PLTW Computer Science Standards Connection
Game Design and Development

Connections to Standards in Computer Science

PLTW curriculum is designed to empower students to thrive in an evolving world. As a part of the design process when developing and updating our curriculum, we focus on connections to a variety of standards. PLTW Game Design and Development connects to standards in the following:

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Computer Science Teachers Association K-12 Computer Science

Algotrithms & Programming

3A-AP-13

Create prototypes that use algorithms to solve computational problems by leveraging prior student knowledge and personal interests.

A1	A2	A3	A4	A5	Project	Problem
☐	☑	☑	☑	☑	☑	☑

3A-AP-16

Design and iteratively develop computational artifacts for practical intent, personal expression, or to address a societal issue by using events to initiate instructions.

A1	A2	A3	A4	A5	Project	Problem
☐	☑	☑	☑	☑	☑	☑

3A-AP-17

Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects.

A1	A2	A3	A4	A5	Project	Problem
☐	☑	☑	☑	☑	☑	☑

3A-AP-18

Create artifacts by using procedures within a program, combinations of data and procedures, or independent but interrelated programs.

A1	A2	A3	A4	A5	Project	Problem
☐	☑	☑	☑	☑	☑	☑

3A-AP-21

Evaluate and refine computational artifacts to make them more usable and accessible.

A1	A2	A3	A4	A5	Project	Problem
☐	☐	☐	☑	☑	☑	☑

3A-AP-22

Design and develop computational artifacts working in team roles using collaborative tools.

A1	A2	A3	A4	A5	Project	Problem
☐	☐	☐	☐	☐	☑	☑

Computer Science Teachers Association K-12 Computer Science

3A-AP-23

Document design decisions using text, graphics, presentations, and/or demonstrations in the development of complex programs.

A1	A2	A3	A4	A5	Project	Problem
☐	☐	☐	☐	☐	☐	☑

Algotrithms & Programming

3B-AP-10

Use and adapt classic algorithms to solve computational problems.

A1	A2	A3	A4	A5	Project	Problem
☐	☑	☑	☑	☑	☑	☑

3B-AP-12

Compare and contrast fundamental data structures and their uses.

A1	A2	A3	A4	A5	Project	Problem
☐	☐	☐	☑	☑	☐	☐

3B-AP-14

Construct solutions to problems using student-created components, such as procedures, modules, and/or objects.

A1	A2	A3	A4	A5	Project	Problem
☐	☑	☑	☑	☑	☑	☑

3B-AP-16

Demonstrate code reuse by creating programming solutions using libraries and APIs.

A1	A2	A3	A4	A5	Project	Problem
☐	☑	☑	☑	☑	☑	☑

3B-AP-17

Plan and develop programs for broad audiences using a software life cycle process.

A1	A2	A3	A4	A5	Project	Problem
☐	☐	☐	☐	☐	☑	☑

3B-AP-23

Evaluate key qualities of a program through a process such as a code review.

A1	A2	A3	A4	A5	Project	Problem
☐	☐	☐	☑	☑	☐	☐

International Society for Technology in Education

Empowered Learner

1a

Students articulate and set personal learning goals, develop strategies leveraging technology to achieve them and reflect on the learning process itself to improve learning outcomes.

A1	A2	A3	A4	A5	Project	Problem
☐	☐	☐	☐	☐	☑	☑

4a

Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.

A1	A2	A3	A4	A5	Project	Problem
☐	☐	☐	☐	☐	☑	☑

4b

Students select and use digital tools to plan and manage a design process that considers design constraints and calculated risks.

A1	A2	A3	A4	A5	Project	Problem
☐	☐	☐	☐	☐	☑	☑

4c

Students develop, test and refine prototypes as part of a cyclical design process.

A1	A2	A3	A4	A5	Project	Problem
☐	☑	☑	☑	☑	☑	☑

4d

Students exhibit a tolerance for ambiguity, perseverance and the capacity to work with open-ended problems.

A1	A2	A3	A4	A5	Project	Problem
☐	☐	☐	☐	☐	☐	☑

5c

Students break problems into component parts, extract key information, and develop descriptive models to understand complex systems or facilitate problem-solving.

A1	A2	A3	A4	A5	Project	Problem
☐	☐	☐	☐	☐	☑	☑

International Society for Technology in Education

6b

Students create original works or responsibly repurpose or remix digital resources into new creations.

A1	A2	A3	A4	A5	Project	Problem
☐	☐	☐	☐	☐	☑	☑

6c

Students communicate complex ideas clearly and effectively by creating or using a variety of digital objects such as visualizations, models or simulations.

A1	A2	A3	A4	A5	Project	Problem
☐	☐	☐	☐	☐	☐	☑

6d

Students publish or present content that customizes the message and medium for their intended audiences.

A1	A2	A3	A4	A5	Project	Problem
☐	☐	☐	☐	☐	☐	☑

7a

Students use digital tools to connect with learners from a variety of backgrounds and cultures, engaging with them in ways that broaden mutual understanding and learning.

A1	A2	A3	A4	A5	Project	Problem
☐	☐	☐	☐	☐	☑	☑

7b

Students use collaborative technologies to work with others, including peers, experts or community members, to examine issues and problems from multiple viewpoints.

A1	A2	A3	A4	A5	Project	Problem
☐	☐	☐	☐	☐	☑	☑

7c

Students contribute constructively to project teams, assuming various roles and responsibilities to work effectively toward a common goal.

A1	A2	A3	A4	A5	Project	Problem
☐	☐	☐	☐	☐	☑	☑

Standards for Technological and Engineering Literacy

STEL 2 Core Concepts of Technology and Engineering

STEL-2X

Cite examples of the criteria and constraints of a product or system and how they affect final design.

A1	A2	A3	A4	A5	Project	Problem
☐	☐	☐	☐	☐	☑	☑

STEL-2Z

Use management processes in planning, organizing, and controlling work.

A1	A2	A3	A4	A5	Project	Problem
☐	☐	☐	☐	☐	☑	☑

STEL 7 Design in Technology and Engineering Education

STEL-7AA

Illustrate principles, elements and factors of design.

A1	A2	A3	A4	A5	Project	Problem
☐	☐	☐	☐	☐	☑	☑

STEL-7BB

Implement the best possible solution to a design.

A1	A2	A3	A4	A5	Project	Problem
☐	☐	☐	☐	☐	☑	☑

STEL-7CC

Apply a broad range of design skills to their design process.

A1	A2	A3	A4	A5	Project	Problem
☐	☐	☐	☐	☐	☑	☑

STEL-7DD

Apply a broad range of making skills to their design process.

A1	A2	A3	A4	A5	Project	Problem
☐	☐	☐	☐	☐	☑	☑

Standards for Technological and Engineering Literacy

STEL 8 Applying, Maintaining, and Assessing Technological Products and Systems

STEL-8N

Use various approaches to communicate processes and procedures for using, maintaining, and assessing technological products and systems.

A1	A2	A3	A4	A5	Project	Problem
☐	☐	☐	☐	☐	☐	☑

References

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