Exploring the use of artificial intelligence (AI) assisted feedback for written assignments in pharmacy education

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BACKGROUND

- Pharmacy students require detailed and timely feedback on their written work, but faculty may face challenges due to time constraints.
- Charlie-AI is an artificial intelligence (AI)-assisted feedback program recently developed by Purdue University for natural written language assignments.
- Charlie-AI will be implemented in the Drug Information (DI) and Literature Evaluation course in a pilot program detailed in *Figure 1*.

OBJECTIVE

- The objective of phase 1 is to explore pharmacy faculty perceptions about adoption of AI-assisted technology to provide student feedback for natural language written assignments.

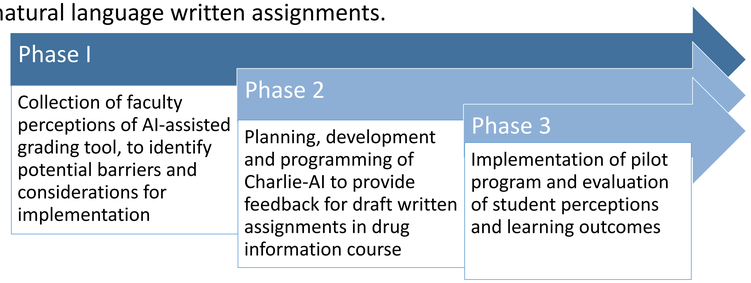

***Figure 1*: Pilot Program for Charlie-AI Implementation**

METHODS

- An exploratory qualitative design was used to conduct semi-structured interviews with pharmacy faculty members (N = 7) recruited via the AACP Connect Drug Information and Library Sciences (DILS) Section.
- An interview guide was developed using the Technology, Individual, Pedagogy, and Enabling Conditions (TIPEC) framework.[1] Questions focused on faculty perceptions of AI-assisted feedback/grading, including potential barriers to implementation.
- The interview guide was pilot tested with an experienced academician and minor modifications were made to improve clarity.
- All subjects participated in a 45-minute to 1-hour virtual interview which was recorded via Microsoft Teams. Recordings were manually transcribed by members of the research team. Data were analyzed using NVivo 20.
- Each transcript was independently reviewed by at least two investigators using an inductive coding process to identify conceptual themes. Data collection was stopped when saturation was reached.
- The study was reviewed and granted exempt research status by the Purdue University Investigational Review Board.

RESULTS

Table 1: Demographics of Interview Participants

	N=7
Experience in pharmacy education, years	12.7 (3-22)
Estimated percentage of time (%) spent providing feedback per week	14.3 (7-20)
Estimated time spent grading 2-page written assignment[a], hours	9.3 (4-24)
Number of female interview participants	4 (57%)

[a]*Two participants did not provide a quantitative response for time estimate*

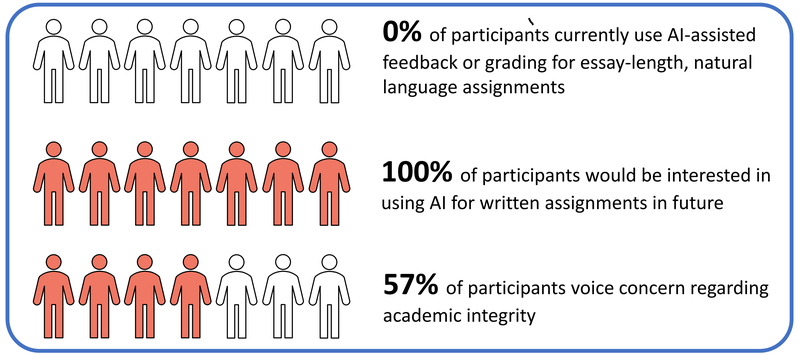

Figure 2: Current Landscape of AI Use, Interest in Pharmacy Education

Table 2: Key Themes Identified Regarding AI Use in Pharmacy Education

Accuracy	*"It's not just, "Is the answer right or wrong?" It's oftentimes, did they (the students) collect all of the necessary information? Is the information correct? And then, was it conveyed correctly depending on the audience?"*
Consistency	*"I would say consistency can be difficult just because, honestly, when you get to essay #45, you're tired and you just want to be done."*
Certainty	*"I would be hesitant to provide AI feedback and grading to students without having done my due diligence of making sure it's 100% correct and in line with what I would put for feedback."*
Academic Integrity	*"The concerns that people are having recently because of ChatGPT regarding cheating in homework raises the question, why are we offering it right in the school?"*
Student Engagement	*"Getting them (the students) to interact with feedback, understand what it is, and ask questions is hard. It's not a new problem, just an age-old student kind of dilemma. Maybe that's a way AI can help."*
Time	*"Grading is tedious. It takes it takes so much time because I am very precise in what I'm looking for. I do have a rubric that I use, but I still go through every line and make edits."*

***Table 3:* Current Software Used in Pharmacy Education**

Blackboard	Brightspace
Canvas	Examsoft
Gradescope	H5P
Kahoot	Padlet
Panopto	Poll Everywhere
Turn It In	

***Table 4:* Potential Classroom Uses for AI-Grading, Feedback**

Referencing and Citations	Active Learning Exercises
Rough Draft Reviews	Short-Form Responses
Journal Article Critiques	Calculations
Drug Utilization Evaluations (DUE)	

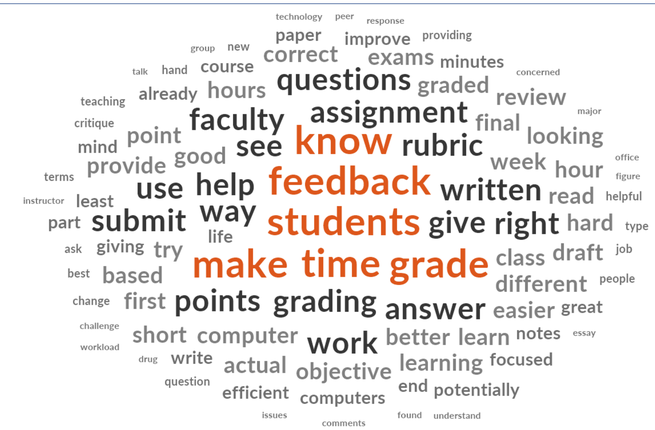

***Figure 3*: Word Frequency Chart from Transcript Analysis**

***Table 5:* Potential Limitations and Benefits of AI-Assisted Grading and Feedback**

Limitations	Benefits
Inaccurate or Inconsistent Feedback	Reduced Workload
Academic Integrity	Increased Student Engagement
Lack of Control of Feedback	Improved Instructor-Learner Relationship
Time Spent Refining, Recoding	

DISCUSSION

- Strengths of this study include the use of a semi-structured interview guide centered around technology use within the classroom and rapid saturation of themes during interviews.
- One major limitation of the study includes rapid development and widespread use and discussion of AI technology from the time point when the interviews were conducted to current date.

CONCLUSION

- Key takeaway to implement AI-assisted grading and feedback programs slowly for low-stakes assignments before implementing for high-stakes, heavily weighted assessments.
- AI-assisted grading and feedback should be used to supplement instructor feedback and grading, with the instructor frequently reviewing feedback for accuracy and consistency.

REFERENCES

- Ali S, Uppal MA, Gulliver S. A conceptual framework highlighting e-learning implementation barriers. *Inf. Technol. People*. 2018;31(1):156-180. doi: 10.1108/ITP-102016-0246