



# AI impacts on academic performance and learning process



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## Introduction

The rapid onset of the use of artificial intelligence (AI) in everyday life. Though a tool designed to help with tasks, people have admitted to using it to do their work instead of assist with their work. This leads to the question: What is AI's impact on learning?

This project examines the educational, cognitive, and psychosocial effects of AI use among modern youth, with particular emphasis on academic performance, learning processes, subject mastery, writing development, study strategies, confidence, and learner independence.

We will try to elucidate the educational cognitive, and psychosocial effects of AI use among modern youth. Data for this research were collected through a student survey designed to measure how frequently students use AI tools, the purposes for which they use them and their perceptions of how AI affects their ability to learn new material. Survey questions explored topics such as daily AI usage when students first began using AI technologies, how AI impacts their grades, and what resources students might use if AI tools were unavailable. The survey also gathered responses about whether students believe AI improves their understanding of course material or changes the way they study and complete assignments.

### Research Questions:

- 1) Do students use AI as a means to circumvent their course work? (ie, do they use AI to do their coursework instead of help with their coursework?)
- 2) How do students use AI?
- 3) To what extent do students rely on AI?
- 4) Does the use of AI impact their overall literacy, especially with regards to subject matter literacy?

**Hypothesis:** We hypothesize that students who rely on AI as a means to complete assignments will be less likely to perform well on subsequent literacy tests within their subject.

## Methods

**Question formatting:** Initial questions were developed by the researchers by asking themselves: What tools would I use if I did not have AI? This question list was discussed with the research group, and subsequent additions were added. Finally, AI was tasked to generate questions to add to the list.

**Research and study design:** In order to determine the use of AI, we will first interview 30 – 40 students on their general practice with using the tool for everyday life, and then for schoolwork. Thematic analysis will be done to determine if there are themes with respect to students' AI usage both in personal life and in school.

**Measuring AI's effect on school outcomes:** Measuring student outcomes will be by using the OECD framework of learning.

## Research Design

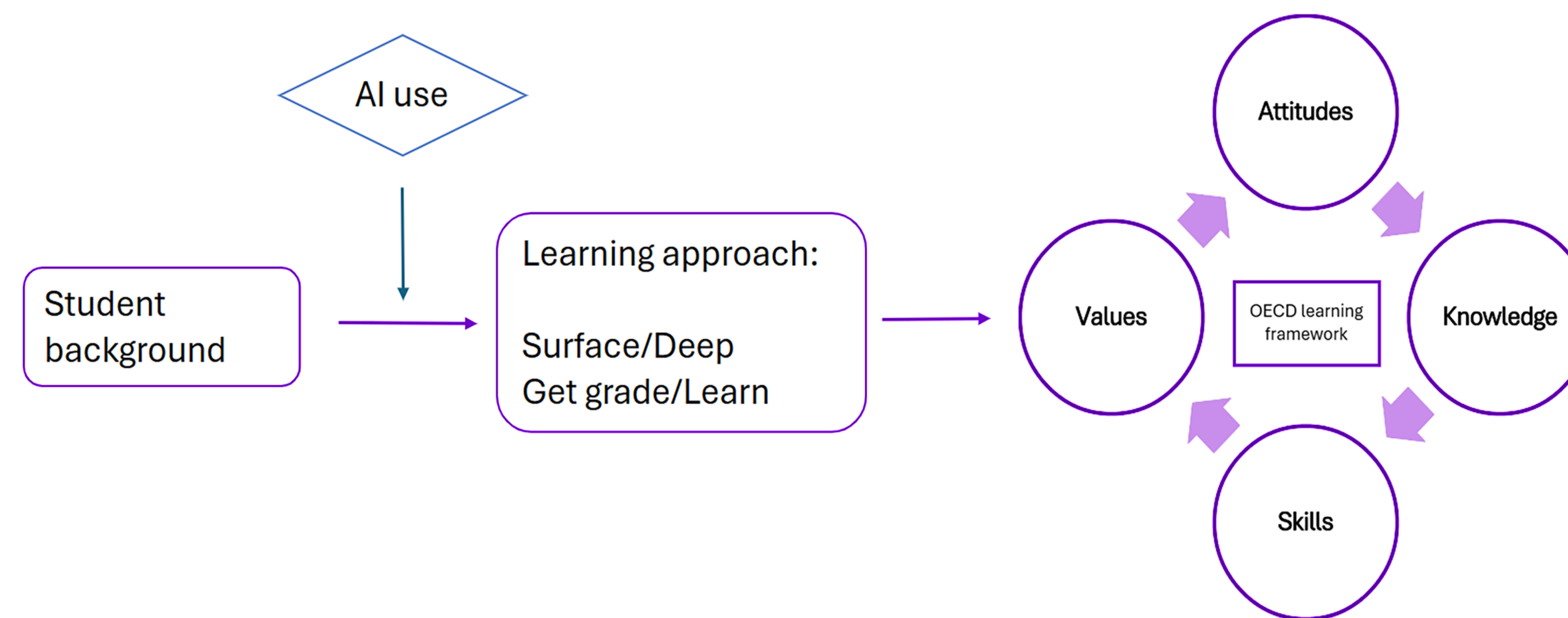


Figure 1. Framework of AI use and a student's background and how it can influence how they approach learning either on focusing on deep understanding or just getting grades. This approach then can affect their outcomes (knowledge, skills, values, and attitudes) based on the OECD learning framework.

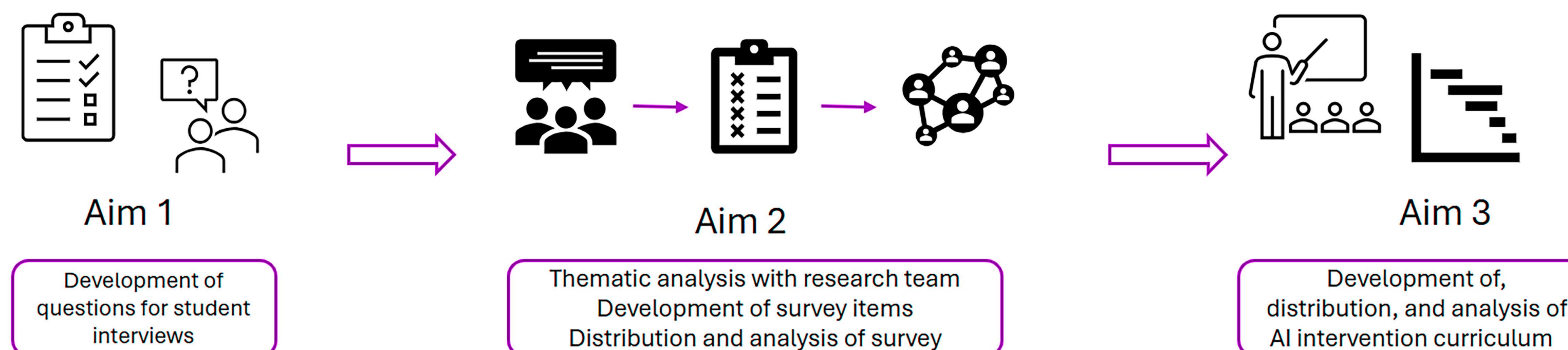


Figure 2. Study design. The project starts by creating questions so we can do student interviews. Then, research and analyze responses and survey data, and finally develop and evaluate an AI-based curriculum.

## Example Questions:

### Human generated:

1. Which AI do you use?
2. How do you think using AI impact your ability to learn material?
3. What tools would you use if didn't have AI?
4. How has AI impacted your grades?
5. How do you think AI will replace human intelligence?

### AI generated:

1. What do you think is the difference between using AI as a tool and cheating
2. How do you decide whether it is ethical to use AI on a specific assignment?
3. Do you think schools should allow AI use? Why or why not?
4. How transparent should students be about using AI in their work?
5. Have you ever considered the environmental impact of AI (such as energy use in data centers)? Why or why not?
6. Do you think the benefits of AI outweigh its environmental costs?
7. How do you think AI will affect future jobs and education systems?

## Future Directions

Future plans include continuing to examine both the positive and negative impacts of artificial intelligence. Additionally, I aim to obtain Institutional Review Board (IRB) approval in order to conduct research by surveying college students on this topic.

Student interviews to determine themes associated with microbiology hesitancy

Expand to test the survey instrument with a larger sample size

Comparing at-home hands-on labs to virtual labs

Combining these data with the MCI and measuring skills to determine an overall understanding of how students' attitudes, knowledge, and skills vary based on the type of microbiology instruction

## References

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