

# Fostering critical thinking in young children

During center time, Mrs. Diaz announced to her class, “When you get to the water table center, we’re going to do a neat science experiment!” When children reached the water table station, Mrs. Diaz greeted them and said, “What will happen if I put three plastic bears on top of the boat? What do you think? Will the boat sink or float?” As each child gave a response, Mrs. Diaz smiled and asked, “Why do you think the boat will sink (float)?” After children made their predictions, Mrs. Diaz placed the three plastic bears on the boat to test whether it would sink or float.

## Description and value of critical thinking

Through her thoughtful selection of an activity and careful questioning, Mrs. Diaz encouraged the children in her classroom to engage in critical thinking. Critical thinking refers to the interrelated processes of gathering new information through observation

or experience, recalling similar or related circumstances, and then using the new information and recollections to think and reason through a problem in a thoughtful manner (Marigliano and Russo 2011).

Critical thinking is essential to making informed choices throughout life. It is needed to make well-founded decisions about friendships, risky behaviors, partners, colleges, and careers. Critical thinking plays an essential role in distinguishing between advertising myths and factual statements about food, clothing, cars, and houses.

Components of critical thinking include:

- recognizing that a problem exists
- finding ways to solve the problem
- recognizing the difference between facts and assumptions about the problem
- comprehending language related to the problem
- gathering information (data) to help define and solve the problem
- interpreting data that are gathered
- understanding relationships between parts of the problem
- making predictions about the outcomes of a problem
- testing predictions and potential solutions
- making judgments about the success of solutions
- basing beliefs on actual experiences, including problem-solving (Glaser 1941).

Despite its importance, critical thinking is rarely taught in school (Kasten 2012). Early care and education teachers can do much to foster the development of critical thinking. The rudiments of these critical thinking components become apparent during the preoperational stage of cognitive development, as theorized by Jean Piaget (1962). By this stage of cognitive development, roughly between 2 and 7 years of age, children can engage in symbolic thought (that is, create mental images of objects and hold them in

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their memories for use at a later time), experience a surge in vocabulary, and associate words with objects. The ability to engage in symbolic thought is associated with children's creativity, imagination, and critical thinking abilities.

## Fostering critical thinking

Asking open-ended questions, as Mrs. Diaz did in the vignette above, provides children with opportunities to elaborate upon or explain their thoughts. Open-ended questions require a thoughtful, multiple-word response, in contrast to close-ended questions that can be answered with a simple "yes" or "no." Open-ended questions also provide children with opportunities to explain their reasoning or perceptions related to the question being asked (Fisher 2005). An example of an open-ended question is, "How did you make your drawing?" In response to this question, children could elaborate on the particular colors they selected as well as possible reasons why they selected the colors or drew particular symbols in the illustration.

Critical thinking was fostered by Mrs. Diaz when she asked the children to predict whether the boat would sink or float when the weight of the plastic bears was added. Making predictions is a building block of critical thinking because it requires thinking back to previous experiences in order to anticipate what might happen in a current or future situation (Fisher 2005). When asking children to make predictions, it's important to ask children the "what if"

questions, as Mrs. Diaz did. *What if* questions can expand children's thinking to include possibilities they may have not considered before.

Encouraging critical thinking includes embracing the originality of children's responses. Children's interpretations of events are based on their unique perceptions. This originality should be encouraged, as children's ideas will vary based upon their experiences and opinions. Original responses can reflect their critical thinking abilities. Furthermore, children's responses are a gateway to their thinking and provide insight into children's current understanding of their world. Teachers can build upon children's current understanding of their observations and experiences.

## CRITICAL THINKING IS RARELY TAUGHT IN SCHOOL.

It is important to relate new information to children's own experiences. If children are learning the concept of growth, teachers could have charts in their classrooms that record children's height over a specific period of time. With this activity, children can gather information, learn to interpret data, and predict how much they will grow in the future.

These activities align with key components of critical thinking (Glaser 1941). When children predict their heights, teachers may enhance children's critical thinking skills by asking them to consider what factors may influence their growth and development. This may be an opportunity for teachers to highlight the importance of eating healthy foods and getting plenty of exercise.

Critical thinking can also be promoted by children's participation in enjoyable activities, such as art. For example, an appropriate literacy goal for preschool children is being able to recognize the letters in their names. They could be directed to create letters using art materials, such as paper, colored markers or crayons, clay, beads, or playdough. Creating letters requires children to recall and then apply their existing knowledge to a new situation. The art activity calls upon children's critical thinking skill.

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Children’s art creations will be unique and based upon their own interpretations of the art activity as well as their own experiences with alphabet letters. Children’s artwork will differ in the variety of colors used and the design of the artwork, or specific details of the artwork may vary from child to child. Providing thoughtfully designed art projects is one tool teachers have for promoting children’s critical thinking. Teachers can provide children multiple opportunities to use their critical thinking by offering experiences that allow children to express themselves or their beliefs (Glaser 1941; Marigliano and Russo 2011).

Teachers can enhance children’s critical thinking by encouraging them to ask questions of each other. During play activities, children communicate and interact with their peers about their shared activity. More knowledgeable or experienced children can teach (that is, scaffold the learning of) their less experienced peers (Vygotsky 1978). For example, two children are building a tower with Legos; one, Aletha, has more experience building with Legos. The novice builder, Ben, asks his teacher, Mr. Blevins, how tall to make the tower. Mr. Blevins suggests Ben ask Aletha how tall to build the tower without it falling over. Aletha, recalling previous experiences with Legos®, tells him, “With these little ones you can build up to here,” pointing to her waist line.

Mr. Blevins follows up with a question designed to elicit critical thinking from both children, “What would happen if you used bigger blocks to build the

tower? How tall could you build it?” The children voice similar predictions, pointing to their shoulders. They excitedly build towers. Mr. Blevins helps the children compare their predictions to the completed towers.

## ASK CHILDREN OPEN-ENDED QUESTIONS.

Early childhood teachers can also promote critical thinking when introducing new information. For example, Ms. Abernathy, a teacher of 4- and 5-year-olds, reads several books to the children about a variety of plants as well what is needed for flowers and plants to grow. After reading the books, the children assist in planting several terrariums. The environment in each terrarium is slightly different: The first contains plants, water, soil, nutrients, and light. The second contains the same as the first, with the exception of nutrients. The third is missing a source of light. Ms. Abernathy asks the children to predict what will happen to the plants in each terrarium over the next two weeks. Their predictions are written on a poster board. Each day, during group time, the children and Ms. Abernathy examine and discuss the condition of the plants in each terrarium. At the end of two weeks, they examine the terrariums once again. Ms. Abernathy helps the children compare their predictions to the actual condition of the plants.

### Summary and recommendations

Integrating activities that promote critical thinking in the curricula of early childhood classrooms is essential for providing children with opportunities to learn this skill. Teachers can encourage children to enhance their critical thinking abilities through the activities they integrate into their classrooms. Encouraging collaborations with other children and providing opportunities to make predictions both foster the development of critical thinking.

Activity ideas that promote critical thinking include:

- Asking children open-ended questions

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- Embracing children's original responses to questions
  - Building on children' own experiences or knowledge when presenting new information
  - Providing children with opportunities to work with peers on projects or activities
  - Asking children to make predictions
  - Encouraging children to answer *what if?* questions
  - Providing children with hands-on activities and new experiences
  - Creating opportunities for children to scaffold their peers' learning.

## References

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