APPENDIX F:

Prioritized Foundational K-12 AI Learning Outcomes

Due to the breadth of computer science and existing curriculum demands, the project team identified a prioritized set of foundational AI learning outcomes for all K-12 students. These priorities are indicated as highlighted rows in Section 3 and summarized in the following table.

Subtopic	Grades K-2	Grades 3-5	Grades 6-8	Grades 9-12
The Human Role in Creating AI	Understand that AI is a tool created by humans to make decisions or to generate something (e.g., an image).	Describe the roles of humans in the creation of AI.	Describe the roles that humans play (including in data curation and labeling) in creating and refining AI models.	Evaluate and analyze the roles of humans and human decision-making in the creation of AI.
Reasoning	Explain how binary choices (e.g., up/down, on/off, under/over) can be used to make decisions that lead to a specific goal by either a human or a machine.	Train a model that can make decisions based on defined criteria (e.g., a dichotomous key to determine which movie to see).	Identify the kinds of AI models (e.g., classifier, predictor, recommender) people interact with in their daily lives.	Describe different types of AI algorithms and models, and compare and contrast the strengths and limitations of their reasoning.
Data (in Machine Learning)	Explore how AI models learn from data.	Explore the relationship between the properties of training data (e.g., size, features, biases) and an AI model's output.	Describe the ways that bias can be introduced and mitigated in an AI model.	Evaluate the data used to solve a problem, including its source(s) and whether privacy is protected, if/how the data has been processed, data quality (e.g., accuracy, reliability, validity), what the data represents, and biases.
Building and Using AI Models	Use data to construct a model for making decisions (e.g., a decision tree to determine what to wear based on the weather).	Using a dataset, develop an AI model to classify inputs.	Using a dataset and a machine learning pipeline, develop an AI model, and consider the impact of the model on various users.	Using a dataset and a systematic process, develop an AI model to generate for classification or prediction, and articulate the assumptions made at each of these steps: (1) develop a question solvable with AI, (2) collect or curate data, (3) evaluate the data, (4) train an AI model on the data, (5), evaluate the model, and (6) iteratively improve the model.
Ethical Evaluation of AI Systems	Explore how an AI system can help and harm different groups at the same time.	Investigate examples of AI, considering differences in experience by different people in different contexts.	Describe the properties, biases, and assumptions of various kinds of AI models (e.g., classifier, predictor, recommender).	Evaluate the design, motivation, outcomes, and potential impacts of AI systems using ethical design criteria and/or ethical frameworks.
Societal Impacts	Explore how some people use AI in their jobs and in their communities.	Explore ways in which some jobs involve the creation and/or use of AI.	Identify the intended and unintended impacts of AI on society — including government, education, entertainment, culture, careers, and national security — while considering how these impacts may differ among diverse communities.	Evaluate the intended and unintended impacts of AI on society (e.g., deep fakes, job loss) — including government, education, entertainment, culture, careers, and national security — while considering how these impacts may differ among diverse communities.