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4 **‘Knock, knock... Who’s there?’ ChatGPT and Artificial Intelligence-Powered Large**  
5 **Language Models: Reflections on Potential Impacts within Health and Physical Education**  
6 **Teacher Education**  
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15 **Author Note**

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### **Abstract**

This research note suggests the emergence of Artificial Intelligence (AI)-powered chatbots like ChatGPT pose challenges to the future of higher education. We as a field should pay attention to issues and opportunities associated with this technology across learning, teaching, and research spaces. We propose ignoring or being indifferent to predictions about what technologies like AI-powered chatbots can do can cause us to do "dumb things." All H-PETE faculty members should make efforts to learn about these tools to facilitate informed, solution-focused decisions about whether and where to leverage them. We highlight the importance of maintaining socio-critical perspectives when considering use of digital technologies to understand and address digital (in)equity and promote equitable practices. We conclude by emphasizing the need for field-specific consensus statements to guide ethical and appropriate use of AI-powered chatbots, to ensure the value of these tools is harnessed for the good of the society. [Output by ChatGPT-3]...

*Keywords:* digital technology, ethics, higher education, OpenAI, Chatbots

46       **‘Knock, knock... Who’s there? ChatGPT and Artificial Intelligence-Powered Large**  
47 **Language Models’: Reflections on Potential Impacts within Health and Physical Education**  
48 **Teacher Education**

49       Before you read on, did you read the entire abstract? If not, please read it before  
50 proceeding. It was generated by ChatGPT, a popular Artificial Intelligence (AI) driven chatbot.  
51 We input text from this article into the chat box, along with a prompt to produce a 150-word  
52 abstract. We used the output from this interaction as our abstract, with minor edits (See Figure 1  
53 for the original output). Did you consider that the abstract was written by a chatbot while reading  
54 it? What if the rest of this paper is also an AI chatbot output? (It is not...) We ask these questions  
55 because, while the stakes for this little meta-commentary are low, the implications are many  
56 (Gendron et al., 2022). Our intention with this was not to be misleading, but rather shed light on  
57 the challenges AI-powered chatbots like ChatGPT pose to the future of scholarship. The broader  
58 purpose of this research note is to draw attention toward some of the added issues and  
59 opportunities associated with this emergent technology within learning, teaching, and research.  
60 We recognize there are far reaching impacts beyond areas of faculty work, however these areas  
61 are most relevant to our professional roles as academics and represent the focus of this  
62 commentary. Our aim is to invite professional peers and colleagues into broader conversation  
63 regarding how we might address the emergence of technologies such as ChatGPT and whether  
64 there is need for consensus guidelines on the appropriate and ethical use of AI-powered chatbots  
65 within our field.

66       ChatGPT was released for public use in November 2022. It is an AI-powered large  
67 language model (LLM), developed by San Francisco-based company, OpenAI. It is designed  
68 with the capacity to generate human-like text. There are several AI-powered LLMs in existence

69 (i.e. Wordtune, Google’s BERT, Microsoft’s Transformer) and others likely in development.  
70 ChatGPT currently represents the most well-known and widely used model. Inputting prompts to  
71 the ChatGPT model will demonstrate the considerable capacity this technology has to gather  
72 public domain information, synthesize the data and knowledge, and output sensible, technical  
73 responses based on user-generated criteria (See [www.chat.openai.com](http://www.chat.openai.com)).

74 The release of ChatGPT to the general public is seen by many as a seminal event. As  
75 such, conditions are ripe for reactionary and consequential predictions among and across  
76 academic disciplines. Much of the current discourse is centered around anticipated disruption  
77 and fundamental transformations ChatGPT and AI-powered LLMs will bring to (higher)  
78 education, particularly related to how teaching, learning, and research are conducted (Gendron et  
79 al., 2022; Hutson, 2022; Nature, 2023). Discussion related to how the fields of health and  
80 physical education (should) respond to different technological developments is nothing new  
81 (Cassidy, 1965; 1971; Locke, 1997). We have been consistently wise as a field to consider the  
82 evolution and roles of digital technology with deliberation and care. So how will we respond to  
83 this new AI-powered digital dimension knocking at our door? Should we let it in, so to speak?  
84 Do we have a choice? Or is it already beyond our control? In 1965, Cassidy called for a culture  
85 of change and openness to “describe, accept, develop and incorporate” technology into our work  
86 (p. 14). This is easier said than done, particularly when the technology is so complex and the  
87 future formidable to envision, as is the case with AI-powered LLMs<sup>1</sup>. As Haggerty (1997) noted,  
88 predicting the influence technology may have within kinesiology and physical education is, “a

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<sup>1</sup> In the six weeks between the initial submission of this manuscript and our final submission, ChatGPT-4 passed the Uniform Bar Exam in the 90<sup>th</sup> percentile (up from the 10<sup>th</sup> percentile by ChatGPT-3), several countries placed temporary bans on its use due to data privacy concerns and lack of age restrictions or content filters available for minors, and prominent technology entrepreneurs like Elon Musk called for a moratorium on AI advancement due to their perceived risk of its unbridled power to society.

89 difficult task- not difficult to predict but difficult to be right” (p. 257). Locke (1997) also warned,  
90 “believing all those predictions about what technology can do sometimes causes us to do really  
91 dumb things” (p. 272).

92           Correctly forecasting how ChatGPT and other AI-driven LLMs will affect our field, and  
93 the work of future professionals, is no easy task. These technologies *will* have an impact and  
94 likely *already are*. For this reason, we have decided to develop this research note. “We” are a  
95 group of faculty members working in Physical Education Teacher Education (PETE) who teach,  
96 conduct research, and serve in various roles for academic journals and books (e.g., reviewers,  
97 associate editors, editors). We are becoming increasingly cognizant of the effects AI-powered  
98 LLMs currently and will have across all facets of our work. We suggest ignoring, avoiding, or  
99 being indifferent to predictions about what technology like AI-powered LLMs can do, can also  
100 cause us (academics) to do *really dumb things*. Rather, we encourage all health and physical  
101 education teacher education (H-PETE) faculty members to learn about the capabilities, functions,  
102 and potential applications of these AI-powered LLM tools. Doing so can facilitate informed,  
103 solution-focused approaches to leveraging new tools and technologies, including ChatGPT,  
104 across academic workspaces. In line with Knudson (2016), we suggest we all actively develop  
105 and adapt our skills and competencies to address the ever-evolving technology landscape with  
106 appropriate wisdom. What this call is *not* intended to do, is to suggest we succumb to all new  
107 tools, devices, and technological trends. We hope to encourage scholars to recognize the  
108 potential implications AI-powered LLMs bring to our work and consider working together to  
109 develop field- and discipline-specific consensus statements to guide ethical and appropriate use.

110           **Implications of AI-Powered LLMs for Learning, Teaching and Research in H-PETE**

111           The following section outlines some of the possibilities and challenges associated with  
112 the emergence of AI-driven LLMs within and across our academic workspaces. We  
113 acknowledge the following considerations are incomplete but hope to stimulate thoughtful  
114 interaction with potential impacts these new technologies may have, for better and/or worse.

### 115 **Pitfalls and Potentials for Learning in H-PETE**

116           One concern about student use of AI-powered LLMs is a heavy reliance on them at the  
117 expense of fully engaging in learning processes. Students can now decide to skip engaging with  
118 assignments by handing in completely AI-generated artifacts. While there are clear and obvious  
119 ethical implications related to academic dishonesty using AI-powered tools, existent umbrella  
120 policies in many institutions will (hopefully) dissuade most students from submitting work that is  
121 not theirs. What becomes more disquieting is the negative impact these tools may have on  
122 student learning, along with potential downstream impacts of underprepared professionals  
123 entering the workforce upon graduation. Learning how to write has been associated with learning  
124 to think, establishing reason, logic, and sequencing of concepts. Learning how to lesson plan in  
125 H-PETE *is* learning to develop and apply critical thinking around effective teaching processes. If  
126 a student can prompt ChatGPT to output a lesson plan for a specific skill-theme (and ChatGPT  
127 *can* do this) related to specific grade-level standards, how will they develop their ability to  
128 recognize, plan, and enact appropriate instruction? Students may even reconsider why bother  
129 building deep content knowledge, when ChatGPT can serve as their resident content expert.

130           Yet, we ask “how is prompting an AI-powered LLM to develop a lesson plan different  
131 from when students consult [slowchathealth.com](https://slowchathealth.com) or [pecentral.org](https://pecentral.org)?” Stepping back from the initial  
132 shock of new technologies and discourse surrounding their emergence, we may begin to see  
133 potential value of the tools for knowledge construction and idea generation. In the past, students

134 started their lesson planning with a blank screen, whatever knowledge they had from their own  
135 health and physical education (HPE) experiences, and what they were taught in their content-  
136 knowledge courses to that point. Now, students begin with these *and* a resident content expert  
137 resource in the form of AI-powered LLMs. Students can now start with something on their  
138 screen, and with knowledge and support of H-PETE instructors, can conscientiously build the  
139 output into something that aligns with good practice. Such a solution-oriented perspective has the  
140 potential to encourage students to leverage the immense power of AI-powered LLMs  
141 responsibly, without sacrificing or by-passing aspects of the learning process.

#### 142 **Potentials and Pitfalls for Teaching in H-PETE**

143 University teachers work to acquire specialized knowledge in their fields of interest to  
144 become known as authorities or experts who are qualified to teach others. Specialized,  
145 discipline-specific information has been produced and curated in a range of print and digital  
146 forms, many of which have converted to online/web-based resources for content sharing and  
147 dissemination. The emergence of AI-driven LLMs can potentially reposition *who* or *what* holds a  
148 position of authority on a topic and *who* or *what* are considered key stakeholders in brokering  
149 new/alternative knowledges. Provided with a well-engineered prompt, ChatGPT has the  
150 capability to scour publicly accessible digital content to produce a nuanced response for the user.  
151 Instructors could harness this AI function to augment instruction in ways that enhance or update  
152 their breadth of knowledge and understanding, which could in turn contribute to developing new  
153 (and diverse) methods of organizing, presenting, and communicating specialized information.  
154 Capitalizing on ChatGPT in this way could also introduce instructors and students to newly  
155 generated knowledge and perhaps offer contemporary perspectives to foundational knowledge. It  
156 could also save instructors time, create certain efficiencies, and facilitate easier and more regular

157 professional learning for re-tooling and content refreshing. These initial ideas offer value-added  
158 possibilities and positive potential for how AI-driven LLMs could enhance various teaching  
159 functions at this time.

160         Issues and possible pitfalls require consideration for teachers' responsible use of this  
161 innovation. If AI-driven LLMs hold the potential to synthesize specialized knowledge into  
162 consumable, translatable, and transferable segments of information for a user, one might ask:  
163 Who and/or what will take a primary role in teaching our teachers? How long will content-driven  
164 professional training programs continue to exist in their current form? At what point does the  
165 position of subject-matter authority shift from human-generated knowledge to machine-  
166 generated knowledge? And could AI-driven LLMs allow individuals to position themselves as  
167 subject-matter experts by using ChatGPT, without proper credentials or a certification  
168 accompanied by accountability measures/mechanisms?

169         The use of LLMs in teaching specialized HPE/H-PETE knowledge still requires critical  
170 consideration. Not all specialized knowledge is publicly accessible, potentially biasing the  
171 knowledge base toward information available through open-access digital platforms or providing  
172 misinformation to users. Knowledge possession and consumption do not translate without  
173 applying sound pedagogical strategies designed for individual learners. Privacy and security  
174 related concerns must be raised when machine-generated information is curating summaries and  
175 accessing "for profit" databases. Could the regular use of tools such as ChatGPT foster a sense of  
176 dependence on AI-produced content and limit teachers' natural curiosity, sense of creativity,  
177 contextual awareness, and suppress active and responsive problem-solving strategies needed  
178 within a teaching and learning environment?

179 **Potentials and Pitfalls for Research in H-PETE**



180 Overreliance on AI-powered LLMs by researchers is also a concern, with perhaps higher  
181 stakes given the nature of publication and scientific communication. Manuscripts written  
182 exclusively by AI-powered LLMs could be circulating without our knowledge or any current,  
183 public efforts to curtail by publishing houses. Yet, these tools cannot be authors on publications  
184 since it cannot be held accountable for disseminated content or generation of ideas (Nature,  
185 2023). Alternatively, if/when researchers rely heavily on these tools at the expense of engaging  
186 fully in research processes, there is a chance for biased or misinformed results to get published.  
187 This problem speaks to a key limitation of AI-powered LLMs: Outputs are restricted by the  
188 available and/or accessible digital data. If an AI-powered LLM bases its output only on research  
189 published through open-access or if research in a particular topic area is still emerging or  
190 underdeveloped, the output will inherently be bound by the (limited) digital information  
191 available. Furthermore, if an answer is unclear or unknown the AI-powered LLM will generate a  
192 response that is based on the predictive modeling or anticipated logic, not on fact, a considerable  
193 concern for consumers of published works. The relative novelty of these technologies means  
194 there are reliability issues related to the accuracy of certain outputs, emphasizing human critical  
195 engagement with these tools is still essential (i.e., van Dis et al., 2023).

196 AI-powered LLMs may provide powerful support to aspects of the research process. In  
197 fact, our writing is already influenced by them, often without notice. Spellcheck, grammar-  
198 checks, and auto-complete are all LLMs we already use. When does a researcher cross the  
199 ethical AI-powered LLM use line? At the time of writing, these tools have the capacity to  
200 generate fully developed, technical manuscripts. Despite the existence of programs designed to  
201 distinguish AI-generated text from human-developed writing, they too, are unreliable for use in  
202 peer-review publishing process at this time. Claiming authorship on a paper generated by an AI-

203 powered LLM is unethical, fraudulent, and potentially dangerous to the public. But what about  
204 using it to develop a manuscript introduction or to output a 200-word abstract for a book  
205 chapter? And if we can agree that *some* use is helpful, is it necessary to notify readers? And if we  
206 deem that it is, what is the appropriate way of acknowledging its use?

207         These questions only address tasks AI-driven LLMs can conduct. Other research-related  
208 tasks general AI can perform are well beyond generating human-like text, like creating art,  
209 sequencing genes, and predicting social outcomes, which have broader implication for learning,  
210 teaching, and research enterprises. van Dis and colleagues (2023) developed a helpful list of  
211 questions to facilitate discussion and refinement of how scholars might approach the use of AI-  
212 powered LLMs, and AI more generally, within the research enterprise. Some of these questions  
213 include: *Which research tasks should or should not be outsourced to LLMs? Which academic*  
214 *skills and characteristics remain essential to researchers? How should research integrity*  
215 *policies be changed to address LLMs? How should LLMs be incorporated into the education and*  
216 *training of researchers?*

### 217 **Ethical considerations for using AI-powered LLMs in research and teaching**

218         Earlier we discussed some potentials and pitfalls of using AI-driven LLMs in research  
219 and teaching. We want to also highlight potentially consequential ethical issues surrounding the  
220 use of such technologies.

221         One ethical concern is how these tools access data without consent, which (at the very  
222 least) poses the risk that researchers do not receiving adequate credit for their work. There is risk  
223 that scholars using these tools could present what they consider “original” thoughts (generated  
224 from an AI output) and pass them off as their own in subsequent publications, given the  
225 relevance and accuracy of output references are currently unreliable. In this scenario, not only

226 would the ideas of original authors be disseminated without due credit, but there would also be  
227 no citation to document the meaningful work of the original scholar. This in turn would affect  
228 important metrics considered for tenure and promotion at research intensive institutions (i.e.,  
229 number of citations and H-Index).

230         Most literature published in major journals is currently behind paywalls. If an AI-driven  
231 LLM is trained only on freely available data (and we will note that OpenAI has not been  
232 transparent about what ChatGPT is trained on), it will skew output contents exclusively toward  
233 open access articles. This favors information produced by scholars and institutions that have  
234 funds paying publishing fees. What will the landscape of research in our field look like when the  
235 AI-generated outputs are biased toward a small sliver of the actual research in existence? Might  
236 this put pressure on more journals to become open access and/but at what cost?

### 237 **Taking a Socio-Critical Perspective**

238         Considering the place of digital technologies within the broad spectrum of (health and  
239 physical) education, there is a tendency to focus on the closest environments within our social  
240 and work ecology- the university or K-12 school and the potential for different technologies to  
241 effectively support research and the teaching and learning of young people. Our focus on such  
242 aspects can result in a blinkered view of how digital technologies can create complex social  
243 inequalities and inequity in educational environments which also mirror those experienced in  
244 human communications in our society (Mascheroni & Ólafsson, 2016; Chen et al., 2023). As  
245 digital technologies develop and evolve into profit-driven platforms, free use of high-quality  
246 programs will be more restricted (as evidenced by the move of ChatGPT-4 to a pay-per-use  
247 model). This may result in disparities in student access, support, use, and proficiencies, along  
248 with any number of downstream effects (Centeio, 2017). We emphasize maintaining a socio-

249 critical perspective when considering if and the extent to which these tools might be useful in our  
250 work and within society more broadly. This involves being mindful of the social phenomenon  
251 inherent in digital technology use and critically investigating social environments in which they  
252 are used (i.e., the home, or online; Selwyn, 2016). Taking a socio-critical perspective can provide  
253 a lens through which digital (in)equity issues can be understood and linked to broader social  
254 inequities, while also making it possible to consider alternatives to ensure the use of such tools  
255 contribute to promoting equitable practices (e.g., supporting students who are neurodivergent).

256 In addition, the assumption that all socio-economic groups of educators and learners can  
257 access AI-driven LLMs in the first place is unwarranted. (In)accessibility becomes problematic  
258 when these types of digital resources are more readily available in certain privileged spaces. Just  
259 as we lean on our current technology, knowledge, and expertise to understand new technological  
260 developments in our own institutions, ensuring every HPE/H-PETE instructor and teacher and  
261 their programs and schools are appropriately equipped and resourced to utilize this approach  
262 cannot be taken for granted. There are already some people being left behind in this regard.

### 263 **A Call for Consensus on the Appropriate and Ethical Use of AI-Powered LLMs**

264 Over 25-years ago Locke (1997) cautioned us to “remember that a technological train  
265 may never leave the station and, even if it does, it may go somewhere you would really not want  
266 to be” (p. 273). A horse-drawn wagon might also have left the same station long before the train  
267 ever arrived. Ranging caution around AI-Powered LLMs is warranted and encouraged. This is  
268 not the first-time technological development has knocked at the door of our field, and it certainly  
269 will not be the last. Just as Cassidy (1965; 1971) wrote about the advances of technology among  
270 other changes to the world during her era - *this is our new dimension*. These and other issues  
271 (many of which are not yet foreseen), will be critical for H-PETE faculty to attend to as we

272 navigate a new world that now includes AI-powered tools. There are currently more questions  
273 about appropriate and ethical AI-powered LLM use than answers. While scholars across various  
274 disciplines have made general recommendations, appropriate and ethical application of AI in  
275 learning, teaching, and research spaces has not been articulated by any field.

276 Further, consideration is needed regarding how teachers and scholars are trained to  
277 approach technology advancements and AI-driven tools like ChatGPT. As we consider if, how,  
278 and what that approach may be within HPE/H-PETE, we acknowledge critical, empathetic  
279 digital citizens must examine the “important ethical questions at the intersection of technology  
280 and humanity” (iste.org, para.1). Conversations about potentials and pitfalls of AI-driven LLMs  
281 would be incomplete without acknowledging the individual users of these tools. We find  
282 ourselves at such an impasse: at the intersection of AI-driven LLMs and humanity. We are  
283 compelled to prompt this intellectual discourse around intentional consequences, and integrity of  
284 use, protection of vulnerable populations from inappropriate use, equitable use, and access.  
285 Considering the user reminds us of the importance and value of diversity of thought, philosophy,  
286 perspective, experience, pedagogical approaches, and instructional styles. We acknowledge and  
287 embrace thoughtful rationales for use and non-use of AI-driven LLMs in H-PETE, with an  
288 important caveat: That we, collectively commit not to allow these differences to divide but to  
289 unify and embrace this challenge as an opportunity to understand one another better as we  
290 engage in thoughtful discourse related to opportunities and risks on the horizon.

291 This research note represents a call to scholars in health, physical education, and  
292 kinesiology more broadly to consider the current technological landscape and ask how we can be  
293 intentional about addressing the proliferation of AI-powered LLMs. We ask whether a collective  
294 consensus statement or set of guidelines for appropriate and ethical applications across academic

295 workspaces would be a beneficial or necessary endeavor at this stage? We believe the security of  
296 our integrity into the future, as well as the maintenance of public trust in the teaching, learning  
297 and research we and our students conduct, depends on our ability to confront the present and  
298 ever-changing technological landscape with collective good intention and action. However, that  
299 statement reflects the voice and beliefs of this author group. What is now needed is your voice,  
300 your perspective, and your input. All HPE/H-PETE stakeholder voices are valuable in  
301 broadening the understanding of AI-powered LLMs in our teaching, learning, and research  
302 spaces. Active consensus building requires a clear definition of the issue. We hope this research  
303 note is only a launching point and is followed by open forums, critical formal and informal  
304 conversations, conference papers, technical reports, and more. These efforts will shape a clearer  
305 picture of the dimensions and nuisances of LLMs in HPE/H-PETE and be significant in shaping  
306 our collective understanding of the issue. We believe that a proactive approach to consensus  
307 building around an initial set of discipline-specific guidelines for appropriate and ethical  
308 applications within our discipline-specific workspaces will help current and future HPE/H-PETE  
309 professionals responsibly navigate this new dimension we find ourselves entering.

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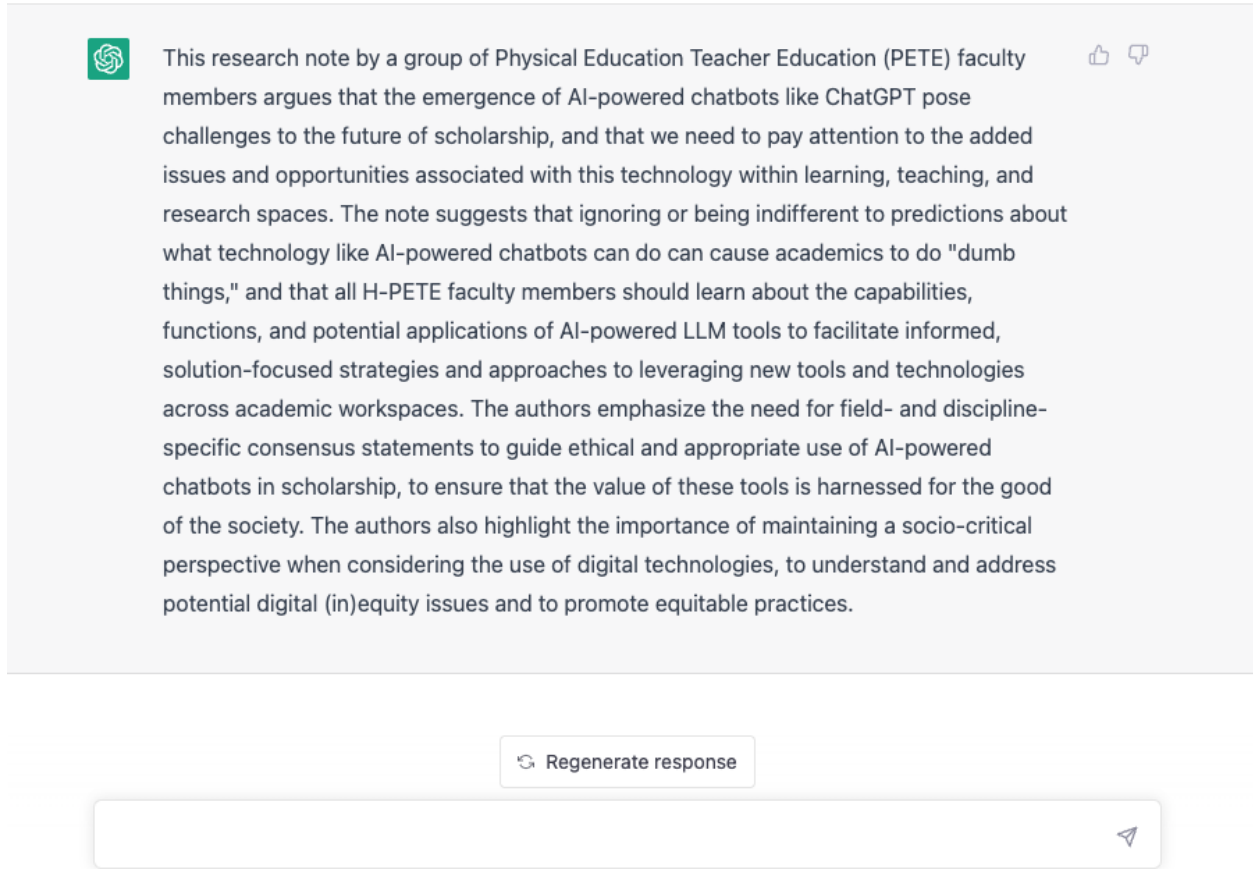
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The screenshot displays a ChatGPT interface. At the top left is the OpenAI logo. To its right is a paragraph of text: "This research note by a group of Physical Education Teacher Education (PETE) faculty members argues that the emergence of AI-powered chatbots like ChatGPT pose challenges to the future of scholarship, and that we need to pay attention to the added issues and opportunities associated with this technology within learning, teaching, and research spaces. The note suggests that ignoring or being indifferent to predictions about what technology like AI-powered chatbots can do can cause academics to do "dumb things," and that all H-PETE faculty members should learn about the capabilities, functions, and potential applications of AI-powered LLM tools to facilitate informed, solution-focused strategies and approaches to leveraging new tools and technologies across academic workspaces. The authors emphasize the need for field- and discipline-specific consensus statements to guide ethical and appropriate use of AI-powered chatbots in scholarship, to ensure that the value of these tools is harnessed for the good of the society. The authors also highlight the importance of maintaining a socio-critical perspective when considering the use of digital technologies, to understand and address potential digital (in)equity issues and to promote equitable practices." To the right of the text are icons for a thumbs-up and a speech bubble. Below the text is a button labeled "Regenerate response" with a circular arrow icon. At the bottom of the interface is a text input field with a paper plane icon on the right side.

[ChatGPT Feb 13 Version](#). Free Research Preview. Our goal is to make AI systems more natural and safe to interact with. Your feedback will help us improve.

364

365 **Figure 1**

366 *ChatGPT-3 Abstract Output*