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Informal Learning: How Care Providers Can Engage in Learning Outside of the Classroom

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Abstract

Informal learning is learning that happens spontaneously with no explicit instruction taking place (Latchem, 2014). The term informal learning was developed in 1950 by Malcolm Knowles in his work *Informal Adult Education* (as cited in Cofer, 2000) and many others have researched best practices for informal learning involving children (Latchem, 2014; Song et al., 2017). In many cases, it is the responsibility of the adult to initiate informal learning experiences by providing quality explanations for the many questions that children ask and engaging in everyday conversation with children. Much of the research that has been done exploring informal learning has taken place in a museum setting or about a STEM subject, (Crowley et al., 2001; Tougu, Marcus, Haden, & Uttal, 2017) but informal learning can take place anywhere using everyday experiences. Although there are individual differences to be mindful of when engaging in informal learning experiences, all care providers are encouraged to initiate informal learning with children using best practices suggested in this article.

Informal Learning: How Care Providers Can Engage in Learning Outside of the Classroom

Learning is fundamental to children's development (Vygotsky, 1978). There are many different ways children learn about their world. In some cases, children learn about their world through first-hand observations and experiences, while in other cases, they rely on testimony and explanations from others such as their peers, teachers, parents, and other adults (Sobel & Jipson, 2016 as cited in Kurkul, Castine, Corriveau, n.d.). Learning takes place in a variety of contexts. Formal contexts are highly structured such as typical classroom-based learning led by a teacher. In contrast, informal contexts, such as museums, the home or even the playground provide children with the opportunity to learn in a naturalistic environment (Jant, Haden, Uttal, & Babcock, 2014). The term informal learning was first introduced in 1950 by Malcolm Knowles, in his work *Informal Adult Education* (as cited in Cofer, 2000). Cofer's (2000) research shows that 70% of what adults know about their job is learned informally by their coworkers. This shows that the process of informal learning is valuable to everyone because much of what people know was not taught in a formal classroom setting. In informal learning environments there is no explicit instruction and learning happens spontaneously (Latchem, 2014). Informal learning is also valuable for children, however, the challenge with informal learning contexts is that it is up to the adult to serve as the teacher. This is potentially problematic given the wide range of educational backgrounds and experience that adults have. Thus, far more variability can be seen in the type of learning that takes place in informal learning contexts compared to formal learning contexts (Latchem, 2014). Given that children spend an average of 80% of their time with a parent or other caregiver (Hofferth & Sandberg, 2001 as cited in Song et al., 2017), these

individuals play an integral role in shaping children's early learning experiences. It is important to recognize and appreciate learning opportunities during everyday activities, while still recognizing the importance of formal learning.

Informal Learning Contexts

Informal learning should not be used in place of formal learning, but as a complement to it (Cofer, 2000). In most cases, informal learning occurs incidentally. In 1977, Bell described formal and informal learning as brick and mortar (as cited in Cofer, 2010). Formal learning acts as bricks used to build knowledge and informal learning is the mortar that fills the spaces in between. It is the responsibility of adults to encourage these learning experiences and provide scenarios where learning can occur. In these contexts, literature suggests that adults play a prominent role in helping children learn. Indeed, children are naturally curious and ask nearly 76 information seeking questions per hour by the time they are three (Chouinard, Harris, & Maratsos, 2007 as cited by Kurkul, Castine, & Corriveau, n.d.). Thus, the explanations and responses adults provide to the questions children ask are often necessary to facilitate learning -- especially when the child is questioning a phenomenon that cannot be learned through first-hand experiences (e.g., gravity, the existence of God etc.). There is value in the information seeking questions that children ask and the conversations that stem from these questions.

Children engage in everyday conversation in order to understand the world around them (Callanan & Oakes, 1992 as cited in (Solis & Callanan, 2016). Parent-child conversations during learning experiences are related to the child's understanding of the event and their likelihood of remembering the experience (Jant, et al., 2014). In 1978, Vygotsky described that opportunities to interact with others become crucial to learning and cognitive development, and interactions

between a novice and an expert can help expand the learner's achievements. In applying Vygotsky's theory to informal learning, the adult would take the role as an expert and the child a novice. In any interaction that novel information is provided to the child to expand their knowledge on a topic, informal learning can occur. Parents play an important role in developing curiosity in children, and informal learning is driven by curiosity and motivation to discover (Song et al., 2017). Adults can help in supporting curiosities by responding to them with explanations to further the child's understanding of the topics.

Quality of Explanations

Explanations provide children with important information that they may not have access to through observations or exploration (Kurkul, Castine, Corriveau, n.d.). Therefore, it is important to provide children with in-depth explanations using evidence so that they can have opportunities to learn more. Research shows that there are many ways to determine whether a quality explanation is provided or not and whether the source of the information is credible (Corriveau & Kurkul, 2014). Simply put, a quality explanation is one where the informant provides evidence to support their statements (Luce, Callanan, & Smilovic, 2013). Researchers have conceptualized quality of explanations in various different ways such as through the use of causal connectives (Bernard, Mercier, & Clement, 2012), circularity (Rips, 2002), epistemological nature (Luce, et al., 2013), or elaborative versus non-elaborative statements (Bradshaw & Anderson, 1982). Any approach used may be helpful in providing a child with an explanation that can increase their understanding of a topic. Research shows that providing quality explanations to children can improve their ability to learn novel skills (Corriveau & Kurkul, 2014). Ways to develop quality conversation with children include activating their prior

knowledge about the topic and asking them questions (Jant, et al., 2014). Next Generation Science Standards (NGSS, 2017) along with the research of Solis and Callanan (2016) suggest that adults should engage their children in collaborative, evidence-based conversation that promotes inquiry. This can be as simple as an adult initiating social conversation with a child and providing them with the tools they need to explore (Thomas & Pattison, 2012). The quality of the explanations that caregivers provide their children in these situations can determine how much knowledge their children are gaining from these experiences.

Children are very perceptive to the explanations being provided to them and are able to determine whether the evidence adults provide them are quality explanations. Mercier, Bernard, and Clement (2014) found that children as young as preschool can make judgments about the quality of an explanation provided to them in order to make decisions. Children's evaluations of explanations develop rapidly over the preschool and elementary school years (Baum, Danovitch, & Keil, 2008). Therefore, it is important for adults to be mindful of not only the how frequently they converse about academic subjects with children, but to focus on what messages they are conveying to them. In some cases, children will continue to ask questions until they are satisfied with the evidence that they have received (Frazier, Gelman, & Wellman, 2016). Children also find more complex explanations more satisfying and are more likely to remember them (2016). In some cases, quality explanations are essential in guiding understandings of subjects that cannot be learned through firsthand experiences.

Informal Learning Experiences with STEM

Research shows that informal learning experiences are important in the science, technology, engineering, and math (STEM) learning process (National Science Board, 2010).

Informal learning environments such as museums, hands-on activities, and conversations with adults can advance STEM learning opportunities for children (Tougu, Marcus, Haden, & Uttal, 2017). Sobel and Jipson (2016) explain that children approach science learning through interactions with parents, teachers, and informal learning partners (as cited in Kurkul, Castine, Corriveau, n.d.). Wood, Brunner, and Ross (1976) describe parents as expert problem solvers, where they scaffold the problem solving skills of the novice (the child) in order to help them define the task, identify possible outcomes, and determine a solution (as cited by Crowley et al., 2001). These problem solving skills become essential when completing engineering design challenges, which can act as great informal learning experiences.

Informal science learning extends far beyond the walls of the classroom to include not only museums and science centers, but community science workshops, nature preserves, hiking trails, and homes as well (Luce, Goldman, & Vea, 2016). Science learning can be easily incorporated into everyday activities by incorporating investigation and experimentation into typical routines (2016). Science surrounds us everywhere, everyday, and acknowledging the science around us through conversations with children may be very beneficial to their understanding of STEM subjects. Crowley and his colleagues (2001) determined that children who engaged in shared scientific thinking with their parents had a greater opportunity to learn than children engaged in scientific thinking with peers or by themselves. In 1999, Crowley and Siegler found that when adults provide explanations when demonstrating problem solving strategies, children are better able to transfer these strategies to novel problems (as cited in Crowley et al., 2001). In turn, studies show that if adults do not provide explanations or encourage the child to develop their own explanation, it is unlikely that children will do so on

their own (Goncu & Roggoff, 1998; Siegler, 1995 as cited by Crowley et al., 2001). Research shows that children who activate prior knowledge acquired during play experiences are able to transfer that knowledge to engineering tasks when completed with their families in a museum setting (Tougu, et al., 2017). Snow and Kurland's research (1996) showed that parent-child conversation about scientific processes was correlated with children's performance on several measures of early literacy (as cited by Crowley et al., 2001). Engaging in informal learning practices about STEM subjects is easier than it may seem, and the positive benefits of these experiences may be worth it for the children involved. Although learning experiences can happen in everyday routine, museums are a great location to broaden understandings of novel topics. Museums are a great place to start if looking for some guidance for engaging in informal learning with children.

Museums

Much of the research on informal learning contexts take place in museum settings. Adults play an important role during informal learning in museum settings. Crowley and his colleagues (2001) determined that when children explore science exhibits with their parents, they explore for longer periods of time and remain more focused than when they explore exhibits on their own. A study conducted by Gleason and Schauble (1999) determined that when a parent is aware of the potential for learning, they are much more likely to engage in problem solving in a way that enhances children's learning experience (as cited in Song et al., 2017). Additionally, Gleason and Schauble (1999) also determined that when parents are unfamiliar with the subject matter, they are more likely to take the lead on problem solving, while allowing children to play a more physical role in the task (as cited in Song et al., 2017). In cases where parents take the

lead, Gleason and Schauble (1999) found that children have a lesser opportunity to gain knowledge from the experience and parents miss out on a collaborative experience to interpret evidence with their children (as cited in Song et al., 2017). When children demonstrate behaviors such as making observations and answering questions, they learn more than when they did not engage in these behaviors (Song et al., 2017). Engaging children in museum exhibits can be very beneficial to them and this can be done in many ways. Researchers have found that even partial or brief explanations referred to by Crowley, Callanan, Tenenbaum, and Allen (2001) as explanatoids, provided during collaborative exploration or problem solving activities can be very beneficial in aiding the child's ability to comprehend complex scientific concepts in a museum setting. Although, explanations from the caregivers are not the only way for children to build knowledge in a museum setting. Andre and her colleagues (2016) suggest that museum exhibits positively influence children's learning when incorporating hands-on activities, narratives and plays, and emphasized the importance of scaffolding by a knowledgeable adult or peer, or support through technology. If a caregiver is less knowledgeable about the topic presented in the exhibit, there is guidance provided by most museums to help engage visitors by providing them with further information about the exhibits. The use of signage in many museums can act as a guide when parents are less knowledgeable about the subject are that the exhibit portrays (Song et al., 2017). Parents play a significant role at museums. It is shown that when they direct their attention toward important information about a museum exhibit, they are more likely to engage their children in more detailed discussions and joint activities, as well as transfer information, not only across exhibits, but outside of the museum and at home (Jant, et al., 2014). Although there are a variety of contexts where informal learning takes place, it was decided to focus on

museums in this article due to the fact that the vast majority of research on informal learning has taken place in the museum context.

Best practices that were found in a museum context can also be extended to use in various contexts. Many skills modeled in museums can be relevant in other informal learning contexts as well, such as the use of signage. Ridge and her colleagues (2015) have found that signage in locations such as supermarkets increases the amount of conversations between parents and children about food types compared to when there are no signs (as cited by Song et al., 2017). If signage or further detail is provided, it can be beneficial to share the information with a child so that learning experiences can occur at any place or time. Sharing knowledge with children can help them develop interest in certain topics. Shaffer's research (2004) has been conducted with children becoming experts in a field of knowledge, or developing an island of expertise (as cited in Palmquist & Crowley, 2007). While children can gain expertise in a subject and have a greater understanding of a particular domain, research collected by Johnson and his colleagues (2004) suggests that children are unable to connect this knowledge to other domains (as cited in Palmquist & Crowley, 2007). This is where the role of the adult becomes very important to help the child make connections and further develop their understandings of a topic that the child shows a great interest in.

Best Practices for a Care Provider to Children

What can care providers do to aid children's learning in informal learning contexts? How can adults provide quality informal learning to children? In this article, the term care provider is being used to describe any adult who engages with children on a daily basis outside of the classroom including parents, guardians, pediatricians, school staff, social workers, and coaches.

The best way for any care provider to start is to understand that the basis of informal learning is its unstructured and unpredictable nature. Although there are suggested practices, there is no set instruction to follow in order to teach children about the world that surrounds them. Informal learning can be made more accessible to everyone. Informal learning does not have to be a museum trip or a twenty piece chemistry set. Shopping, going to the doctor's office, church, library, parks, community groups, and visiting relatives and friends can all be made into informal learning experiences. Thomas and Pattison's research (2012) shows that informal learning can represent itself by providing children access to computers, books, dvds, pens and paper, money, clocks, keys, transportation, and other household materials or everyday experiences. If a STEM topic is being discussed, children's learning may vary depending on their previous experience with science-based conversation with their parents (Jant, et al., 2014). The best thing that any caregiver can do is be conscious of the opportunities surrounding them every day that can further the learning of children in their life. Although life can get hectic at times, slowing down and taking advantage of learning opportunities will always be beneficial for children. It is the responsibility of the adult to initiate these informal learning experiences. There are many resources out there that can guide care providers toward initiating valuable and quality informal learning practices.

Individual differences

Below are following findings that should be taken into account when working with children in informal contexts. Individual differences can include but are not limited to cultural, gender, and socioeconomic differences that vary amongst people and reinforce the understanding that people have different circumstances and abilities. There are a variety of ways that adults and

children can make sense of the world and engage in activities (Solis & Callanan, 2016). Learning is not acultural and can be made accessible to adults and children of all cultural backgrounds (Bang & Medin, 2010).

Jant and her colleagues (2012) recognize that parents with different educational levels speak differently to their children in museum settings. In her work (2012), Jant states that more research may need to be done to expand what we know about individual variations in informal learning approaches and outcomes. There is extensive research suggesting that parents talk with their children differently in museum settings and the amount of verbal explanatory talk also varies based on the socioeconomic status and education attainment of the parent (Siegel, Esterly, Callanan, Wright, & Navarro, 2007; Tenenbaum & Callanan, 2008 as cited in Jant, et al., 2014). Teaching styles of parents may vary depending on their comfort level and experiences with the task (Moreno, 1991 as cited by Tennenbaum & Callanan, 2008). Diverse families may have different methods of conducting sense-making practices, but these practices are not wrong just because they do not coincide with the practices of the dominant culture (Solis & Callanan, 2016). Families from different backgrounds may engage with science practices differently when having conversations about science-related topics (Bang & Medin, 2010, Bricker & Bell, 2014 as cited in Solis & Callanan, 2016). These findings do not suggest that any method of engaging in informal learning with children is right or wrong. Care providers are encouraged to engage in informal learning practices with children in any way that they may be comfortable.

Care providers can be more mindful to provide quality explanations dependent of gender. According to Crowley and his colleagues (2001), parents were three times more likely to explain science to boys than to girls during shared scientific thinking in a museum. Their findings (2001)

suggest that parents may be unintentionally contributing to the gender gap in children's scientific understandings before they begin formal science instruction in school. Being aware of the gender differences in explanations is the first step in modifying how adults approach their own explanations to children.

All families and children have their own set of individual differences that makes their learning experiences unique to them. Every person brings their own set of background knowledge to the table when engaging in new activities. The findings and suggestions in this poster are best practices so that any care provider of children can offer positive experiences with those children when engaging in informal learning in any context.

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