UNIVERSITY of VIRGINIA | SCHOOL of EDUCATION and HUMAN DEVELOPMENT
CASTL

Using the Engineering Design Process

INSTRUCTIONS

This handout was designed for use with the article, "Promoting Inclusive Teaching and Learning Using the Engineering Design Process," from the National Association for the Education of Young Children. The questions and activities in this handout could be used in a work session (e.g., professional learning community, professional development session), for individual coaching, or for self-reflection.

Goals

- Understand the importance of knowing the strengths and interests of children with disabilities to support their problem-solving skills.
- Reflect on effective strategies you use to intentionally enhance children's problem-solving skills.
- Develop a plan to continue to support children's problem-solving skills.

Activity

- Read the article.
- Use the questions below to guide your reflection and action plan to support preschoolers' problem-solving skills.
- Implement your plan and adjust as needed to support preschoolers' problem-solving skills.

The engineering design process provided us with a framework for effective practices and to help address access and opportunity for children with disabilities to engage in early STEM learning.

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REFLECTION QUESTIONS

- What caught your attention from the article? What made that fact, excerpt, or example meaningful to you?

- This article discusses the importance of providing time for exploration of materials before children begin problem-solving. For children with disabilities, such opportunities will help them to develop confidence and engage further with the materials and activities. Observe children as they interact with activities and materials in your learning environment. Reflect on your observations and current approach to open-ended opportunities.
    - How are children engaging in exploration? How does your learning environment and current practices support this exploration?
    - Are there children who are not engaging in exploration? How are you modifying the environment or the materials to support children with disabilities to fully explore?
    - How can you adjust the materials, environment, or support you offer to help children move from exploration to creating solutions?

- The article highlights the steps in the engineering design process. It suggests that the process can support all children as they develop problem-solving skills. Throughout the article, there is evidence of children with disabilities problem-solving through their own strengths and interests. Reflect on how you use children's strengths and interests to support their problem-solving.
    - Children have a better understanding when concepts are connected to past experiences. How are you linking the problem to a previous experience, interest, or knowledge?
    - How are you incorporating children's strengths into the problem-solving process?
    - Part of the problem-solving process focuses on viewing problems as opportunities to improve. How are you supporting children as they engage in this step? How might your support need to be adjusted to meet the needs of all children?

- Develop an action plan to support the development of problem-solving for children with disabilities.
    - Think about your environment, materials, and interactions. What is one change you can make that will support children with disabilities to explore the materials, think about solutions, and/or focus on ways to improve on their solution?
    - How can you build these supports into your routine to ensure that they are consistently used when engaging in activities that require problem-solving?
    - Implement your plan, monitor children's progress, and adjust as needed.

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