

Design Thinking

LESSON PLAN

Middle Elementary Grades

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Lesson Title: Design Thinking Building Challenge	
Grade/Age: 2nd-3rd Grade	Content area: STEM/4 Cs
Point in year when your lesson is taught (prior knowledge assumed): <ul style="list-style-type: none"> • Late September - This will be the students' first exposure to design thinking format. Knowing this, I plan to scaffold for them by doing the last three steps of the process (ideate, prototype, test) and then we'll reflect on the process and their results. • No prior knowledge assumed, except for their natural curiosity 	
Learning objectives/learning targets: <ul style="list-style-type: none"> • The students will be able to experience a few steps of the design thinking process for the first time to lay a foundation for future opportunities. • The students will use a digital search to learn about various designs of tall buildings to inspire their structure building. • The students will be able to work cooperatively with their team to build a structure with a predetermined set of supplies. • The students will be able to use an iPad to document their group's building process using a self chosen app(s). • The students will be able to share their documented building process with the class and their families in their Seesaw learning journal. • The students will reflect on their groups difficulties and successes and share what they learned in the two versions of the building challenge on a digital exit slip completed on Pic Edu and shared on Seesaw. 	
ISTE Standards for Students <ul style="list-style-type: none"> • <u>Empowered Learner</u> <ul style="list-style-type: none"> ○ c: use technology to seek feedback that informs and improves their practice and to demonstrate their learning in a variety of ways. The students will meet this standard when sharing their documented building processes and final structures on Seesaw. ○ d: understand the fundamental concepts of technology operations, demonstrate the ability to choose, use and troubleshoot current technologies and are able to transfer their knowledge to explore emerging technologies. The students will demonstrate this standard when choosing which app(s) to use for documenting and showing their design process and final structure. • <u>Digital Citizen</u> <ul style="list-style-type: none"> ○ b: engage in positive, safe, legal, and ethical behavior when using technology, including social interactions online or when using networked devices. The kids will be meeting this standard as they share their learning on Seesaw and in their responses to other groups posts on Seesaw. • <u>Knowledge Constructor</u> <ul style="list-style-type: none"> ○ a: plan and employ effective research strategies to locate information and other resources for their intellectual or creative pursuits. This standard will 	

be met as the kids do a digital search to view tall buildings and collect ideas to inspire their structure building.

- **Innovative Designer**

- **c: develop, test, and refine prototypes as part of a cyclical design process.** The kids will be practicing this standard as they build their structures the first day and then as they are able to plan, revise, and communicate for their structure building the second day.
- **d: exhibit a tolerance for ambiguity, perseverance, and the capacity to work with open-ended problems.** This will be evident as the students work through this process of planning for, constructing, and completing this building challenge.

- **Creative Communicator**

- **a: choose the appropriate platforms and tools for meeting the desired objectives of their creation or communication.** When the team chooses which apps to use for documenting their building process and how to present it, the kids will be meeting this standard.
- **b: create original works or responsible repurpose or remix digital resources into new creations.** Creating their documentation and presentation of their process and structure building will demonstrate this standard.
- **d: publish or present content that customizes the message and medium for their intended audiences.** As kids publish to their Seesaw learning journal for the class and families to see, they will be meeting this standard.

- **Global Collaborator**

- **c: contribute constructively to project teams, assuming various roles and responsibilities to work effectively toward a common goal.** This will be evident as kids participate in and help their small group complete this building challenge.

Assessment - How students will demonstrate mastery:

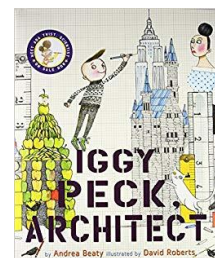
- Teacher observation of participation in challenge
- Completed structures built in the challenge (both times given) by their team
- Digital exit slip: explain what they learned about the challenge the first time without planning and talking with peers vs. the second time with planning time and the ability to talk to peers.

Design thinking activity:

*Since this is their first introduction to this type of activity, I am going to scaffold for them by doing the last three steps of the process (ideate, prototype, test) and then we'll reflect on the process and their results.

Day 1:

- Read aloud Iggy Peck, Architect by Andrea Beaty
- Present challenge of making the tallest building possible with materials provided - 6 sheets of copy paper and 18 inches of masking tape (in groups of 3-4 kids) without communicating/talking. They will also need to document their building process leading up to their final structure using the app(s) of their choice to be posted on Seesaw to share with the class and their families.



- Give 15 minutes for building time.
- Give time for teams to measure their building and finish documenting their process, their building, and final structure created.
- Gallery walk of creations built. Reflection/Debriefing of how it went.
- Save structures. Break to next day

Day 2:

- Discuss architects, building things
- Do they know any famous buildings?
- Do a digital search for tall buildings on ipads, paying attention to how they're designed, share what they notice.
- Present same challenge of making the tallest building possible with materials provided - 6 sheets of copy paper and 18 inches of masking tape (in the same groups of 3-4 kids)
- Give 7-8 minutes of planning time as a team
- Give 15 minutes of building time
- Give time for teams to measure their building and finish documenting their process, their building, and final structure created.
- Gallery walk of creations built. Reflection/Debriefing of how it went.
- Discussion and comparison to how the structures today turned out compared to the ones built the previous day.
- Digital exit slip completed on Pic Edu and shared on Seesaw: explain what they learned about the challenge the first time without planning and talking with peers vs. the second time with planning time and the ability to talk to peers.

Digital tool(s) used and how it/they contribute to lesson:

- iPads
- Seesaw for sharing structures and their building process with the class and their families
- Other possible apps that students may use for documenting their process and structure: Camera app for photos and/or video, Pic Edu, Shadow Puppet, Chatterkids. They will have the ability to choose any app(s) they want to use for documenting their process.

If relevant, how you're engaging one or more alternative learning environments (blended, flipped, makerspace, fully online, etc.) and/or pedagogical approaches (project-based, problem-based, personalized, deeper, etc.).

- Although not the primary focus of this lesson, the students are in a flexible seating classroom and will have the opportunity to choose where they will work best for this challenge.
- This lesson will engage some of the same processes as a makerspace, but not be the primary focus of the lesson.