encourage students to use educational apps and websites to reinforce what we're learning in class.

But you know, it's not just about the gadgets. I also use social media to share interesting science articles, videos, and updates. It's a great way to keep the conversation going beyond the classroom **walls** and make science a part of their daily lives.

Of course, I always make sure to strike a balance. While tech is fantastic, I believe in the power of hands-on experiments and face-to-face interactions. It's all about finding that sweet spot where technology enhances the learning experience **without overshadowing the fundamentals**.

# Qualitative Research Findings



*ChatGPT (third GAIP data set CL w. RI):*

Hey there! In my high school science classes, I've found technology to be a game-changer. I use a mix of tools to keep things engaging. Smartboards are a staple – great for interactive lessons and visual aids. I also incorporate educational apps and online simulations to make abstract concepts more tangible. For communication, I rely on a secure platform to connect with students and parents, ensuring a smooth flow of information. It's essential to strike a balance, though, and not let tech overshadow the personal touch of teaching. What about you? Any favorite tech tools in your classroom?

# AI Detection



AI Detection Software	Control	GAI Data Set & Language Type, Percent AI Detected Or Probability of Human				
		C1 FL (Sept 23)	C2 FL (Oct 23)	C3 FL (Nov 23)	C3 CL (Nov 23)	C3 CL w. RI (Nov 23)
Safe Assign	0% AI	0% AI [7% Plag]	0% AI [16% Plag]	0% AI	0% AI	0% AI [11% Plag.]
Turn It In	0% AI	0% AI	0% AI	0% AI	0% AI	0% AI
Content at Scale	Passes as Human	Passes as Human	Passes as Human	Reads Like AI	Reads Like AI	Hard to Tell
Copy Leaks	Human Content	100% AI	100% AI	100% AI	100% AI	100% AI
Cross Plag	0% AI	100% AI	100% AI	0% AI	84% AI	0% AI

FL= Formal Language; CL=Casual Language; CL w. RI= Casual Language with Researcher Information



# Taking the Inquiry Further

While the focus of the study was on gathering of viable qualitative research, we looked at chatbots ability to provide quantitative data and the possible results.



# Generating Quantitative Research Data and Findings

Likert Scale questions with a range of 1 to 5

Same custom instructions for participant demographics

General and specific questions asked

ChatGPT provided a Likert Scale value and rationale

A request for a rationale was not included in the custom instructions.



# Generating Quantitative Research Data and Findings

On a scale of 1 to 5, where 1 is not likely to 5 is very likely, how likely are you to use assisted technology for students with disabilities in the classroom?

*I'd rate my likelihood of using assisted technology for students with disabilities in the classroom as a 5 - very likely.* Inclusive education is a priority for me, and I'm committed to providing equal learning opportunities for all my students. Assisted technology can make a significant difference in helping students with disabilities access and engage with the curriculum. Whether it's screen readers, adaptive software, or other assistive tools, I would actively seek and use technology that supports the diverse needs of my students. Ensuring that every student has the chance to succeed in my Earth Science class is of utmost importance to me.

# Generating Quantitative Research Data and Findings

On a scale of 1 to 5, where 1 is not likely to 5 is very likely, how likely are you to use SuperNova assisted technology for students with disabilities in the classroom?

*I'd rate my likelihood of using SuperNova assisted technology for students with disabilities in the classroom as a 4 - likely.* While I'm open to exploring new technologies that can benefit my students, including those with disabilities, my decision would still depend on several factors. These factors would include the specific features and benefits that SuperNova offers for students with disabilities, its compatibility with the needs of my students, and the availability and affordability of this technology within the resources of my rural Title 1 school in Southern California. Ultimately, my priority is to provide the best possible support for all my students, including those with disabilities. If SuperNova proves to be an effective and accessible tool for this purpose, I would certainly consider implementing it in my classroom.

# Implications

Scholars have a shared understanding of what plagiarism looks like and how it should be handled

–No such shared understanding exists for GAI

Clear, easy to follow University Policies are needed ASAP

Institutional Review Boards have an important role as GAI applies to research

Without clear guidelines all research findings must be viewed as if GAI could be serving as the “participants”



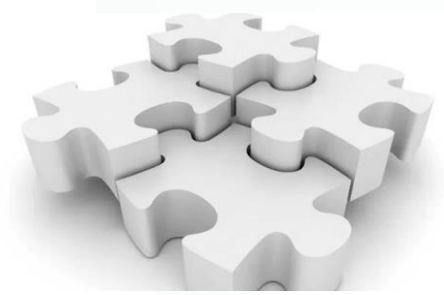
# Recommendations

- Doctoral committee members must take an active role in data collection oversight and verification
  - View written transcripts looking for signs of speech patterns such as pauses and hesitations
  - View quantitative data or have full access
- Faculty need Do's and Don'ts for appropriate GAI use, monitoring, oversight in research
- Faculty require backing from university policy



# Conclusions

Action is needed to preserve data integrity in light of GAI applications in research



Doctoral student research may be a particular risk given students' novice researcher status and the pressure to complete the degree

Doctoral committees need to take proactive steps to prevent intentional misuse and unintentional errors

The presence of GAI presents new demands for building a culture of integrity with respect to research data

# Questions and Conversations





**Thank you**



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