IJHSR
ijhighschoolresearch.org
RESEARCH ARTICLE

An Automated Framework for Studying the Potential of AI Defaults in Assignments

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ABSTRACT: In this paper, we propose an automated experimental framework that can be used by educators to conduct research studies on the impact of AI in their classrooms. The framework helps educators understand how students use AI to solve homework questions. Furthermore, as one test of this framework, we have created an experiment to test the theory of defaults, which states that users are more likely to stick with the defaults than to spend effort pursuing a different option. By making certain uses of AI default within a homework assignment (through our novel interface), we conjecture that students are more likely to stick to those carefully chosen uses of AI instead of independently seeking AI to solve their entire assignment, which has been documented as a pressing problem in education today. We also provide automatic data collection for this framework, as well as guidelines on how to analyze and process the data, and all of the consent forms required to conduct these types of studies.

KEYWORDS: Systems Software, Human/Machine Interface, Online Learning, AI in Education.

Introduction

A study by Anthropic showed that, in the context of educational settings, the two major use cases of their LLM "Claude" are: (1) students generating new content from which they can learn (e.g., designing practice quizzes or editing essays); and (2) students requesting explanations and solutions to academic assignments.[1] This study also showed that 47% of interactions with Claude were "Direct" or "seeking answers or content with minimal engagement."[1] This data illuminates how students tend to ask for full and direct answers, instead of being guided by example or an explanation. This has led many educators to be concerned about how students' dependency on AI may lead to a lack of critical engagement and intellectual independence. Another study also cites the use of AI to cheat in academic assignments as a growing concern.[2]

The consequences of this widespread use of AI in the classroom have confused educators. Some advocate forbidding all AI from the classroom, while others argue that it should be treated more like a new technology that enhances learning, such as calculators or the Internet when they first came out.

In this project, we believe the latter. We think AI has the potential of enhancing—rather than harming—education, but it needs to be done carefully. The guiding principle behind our work is the theory of defaults. This theory states that users are more likely than not to choose defaults over alternatives because of the mental and physical cost-efficiency trade-off of staying with the given option, and how defaults may seem like an implicit suggestion given by the decision maker.[3]

We conjecture that if we create assignments that include certain curated uses of AI as defaults, then students will leverage these resources and will abstain from using the more harmful components of AI (e.g., asking for full answers). To test this conjecture, we designed a randomized experimental framework that can be conducted at schools throughout the country in any educational discipline. All that our framework requires is for instructors or researchers to supply their subject-area questions in a particular file format, and our framework will automatically enhance these questions to provide designated AI help. The goal of the experimental framework is to collect data from a diverse set of students and subjects to understand whether careful use of AI via defaults has the desired effect. In addition to the framework, we also provide automatic data collection to help instructors and researchers gather the data they need to answer their questions. Further, we also provide data analysis and data cleaning guidelines, and sample consent forms that instructors and researchers can give to students and their parents to enroll in this study.

In an ideal world, we would perform the full study ourselves to answer our research hypothesis. However, finding a large enough sample with diverse research participants is challenging in the amount of time that we had. We plan to perform a limited study in one high school, but we also hope that others will use our framework to conduct parallel studies at various schools throughout the nation. Indeed, we consider our primary contribution to be the creation of the randomized experimental framework to test the hypothesis, rather than the results of the experiment itself. We believe that answering this question in the affirmative could significantly impact the way in which educators create assignments and how they approach the role of AI in the classroom.

Background

The impact of AI in education:

AI can revolutionize the way education is taught today. Studies have reported success in improving test scores after using AI as a tutor.[4] A semester-long study at Uni-Distance Suisse showed that using an AI tutor app increased active engagement by 15 percentile points compared to a similar control course.[5]

DOI: 10.36838/IJHSR87.183

The AI app personalized the course to a student's strengths and weaknesses, and led to students achieving higher grades.[5]

AI can also improve personalization and reduce accessibility barriers. Language/cultural differences, economic inequalities, and teacher availability are some issues that educational systems fail to address. However, the new wave of AI technology could reduce these problems. It can provide high-quality teaching to users without being constrained by time or money, unlike a tutor, and tailors its response to the student's language, style, and pace of learning.[4,6]

However, while AI has the potential to improve education, as mentioned above, it can also weaken learning. One of the most commonly associated problems with AI in education is cheating. The rise in AI in the past year has led to an increase in the number of students using this technology to complete assignments with work that is not theirs.[7] Not only does AI plagiarism make it harder for schools to enforce and maintain academic integrity, but it also reduces students' ability to think critically and originally.[7]

Effective Educational Strategies:

In our review of the education literature, we found a few very helpful educational strategies that can improve students' outcomes. These include:

- The use of examples
- Contextualization of problems and grounding in real-world situations
- Clarification of the problem

Examples. The use of examples is an effective tool pervasively utilized in education. Giving examples can help students identify features of a concept that can be generalized and allow them to make associations with other concepts they know.[8] Being familiar with different cases and versions of a problem also creates a "priming" that can speed up students' ability to process and understand concepts.[8]

Contextualization and grounding. "Authentic learning" encapsulates contextualization and grounding and is an educational approach that connects concepts to the real world, whether through a real-life example or a hands-on experience.[9] Authentic learning has been rigorously proven in the educational literature to allow students to relate their learning to their own lives and experiences on a personal level and drive intrinsic motivation, rather than a school's extrinsic motivation driven by grades, social stigma, and other external factors.[9]

Clarification. Clarifying a problem is an effective way to help students tap into their own intrinsic motivation. Giving further details and rephrasing an explanation can simplify and unravel the complexity of a concept.[10] Clarification, as a result, reduces the cognitive load in actually understanding the questions and makes room for deeper association and connections with other concepts.[10] Clarification is also shown to act as an intrinsic motivator that can make students feel rewarded and encouraged by a clearer understanding of a topic.[10]

Beyond the above three, other educational strategies include bridging and open-ended questions. Bridging connects the content of the current lessons with concepts the student has seen in the past.[11] Open-ended questions could allow students "to analyze situations, make comparisons, draw conclusions, and then make inferences," to name a few. [11]

The power of defaults:

A substantial body of research shows that defaults can have a profound effect on behavior. Default is an option that does not require the user to take any action in its selection. This option allows designers to influence behavior and maintain the freedom to choose from alternatives.[3]

In particular, default theory illustrates that defaults can be effective at influencing behavior for three reasons.[3] First, the physical effort of clicking on a menu of options or reading through the choices can trade off with the user's internal preference and the time it takes.[3] Similarly, the mental cost of making a decision and reading each possible option can sway the user to choose the default over other possible options.[3] Secondly, defaults' pre-selection can serve as a reflection of the decision maker's recommendation.[3] Especially when users are unsure or do not have enough information to make a decision themselves, they tend to rely on defaults to help them make a decision.[3,12] Third, even if one doesn't choose the default, defaults can serve as a reference point for users' decisions in considering alternative options.[3] Following the same logic that defaults act implicitly as the decision maker's own recommendation, users may be influenced by defaults and the reasoning behind why certain options are selected as defaults, even when the automatic option may not itself be chosen.[3]

Many real-world applications also testify to the effectiveness of defaults. Political campaigns, businesses, and websites guide their audience's behaviors using defaults.[13] Fundraising efforts by Republican committees in 2020 show this effect. The default option in their donation form had recurring weekly donations checked as the default. This led to campaign donations increasing by 40 million dollars.[14] Another example that demonstrates the power of defaults is a study where researchers changed the printer settings' default option from simplex to duplex.[15] Their results showed that this subtle shift reduced the amount of paper consumption by 15% and suggested that green defaults could induce pro-environmental behavior. In contrast, encouraging moral appeal did not have any effect on the subjects.[15] Yet another example of how defaults can generate millions of dollars for companies is Google's position as the default search engine in a variety of browsers.

In the United States *et al*. v. Google LLC court case, it is alleged that Google paid companies such as Apple, Samsung and Mozilla billions of dollars to ensure that its search engine was set as default and, as a result, has earned billions in return through its monopoly.[16,17] Recently, the Justice Department ruled in favor of the anti-trust division, and this court case exemplifies how influential defaults can be.[16] Lastly, studies have shown that defaults can have a significant impact on education. "Cognitive and attentional limitations" are an "important barrier to good decision-making for complex choices such as education decisions."[18] Damgaard and Nielson suggest that defaults could provide small nudges that can help shape student behavior in making better judgments.[14] This is precisely the hypothesis that we wish to test in this paper: can

defaults help overcome the previously mentioned problems associated with AI? More specifically, integration of defaults could reduce plagiarism and cheating by taking advantage of the psychological tendency to stick to the given path.[18]

User Interfaces:

User interfaces are a powerful medium for encoding defaults. Specifically, how an interface is designed can affect a student's learning and satisfaction.[19] If a platform is not difficult to understand and leads to mistakes, it can discourage the user from wanting to achieve their learning goals.[15] On the other hand, having applications that make the content more understandable in the user interface can increase learning and have a positive effect on the user.[19]

Traditionally, homework and project assignments use a static user interface, namely a printed document, a static Word document, or a PDF. On top of this, homework and project assignments often do not have any integration with AI. They are separate entities/documents. The lack of interactivity or a user interface that incorporates AI into assignments means that existing classroom assignments do not have a notion of defaults or any meaningful way of discouraging students from cheating, a common problem with AI.

Our Hypothesis

The background section has shown that AI introduces the tension between being helpful for personalized learning and encouraging plagiarism. This has led to ongoing discussions on how to best incorporate AI into the classroom.

We hypothesize that extending assignments with carefully chosen defaults that incorporate AI in ways that help students better understand the concepts can lead to students being less likely to use AI for purposes of plagiarism. To study this hypothesis, we built a homework framework that incorporates default AI behaviors into the assignment itself. The next section describes this framework.

Our Chosen Defaults

The Effective Educational Strategies section outlines some effective learning strategies supported by research studies. As a result, we chose to include three defaults that utilize these approaches. Our defaults enable users to receive further explanations about a given concept to tap into their intrinsic motivation, unique examples to clarify a topic, and real-world applications of a concept to enhance authentic learning.

However, our framework is not limited to the current defaults chosen. Our Effective Educational Strategies section offers ideas on other potential defaults that could be implemented within our framework, such as an option that allows the student to generate a thought-provoking question about a given topic.

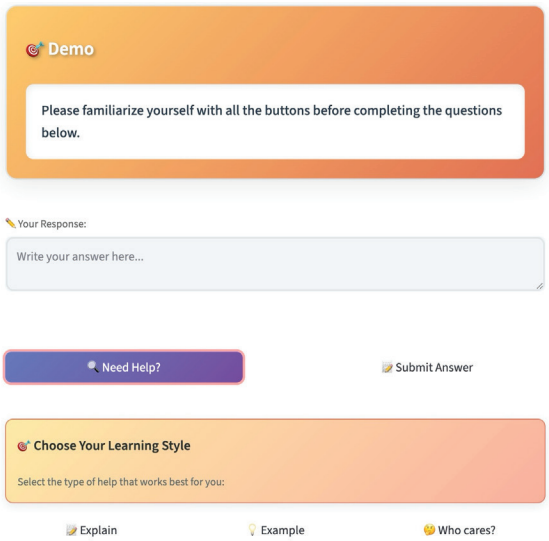

Figure 1: Screenshot of a demo question in our framework. The interface includes three buttons, "Explain," "Example," and "Who cares?" that allow students to interact with different AI-generated responses of research-supported learning strategies. These three buttons serve as defaults to disincentivize external AI usage and improve student comprehension.

A Homework Framework with AI

We designed a homework framework that can be used to answer the question of whether defaults can align AI usage with educational objectives. This framework is open source and available on HuggingFace Spaces at https://huggingface.co/spaces/feministmystique/AI-Course-Research.

The framework first includes a demo question. This question does not collect any of the interactions and controls for any confounding variables, such as users potentially experimenting with monitored questions included in the data set to familiarize themselves with the data set. Then, the following problems after the demo question test the user's knowledge on a given subject. We chose Precalculus, a course that could be conducted on 9th, 10th, 11th, and even potentially 12th graders, as the subject used for the example interface above. The questions we included in this interface came from Varsity Tutors, a free education and tutor provider.[20]

Each question in this framework has two drop-down buttons, "Need Help?" and "Submit Answers" with a text box directly under the query. You can see an example of this in Figure 1. Clicking "Submit Answers" will collect the user's answer in the text box and prevent them from making future edits, typical of a quiz or an assessment. On the other hand, clicking "Need Help?" will make another drop-down visible with three options: "Explain", "Example", or "Who cares?" with the title "Choose Your AI-Generated Answer." This title is necessary to clarify to the user that the three options provide different modes of AI-generated responses.

DOI: 10.36838/IJHSR87.183

Table 1: A table showing prompt types with multi-line content and providing the prompts we used within the interface for the three buttons "Explain," "Example," and "Who cares?" as well as the system prompt. The three buttons are specific to the defaults that we selected as valuable.

Type of Question	Prompt
System Prompt	You are an AI assistant designed to support high school students in the subject of {SUBJECT}. Your role is to offer friendly, helpful, concise, in-depth guidance, just like a supportive teacher would. Please follow these guidelines: 1. Maintain a polite, respectful, and professional tone at all times. 2. Adhere to ethical principles—do not promote cheating, harmful behavior, or misinformation. 3. Interact in a warm, encouraging, and student-centered style—use clear explanations, positive reinforcement, and examples when needed. 4. The word limit is {WORD_LIMIT} words. 5. Do not give the direct answer to the question.
Explain	6. Focus on thoroughly explaining the question by breaking down its components. Clarify the key concepts and definitions involved, ensuring that the explanation helps the reader fully understand what the question is asking. Avoid jumping to answers or examples; instead, concentrate on making the meaning and scope of the question clear. 7. Do not include specific examples or real-world applications in your response.
Example	6. Focus on providing three distinct, simple examples of this general question. Each example should highlight a unique approach or scenario related to the topic, helping to clarify the concept from multiple perspectives. 7. Do not include any explanation or real-world applications. 8. Do not give an example with the same question provided.
Who cares?	6. Explain two reasons why learning this subject in school is useful. Perhaps provide real-world applications. 7. Do not include any explanation or examples about the specific question provided.

The "Explain" option gives the user further explanation of core concepts necessary to answer the question. The "Example" option gives the user multiple examples to help them answer the question. The "Who cares?" option shows the user why the topic of the question is relevant in different fields and could give examples of tangential applications. In our implementation, we use the LLM model "deepseek-ai/DeepSeek-R1-0528" in HuggingFace to produce the corresponding output.

Table 1 includes the overall system prompt as well as the prompts for each of the default options that we identified. Our prompts were inspired by OpenAI's Study Mode[21] and their publicly released "Prompt Pack for students,"[22] but were specialized to the defaults that we identified as useful.

When one clicks on any of the three options mentioned above, another drop-down menu of selections opens in addition to an AI-generated response. These selections include "Retry?", "ChatGPT" and "Helped!" button. The "Retry?" button retrieves a different AI-generated response if the first was not sufficient. It does so by appending the following to the original prompt: "Please provide a different explanation. This is attempt retry_count + 1.", where the "retry_count" is the number of times that the user has clicked the button "Retry?". This option gives the user the ability to look through many possible explanations for a given question and select the AI-generated response that makes the most sense to them. Such an abundance of examples can help bring AI a step toward providing personalized learning in a safe environment. The "ChatGPT" button takes the user to ChatGPT if they still want to access a chatbot directly, despite the defaults, and having this button is necessary to have some way of keeping track of the number of times students will use the regular ChatGPT rather given the option than the AI-generated response provided. Finally, the "Helped!" button closes the tab and allows the user to continue with the original question and layout.

The three options "Explain", "Example", and "Who cares?" mentioned encapsulate the different possible questions that a user might ask. Additionally, the "Retry?" allows for further clarification and opportunity for AI to help solve a student's misunderstanding if the first answer was not sufficient. We limited the selection to three instead of four or five options because having many selections could overwhelm the user, on top of the other menu options within the interface.

The student interacts within the framework, as seen in Figure 1, by first exploring how to use the buttons as much as possible on the demo question. Then, the student can focus on answering the rest of the non-demo questions to the best of their ability by answering the question without the help of AI, using the default AI-generated responses, or using ChatGPT to help them answer the question.

Methods

Data Automation:

Previously, we discussed a homework framework using defaults, buttons, and AI. Now, we will dive into how this framework can be automated to help instructors and researchers. For instructors, collecting data on interactions with buttons can help teachers analyze patterns about how well the students comprehended the lessons and how well the lesson was taught. For example, instructors may find it helpful to collect data on the types of questions where students rely more on AI-generated responses. Such feedback can help instructors identify when their teaching was not effective and can help them review these concepts in class or improve their lessons for future class offerings. On the other hand, our framework can be equally beneficial for researchers. Data collection of student engagement can provide meaningful relationships and patterns for researchers to draw conclusions about.

The homework framework is designed to be customizable to any subject or any questions needed for a particular class. To make the interface more easily accessible for a teacher or researcher who may not necessarily have a background in programming, our framework allows a person to format the subject, questions, and answers for those questions in a text file using JSON.

```
{
    "Subject": "String",
    "Questions": [
        "String",
        "String",
        ...
    ]
}
```

Here is an example using the JSON format specified.

```
{
    "Subject": "Precalculus",
    "Questions": [
        "What is sin(π)?",
        "What is the center and radius of the circle indicated by the
         Equation (x-2)^2 + y^2 = 36?"
    ]
}
```

Our application reads the JSON file and extracts the information, and then produces the layout similar to that shown in Figure 1. Consequently, any relevant details and questions must follow the above-specified syntax and format.

Data Collection:

As mentioned in the Homework Framework section above, our framework collects users' interactions with the buttons and the interface. There are two types of data that the interface gathers. The first are the answers themselves, which instructors and researchers can use to grade students and understand the difficulty and success of a given question. The second type of data that we collect is AI assistance. This includes the time and date of the interaction, a unique ID for every session using UUID, the type of button clicked (e.g., the "Help" or "Explain the question" button), the question itself, the topic, and the number of times the Help and Retry buttons are clicked. We can estimate how long a student spent on each question by tracking when the student finished each of the questions. For example, if the student finished question 2 at 11:00 AM and question 3 at 11:10 AM, we can have a rough estimate that the student took around 10 minutes to complete question 3. This is an upper bound since the student may have done some other task in the meantime.

To collect this data into a Google Sheets document, we used the gspread library and the Google Cloud API. Using a UUID ensures researchers can keep track of and anonymize separate users. The number of times the Help and Retry buttons are clicked is recorded to give context to other buttons that are clicked. For example, researchers may find it helpful to know that a user selected the "ChatGPT" button after clicking on the Retry button twenty times and derive conclusions from it. We store the data mentioned above in a private Google Sheets that is updated in real-time.

Collecting Ground Truth Data:

To test our hypothesis, we would need to know what the ground truth of AI usage in assignments is to have a point of comparison for our data collection. This ground truth needs to determine the impact of AI on a student's performance without defaults.

We designed an interface used to collect ground truth information separate from the homework framework in Section 4. This interface has the same design and general layout as the homework framework, with the exception of removing the "Need Help?" button and all of the corresponding features.

Instead, there is only a "Submit" button under each question. In this interface, we do not tell the students to use AI, because such a suggestion could act as priming, producing results that may not be a reflection of how many times students use AI regularly. One other difference between the two interfaces is that the interface that does not have defaults will include an extra question at the end. In this last question, students self-report how many times they used AI to solve the questions (if at all).

This new interface that collects ground truth data uses the same JSON file provided in Section 5 and the same data collection mechanisms in Section 6.

Results and Discussion

At this point, our work is preliminary, and we do not have experimental results. Instead, we describe how our framework can be used to collect and analyze results in the future.

Above, we described two frameworks for collecting data from students. One is the "ground truth" framework, and the other is the "AI defaults." To conduct a study using these frameworks, we suggest choosing a minimum of 50 participants and randomly assigning them to two groups. One group should be given the "ground truth" homework framework, and the other group should be given the "AI defaults" homework framework.

Now, we need to establish the null and alternative hypotheses. Restating the hypothesis mentioned in Section 3, our alternative hypothesis states that if assignments incorporate AI via defaults, students are more likely to engage with these default AI options instead of relying on their own uncontrolled use of AI that can simply answer the entire question for them. The null hypothesis would be that the assignment that incorporates AI defaults does not significantly change how often students engage with uncontrolled AI, in comparison to an assignment that does not employ defaults. Once the data for these 2 experiments has been collected for a sufficiently large number of participants, the following data processing should be performed.

Data processing:

First, we suggest cleaning the data from the data collection process. Because all data is stored on Google Sheets, we recommend saving it as a CSV and converting the CSV to the most convenient dataframe, such as the pandas library. We also recommend removing outliers. This could look like detecting the time that users took to read and answer the question and removing any where students answered too quickly to have read the question. Another example of an outlier could include bogus answers that users answered that don't make any sense, like responding with an emoji or curse word to a question with a numerical response.

Second, we suggest that researchers and instructors use one or more two-sample comparison tests such as the Student's t-test, Welsh's test, cosine similarity, cross-correlation, etc.

Then, based on the results of these tests, ensure that the results are statistically significant. In Equation 1, we provide the formula for calculating the test statistic for Welsh's test for two sets of experiments.

$$t = \frac{\overline{x_1} - \overline{x_2}}{\sqrt{\frac{{s_1}^2}{n_1} + \frac{{s_2}^2}{n_2}}}$$

Equation 1: Welsh's equation, where $\overline{x_1}$ is the mean for sample one, $\overline{x_2}$ is the mean for sample two, s_1 is the standard deviation for sample one, s_2 is the standard deviation for sample two, n_1 is sample one's size, and n_2 is sample two's size. This equation is used in Welch's t-test as one of the potential ways to further analyze data collected from our interface.

DOI: 10.36838/IJHSR87.183

If the results are statistically significant, this can provide evidence against the null hypothesis and in favor of our alternate hypothesis: that our intervention (namely, the use of defaults) could have an impact on students' actions.

Limitations:

One limitation of this study is that we did not test our proposed framework ourselves due to time constraints. However, we plan to perform a limited study in one high school in the near future and hope that others will use our framework to conduct parallel studies at various schools throughout the nation. Our framework also gives students the ability to interact with different generated explanations of a question, but does not allow students to type in their own individual questions at the moment, which allows for even further personalized learning. For data collection, we currently do not have a method of verifying whether a student opens an external window and uses a separate AI model. Therefore, knowledge of whether a student interacted with another model beyond our interface is self-reported through our survey.

■ Conclusion

In this work, we discuss how students are using AI in harmful ways: to cheat on their assignments or avoid critical and engaged thinking. We hope that the theory of defaults can provide a way to guide the use of AI in educational settings to ensure that students are making the most out of this powerful technology. To test this hypothesis, we put forth a randomized experimental framework that we hope educators will implement across the nation to get a sense of whether AI can be used in constructive ways. Our framework can be a potential solution to the increasingly problematic rise of AI plagiarism that is devaluing the existing educational system. It also provides a way for educators to take a more active part in how students engage with AI.

■ Acknowledgments

The author thanks Sebastian Angel (University of Pennsylvania) for his mentorship in this project, as well as the AI Student Committee at the Kinkaid School, which inspired the author to look into the harmful effects of AI in education.

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Appendix

Appendix A: Parent Consent Form:

Title: The Impact of Defaults on AI Usage in Education

Researchers: Audrey Koo

This is a consent form for research participation. It contains important information about this study and what to expect if you decide to participate. Your participation is voluntary.

Purpose: Our research aims to assess how defaults can have an impact on integrating AI into education. By examining these effects, we deepen our understanding of how defaults promote or hinder desirable interaction behaviors with LLMs.

Procedures and Time Required: If agreeing to participate in the study, we will collect and analyze your child's interactions with the interface.

If your child becomes an adult (turns 18 years old) while they are still actively participating in this research, we will request that they provide their consent (agreement) to continue their participation in this study.

Compensation: Students will not be compensated for participation.

Risks and Benefits: This study entails little risk. If one chooses to participate, one's data would be anonymized, and one can withdraw at any point during the process. The data collected is a participant's interaction with the interface, not a name or any identifying personal information. Participants will further research in developing educational tools and give researchers further insight into integrating AI in classroom learning.

Confidentiality: Information is collected without any personal information of a specific child and, as a result, will be anonymized. The only person who will have the individual data is Audrey Koo. Data may be individually presented in this study, but without any identifiable information.

Contact & Questions: If you have any questions, please contact Audrey Koo, The Kinkaid School at audrey.koo@kinkaid.org.

Consent: Participation is voluntary. Refusal to participate or withdrawing from the research will involve no penalty or loss of benefits to which you might otherwise be entitled.

By signing below, you acknowledge that you have read and understood the information above, and you voluntarily consent to your child's participation in the research study.

Child's Name: _____

Parent's Name: _____

Signature: _____

Date: _____

If your child is 13 years or older, we will also ask for their consent to participate in the research.

Appendix B: Parent Consent Form:

Who are we?

Audrey is a senior at The Kinkaid School, doing a research study.

What is this?

We will do a research study to understand the use of Large Language Models (LLMs) when solving challenging assignments.

What will happen if I say yes?

You will be given access to a demo homework assignment that you will complete. We will collect information such as your answers and how long it takes you to solve each question, but they will not be tied to you—they are completely anonymous.

You will not personally receive any compensation or any benefit from the school if you choose to participate. This is entirely voluntary.

Will anyone know what I said or did?

The study is completely anonymous, and your name or personal information will not be collected. We will only use your interactions with different parts of the webpage, and we'll use made-up codes instead of your name when collecting data.

Is there anything bad that could happen?

There is minimal risk since the data will be anonymized, and nothing we collect will affect your grades or school records.

What are the good parts?

The good part is that you can help researchers better learn about how AI is used in education!

Do you want to be in this study?

If you've read this and want to be in the study, please sign below. If you're not sure, ask us questions! You can always say no.

Student:_____

Parent:_____

Appendix C: Research Study Description:

Title: The Impact of Defaults on AI Usage in Education

Description: I am a researcher at the Kinkaid School. I am conducting a research study on how an interface can affect students' behavior with LLMs. All students will use the same interface.

If you agree to participate in the study, your interaction with the interface will be recorded as well as the answers submitted on the assignment.

Risks: This study entails little risk. If one chooses to participate, their data would be anonymized, and one can withdraw at any point during the process. The data collected is a participant's interaction with the interface, not a name or any identifying personal information. The only risk is perhaps a breach of confidentiality; however, the data would not hold any personal or identifiable information of the participants.

Participation may stop due to a participant wanting to withdraw their data from the study.

Visibility: The only person who will have the individual data is Audrey Koo. Data may be individually presented in this study, but without any identifiable information.

Benefits: Participants will further research in developing educational tools and give researchers further insight into integrating AI in classroom learning.

Compensation: No compensation to the participant will be provided.

Time: Each participant will spend around 30 minutes

Number of participants: 100

Contact:

For additional questions about the research or the rights of participants, please contact audrey.koo@kinkaid.org

Author

Audrey Koo is a current 12th grader and a dedicated science researcher who is interested in majoring in Information Science. She is involved in many STEM leadership positions at her school and hopes to continue to pursue college research.

DOI: 10.36838/IJHSR87.183