It Takes Two to Engage: Ethical AI Use in Research Skill Development for Security Studies Students

Ibrahim Kocaman and Daniel Cutrer

Embry-Riddle Aeronautical University

Motivation and Introduction

Various generative AI (GenAI) tools are increasingly utilized by students, creating a grey area where it is challenging to determine whether AI is used without violating academic integrity and whether it is assisting or impeding student engagement and success. To our knowledge, there is no definitive way to prove AI ghostwriting. AI is also increasingly utilized to enhance student engagement (Bauer et al., 2025; Chen et al., 2025). Recognizing that GenAI is here to stay, we are interested in finding the best way to leverage GenAI's benefits while not jeopardizing educational integrity. Hence, the following question guided our efforts: How can GenAI tools be utilized to increase student engagement and student success? We believe this investigation may help determine/define a safe interval of AI utilization that is mutually agreeable between students and instructors. It takes two to dance, after all.

While we do not include a comprehensive literature review on the relationship between AI and student engagement, we present a preliminary review to set the stage for our intervention. Existing scholarship highlights several positive impacts of AI utilization in education (AIEd), while some studies call for attention to potential negative impacts. Positive impacts of AIEd include personalized learning and feedback, higher engagement, motivation, and improved self-efficacy (Alshahrani & Alqahtani, 2024), reciprocal engagement (Zawacki-Richter et al., 2019), enhanced interaction in STEM education, increased student learning (Bauer et al., 2025), and better accommodation of diverse learners (Zhang & Xu, 2022).

On the other hand, others raised concerns regarding AI's negative impacts on education and the challenges introduced by haphazard AI adoption. Cited negative impacts of AIEd on student engagement and learning include overreliance on AI (Zhai et al., 2024), cognitive disengagement (Holmes et al., 2025), causing harm to *actual* learning (Bastani et al., 2024), and taking away student-instructor interaction (Flenady & Sparrow, 2025). The debate on GenAI is not likely to settle anytime soon (Fabia et al, 2025; Simms, 2024). We believe, however, that the limits of AI utilization in

education merit investigation. Recent advances in GenAI also present opportunities to experiment with innovative pedagogical interventions. This is what we are aiming to do.

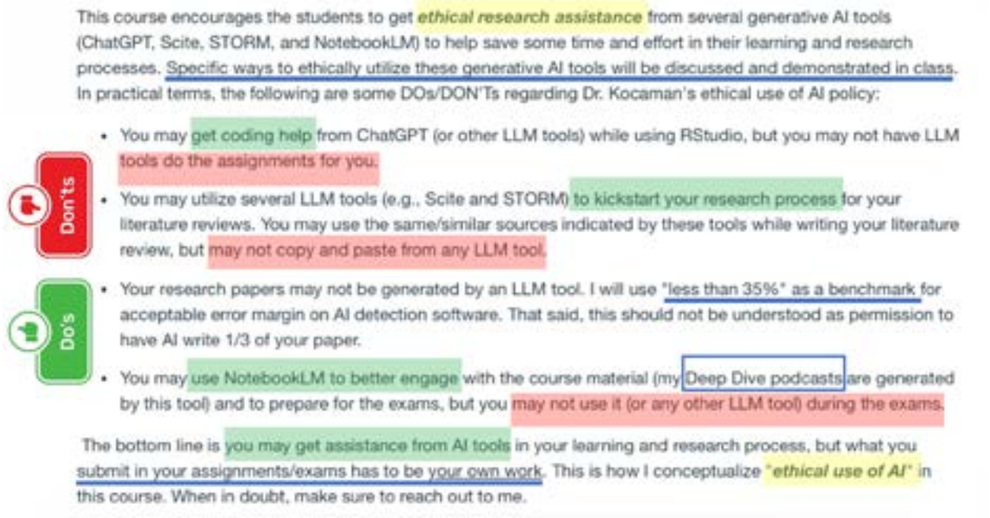
Our Intervention: Implementing an Ethical AI Utilization Policy (EAUP)

Our intervention builds on the common approach of using a problem as part of a solution, which involves reframing the problem, identifying root causes, and leveraging that understanding to develop a solution. Using this approach, we analyzed the problem of implementing GenAI in the classroom to understand root causes, generate potential solutions, and identify any constraints.

We argue that implementing an ethical AI utilization policy (EAUP) would help: (1) foster transparent communication of EAUP (via course syllabus, LMS, and class lectures), (2) provide the students with the opportunity to ethically utilize GenAI, (3) reduce the sense of guilt students may feel when using GenAI, (4) engender positive attitude towards course material and objectives, and (5) ultimately result in higher levels of student engagement and success. To that end, we integrated an EAUP into the course syllabus. Figure 1 illustrates the Ethical AI Utilization Policy (EAUP) we implemented in the classroom study.

Figure 1

Ethical AI Utilization Policy (EAUP), SS 207 Course Syllabus, Spring 2025



Following the seminal works of Fredricks et al. (2004) and Axelson and Flick (2010), and some recent studies (Alshahrani & Alqahtani, 2024; Zhang & Xu, 2022), we adopt a minimalistic definition of student engagement over three dimensions as "*cognitive, behavioral, and affective involvement in learning*."

Our EAUP, which allows AI to brainstorm and code but prohibits it for copywriting/ghostwriting assignments, is designed to enhance engagement while addressing issues such as overreliance. Our EAUP may lead to improvement in all three dimensions of student engagement:

- **Cognitive Engagement**: Our EAUP's ban on AI for homework ensures students engage critically with content, addressing Holmes et al.'s (2025) concern about reduced cognitive skills. We required students to submit outputs from two specific GenAI tools (Scite and STORM) regarding their literature review topics to help students critique AI outputs, enhancing cognitive engagement.
- **Behavioral Engagement**: Allowing AI for coding, as supported by Lehmann et al. (2024), encourages participation in technical tasks. We will track participation rates via AI Usage Logs, addressing potential misuse (a negative consequence).
- **Affective Engagement**: AI's time-saving benefits (as in Alshahrani & Alqahtani, 2024) boost motivation, which our EAUP leverages. We collected student feedback via surveys to ensure the policy sustains student enthusiasm for course material.

With our EUAP, we aimed for a vigorous learning environment as opposed to a rigorous one (Pickering, 2024). Our policy aims at being vigorous in that it fosters energy, activity, intensity, and participation, while wholesale banning GenAI utilization would be more rigorous, leading to exhaustion, difficulty, guilt (Qu & Wang, 2025), and inflexibility. Holmes et al. (2025) support our ban on AI for homework to prevent cognitive disengagement, while Lehmann et al.'s (2024) and Alshahrani's (2025) findings justify our policy of allowing AI for coding to boost motivation.

Testing the Impacts of EAUP on Engagement and Success

We anticipated that implementing an EAUP would lead to both higher student engagement and higher student success. We tested these expectations, availing ourselves of an opportunity to carry out a quasi-experiment. One of the authors happened to teach two sections of Introduction to Research Methods in Spring 2024 without utilizing our AI policy. The same instructor taught two sections of the same course in Spring 2025, which provided us with a chance to implement our EAUP. We defined the two Spring 2024 sections (58 students) as the control group and the two Spring 2025 sections (55 students) as the treatment group, since they received the treatment of EAUP.

We measured student engagement utilizing midterm feedback surveys in both semesters, fielded by ERAU's Center for Teaching and Learning Excellence (CTLE) using the Critical Teaching Behavior (CTB) framework by Barbeau and Cornejo-Happel (2023). In our analysis, we used the "INCLUDE" and "ENGAGE" indicators (both are Likert-scale measures ranging from 0 to 5) from CTLE's survey to measure student engagement. We also added some tailored questions to the midterm feedback survey for the treatment group to further observe the impact of our policy. To measure

student success, we used the scores students received for their literature review assignments while controlling for student exam grades. We performed basic regression and mean comparison analyses (aka pooled t-tests) to compare the engagement and success metrics across treatment and control groups. In terms of engagement, we observed that students in the treatment group rated the classroom environment, on average, more than *half a point higher* (0.54 for INCLUDE and 0.55 for ENGAGE dimensions) in the CTLE feedback surveys. Figures 2 and 3 below illustrate the results of the mean comparison tests between both groups for the engagement metrics.

Figure 2

The impact of EAUP on INCLUDE metric (data: CTLE midterm feedback surveys)

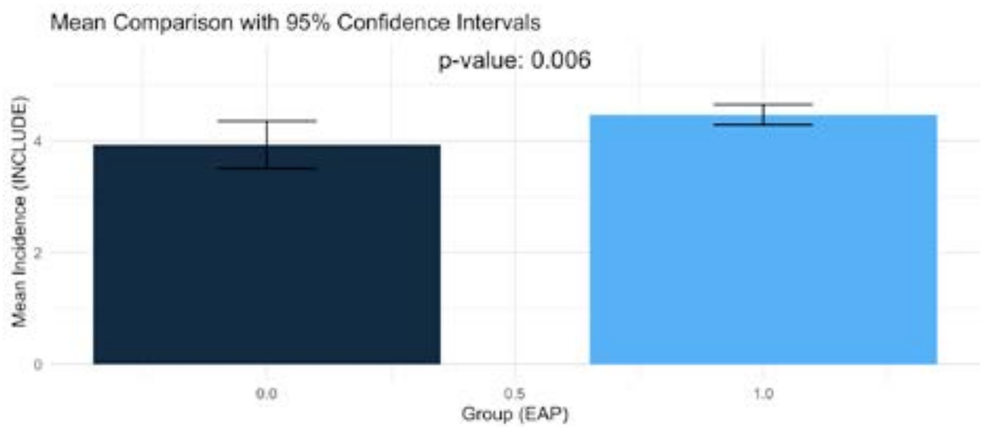
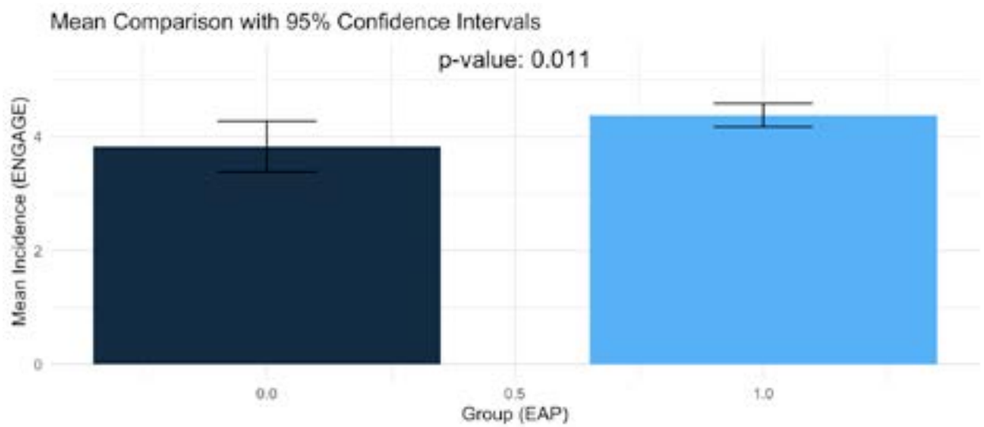


Figure 3

The impact of EAUP on ENGAGE metric (data: CTLE midterm feedback surveys)

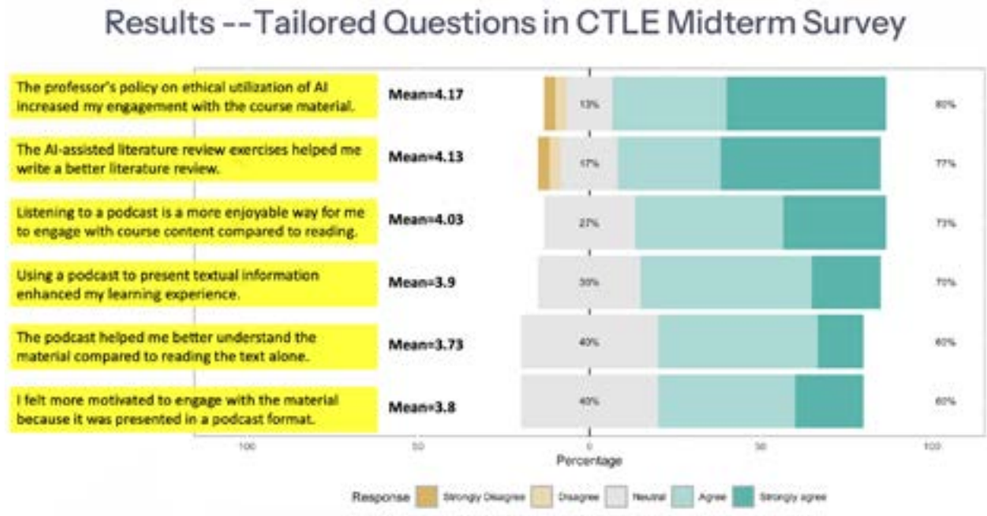


The treatment group is represented by the light blue bars in both figures. Both mean comparison tests for the INCLUDE and ENGAGE dimensions show that our EAUP is associated with higher engagement metrics.

The CTLE's midterm feedback survey also included six statements (highlighted in yellow in Figure 4 below) for the treatment group to further gauge the impact of our EAUP. The average values of student responses to these tailored questions on a Likert scale (0-5), shown in Figure 4, cluster around 4 (or "Agree") out of 5, providing further support to our expectation that our EAUP would lead to higher engagement.

Figure 4

CTLE survey tailored questions (Spring 2025)



Our regression tests for student success using data from our sample of 113 students indicate similar results. Compared with the control group, the treatment group scored, on average, 9.4% higher (with a p-value<0.01) in their literature review assignments while using student exam grades as a control variable, as it is plausible that students with higher exam grades would be more likely to write better literature reviews. The impacts of our EAUP on both engagement and success indicators are also statistically significant.

Discussion and Conclusion

Our findings indicate that allowing ethical use of AI is strongly associated with higher student engagement and success. GenAI holds significant potential for increasing student engagement with course material through personalized learning experiences, innovative instructional strategies, and

interactive study aids. Banning students from using GenAI altogether is not the answer, as this can lead to surreptitious usage and a feeling of guilt on the student's part. Instead, by thoughtfully integrating GenAI into educational practices through ethical AI policies, educators can create dynamic learning environments that enhance student engagement and academic performance. That said, our intervention is not free from limitations, as it is minimal in its scope (i.e., specific course, department, and university). We plan to add several aspects, such as an "AI Usage Log" requirement and reflective tasks, to the next phase of our AI policy implementation. Having access to the details of AI usage will help us better assess the impact of our pedagogical intervention.

References

Alshahrani, A., & Alqahtani, H. (2024). The impact of using artificial intelligence on enhancing student engagement and academic performance in higher education. *Sustainability, 16*(7), 2894. https://doi.org/10.3390/su16072894

Axelson, R. D., & Flick, A. (2010). Defining student engagement. *Change: The Magazine of Higher Learning, 43*(1), 38–43. https://doi.org/10.1080/00091383.2011.533096

Barbeau, L., & Happel, C. C. (2023). Critical Teaching Behaviors: Defining, Documenting, and Discussing Good Teaching (1st ed.). Routledge. https://doi.org/10.4324/9781003443902

Chen, X., Xie, H., Qin, S.J., Wang, F.L., & Hou, Y. (2025), Artificial Intelligence-supported student engagement research: Text mining and systematic analysis. *European Journal of Education, 60*: e70008. https://doi.org/10.1111/ejed.70008

Fabia, J. N., Napoles, V., Goh, J. E., & Borbon, Jr., M. (2025). How AI tools are accepted and utilized in academia: A mixed methods study. *Journal of Social and Scientific Education, 2*(1), 33–50. https://doi.org/10.58230/josse.v2i1.295

Flenady, G., & Sparrow, R. (2025). Cut the bullshit: Why GenAI systems are neither collaborators nor tutors. *Teaching in Higher Education*, 1–10. https://doi.org/10.1080/13562517.2025.2497263

Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: Potential of the concept, state of the evidence. *Review of Educational Research, 74*(1), 59–109. https://doi.org/10.3102/00346543074001059

Lehmann, M., Cornelius, P. B., & Sting, F. J. (2024). AI meets the classroom: When does ChatGPT harm learning?. *Available at SSRN 4941259*. http://dx.doi.org/10.2139/ssrn.4941259

Pickering, T. (2024). Rigor or vigor? What do we want for our children? *Getting Smart*. https://www.gettingsmart.com/2024/01/18/rigor-or-vigor-what-do-we-want-for-our-children/

Qu, Y., & Wang, J. (2025). The impact of AI guilt on students' use of ChatGPT for academic tasks: Examining disciplinary differences. *Journal of Academic Ethics*, 1-24. https://doi.org/10.1007/s10805-025-09643-x

Simms, R. (2024). Work with ChatGPT, not against. *Nurse Educator, 49*(3), 158-161. https://doi.org/10.1097/nne.0000000000001634

Zhang, Z., & Xu, L. (2022). Student engagement with automated feedback on academic writing: A study on Uyghur ethnic minority students in China. *Journal of Multilingual and Multicultural Development, 45*(8), 3466–3479. https://doi.org/10.1080/01434632.2022.2102175

Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education–where are the educators? *International Journal of Educational Technology in Higher Education*, *16*(1), 1-27.