Editorial – The Importance of Having K–12 Students Explore Artificial Intelligence: A Working Conversation About AI-Based Image Generation

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Artificial Intelligence (AI) is becoming a widespread technology in our society, ranging from marketing and healthcare to predictive analytics and instruction. The potential impact of this innovation on education has recently raised concerns (e.g., plagiarism) but also hopes (e.g., problem solving, assistive learning). Regardless, scant attention has been given to how AI can and should be used with PreK–12 students in terms of constructs like self-reflection. This editorial first briefly introduces the articles in the special issue focused on:
“Artificial Intelligence + Education: Love or Hate?” It then introduces a conversational and practical engagement involving three PreK–12 students as they explored AI-based image generation. Outcomes point to important insights that can inform current and future interventions, additional research on this topic, and resulting ethical implications.

INTRODUCTION

Although there is no universally accepted definition of artificial intelligence (AI) (Schuett, 2019), several works have attempted to define it (Hancock et al., 2020; Kok et al., 2010; Samoili et al., 2021). For instance, AI can be defined as “the science and engineering of creating intelligent machines” (McCarthy, 2007, p. 2). AI is also referred to as “machine learning and deep learning” and the “learning analytics that are used to train AI models to personalize learning tasks for students” (Crescenzi-Lanna, 2023, p. 21). Scholars suggest that AI includes four processes: “how a system perceives data, analyzes data, uses data, and improves its intelligence based on the data” (Antonenko & Abramowitz, 2023, p. 64).

References to AI date back to 1956 (Anyoha, 2017). However, there have been major recent advancements in AI driven by improvements in machine algorithms and other innovations that help computers process data, recognize patterns, and make predictions (Gerke et al., 2020; Woschank et al., 2020). These newer AI offerings (e.g., ChatGPT, Midjourney, Google’s Bard), their ease of access, and their general availability to the public have sprung AI into the forefront of both public purview and academic research in areas like manufacturing (Arinez et al., 2020; K. Liu et al., 2022), education (Chen et al., 2020; Vincent-Lancrin & Vlies, 2020), and healthcare (Reddy et al., 2020; Secinaro et al., 2021). The publicity surrounds the promise of being able to solve complex problems and develop innovative applications across multiple domains. But it also has been flagged as a threat with concerns like bias, cheating, and even endangering human existence.

It is no wonder, therefore, that the Journal of Interactive Learning Research (JILR) joined many other academic journals in creating a special issue on AI. It should also not be surprising that the focus of this special issue highlights the spectrum of affordances and constraints, with the call centered on: “Artificial Intelligence + Education: Love or Hate?” This special
issue was created to collect an interdisciplinary corpus of work that advances our theoretical and analytical understanding of AI as applied to human interactive learning (across disciplines and across the lifespan). Preference was given to empirical research, though strong theoretical papers and literature reviews were also welcomed.

Accepted papers included theoretical pieces addressing cheating detection (Oravec, 2023) and comparing the scholarly and public discourse around AI (Cain, 2023). Empirical studies included two pieces examining student (Cheng et al., 2023) and teacher perspectives (Kaplan-Rakowski et al., 2023) on the educative value of AI. There were also three empirical studies that highlighted the interdisciplinary interest in AI, focusing on public speaking (Cherner et al., 2023), perceptions and fears of future nurses (Reed et al., 2023), and teaching medical students about AI and healthcare (Pizzolla et al., 2023).

This valuable research has indeed contributed to our theoretical and empirical understanding of AI. It is worth noting, however, that hosting this special issue has raised our awareness of two pressing gaps in educational AI. First, very little work has examined the impact of AI on and with children and youth (Su & Zhong, 2022). None of the papers submitted to this special issue (accepted or rejected) dealt with PreK–12 student use of AI (outside of training teachers to engage students and/or deal with student cheating). Arguably, our limited sample does not represent the entire field; moreover, there is published work in this area. It just does not seem to be a major focus in the field.

This could be due, in part, to the second realization. During the time for submission, review, and publishing, our attention was obviously drawn to issues of AI. Most of the work that included PreK–12 education revolved around fear, with issues like cheating, bias, and privacy. The lack of research with PreK–12 students could also be due to the fact that teachers often spend more time producing content through innovative tools than they do having students create their own materials using those same technologies (Ferdig, 2006). In other words, we may not see dramatic PreK–12 student use in most schools until policymakers, administrators, and (most importantly) teachers feel comfortable in its pedagogical uses (or change their pedagogical approaches).

Given these outcomes, we ran an experiment (loosely described) to see what it was like to explore generative AI use with K–12 students. There were two unique features of this work. First, we used AI-based image generation technologies, in direct comparison to most of the scholarship we have seen that has been related to chat-based tools (i.e., ChatGPT). Second,
we invited the students to write this editorial with us. Our hope in conducting this work was to introduce readers of this special issue to the many possibilities of using AI with PreK–12 students, including inviting them to join in the reflection of the outcomes. In the editorial that follows, we review the current literature regarding AI, explore how it is (and can be) used with students, discuss the ethical implications of AI with children/youth, present results from engaging our student coauthors with AI-based image generation, and offer suggestions for further research in this area.

LITERATURE REVIEW

The Affordances and Constraints of AI

Most of the published research on AI and education has been in higher education (Su et al., 2022). For instance, AI (with ChatGPT) has been used to write queries for systematic reviews (Wang et al., 2023), take law exams (Kelly, 2023; Sloan, 2023), and pass medical licensing exams (Ault, 2023). AI has also been heavily researched in the medical field (Bhattacharya et al., 2023; Biswas, 2023); it is applied to many forms of patient care like medical imaging to combat COVID-19 (Fuhrman et al., 2022; Soomro et al., 2022). General health monitoring has capitalized on AI for cost-effective medical services all over the world (Sujith et al., 2022), including wearables and sensors (Ramasamy et al., 2022; Sofi et al., 2022). Additionally, it has been used to help screen for depression, anxiety, and addiction (Ahmed et al., 2022; Wani et al., 2022; A. Zhang et al., 2022). It has helped to make some medical procedures lower in price and continues to improve quality of life for many patients (Pearce et al., 2023).

AI is also central to many devices used daily such as Apple’s Siri and Google Maps (Pachauri, 2020). AI technology has been added to e-mail software such as Google Mail and Microsoft Outlook to ‘smart compose’ responses, and even in Google searches to easily find images and text and rank them appropriately (Kaput, 2022). Netflix and other streaming services rely on AI technology to help guide user choice when choosing a show to watch (Sha, 2018). It is also used on social media sites such as TikTok with filters and AI engines for transforming art (Malik, 2022).

Even with the positive affordances of AI, there is growing concern about the use of AI. Critics, for instance, are concerned with an increased dependency on the technology, inaccurate information, and its potential negative impact on critical thinking for students (Elsa, 2023). There have
also been concerns about the use of AI generated texts in publishing and in schools through tools like *ChatGPT* (Khalil & Er, 2023; Liebrenz et al., 2023; Thorp, 2023). Artists are alarmed about how AI engines mimic their artwork (Guevara, 2022). Warnings have sounded regarding AI and issues with gender and racial bias (Noor, 2020; Quinn, 2020) as well as ‘undesired results’ from training AI systems (including prejudice, privacy protection, and job loss) (Ouchchy et al., 2020).

One study found that teachers are “not overall concerned or unsure about the ethics of AI in K–12 education” (Antonenko & Abramowitz, 2023, p. 72). Such a statement indicates room for improvement regarding society’s general understanding of the ethical use of AI with students, particularly given the known issues and unknown solutions regarding children’s privacy when using AI (Akgun & Greenhow, 2022). UNICEF, for instance, warns that privacy and safety fall across a wide spectrum of known risks with AI (UNICEF, 2023). The World Economic Forum also urges parents to find out how the technology protects privacy during use (World Economic Forum, 2022).

Beyond these issues, there are also growing concerns with children not being able to have control of their own lives with AI technology interfering. One study showed the concern with “jeopardizing student’s autonomy and agency to govern their life via predictive systems” (Akgun & Greenhow, 2022, p. 435). There is also general anxiety and fear regarding AI, with both adults and children (Schmelzer, 2019). There are few known solutions regarding these concerns. For instance, to help combat some of these psychological unknowns, UNICEF is exploring what AI can do to the developing brain, the psychological implications, and if or how AI can direct or control children’s behavior (UNICEF, 2023). Another study proposed to have children design concept maps to explore potential issues (Su & Zhong, 2022). Other authors have suggested having students identify both positive and negative ways it impacts society (D. Touretzky et al., 2019). While such work is promising, it is limited in both scope and availability.

**Exploring Children’s Use of AI**

AI-based personalized learning systems and automated assessment systems are common in education. (Akgun & Greenhow, 2022). The ALEKS system, for example, uses AI in tutoring students in math (Craig et al., 2013), while Duolingo does the same for language learning (Loewen et al., 2019). In these cases, AI can pace content for each student according
to their performance. While such practices are common, there is limited research in which AI has been studied with children (Druga et al., 2019; Kahn et al., 2018). A recent literature review on early childhood education with AI found there were 114 studies published on this topic since 2018 (Crescenzi-Lanna, 2023). With this literature review, the authors found a need to develop AI competencies such as supervised machine learning and knowledge-based systems for student use. Studies have also found teachers are not equipped to handle AI in the classroom; they need to acquire AI skills (L. Liu et al., 2020; Zilz & Pang, 2021). The good news is that teachers seem to be enthusiastic about the potential of AI for K–12 education and use with kids (Antonenko & Abramowitz, 2023).

While many educational AI systems have been available for years, newer technologies such as ChatGPT have recently become available publicly (Lund & Wang, 2023). Given their novelty, there are few studies on such newer tools, particularly those that engage students. Most have been theoretical, emphasizing the importance of children understanding how to work with and use AI (D. S. Touretzky, 2017). Other studies have explored different ways children have used AI to create. For instance, Su and Zhong (2022) offered suggestions to incorporate AI at the early childhood level including several free resources like Google’s Teachable Machine and Machine Learning for Kids. Charisi and coauthors (2020) created opportunities for reflection with AI using robotics. Sysoev et al. (2022) attempted to automate scaffolding procedures with four- to six-year-old children. They found that scaffolding was still able to facilitate creative expression. AI has also been used to help support children’s storytelling (C. Zhang et al., 2022) and creativity (Ali et al., 2019; Marrone et al., 2022). AI engines such as ChatGPT can help children by generating prompts for writing and developing reading skills for elementary students (Kasneci et al., 2023).

According to UNICEF, AI’s greatest impact will most likely be on children (Preface, 2021). The aforementioned research articles notwithstanding, more research needs to be done with children and youth to ensure preparedness for the future (Su & Zhong, 2022). There are notable issues with AI, but the ubiquity of AI mandates children and youth are prepared to use AI safely and with good intentions. For example, one area of future research could seek to understand children’s current knowledge of AI, encourage them to use an AI image generation engine to respond to given prompts, and then have them reflect on what they learned by using AI.
OUR CONVERSATIONAL EXPERIMENT

Procedure

Three students, co-authors of this paper and aged 12-15, were invited to participate in a working conversation. Two were children of one of the coauthors; they were in middle and high school at a private Christian school in Northeast Ohio. The third was a child of another coauthor and in middle school at a local public school in Northeast Ohio.

There are several well-known and freely available image generation tools (e.g., NightCafe, Imagen, DALL-E 2). For this engagement, the research team used Midjourney, given their familiarity with the tool, as well as its popularity in pop press and scholarly literature (King, 2022; Roose, 2022; Vincent, 2023). Midjourney is accessed through Discord. It is worth noting that Midjourney returns a series of four photos in one as a response to text prompts.

Recent research has provided evidence of the negative impact of COVID on the mental health and well-being of adults and children (Samji et al., 2022). However, research has also provided evidence that images can be used as a way to share and discuss feelings (Ginicola et al., 2012; Gladding & Newsome, 2003). Given these needs and opportunities, the students were given four COVID-related prompts to consider. These prompts included:

1. Tell me about your life before COVID (i.e., pre-2020).
2. Tell me about your happiest memory of something that happened during COVID (i.e., 2020-2022).
3. Tell me about your saddest memory of something that happened during COVID (i.e., 2020-2022).
4. Tell me about life after COVID (i.e., post-2022).

Creating exact dates for COVID was difficult to consider, as the world is still dealing with the effects and after-effects of the pandemic. However, for sake of ease, and because the young researchers were also students, they were advised to use school years in reference to time. For instance, if they were in 8th grade for year 2022-23, they were advised to use 6th (2020-21) and 7th (2021-2022) grades as the years during COVID. The youth researchers were asked to write between 40 and 70 words to respond to the prompts. They were also asked to provide keywords that summarized their responses. In past research, image generation has occasionally worked best using one or the other (Ferdig et al., 2023), and so they were asked to provide both.
Once the prompts were completed, the lead authors provided a computer for the children that had access to Discord and the Midjourney server. They were given printed instructions on the process of creating images using the tool. These instructions included clicking on a newcomer room, typing “/imagine” in the chat box, and then copying and pasting their prompt response into the bot. They were told how to look for their picture (after approximately 60 seconds), and how to save their picture. They completed this process eight times to account for 4 narrative prompts and the 4 keyword prompts associated with the narrative responses. The youth researchers were then asked to pick the best image out of the two (the keyword or narrative image) that represented their text from the writing prompt. At the conclusion of the activity, they were given the opportunity to write about their experience. While they had the freedom to write anything they wanted, they were also given guiding questions to help them consider what they were writing. These questions included:

1. What do you know about AI?
2. What did you think when I first asked you to explore AI with me?
3. What did you feel when you saw your pictures?
4. Did the pictures represent what you wrote in the prompts?
5. Would the images created help you share your feelings with someone else?
6. Now that you’ve done this, what do you think about AI?
7. Do you think that AI could help people teach or learn?

NARRATIVE AND KEYWORD RESULTS

The three students spent about 15-30 minutes responding to the prompts. The appendix contains a complete summary of the child researcher, their narrative response, and the keywords that summarized each prompt. What follows next are the actual written summaries from the students regarding their experiences.

Written Response from Ethan with Images

I did not really know a lot about AI before we began. I knew that AI was this technology where you can put in what you want, and something would be created for you. That can be an essay or images or whatever. I
knew that AI had to do with coding; it is not a real person. I believed that AI could help, but it can also not be good because teachers can think people are cheating. AI can create good things and can also create inappropriate things. It can also create things that can scare you. I saw someone’s photos from AI creation of the last day on earth. That was really scary.

When my dad first asked me to explore AI with him (through Midjourney), I was really excited because a while ago he had showed me what had been created with other tools. For instance, we saw some basketball images created with NightCafe, and I thought that was really cool. I was really excited to explore that and to see what it was. I didn’t really know how we would use it for teaching (for my dad’s job), but I was still excited. When I saw the pictures being generated, I thought it was such a cool feeling. I thought it was cool to see AI generated images. When you look on Google, certain images come up. But when you put text into Midjourney, you can create exactly what you want. And I just think that’s so cool. The pictures I created really were just my words put into images.

When I saw my pictures come out, I saw sadness. The saddest moment really explained what COVID was like and how many people were struggling and dying. I just thought that really explained it well (see Figure 1). The traveling one explained life before COVID, because as you can see in the lower right picture, people were sitting next to each other (see Figure 2). After COVID, they couldn’t do that anymore, and I thought that the picture helped me explain that. The happy one explained my experiences with Zoom because people were making funny faces and it was really hard not to laugh (see Figure 3).

Now that I’ve done this, I think AI is a really cool tool you can use. I still think some of the images may be a little bit too scary for some of the younger people. So, I don’t think younger children should use this or see some of these pictures. But I still think that this could be used in good ways. For instance, for teaching, take something happened a long time ago, like the Great Depression. Students could look up images and learn more about it. It could be a great study tool. I think this could be many ways to help people teach and learn. Maybe they could even use it in health class and use ‘imagine/ images of people bad after smoking’ to scare people not to smoke. If a baby was born after the time of COVID, and they didn’t know about COVID, these images could be shown to them, so they could learn about it.
Figure 1

_Ethan’s photo of sadness during COVID_

![Figure 1: Ethan’s photo of sadness during COVID](image1)

Figure 2

_Ethan’s photo of life before COVID_

![Figure 2: Ethan’s photo of life before COVID](image2)
I did not know much about AI when I began, other than it stood for artificial intelligence. I also knew they could use AI for specific purposes, but I had not had that much experience with it before today. I have started to see more AI generated artwork online, particularly on sites like iFunny. I think it is both really cool and really scary what they can do with a computer.

I was not sure what to expect when my dad first invited me to explore AI with him. I am the kind of person who is kind of afraid of technology, but it was cool to experiment with it. I found that it’s kind of amazing what technology can do. For the record, I did find some of the faces on my ‘Life Before COVID’ narrative slightly concerning (see Figure 4). Most of the pictures generally represented what I created. I would say it was pretty even as to which paragraph-turned-images I preferred to which keywords-turned-images I preferred. I think my favorite was the ‘Saddest COVID Memory.’ While it didn’t accurately represent my memory from COVID, it definitely captured the feelings (see Figure 5). I also really liked the way the generator depicted the ‘Life After COVID’ image; I found the comic book style mixed with realistic artistic expression was really cool (see Figure 6).
I think the images I created would help me express my feelings with someone else, but only if they were not in some other language and mirrored. The ‘Saddest COVID Memory’ picture, again, while it was not what I typed in, would definitely be one I could share. Not only does the image represent how I felt in relation to the death of a pet (whom I consider a friend), but it also captures the whole of how many people felt during the pandemic. It was a time when, believe it or not, even I began to miss social interaction (like the eyes of the dog in the top left).

Now that I completed this, AI is less scary; it’s quite fascinating, actually. And now I want to play around with it more! As a writer, I think it could be really helpful to get possible illustrations that could assist me in illustrating with words. Besides, having a preternatural imagination, it would be cool to see my ideas on a sheet of paper, not just in my head. I also think people could easily use this to teach or learn. Some people learn better when they have videos or pictures in front of them to illustrate the point, and the power that is conveyed in some of these images. The system-generated-images could also have a poignant effect on distracted students (especially when studying historical events like wars and seeing the effects of humanity in full color).

Figure 4

Owen’s “Life Before COVID” picture
Figure 5
Owen’s “Saddest COVID Memory” picture

Figure 6
Owen’s “Life After COVID” picture
Written Response from Sofia with Images

I did not know much about AI before my dad asked me to do this exercise, although I had already heard of it. So, when I was offered the opportunity to work with AI, I immediately felt very excited. Now I understand! AI stands for artificial intelligence. AI is when you give a command to a robot (e.g., prompts, words) and that robot follows it by trying to imitate a human brain, hence the name, artificial intelligence. There are a lot of AI programs that can be so fun and rewarding. The AI used to create these images is my favorite AI robot; it is so creative and can turn words into a visual representation of the text. It manages to make hyper-realistic images that always include such mesmerizing details such as texture and vibrant colors.

The images are awe-inspiring and represent the text perfectly. The images captivated my feelings before/during/after COVID in such a brilliant way (see Figure 7). I think that by looking at these pictures, another person could really understand what was going through my head during COVID times (See Figure 8).

**Figure 7**

*Sofia’s “Life Before COVID” picture*
The differences in the pictures really show all of the different emotions that a person might experience during a pandemic. If you look at Figure 9, you can see how happy and light-hearted it feels compared to the other images. That picture represents my happiest memories during COVID, it doesn’t fail to show how different my thoughts were when I was doing something enjoyable.

After doing this activity I feel that AI is such an amazing use of technology. You can do so many things with different types of AI and I can’t wait to see what the future holds in relation to AI. I really do think that AI is a suitable tool for learning, and that it, unlike other teaching methods, can provide better visual learning tools.

**Figure 8**

*Sofia’s “Saddest COVID Memory” picture*
The purpose of this conversational experiment was to engage three students as they explored AI image generation for the first time. In doing so, the goal was to be able to discuss ethics for children and AI. The experiment was a success in three key areas—all related to ethics and AI.

First, the students were all introduced to a new technology that will impact their future. The engagement took less than an hour of their time. However, each child requested to stay on Discord and play with Midjourney. They moved beyond the prompts they were given to create images that represented interests in their own worlds. They asked for the images to be saved and emailed to them, so that they could share them outside of this experiment.

While both schools that the children attend are considered top in their area, none of the schools currently have AI scheduled to be taught or addressed in any of their classes. While educators often talk about ethics and AI in relation to what might harm them (Bergeson, 2022), they do not spend as much time talking about the potential harm of keeping technology from them. Rather than banning it (Johnson, 2023), educators need to be able to
teach them how to use it. In introducing them to the technology, the students generally came to their own understanding of ethical concerns related to the technology. Ethan, for instance, noticed that some of the images might be too scary for young children. Owen recognized the potential he would have as an author, and even the potential disadvantage of competing with others who had the tool if he did not. Sofia realized the possible risks of being exposed to inappropriate content while creating images in the Midjourney Discord channels (although this tool has an automatized moderating system that blocks prompts with hostile and disruptive words).

A second successful outcome is that they began to immediately recognize the potential for AI to be used in teaching and learning. Sofia highlighted the potential of this technology for storytelling and narration. As a child with a strong interest in writing, she claimed that Midjourney could foster imagination and help inspiration and words come to life. Each child, incidentally, felt better about their latter images than their earlier ones. This was due, in part, to being able to refine and revise their prompts. That revision came not only from their own learning, but also from watching what others were creating and the prompts that other users had input. Sofia also learned that one of the benefits of Midjourney was that four pictures automatically created as one output helped tell a broader and more complete story.

Ethan brought up Google and searches that might produce real images. However, he suggested that there may be some events where we have text but no images. He thought about how AI image generation tools might be used to help students learn from events where we had few visuals. Owen agreed with that point and talked about both image generation and image viewing as ways to engage disengaged learners. Theoretically, they both pointed out new ways to get access to students and spread equity in education (an ethical issue). However, they also discussed and highlighted their learning and how they were excited to share this with others. It was unlikely that their teachers would learn and/or teach AI and image generation in the next few months given all the concerns some schools and district leaders have with AI. But it is possible, particularly given their relationships with their teachers, that this simple assignment could generate a conversation that might support teacher inquiry. Teacher professional development is not just top down from a leader to a teacher. In some cases, it is between teachers; in other cases, it is actually bottom up as students support and engage teachers with new ideas. The student acts as the technology guide and the teacher retains their position as the content expert.

Last, but not least, this engagement with students was a success because of its potential tie to mental the health of our youth, which is a critical ethical issue stemming from COVID. In a book titled, Narrative Means to
Therapeutic Ends (White & Epston, 1990), White and Epston make an important argument for externalizing problems. A problem can be addressed easily and more appropriately if it lives outside the person experiencing the issue. The challenge, of course, is that most students cannot always put into words the reasons for the anxiety, fear, and depression they feel (Oliveira et al., 2022). Image creation can provide a way to help them externalize their feelings. There are obviously important and secondary issues that arise when those emotions are let out. For instance, schools and parents obviously have to be ready and willing to provide support for students who want to talk about the images they created. But to ignore the implications of COVID on student mental and physical health is unethical. AI image generation may be an important first step in addressing such needs.

These findings point to seven areas of future research. First, additional investigations are required to shed light on how children can interact with AI and machine learning processes to promote learning, mental health, and self-improvement. This study is just a first attempt toward this direction, and further research should involve children as active participants and creators (rather than just as mere consumers) in their research designs/methodologies. Second, there is a need to develop AI literacy standards and guidelines that can support learners and educators in embracing but also evaluating strengths and limitations of this technology according to contexts and related conditions. Third, children’s rights regarding AI (e.g., privacy, copyright, access, safety) is an overlooked topic that must be explored due to the increasing accessibility and ubiquity of AI technologies. Fourth, more efforts should focus on how ethical AI may and should be programmed to empower and protect young people while experimenting with this innovation and sharing their creations with the public (i.e., all images created with Midjourney can be seen publicly without a premium, paid subscription).

Fifth, AI algorithms are not unbiased and may convey stereotypes and stigmas that could weaken efforts towards diversity (Gandolfi & Ferdig, 2018). As such, it is important to evaluate the limitations of AI tools, with a goal of developing more inclusive applications of this innovation. Sixth, AI editors show important differences in terms of features and settings available to end users. For instance, Midjourney generates four images rather than one from a single prompt. Therefore, more comparative studies and assessments across multiple AI programs would be beneficial to understand which affordances are more or less beneficial to promote learning. Finally, AI creation is becoming increasingly shared and social; AI creators observe and learn from each other in outlets like Discord and Reddit devoted to AI. More analyses are necessary to better understand these processes, safety, collaborative instruction, and related social interactions for PreK–12 students.
REFERENCES


Oravec, J. (2023). Artificial Intelligence Implications for academic cheating: Expanding the dimensions of responsible human-AI collaboration with ChatGPT. *Journal of Interactive Learning Research, 34*(2), X–X.


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## APPENDIX: STUDENT PROMPT RESPONSES

Ethan’s responses to the prompts.

<table>
<thead>
<tr>
<th>Topic</th>
<th>Description</th>
<th>Keywords</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Life Before COVID</strong></td>
<td>People didn’t have to think as much. Life was free. People did what they wanted. People didn’t have to worry about where they went. People used to travel so much. You could buy things cheaper. It was easier to get materials. People didn’t think it was a big deal if you were traveling.</td>
<td>Freedom, thinking, cheap, travel, buying things, things were accessible</td>
</tr>
<tr>
<td><strong>Happiest Memory</strong></td>
<td>One of them was being on zoom meetings with my teachers and friends and having to learn math online. Teachers were not looking at how you were reacting in class. You could sit back, and you could wear whatever you wanted. I had to mute myself because some of the kids were making funny faces and I didn’t want to distract the teacher.</td>
<td>Zoom meetings, funny faces, teachers, wear whatever clothes you want</td>
</tr>
<tr>
<td><strong>Saddest Memory</strong></td>
<td>I didn’t get to travel. A lot of people died. When you looked up on Google, you could see all the people that died on maps of the United States. People were not as friendly and didn’t want to talk to you that much. There was no interaction between people, which was kind of hard. I didn’t probably learn as much when I was on zoom.</td>
<td>People dying, unfriendly, no interaction between people, Zoom learning</td>
</tr>
<tr>
<td><strong>Life After COVID</strong></td>
<td>People have to take more precautions in life after COVID. There aren’t as many hospital beds. I still have to wear a mask to do certain things. Prices are still expensive, and it is hard to get things like lumber. There are sometimes not the same kinds of food available in stores. People seem to care more by coughing into arm or sleeve.</td>
<td>Precautions, hospital beds, expense, masks, lumber, food, coughing</td>
</tr>
</tbody>
</table>
Owen’s responses to the prompts.

<table>
<thead>
<tr>
<th>Life Before COVID</th>
<th>I specifically remember 2019 and spending time with family watching all the Descendants movies on Disney Channel before Descendants 3 came out. I remember in school we could pull over two tables to fit all my friends together. I was also able to make things (i.e., the Demanitus Scroll from Tangled the Series) and then show those things to my teachers like Miss O’Brien.</th>
<th>Watching movies, eating with friends, talking with teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Happiest Memory</td>
<td>Not having to put up with people for 6 months!!! Dad and I finished our discipleship challenge and, during a break in COVID, we got to go to Washington and Olympic National Park. We watched a lot of TV including Once Upon a Time on Disney Plus.</td>
<td>Happy solitude, travel with family, watching shows together</td>
</tr>
<tr>
<td>Saddest Memory</td>
<td>There were only a few things I remember: Ethan’s fish died, I finished seventh grade, the series finale of Tangled the series happened in March. I also remember not being able to see my grandparents. I would use a cloth gator/buff for my mask, and it had fun patterns on it, but it kept fogging up my glasses… there was no good angle.</td>
<td>Pets dying, missing teachers, missing family, masks</td>
</tr>
<tr>
<td>Life After COVID</td>
<td>We have block scheduling at school because of COVID, and I like having a one and a half hour study hall… We do not have to wear masks and social distancing does not really apply at school anymore. We have to get vaccinated for certain things like travel, politics has escalated, and eggs are too pricy.</td>
<td>School changes, personal freedom, vaccines, escalating politics, expensive food</td>
</tr>
</tbody>
</table>
Sofia’s responses to the prompts.

<table>
<thead>
<tr>
<th>Life Before COVID</th>
<th>Life before COVID was carefree, and I had little things to really worry about. I was happy and I never had to be anxious about getting seriously sick. I especially never had to worry about a pandemic spreading throughout the whole world.</th>
<th>Carefree, happy, friends, healthy, smile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Happiest Memory</td>
<td>One of the happiest memories during COVID was playing video games. They were a distraction from the real world, and they let me have a break from all the suffering going on. My personal favorite was Animal Crossing New Horizons, it is a relaxing cozy game with plenty of activities to keep you occupied. It really helped me during COVID.</td>
<td>Break, video games, Animal Crossing, relax, distraction</td>
</tr>
<tr>
<td>Saddest Memory</td>
<td>One of the saddest memories of COVID was the constant fear of getting sick. Before the pandemic if you sneezed, it was no big deal, but during the pandemic it could mean you were sick and were putting multiple other people at risk. You always had this fear of getting COVID that never really went away.</td>
<td>Fear, sick, mask, risk, hurting others</td>
</tr>
<tr>
<td>Life After COVID</td>
<td>After COVID it was hard to get adjusted back to “normal” life. Not having to put masks on was a big adjustment as well as not being paranoid if someone around you coughed. The truth is that we can’t ever really go back to life as it was, we were all affected by COVID, whether mentally, physically, or both.</td>
<td>Adjustment, change, at ease, goodness, recovering</td>
</tr>
</tbody>
</table>