LEGO® Education STEAM Career Toolkit

Differentiation Resource Guide

Meet Rebekah

Rebekah Poe, M. Ed. is an award-winning former special education teacher and a national teaching conference presenter with over a decade of experience in the special education field. As an education consultant, Rebekah focuses on providing teachers with the training necessary to offer equitable education and establish connections to students of all ability levels in an inclusive setting. Her first book, *Blueprint for Inclusion*, will be available in the summer of 2024.

Follow her: **@rebekahpoeteaching**

Today's students are our future STEAM leaders – the ones reimagining and rebuilding a better world for all of us. Together we can show them what's possible and allow *all* students to see themselves in STEAM. In this guide you will find ideas for scaling the level of difficulty for your students who need a greater challenge, the ones who need a bit more support, and everyone in between.

There are many strategies available for differentiation, but ultimately the goal is the same: have every student be able to participate and learn in the way that is meaningful to them. Hands-on, playful learning by nature provides entry points for students and lends itself to giving opportunities to iterate and ask questions for those who need more.

This resource, including free printables, was developed in collaboration with Rebekah Poe, who started as a K-3 special education resource teacher and is now dedicated to bringing best practices to all educators with ready-to-use activities and resources to meet the needs of all learners.

We hope you find this resource useful and inspiring as you bring the STEAM Career Toolkit into your classroom.

LEGO education

Rebuild the World

Advanced Level

Students in this group will be capable of working more independently without much teacher support. The differentiation ideas in this level will increase the difficulty for students who need a bit more of a challenge.

PREPARE

- Allow students to select a research topic independently.
- Students can create a presentation about what they researched.
- Students can create a short video explaining the topic they researched.
- Ask students to answer questions such as "How?" or "Why?" regarding a topic. These types of questions require a greater depth of knowledge and increase the level of difficulty for those who need to be challenged.
- Have students analyze the STEAM topic and specify a problem that might impact that topic.

VOCABULARY WORDS

- Students can explain how the terms are used within the STEAM topic.
- Students can write a paragraph about the STEAM topic utilizing the vocabulary words.
- Students can build something that represents the meaning of the vocabulary words.
- Challenge students to use the vocabulary words when explaining their models or solutions.

WATCH NOW

- Ask students "why" they think the person in this STEAM career does what they do. Asking Why/How questions requires a greater depth of knowledge and increased thought since the answers are not given explicitly.
- Ask students to make predictions based on the video.

CHALLENGE

- Give students open-ended questions and encourage them to think creatively to solve the problem associated with the STEAM topic.
- For a greater challenge, throw an extra design constraint into the mix or add a new barrier to the challenge mid-stream.
- Allow students to select any and all available materials they think they'll need to create their project.
- Have students design a project that solves a specific problem related to the STEAM topic.
- To get your students thinking about their creation process, have them create directions or diagrams for the construction of their projects that could be used by others to recreate the projects.

LEGO education

Rebuild the World

Intermediate Level

PREPARE

- Provide suggested topics for students to research.
- Encourage students to identify potential problems that might occur within the STEAM topic.
- Ask the students to summarize an article or video about the STEAM topic.
- Students can consider the cause and effect of problems that might arise within the STEAM topic (If this happened, then that would happen).
- Allow the students to create a poster about the topic.

VOCABULARY WORDS

- Students can be paired up to share a representation of new vocabulary words. Students may share their understanding of a new word by acting it out, drawing a sketch, or using synonyms to describe the new term.
- Students can use the terms in a sentence (either typing into a computer or other device, writing them by hand, or even by dictating the sentences).

WATCH NOW

- Give students specific questions to answer while watching the video with answers that are explicitly stated within the video.
- Ask "Why" questions to further challenge students and get them thinking about context clues and making inferences.

CHALLENGE

- Guide students through deciding what to create or provide ideas to choose from.
- Reduce the materials the students have to choose from so they aren't overwhelmed by too many options.
- Allow students to work with a partner or with a group.
- Give students a graphic organizer or "blueprint" to plan their project that answer questions like:
  - What is my project?
  - What will my project be able to do?
  - How big will my project be?
  - What kind of materials will I need for my project?
  - How long will it take to complete my project?

LEGO education

Rebuild the World

Beginning Level

Students in this group will require substantially more teacher support or peer helpers. The ideas for differentiation at this level reduce the complexity and difficulty of the activity to make sure all learners are able to participate.

PREPARE

- Have students identify the STEAM topic being discussed.
- Ask questions (who, what, where, when) that can be explicitly answered based on the information presented. Ask "why" questions to encourage deeper thinking and praise participation.
- Students can illustrate basic ideas related to the STEAM topic.

VOCABULARY WORDS

- Students can match definitions to terms (with or without teacher support).
- Students can use images to match terms to definitions.
- Students can illustrate terms.
- Students can match terms to illustrations.

WATCH NOW

- Guided Watching: Give students a specific term to listen for within the video clip. Have them tally the number of times they hear that word or give a thumbs up when they hear it. Doing so ensures their attention stays on the video and gives the teacher a way to make sure they're paying attention.

CHALLENGE

- Decide on a project to build or allow students to vote between project ideas to promote autonomy.
- Give students preassembled baggies with materials they'll need to build their project.
- Give students a list (written or visual) they can use to identify and collect the materials they'll need to complete their projects.
- Provide students step-by-step directions with visual supports for assembling their project.
- Work with a peer helper as needed for assistance if the teacher is not available (Note: While advanced students might make good peer helpers for beginning students, they should not be utilized ONLY as peer helpers so they have the opportunity to learn and grow throughout the activity as well.)
- Allow students to use a graphic organizer to plan their project.
- Give students a sequence to follow to assemble their projects.

LEGO education

Rebuild the World

Printables

The following printables have been created by Rebekah Poe for you to print and use with your students. Or use them as inspiration to create your own!

- **STEAM Career Activity Rubric:** Use this printable to determine what level of difficulty your students' projects fall into or as a guide to group students according to their needs.

- **Graphic Organizer (Intermediate):** Use this printable with your Intermediate students to help them brainstorm and plan ideas for their project.

- **Graphic Organizer (Beginning):** Use this printable with your Beginning students to help them brainstorm and plan ideas for their project or to discuss their project after completion.

- **Building Sequence (Beginning):** Use this printable with your Beginning students to help them brainstorm and plan the sequence for their project or complete the boxes before your student begins to build so they know in what sequence the materials will be used.

- **Sentence Stems and Conversation Starters:** Use this printable to support student communication as students present about their projects and give feedback to others' presentations.

STEAM Career Activity Rubric

LEVEL	PREPARE	VOCABULARY	WATCH NOW	CHALLENGE
Advanced	Students are able to research a topic independently and answer "How" and "Why" questions pertaining to the chosen topic. Students are able to share about their topic, including what problems may arise.	Students can independently look up definitions of each vocabulary word and explain how the terms relate to the STEAM topic. Students can write a paragraph about the STEAM topic utilizing the vocabulary words.	Students are able to answer "why" and "how" questions pertaining to the video and adequately explain their thinking. Students are able to make predictions based on the information in the video.	Students are able to think creatively to solve a particular problem associated with the STEAM topic. Students' projects have working mechanisms. Studens are able to thoroughly explain their projects with words and/or diagrams.
Intermediate	Students are able to identify potential problems that might occur within the STEAM topic and summarize an article about the assigned topic. Students can determine cause and effect of potential problems. Students can create a poster that highlights key concepts about the topic.	Students can locate definitions for the vocabulary words either independently, with a partner, or with a group. Students can write complete sentences utilizing the vocabulary word. Words will be spelled correctly, and sentences will follow all grammar rules.	Students are able to answer specific questions regarding information explicitly stated within the video. Students can hypothesize about "why" or "how" questions using context clues and making inferences using information from the video that might not be explicitly stated.	Students are able to work independently, with a partner, or with a small group to design and build a project that is directly related to solving a problem regarding the assigned STEAM topic. Students can make considerations about the planning of their projects and answer questions regarding their projects.
Beginning	Students are able to identify the STEAM topic being discussed. Students can answer who, what, when, where, questions regarding the presented information. Students can illustrate basic ideas related to the STEAM topic.	Students are able to complete one of the following tasks related to the vocabulary words: • match terms to definitions • match images to terms • illustrate terms	Students are able to listen for a specific term within the video and signal they have heard the term by giving a "thumbs up" or drawing a tally mark each time the term is used in the video.	Students are able to follow directions to gather supplies and build a specific project pertaining to the STEAM topic. Students can complete graphic organizers to plan and describe their projects. Students may work with a partner or with a group if needed.

@rebekahpoeteaching

Graphic Organizer - Intermediate

Name: _____   **Date:** _____

What will my project be able to do?

How big will my project be?

Project Name

What kinds of materials will I need for my project?

How long will it take to complete my project?

Graphic Organizer - Beginning

Name: _____

Date: _____

What does my project do?

How does my project help solve a problem?

Project Name

Who might use my project?

My project looks like this:

Building Sequence - Beginning

Name: _____   **Date:** _____

1st Step	**2nd Step**	**3rd Step**
4th Step	**5th Step**	**6th Step**

@rebekahpoeteaching

Sentence Stems and Conversation Starters

For Presenters:

- My project is called:
- I created this project to:
- My favorite thing about my project is:
- My project can help [STEAM Career] by:
- The problem my project can solve is:
- STEAM Careers that might be able to use my project are:

For the Audience:

- How did you come up with this idea?
- I really like how you:
- Can you explain [this part] of your project a little more?
- A question I have about your project is: