Metacognition and young children: an exploration of how metacognition contributes to children's thinking and learning by Dr Betty Liebovich, Goldsmiths, University of London

Abstract

Metacognition, or the ability to think about one's own thinking processes, plays a crucial role in the learning and development of young children. While initially children might not possess fully developed metacognitive skills, they begin to develop these abilities gradually as they grow and gain more experiences. This chapter will explore ways that metacognition influences young children's learning, how young children develop metacognitive skills, and why young children should develop metacognitive skills and strategies.

Introduction

Young children's learning is a comprehensive process that encompasses various developmental domains, including cognitive, social, emotional, physical, and language development. It involves acquiring skills, knowledge, and behaviors through exploration, interaction, and engagement with their environment and the people around them. "The development of a growth mindset allows children to exercise autonomy over their learning, helping them to develop positive lifelong learning habits for the twenty-first century" (Boylan, et al, 2018. p.16). Metacognition is an approach to support and develop young children's engagement in learning and understanding. Metacognition "involves a type of exogenous constructivism" (Dinsmore et al., 2008 p.393) where learning occurs as a result of an individual's engagement with the learning process.

The relationship between child and caregiver, when secure, enables the child's negotiations towards a goal to develop – and, with it, their confidence. This is then accepted into the child's working model of themselves in a positive way. The child, as they develop physically, will then have the security within themselves of knowing that, as they venture further from the primary caregiver, their caregiver will be there as a secure base to return to. This gives the child confidence to explore the world they find themselves in, including preschools, learning, new environments, children, and adults (Ainsworth, 1989). Seminal educational theorists such as Piaget and Vygotsky discuss the ideas of self-regulation and metacognition in their work (Dinsmore et al., 2008, Fox and Riconscente, 2008). "The engagement of young students in metacognitive thinking is considered necessary, as they seem capable of developing fundamental forms of metacognition after the age of three. The development of metacognitive skills helps young children to become thoughtful about their learning process" (Chatzipanteli, et al. 2014).

Understanding young children's learning as a complex and dynamic process underscores the significance of metacognition in supporting their cognitive, social, emotional, and physical development. By nurturing metacognitive skills in young children, caregivers and educators lay the groundwork for a lifelong journey of exploration, discovery, and growth that prepares children to thrive in an increasingly complex and interconnected world.

This chapter is designed to explore metacognition and young children, offering an exploration of how this approach to learning supports young children to think deeply about their learning and provide them with agency in their learning progress. Metacognition, or the ability to think about one's own thinking processes, plays a crucial role in the learning and development of young children. While initially, children might not possess fully developed metacognitive skills, they begin to develop these abilities gradually as they grow and gain more experiences. This chapter will explore how to support young children in developing these abilities through growth and experiences in early learning environments.

What is metacognition?

Metacognition refers to the awareness and understanding of one's own thought processes. It involves two key components: Metacognitive Knowledge which includes knowledge about oneself as a learner and the factors that might impact performance. It also encompasses understanding different strategies that can be used for learning or problem-solving and knowing when and why to use them. The second is Metacognitive Regulation which involves the processes used to oversee and control one's learning. It includes planning, monitoring, and evaluating one's understanding and performance.

There are many ways for young children to engage in metacognition. One is awareness of learning strategies. As children engage in various learning activities, they start to become aware of the strategies that help them learn effectively. For instance, they might realize that repeating information aloud helps them remember better or that breaking down a problem into smaller parts makes it easier to solve.

A second way children engage in metacognition is self-reflection. Metacognition involves reflecting on one's own learning process. Young children who are encouraged to think about what they have learned, how they learned it, and what they could do differently next time develop a deeper understanding of their own strengths and weaknesses.

A third outcome of metacognition is monitoring and evaluation. Metacognition involves monitoring one's own understanding and performance. Children who are able to monitor their progress in a task can identify when they need help or when they need to adjust their approach. For example, a child might recognize when they are struggling with a math problem and decide to try a different method.

A further outcome of metacognition is goal setting which is an important aspect of metacognition. Young children who are taught to set specific, achievable goals for their learning are more likely to stay motivated and focused. They learn to break down larger goals into smaller, manageable steps and monitor their progress toward those goals. Developing this skill gives children control of their learning, responsibility for progressing and empowers them to regulate their understanding and develop an appreciation of life long learning.

Metacognition encourages children to develop problem-solving skills through encouraging children to think about their thinking process when faced with challenges. They learn to analyze problems, consider different approaches, and evaluate their effectiveness. This helps them become more independent and confident learners.

Additionally, metacognitive skills allow children to transfer their learning to new situations. By reflecting on past experiences and strategies that worked in one context, they can apply similar approaches to different tasks or subjects. When children are encouraged to make links between ideas and concepts explored, they are able to efficiently and effectively embed this information in their long-term memories and have a deeper understanding of the importance of and connections between what they are learning.

Educators and caregivers can support the development of metacognitive skills in young children by providing opportunities for self-reflection, encouraging goal-setting, teaching problem-solving strategies, and fostering a supportive learning environment where children feel comfortable taking risks and learning from their mistakes. Through these practices, children can become more effective learners and thinkers, setting a strong foundation for their future academic and personal success.

How do young children develop metacognitive skills?

Young children develop metacognitive skills through a combination of biological maturation (Gesell, 1945), environmental influences (Piaget, 1978), and social interactions (Brown, et al., 2013). There are several key ways in which metacognitive skills develop in young children. Through modeling and imitation children learn by observing and imitating the behaviors of adults and older peers. When caregivers and teachers demonstrate metacognitive strategies such as self-reflection, goal-setting, and problem-solving, children are more likely to adopt these behaviors themselves. Additionally, providing explicit instruction about metacognitive strategies can help children become more aware of their own thinking processes. Children identify what they are thinking, why they are thinking what they are thinking and the next steps for addressing a challenge.Teachers and caregivers can teach children specific strategies for monitoring their understanding, setting goals, and evaluating their progress. Guided practice allows children to apply metacognitive strategies in a supportive environment. Teachers and caregivers can scaffold children's learning by providing prompts, cues, and feedback to help them develop their metacognitive skills gradually.

More strategies include reflective discussions, meaning engaging children in considered discussions about their learning experiences can promote metacognitive awareness. By asking open-ended questions and encouraging children to articulate their thoughts and strategies, adults can help children become more conscious of their own thinking processes. This is sometimes referred to as sustained shared thinking which involves two or more people (adults and children) working together to think about different problems and to analyse different concepts. It is when you are totally absorbed with a child, whether that's in a conversation or an activity.

According to Sylva, et al. (2004) "Sustained shared thinking" occurs when two or more individuals "work together" in an intellectual way to solve a problem, clarify a concept, evaluate an activity, extend a narrative etc. Both parties must contribute to the thinking and it must develop and extend the understanding.

The learning supported by metacognition and ultimately emotional development is intrinsic for learning about the self. Through taking risks, making mistakes, and testing the world, children learn to be self-assured, confident, raise their self-esteem, and develop self-reflection. They then become able to explore, experience, and understand their emotions and reactions, in order to develop empathy and, thus, develop tools necessary to become life long learners and develop the foundations for healthy self-regulation.

Metacognitive Tools and Techniques

Using metacognitive tools and techniques can support children's development of metacognitive skills. For example, graphic organizers, self-assessment checklists, and think-aloud protocols can help children organize their thoughts, monitor their understanding, and reflect on their learning progress.

Opportunities for Self-Regulation: Providing children with opportunities to regulate their own learning fosters the development of metacognitive skills. Allowing children to make choices about their learning, set goals, and manage their time encourages them to take ownership of their learning process. Providing opportunities for self-regulation in young children to foster the development of metacognitive skills involves creating environments and experiences that empower children to take control of their learning and decision-making processes. Here are some key aspects to consider when offering opportunities for self-regulation:

Choice and Autonomy: Providing children with choices in their learning experiences allows them to exercise autonomy and make decisions based on their interests and preferences. By offering options for activities, projects, or learning materials, caregivers and educators empower children to take ownership of their learning journey and engage in tasks that resonate with them.

Goal Setting: Encouraging children to set goals for their learning helps them develop a sense of purpose and direction. By defining objectives and milestones, children can track their progress, monitor their understanding, and adjust their strategies accordingly. Goal setting promotes metacognitive awareness by prompting children to reflect on their learning outcomes and plan their next steps.

Time Management: Allowing children to manage their time and allocate resources for different tasks teaches them valuable organizational skills and self-regulation. By setting time limits, deadlines, or schedules for activities, children learn to prioritize, plan ahead, and monitor their progress effectively. Time management skills are essential for developing metacognitive abilities and promoting self-directed learning.

Decision-Making: Encouraging children to make decisions and solve problems independently fosters critical thinking and metacognitive skills. By presenting children with real-life scenarios, dilemmas, or challenges, caregivers and educators provide opportunities for children to apply their knowledge, evaluate options, and make informed choices. Decision-making experiences promote self-regulation and enhance children's ability to reflect on their actions and outcomes.

Reflection and Feedback: Promoting reflection on learning experiences and providing constructive feedback help children develop metacognitive awareness and self-regulation. By encouraging children to reflect on their successes, challenges, and areas for improvement, caregivers and educators support the development of metacognitive skills. Constructive feedback guides children in evaluating their strategies, setting new goals, and refining their approaches based on feedback received.

Supportive Environment: Creating a supportive and nurturing environment is essential for fostering self-regulation in young children. Caregivers and educators play a crucial role in providing guidance, encouragement, and resources to help children navigate challenges, regulate their emotions, and develop resilience. A supportive environment promotes a sense of security and confidence, enabling children to take risks, make mistakes, and learn from their experiences.

By offering opportunities for self-regulation in young children, caregivers and educators empower them to become independent, self-directed learners who are capable of monitoring their understanding, setting goals,

and adapting their strategies to achieve success. Encouraging self-regulation not only enhances metacognitive skills but also promotes a sense of agency, responsibility, and confidence in children as they navigate their learning journey. Overall, the development of metacognitive skills in young children is a gradual process that requires support, practice, and reinforcement from caregivers, educators, and the learning environment. By fostering metacognitive awareness and providing opportunities for children to practice metacognitive strategies, adults can help children become more independent, self-directed learners.

Why should young children develop metacognitive strategies and skills?

There are several important reasons why young children benefit from developing metacognitive strategies and skills. The development of metacognitive abilities in early years is important because these abilities improve children's awareness about their learning.

Educators could improve young children's metacognition in activities where children have increased motivation and engagement, such as physical activities. This is supported by fine and large motor play indoors and outdoors. In addition, there are several other benefits to young children's development through engaging in metacognitive approaches. Some of these approaches include:

Enhanced Learning: Metacognitive skills enable children to become more effective learners by helping them understand how they learn best, monitor their understanding, and adapt their learning strategies as needed. When children are aware of their own thinking processes, they can engage more deeply with learning materials and make connections between new information and their existing knowledge.

Problem-Solving Abilities: Metacognitive skills promote critical thinking and problem-solving abilities. Children who are able to reflect on their thinking processes can approach challenges more strategically, break problems down into manageable steps, and evaluate different solutions. This fosters creativity, resilience, and innovation.

Increased Independence: Developing metacognitive skills empowers children to take control of their own learning. By learning how to set goals, monitor their progress, and adjust their strategies, children become more self-directed and independent learners. This not only prepares them for academic success but also equips them with valuable skills for lifelong learning.

Self-Regulation and Emotional Well-Being: Metacognitive skills support children's ability to regulate their emotions and behaviors. By understanding their own strengths and weaknesses, setting realistic goals, and monitoring their progress, children can develop a sense of agency and self-efficacy. This contributes to their overall well-being and resilience, enabling them to persevere in the face of challenges.

Transfer of Learning: Metacognitive skills facilitate the transfer of learning to new situations and contexts. When children are able to reflect on their learning experiences and identify patterns or strategies that have been successful in the past, they can apply these skills to different tasks, subjects, or real-life situations. This promotes deeper understanding and more flexible thinking.

Preparation for Future Success: Metacognitive skills are essential for success in school, work, and life. Children who develop strong metacognitive skills are better equipped to navigate complex academic tasks, collaborate with others, and adapt to changing circumstances. These skills are increasingly valued in the modern workforce, where lifelong learning and adaptability are critical for success.

Overall, the development of metacognitive skills is vital for young children as it lays the foundation for effective learning, problem-solving, independence, and success in all areas of life. By fostering metacognitive awareness and providing opportunities for children to practice and refine these skills, caregivers and educators empower children to reach their full potential and become lifelong learners.

Key Aspects of Metacognition

Planning on the part of children and adults: Metacognitive regulation is the monitoring of one's cognition and includes planning activities, awareness of comprehension and task performance, and evaluation of the

efficacy of monitoring processes and strategies. It is expected that the adult in the learning environment will support children to monitor their own understanding through engagement with activities offered. The activities are designed with an understanding of individual learners and their leaning styles in addition to their understanding of specific ideas and concepts. Children are supported in setting goals and objectives for learning or problem-solving, as the adult will have planned learning with these specific ideas in mind. It is expected that the adult will have an idea of the strategies children might use and how they might approach a task and be prepared to support the children in their learning to take full advantage of the learning opportunities. Through observation, the adult will determine how and whether children are engaging in activities and scaffold their understanding to further develop their metacognition.

Monitoring: correlations between memory monitoring and performance can be substantial even for young preschool children. Self-regulation, which young children are developing in early years, is the idea that young children develop the skills of monitoring and controlling their own responses and engagement, also referred to as intrapersonal regulation. The observed behaviors that adults in a young child's life look for in terms of emotional and motivational regulation are the learner's ongoing monitoring and control of emotions and motivational states during learning tasks. These include verbal expressions regarding the child's own activity such as 'I can climb this big ladder' or 'I can add 1+1'. Additionally, observations should look for evidences of unspoken behaviors and/or actions demonstrating monitoring or regulation of thinking and problem-solving in order to achieve a personal goal. Shared regulation involves group planning, monitoring and regulation of a collaborative activity that may involve support with a more knowledgeable other (Vygotsky, 1978) or negotiating play outdoors with children making decisions about rules and boundaries. The verbal interchanges usually involve everyone in the group (or no one in particular) and the talk is more about negotiating what has to be done rather than who is specifically responsible for particular tasks. The talk is usually inclusive, stating what the group (we) need to do rather than assigning individual responsibilities or what "you" need to do.

Monitoring using metacognition is about a child keeping track of their own comprehension and progress while engaging in a task. This could be demonstrated through the child talking to oneself as they engage in learning, describing what they are doing (or not doing) and why. During the monitoring process, children recognize when they do or do not understand something. Ideally, this is when they would seek support, either from another child or an adult, to gain the needed understanding and fully engage in the activity successfully. This leads to the child having a deeper awareness not only of the ideas in which they are engaging, but their strengths for accommodating these ideas into long term memory.

Evaluating: Evaluation is the process by which children use certain criteria to make judgments about their own and others' behavior and evaluate their own processes and effect. Children evaluate what they know and do not know (metacognitive monitoring). Metacognition knowledge enables children to plan, monitor, and evaluate their learning and evaluation is the process by which children use certain criteria to make judgments about their own and others' behavior and evaluate their own processes and effects. The process of evaluation defines, explains or teaches others how one has done or learned something. The child explains procedures involved in a particular task and Evaluates the effectiveness of one or more strategies in relation to the context or the cognitive task. By Reviewing one's own learning, the child evaluates the strategies used, rates the quality of performance (self-assessment) and confidently observes or comments on task progress. Through evaluation, children may test the outcome or effectiveness of a strategy in achieving a goal. Evaluation also interrogates the effectiveness of one or more strategies in relation to the context or the cognitive task. Teachers may evaluate the regulation of the children's understanding and engagement with metacognition by observing their behavior while engaged in problem-solving or seeking answers to questions they have posed.

By assessing the effectiveness of strategies used and the outcomes of a task, children have agency over their learning and have the opportunity to commit the learning to long-term memory for future retrieval in addressing tasks and questions effectively. Ultimately, reflecting on what worked, what did not work and why establishes an effective and systematic approach to learning new ideas and assimilating prior learning and information into new ideas and concepts.

Examples of Metacognitive Activities

Activities such as looking at something, reading, listening to something, talking to another person, and, for some many young children, even deciding something. Pretend play belongs to a family of activities that is considered 'pretending' or 'behaving as if' in a broad sense. This kind of creative play provides opportunities for children to

explore their creativity and sense of wonder. Conversations or sustained shared thinking develops the skill of constructive discussion, questioning, querying and criticism so that engagement in these cognitive skills become internalized and self-reflective practices.

In a play-based, child-initiated learning environment, young children have plenty of opportunities for open-ended activities and learning. This allows children space to reflect on their thinking and allows the adult to ask questions like "can you tell me more about what you are thinking and why you think that?". Open-ended activities could include blocks, a writing area, a home corner and table-top learning set up with goals for children's development and understanding.

In discussions with children, help them identify solution-focused learning. Encourage them to consider how they might use their developing understanding to change approaches and understanding in the future. A question to instigate this thinking could be "How could you handle that differently next time?". By doing this, children develop their ability to problem-solve and transfer ideas for future successes. Children are encouraged to identify their strengths and weaknesses and apply their understanding to the current situation and remember their approaches for future success.

Related to discussions about solution-focused learning is the idea of encouraging children to self-question. Guiding children to think about questions before, during and after engaging in an activity helps the child to understand and manage learning. The child might be asked to consider "What do I know already about what this learning presents?", "Is the strategy I'm using working for me?" and "What can I do differently next time"? Through this kind of control and agency in their learning, children take responsibility for their own progress and gain a sense of independence and pride in successfully completing or understanding the ideas in which they are engaging.

Integrating these activities into daily routines and lessons can help young children develop stronger metacognitive skills, enhancing their ability to think about their own thinking and learning processes.

Developing Metacognitive Skills

Educators and adults working with young children can teach specific strategies and model how to use them. By demonstrating skills and problem-solving strategies, you provide a clear example for children to follow and learn from. Modelling is one of the most effective skills a teacher or practitioner can practice—demonstrating for children how to approach their learning by acting out what you would do in their situation. The children do not need to know your "acting out" what you would do but allowing them to see a demonstration of how to approach a situation offers them insight on how to approach unfamiliar situations and learning opportunities/ideas. A lively, humorous approach will help the children remember what you have done. Imagine attempting something that may be really out of your own comfort zone and understand that how you are reacting reflects the feelings of the children in your learning environment as you present them with new ideas and concepts.

Scaffolding children's learning through sustained shared thinking and visuals will support children in deepening their understanding and support them in building their confidence in acquiring new knowledge and comprehension. Scaffolding actively involves children in the learning process, keeping them engaged and motivated to acquire new skills and understanding. Scaffolding helps alleviate the stress and confusion that may arise when children are faced with challenging tasks, providing them with the necessary support and guidance. Providing hints and suggestions can help children overcome challenges and develop problem-solving skills without providing the complete solution. Scaffolding through offering hints and suggestions can guide children toward finding their own solutions. Instead of giving the answer outright, provide partial hints or alternative approaches to help children overcome challenges and develop problem-solving skills.

Sustained shared thinking encourages reflective discussions that give agency to the children to reflect on their learning experience and promote metacognitive awareness. By asking open-ended questions and encouraging children to articulate their thoughts and strategies, adults can support children to become more conscious of their own thinking processes. One important aspect of sustained share thinking is for the adult to actively listen to the children and allow them to take the lead in the discussions. Through this agency, children become independent and confident learners. Encouraging sustained share thinking provides children an opportunity to work together with an adult in an intellectual way to solve problems, clarify concepts and evaluate their own learning.

By implementing these strategies and creating a supportive learning environment that encourages metacognitive development, caregivers and educators can help young children enhance their cognitive abilities, problem-solving skills, and overall learning outcomes. Providing children with opportunities to regulate their own learning fosters the development of metacognitive skills. Allowing children to make choices about their learning, set goals, and manage their time encourages them to take ownership of their learning process. In summary, metacognition involves thinking about one's own thinking, encompassing both the knowledge and regulation of cognitive processes. It plays a crucial role in effective learning, problem-solving, and overall cognitive development.

Conclusion

In conclusion, the exploration of metacognition and its impact on young children's learning and development underscores the critical role of reflective thinking in shaping cognitive abilities and academic success. By fostering metacognitive skills such as self-reflection, goal-setting, problem-solving, and monitoring, educators and caregivers can empower children to become more effective learners, independent thinkers, and resilient problem-solvers. Through a combination of biological maturation, environmental influences, and social interactions, young children gradually acquire metacognitive abilities that lay a strong foundation for lifelong learning and personal growth. Encouraging children to engage in metacognitive activities, such as physical play and sustained shared thinking, not only enhances their cognitive skills but also promotes emotional well-being and self-regulation. Ultimately, by nurturing metacognitive skills in young learners, we equip them with the tools necessary to navigate challenges, transfer learning to new contexts, and cultivate a deep appreciation for the process of learning and self-discovery.

In essence, the development of metacognitive skills in young children is not just about enhancing learning and understanding; it is about nurturing well-rounded individuals who are equipped with the tools and mindset to thrive in an ever-evolving world. By investing in the metacognitive development of young learners, caregivers and educators pave the way for a future generation of critical thinkers, problem-solvers, and lifelong learners who are poised for success in all aspects of their lives.

Questions for Reflective Discussion

How does metacognition influence young children's learning?

What are some strategies for helping young children develop metacognitive skills?

Why is it important for young children to develop metacognitive skills and strategies?

What are the benefits of engaging young children in metacognitive approaches, such as physical activities?

In what ways can educators and caregivers support the development of metacognitive skills in young children?

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