Games

Games have been used for thousands of years as a method of making tasks more engaging. For example, two hunting and gathering groups compare quantities, which motivates the production of food supplies. Game creation occurs when someone takes a daunting, tedious or boring task, i.e. something difficult, and makes it fun. Games are created if the elements of tracked activities, optimize the motivation to complete the activity or task.

Games bridge the gap between what students do at home and what they do in school. Having students develop their own games, whether digital or not, encourages them to set goals, persevere and learn through failure, iterate and improve, and apply life-long learning skills.

Uses of games:

- Create a high level of engagement in rigorous tasks
- Make learning "fun"
- Visualize abstract and complex concepts

Computational Thinking:

- Abstraction – In creating games, students can determine information or steps that might be unnecessary to complete a task, learn a skill or master a concept.
- Algorithmic Design – Developing or creating the steps for a process, procedure or task. Creating an algorithm is the process of creating parts/steps and placing them in a logical order. Games require the use of algorithmic design in creating steps for a process, procedures for advancement, and levels of tasks.
- Decomposition – Break up a given task, procedure or process into steps. The designer must do this for every stage of the game ensuring that the progress goals and end goal are preserved.
- Pattern Recognition – Recognizing patterns allows the game designer to save design time by creating replicants of the pattern, the procedure, or task to be used over and over in different scenarios.

Tips for using gaming in the classroom:

1. Do it for the right reason: to promote rigorous study of intrinsically difficult content, tasks and skill mastery.
2. Students start out using games and move into creating games.
    a. If you are new to gaming, start small – choose one task, or learning objective.
    b. Novice students participate in games you have created – but the objective is to have them creating the games from the content, tasks and skills you present.
    c. Provide a model for students – demonstrate how to 'gamify' a task or concept they already know.
    d. Gradually increase the rigor… but do increase it!
3. Align it to the real-world. Exploit what makes the concept, idea, task or skill appealing in the first place. (Ask: Why is this cool/fun to know?)

4. Use technology! (*See resources below.)*
5. Don't make it all about rewards (badges, leaderboards, etc.). Initially, some students may need rewards to engage. However, if you are implementing the other tips, students will recognize the 'physical rewards' for what they are – superficial! Remember, the students' true reward is being confident enough to set and achieve their own goals.

Reference:

Chou, Yu-kia (2014) Actionable Gamification: Beyond Points, Badges and Leaderboards. Milpitas, CA: Octalysis Media.

Resources:

Free Digital Resources:

Tools to create digital games:

- https://www.piskelapp.com/ (Novice Level tool for creating avatars/sprites)
- http://classtools.net/ (Novice Level - Fast and easy, requiring little to no instruction. It requires no login. Once created, games can be shared.)
- https://www.yoyogames.com/gamemaker (Advanced Level - great for teacher use)
- https://gamesalad.com/ (Intermediate Level – no programing)
- https://gamestarmechanic.com/ (Intermediate Level – course/skill builder like scratch, tutorial-based learning platform to build more complex games)
- https://scratch.mit.edu/ (Intermediate Level - block coding – very intuitive with great tutorials)

How-to-guides:

- https://educators.brainpop.com/lesson-plan/lesson-resources-for-incorporating-student-created-games/ (how to use student-made games in your classroom)
- http://www.readwritethink.org/files/resources/lesson-docs/NovelBoardGameRubric.pdf (How-to-guide for creating boardgames – for students and teachers)
- https://askatechteacher.com/2017/05/30/zap-zap-math/ (gamify any math content)

