

Appendix 2 AI literacy questionnaire

Affective learning (10 items)

Intrinsic motivation

IM01 Artificial intelligence is relevant to my everyday life (e.g., personal, work).

IM02 Learning AI is interesting.

IM03 Learning AI makes my everyday life more meaningful.

IM04 I am curious about discovering new AI technologies.

Self-efficacy

SE01 I am confident I will perform well on AI related tasks.

SE02 I am confident I will do well on AI related projects.

SE03 I believe I can master AI knowledge and skills.

SE04 I believe I can earn good grades in AI related assessments.

SE05 I am sure I can understand AI. (delete)

Confidence

CL01 I can understand AI related resources/ tools.

CL02 I am confident that I can succeed in doing AI related tasks. (delete)

CL03 I feel confident that I will do well in the AI related tasks.

CL04 I am confident I can learn the basic concepts about AI. (delete)

CL05 I am confident I can choose appropriate AI applications to solve problems. (delete)

Career interest

CI01 Learning AI will help me get a good job in the future. (delete)

CI02 Knowing AI (and knowing how to use AI tools) will give me a career advantage. (delete)

CI03 Understanding AI will benefit me in my future career. (delete)

CI04 My future career will involve AI. (delete)

CI05 I will use AI-related problem-solving skills in my career. (delete)

Behavioral learning (8 items)

Behavioral commitment

BI01 I will continue to use AI in the future.

BI02 I will keep myself updated with the latest AI technologies.

BI03 I plan to spend time exploring new features of AI applications in the future.

EN01 I actively participate in AI-related learning activities.

EN02 I am dedicated to AI-related learning materials.

EN03 I learn effectively in the AI-related learning tasks. (delete)

EN04 I often look at extra materials about AI after school such as books and magazines.
(delete)

Collaboration

SI01 I often try to explain the AI learning materials to my classmates or friends.

SI02 I try to work with my classmates to complete AI learning tasks and projects.

SI03 I often spend spare time discussing AI with my classmates.

SI04 I usually ask classmates for help when I meet difficulties in AI activities. (delete)

Cognitive learning (6 items)

Know and understand

KU01 I know what AI is and recall the definitions of AI.

KU02 I know how to use AI applications (e.g., Siri, chatbot).

KU03 I know some working principles behind AI (e.g., linear model, decision tree, machine learning). (delete)

KU04 I understand how AI perceives the world (e.g., see, hear) to handle various tasks. (delete)

KU05 I can compare the differences between AI concepts (e.g., deep learning, machine learning).

Apply, evaluate and create

EC01 I can apply AI applications to solve problems.

EC02 I can derive a machine learning model to solve problems. (delete)

EC03 I can create AI-driven solutions (e.g., chatbots, robotics) to solve problems.

EC04 I can evaluate AI applications and concepts for different situations.

Ethical learning (8 items)

AI ethics

AIE01 I think that AI ethics is important to guide moral conduct to develop and use AI technology. (delete)

AIE02 I understand how misuse of AI could result in substantial risk to humans.

AIE03 I think that AI systems should minimize data bias (e.g., gender, ethnicity). (delete)

AIE04 I think that AI systems should perform reliably and safely. (delete)

AIE05 I think that AI systems need to be subjected to rigorous testing to ensure they work as expected.

AIE06 I think that AI systems should respect privacy. (delete)

AIE07 I think that users are responsible for considering AI design and decision processes.

AIE08 I think that AI systems should benefit everyone, regardless of physical abilities and gender.

AIE09 I think that AI systems should be transparent and understandable. (delete)

AIE10 I think that users should be made aware of the purpose of the system, how it works and what limitations may be expected.

AIE11 I think that people should be accountable for using AI systems.

AIE12 I think that AI systems should meet ethical and legal standards.

AIE13 I think that AI can be used to help disadvantaged people.

AIE14 I think that AI can promote human well-being. (delete)

AIE15 I wish to use my AI knowledge to serve others. (delete)

AIE16 I think that the use of AI should aim to achieve common good (e.g., environmental & poverty issues). (delete)