Using Informational Text and Play Experiences
to Support Student and Family Engagement in a Virtual Learning Environment

Children Coping with Stress in the Early Childhood Classroom

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A Resource Devoted to Infants & Toddlers

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Encontrar maneras de abogar, animarse unos a otros

Judy Whitesell

"…an environment where everyone is valued and respected with all colleagues onboard."

Fall is upon us, and there is a change in the air. The change I'm referring to is not necessarily related to weather. Although we enjoy the seasonal colors, football, and getting back to more consistent routines, the change I'm referring to is to be more intentional and focused in everything we do. One of the areas should be to become a more consistent advocate for children with others. It seems lately that everyone has opinions on what's best for children even though most do not have training or countless years of research to support their opinions. Those of us who do, should seek opportunities to share what we know to help them understand why we use these "best practices". Once understanding between adversaries is achieved, then true conversation can take place. In the words of Maya Angelou, "Do the best you can until you know better. Then when you know better, do better."

Another area of change as leaders in our field is to find additional ways to encourage and support one another. It's no secret that in the last few years, we have had many colleagues abandoning their passion to find employment in other areas due to many factors including lack of the above-mentioned and the stress that comes from it. We may not be able to "wave a magic wand to make everything better", but we can start by finding new ways to lift up one another. One suggestion is having a workplace environment where everyone is valued and respected with all colleagues onboard. Another is building relationships with one another and the families we serve, that will solve many of our concerns. Definitely steps in the right direction!

In this issue of *Dimensions*, you will find a variety of topics that will address coping with stress as well as content areas. I'm confident you will find this resource beneficial in addressing the "changes in the air". I'm proud to be part of this community and am to be able to share it with you! Blessings to you all.

El otoño ya está con nosotros, y ya sentimos un cambio en el aire. El cambio al que me refiero no está necesariamente relacionado con el clima. Aunque disfrutamos de los colores de temporada, el fútbol y volver a rutinas más consistentes, el cambio al que me refiero es ser más intencionales y centrados en todo lo que hacemos. Una de las áreas debería ser convertirse en un defensor más consistente de los niños con los demás. Parece que últimamente todo el mundo tiene opiniones sobre lo que es mejor para los niños a pesar de que la mayoría no tiene formación o incontables años de investigación para apoyar sus opiniones. Aquellos de nosotros que lo hacemos, debemos buscar oportunidades para compartir lo que sabemos para ayudar a comprender por qué usamos estas "mejores prácticas". Una vez que se logra el entendimiento entre los adversarios, entonces puede tener lugar una verdadera conversación. En palabras de Maya Angelou, "Haz lo mejor que puedas hasta que sepas mejor. Luego, cuando sepas mejor, hazlo mejor".

Otra área de cambio como líderes en nuestro campo, es encontrar formas adicionales de alentarse y apoyarse mutuamente. No es ningún secreto que en los últimos años, hemos tenido muchos colegas que abandonan su pasión por encontrar empleo en otras áreas debido a muchos factores, incluida la falta de lo mencionado anteriormente y el estrés que se deriva de ello. Es posible que no podamos "agitar una varita mágica para mejorar todo", pero podemos comenzar por encontrar nuevas formas de levantarnos unos a otros. Una sugerencia es tener un ambiente de trabajo donde todos sean valorados y respetados con todos los colegas a bordo. Otra es construir relaciones entre nosotros y con las familias a las que servimos, resolverá muchas de nuestras preocupaciones. ¡Definitivamente son pasos en la dirección correcta!

En este número de *Dimensions*, encontrarán una variedad de temas que abordarán cómo lidiar con el estrés, así como temas sobre contenido curricualr. Estoy seguro de que encontrarán este recurso beneficioso para abordar los "cambios que hay en el aire". Estoy orgullosa de ser parte de esta comunidad. ¡Bendiciones para todos!

Supporting Child Development
Apoyando el desarrollo de los niños

Wilma Robles-Melendez, PhD

Welcoming once again another fall season, we take time to reflect on the many opportunities to continue supporting children's development and wellbeing. At centers and schools, fall marks a time that for many, both children and teachers, is one of new beginnings. For some, it may be another time of new experiences, meeting new friends and gaining new ideas in their ongoing learning. Whether they are new or not, this is a time where our hopes are in experiences that will continue to support children's development. It is with this goal in mind that in this edition you will find topics that will contribute to offer rich and valuable experiences for children. The articles in this issue offer ideas, examples, and suggestions so that we early childhood educators can continue to support children's overall learning. We hope they will offer ideas, clarify and expand others with new ways of teaching and working with children to lead them to their personal success.

Dando la bienvenida una vez más a otra temporada de otoño, aprovechamos esta oportunidad para reflexionar sobre las muchas oportunidades para apoyar el bienestar de los niños. En los centros y aulas, el otoño marca un momento que, para muchos, tanto niños como maestros, es uno de nuevos comienzos. Para otros, puede ser otro momento con nuevas experiencias, de conocer nuevas ideas y también de continuar aprendiendo sobre su realidad y sobre si mismos. Ya sea que sean nuevas o no, este es un momento en el que nuestras esperanzas están en experiencias que continuarán apoyando el desarrollo exitoso de los niños. Es con ese propósito que en esta edición encontrarán temas que contribuyan a ofrecer experiencias ricas y valiosas para los niños. Los artículos en esta edición ofrecen ideas, ejemplos y sugerencias para que nosotros los educadores del nivel infantil podamos continuar apoyando el aprendizaje general de los pequeños. Esperamos que los mismos ofrezcan ideas, clarifiquen y expandan otras con nuevas formas de enseñar y trabajar con los niños que beneficie su éxito personal.

Using Informational Text and Play Experiences to Support Student and Family Engagement in a Virtual Learning Environment

Carmen Sherry Brown

Introduction

Young children learn best through hands-on, authentic experiences that motivates, stimulates and supports their growth in all areas of development (Zosh, et al., 2017). This includes the skills necessary to enhance their literacy and language acquisition, physical and cognitive development in addition to their social-emotional development and approaches to learning. During play activities, children are encouraged and supported in expressing their thoughts and emotions (Duffy, 2006), while exploring their environment, and connecting their prior knowledge with new knowledge and skills (Zosh, et al., 2017). Using informational text to support play and developmental activities for young children arouses their interest and curiosity and fuels their exploration and discovery.

Informational text is nonfiction writing that is written with the intention of informing the listener and reader about a specific topic. Informational texts have supplemental details that make it easier for listeners and readers to follow the dialog and acquire the information they need to deepen their understanding of the topic, engage in activities that reinforce the subject, and transfer knowledge in to play and interactive activities. These details include written cues with identified vocabulary, graphics, illustrations, and an organizational structure. Informational text can be used as an anchor for language and vocabulary development as well as making connections with contextual information through collaborative activities that support whole child development.

During the COVID-19 pandemic and remote teaching and learning, engaging families and young children in activities that support development through active participation and play was a critical component of the virtual learning environment. Families and children were still expected to meet developmental and grade level expectations while adapting to new modalities of teaching and learning. In addition, families became increasingly concerned about their children's social-emotional development and approaches to learning. Moreover, fieldwork interns in schools of education (SOE) did not have the opportunity to interact with children and families in a face-to-face classroom setting due to Centers for Disease Control (CDC) guidelines. In order to support children, families, and fieldwork interns, a virtual tutoring model was conceptualized by an SOE faculty member and families to provide children with supplemental support and enrichment activities and fieldwork interns with an authentic teaching and learning experience.

A play-based approach involves both child-initiated and teacher-supported learning (Robertson et al., 2018). The following activity was developed by families and fieldwork interns to support children's curiosity, interest, and initiative in learning about the weather, specifically clouds, after severe thunderstorms were experienced in the area where the children and families lived.

Purpose

The purpose of this virtual activity was to provide Kindergarten, Grade 1, and Grade 2 students with the opportunity to develop their decoding, fluency, and comprehension skills while reading a grade and developmentally appropriate informational text about clouds. This activity also supported multiple modalities and provided interdisciplinary connections throughout the virtual activity and family engagement.

Using an informational text about clouds provided an anchor for an authentic play experience, language and vocabulary development, and family engagement to extend the learning beyond the virtual tutoring session. To support culturally responsive pedagogy, the activity was dependent on family participation and active engagement and utilized the home and community assets.

Planning

Fieldwork interns and families engaged in collaborative planning to support early childhood students. The lessons and activities were created to supplement the asynchronous school-based lessons and were based on the children's initiative to learn about weather related activities, inquisitiveness to learn how clouds work, and general interests. Families also wanted their children to receive additional

support with specific skills they were learning in synchronous and asynchronous lessons that was part of the curriculum in the schools their children attended.

While the families were aware of the specific skills their children were expected to learn, it was also important for the families to understand the connection to early learning guidelines and standards to guide the planning process. During the creation of the clouds lesson, fieldwork interns and families were aware that the activities should align with developmental and grade-level expectations to ensure children were developing along a continuum (**Table 1**). Families were knowledgeable about their children's interest, skills and abilities and provided valuable information during the planning sessions on the type of activities and interaction that would support their children's engagement during the virtual tutoring sessions.

Objectives

The objectives of the activities were differentiated by grade and developmental level and individualized to meet individual children and family need (**Table 2**). Families provided specific information about their children's developmental levels including their social-emotional

Table 1. Sample alignment to developmental expectations

Kindergarten	Grade 1	Grade 2
1. Decode some regularly spelled one-syllable words.	1. Read most common high-frequency words by sight.	1. Read all common high-frequency words by sight.
2. Read common high-frequency words by sight.	2. Read beginning reader texts, appropriate to individual student ability, orally with accuracy, appropriate rate, and expression on successive readings.	2. Read grade-level text orally with accuracy, appropriate rate, and expression on successive readings.
3. Engage with emergent level texts and read-alouds to demonstrate comprehension.	3. Use context to confirm or self-correct word recognition and understanding, rereading as necessary.	3. Use context to confirm or self-correct word recognition and understanding, rereading as necessary.

Table 2. Objectives for each grade level

Kindergarten	Grade 1	Grade 2
1. Children will discuss and read vocabulary words in word bank.	1. Children will discuss and read vocabulary words in word bank.	1. Children will discuss and read vocabulary words in word bank.
2. Children will read a short story about clouds.	2.Children will read a short story about clouds.	2. Children will read a short story about clouds.
3. Children will write vocabulary words.	3. Children will write vocabulary words in a sentence.	3. Children will write vocabulary words in a sentence.
4. Children will identify rhyming pairs in a cloud game.	4. Children will identify sight words in a cloud game.	4. Children will identify singular nouns in a cloud game.

and deeper processing for learning and development.

Activities

Preparation and anticipatory set

In preparation for the activity, children and families completed a 3-day observation chart. They were encouraged to take a daily neighborhood walk and observe the different types of clouds that were in the sky. Depending on the availability of resources in the home, families were encouraged to take pictures with a camera or camera phone or draw pictures of the types of clouds they saw on their daily walks. For those families that were unable to participate in the observation walk, the children were encouraged to use a real-time observation during the virtual tutoring activity.

development and eagerness to participate in the lesson. Families also provided important information in regards to their children's approaches to learning such as enjoyment, initiative, and perseverance while engaging in remote activities. Collaborating with the families supported the fieldwork interns in learning about the children's strengths and what piques their interest. The collaboration was also a key factor in learning about the children's background knowledge.

Vocabulary

Vocabulary plays a fundamental role in the reading process and contributes greatly to a reader's comprehension (Manyak, et al., 2014.) A reader cannot understand a text without knowing what most of the words mean. To support the potential frequency and varied encounters with the vocabulary words in the text about clouds, families and fieldwork interns collaborated to identify vocabulary words that could be used within the context of the virtual activity as well as in decontextualized situations outside of the virtual learning environment (**Table 3**). This supported the children and families in participating in meaningful instructional activities that engaged students in making connections

Introduction to virtual activity

Each family briefly shared their 3-day observation photos and/or drawings and discussed the different types of clouds, if any, they saw on their daily walks. To support the extended discourse about the subject, to assess their prior knowledge about clouds, and to ensure that all the children were able to engage in the introductory activity, the children were asked the following questions:

1. *Do you know what a cloud is?*
2. *Do you know what clouds are made of?*
3. *What can clouds tell us about the weather?*
4. *Depending on their shape, size, or color clouds have special names. Do you know any names for the clouds?*
5. *What did you notice about the clouds on the day there were thunderstorms?*
6. *How did you feel during the thunderstorms?*

Using a Google slides presentation, the children were introduced to the vocabulary words that were necessary for comprehension of the informational text.

Table 3. Vocabulary words

Kindergarten	Grade 1	Grade 2
thin	information	gravity
puffy	fog	droplets
blanket	droplets	satellite
cumulus	cumulus	cumulus
stratus	stratus	stratus
cirrus	cirrus	cirrus

Different cloud forms that children can observe and describe.

Small group lesson
Part 1
Each lesson began with a review of the vocabulary that was aligned to the age/developmental level of the children and a discussion of the different types of clouds. To provide an authentic and meaningful connection, all students were encouraged to match the names of the specific clouds to the photograph or picture of the clouds they saw on their daily observation walk. If the family was unable to take a walk during the week, the children were encouraged to use a real-time observation to describe or name the clouds.

Depending on the developmental level on the students, children, families and fieldwork interns engaged in an interactive shared reading or a guided reading lesson. The interactive shared reading lesson supported early readers by having a shared reading experience while the families and fieldwork interns modeled and guided the children in decoding and fluency skills. The guided reading lesson supported students in reading the text independently. During both lessons, families and fieldwork interns asked comprehension, inference, and prediction questions throughout the virtual lesson.

Part 2
Depending on the developmental level of the children, each child engaged in an interactive activity that supported one of the following skills: Matching rhyming words (Kindergarten), identifying sight words (Grade 1), or identifying singular nouns (Grade 2). Each of the skills were represented in an online, interactive game that utilized the theme of turning clouds into rainbows.

Conclusion activity
Part 1
To support the family engagement component of the activity, the conclusion lesson incorporated a simulation of a cloud and rain demonstration. To extend the conversation and learning, families were encouraged to replicate the activity using the information and vocabulary from the text. Families that were unable to replicate the activity due to lack of resources or time, were provided with the video of the activity as well as YouTube links of the same/similar activity being conducted.

Cloud in a jar activity
Materials:
1. Clear glass jar.
2. Shaving cream.
3. Blue food coloring.
4. Dropper (if needed)

Directions:
1. Fill glass jar with warm tap water three-quarters (3/4) to the top.
2. Fill the remaining space in the jar with the shaving cream, going slightly over the rim of the jar.
3. Wait 30 seconds and then drop small amounts of the blue food coloring onto the shaving cream.
4. Observe, discuss, and document what happens to the shaving cream and the water in the jar.

Part 2
Extension activities
Vocabulary bin
Identified vocabulary words can be written or typed on cloud shaped tag board and placed in a plastic bin with cotton or cotton balls.

Children will listen to or read a definition and find the appropriate vocabulary word in the bin. Children can also use the vocabulary words during interactive and independent writing activities.

Family adaptation:
"We used index cards to write down the words and have him go on a scavenger hunt. Then he would tell us what it meant…sometimes he would write the word in a sentence." (Parent, Spring 2021)

"Our family made matching cards and played a memory game. We did this with all of the vocabulary words he was learning in school." (Parent, Spring 2021)

Cotton ball clouds
Using the photographs and pictures of clouds as models, children can use cotton balls to create the different types of clouds they observe(d) and/or read about in the informational texts. As an alternative, children can use tempera or fingerpaint to create the different types of clouds.

Family adaptation: *"<Child> would ball up or tear up paper from junk mail to make clouds."* (Parent, Spring 2021)

"She loves playdough and making playdough. We used the playdough to make 3-D models of clouds." (Parent, Spring 2021)

I-Spy cloud viewer
Children can create a personal viewer to observe the sky and identify the various clouds they see. White tag board can be used to create a cloud shaped eye mask that children can decorate. The mask can have string attached to secure to the face or a tongue depressor to be held during observations.

Family adaptation: *"…used sunglasses to look at the sky…said they had special power that helped name the clouds and predict the weather."* (Parent, Spring 2021)

"They received binoculars as a present and used them to look at the clouds during the day and the stars at night. <Children> were able to notice that the clouds still were in the sky at night" (Parent, Spring 2021)

Additional informational texts about clouds

Saunders, G. (2006). *Clouds*, Pebble Books.

Hansen, G. (2016). *Clouds*. Capstone Classroom.

Ferguson Delano , M. (2015).*Clouds*. National Geographic.

Dane Bauers, M. (2004). *Clouds (Ready to reads)*. Simon Spotlight.

dePaola, T. (1975). *The cloud book*. Holiday House.

Carle, E. (1997). *Little cloud*. Scholastic.

Sherman, J. (2203). *Shapes in the sky. A book about clouds*. Picture Window Book.

Music and movement
Children and families interact with music and videos about clouds that reinforce the vocabulary from the informational texts and introduces new vocabulary and facts abouts clouds.

Family adaptation: *"…bedtime has been so much more fun since learning about clouds. We use cloud motions for calming down activities."* (Parent, Spring 2021)

Conclusion
Engaging children in authentic, real-life play experiences that are connected to content and skill development makes the learning meaningful and fun. For young children, listening to, reading, writing, and illustrating informational texts is a great way to build knowledge and vocabulary in science, social studies, and the arts (Wise & Duke, 2019). Engaging families in the planning and implementation process encourages children's learning and inquiry through playful interactions and supports young children's growth and learning across the developmental domains.

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Sherman, J. (2004). *Shapes in the sky: A Book about Clouds*. Picture Window Books.

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Children Coping with Stress in the Early Childhood Classroom

Michelle Grantham-Caston and Jeannete Bankston

The early years of a child's life are a crucial time for brain development and stress can play a critical role in compromising its development (Zadina, 2014; Zull, 2011). Fink (2019) explains physical and mental stress as being characterized by heightened excitability and arousal, perceived adverse situation, and lack of control. This normal, adaptive, physiological response is a reaction to a perceived threat. Children can experience stress because of peer conflicts, familial conflict, changes and transitions such as new siblings or moving, extreme conditions such as hunger, being very cold, being ill for a long period, abuse, war, consumption of drugs and alcohol and academic pressure (Feldman, 2019; Nijboer, 2007; Statman- Weil, 2015). Teachers have the opportunity to construct trauma sensitive classrooms and safe spaces that guide children in the development of self-regulation and coping strategies to mediate the negative effects of stress.

Stress and the Development of Young Children

Every child will experience some stress in their lives. Stress does not pose a threat to development unless it is repeated and persists into chronic or toxic stress (Centers for Disease Control and Prevention, 2019) . Toxic stress, is defined by Shanks and Robinson (2013), as "strong, frequent or prolonged activation of the body's stress management system" (p. 162). For example, every time a child perceives a threat the body responds by engaging the limbic system which triggers changes throughout the brain and body that better equip us for "fight or flight." However, when this response system is engaged repeatedly the body adapts structurally and neurolog-

ically, impacting the ability to develop and function normally in the absence of stressors.

Adverse Childhood Experiences (ACEs) can have cumulative effects on health and behavior across a person's lifetime beginning with childhood experiences. These experiences could stem from traumatic events that include abuse, violence, family mental health or substance use problems. In adults ACEs or toxic stress is correlated with risky behavior, heart disease, diabetes, substance abuse, and early death (Centers for Disease Control and Prevention, 2019). As early childhood educators, we can start to mediate these effects by identifying children who are experiencing stress and support their self-regulation and coping abilities. Young children communicate stress through a variety of behaviors. Some behaviors that may be observed are hurting themselves and others, crying, staying away from activities, losing their appetite, yelling, swearing, nail biting, resisting coming to school or going home and feeling fatigue (Fink, 2017; Nijboer, 2007; Santelman, 2014;Statman-Weil, 2015).

In the classroom, teachers might observe evidence of stress and trauma in a child's play (Feldman, 2019). For a child, play is used to make sense of a child's world and can be viewed as an effort to communicate with adults. One might observe reenactments of gun violence, trauma, or death which is an example of children "adapt [ing] their games to the constraints of conflict and persevere with their play in the face of lethal danger" (Feldman, 2019, p. 289). Children who have experienced trauma often engage in behaviors such as yelling, hitting, running, and ignoring others that can be misdiagnosed in young children as unrelated conditions (Statman-Weil, 2015). It is crucial that teachers document children's play behaviors as supportive pieces of evidence of cognitive development including self-regulatory abilities and, social, linguistic, and motor development.

Self-Regulation

Self-regulation is the ability to identify, control and express emotions and thoughts through behavior. Children develop emotional regulation and cognitive regulation skills gradually through the

early childhood years (Florez, 2011). This development is dependent on their interactions with caregivers and peers. According to Florez, "Children must translate what they experience into information they can use to regulate their thoughts, emotions and behaviors" (p. 47). When young children have a trusted adult that serves as a secure base, they can persist through challenges and practice self-regulation. This metacognitive ability is crucial for success in school, which means those who fail to develop these skills have a disadvantage before schooling even begins (Le & Wolfe, 2013).

Zimmer-Gembeck (2017) found that self-regulation is related to attachment in young children. Children who are securely attached are likely to learn how to cope with stress appropriately from the safety of their relationship with a caregiver. However, insecurely attached infants and toddlers do not have that same opportunity as insecure toddlers are more likely to rely solely on self-related regulation and less likely to rely on social-oriented regulation and coping (Zimmer-Gembeck, 2017). If children do not have the opportunity to practice self-regulation in the first years of life, they are more likely to need assistance coping with stress in their first years of school (Le & Wolfe, 2013; Nijboer, 2007). Thus, the importance of attachment with caregivers as the foundation for adaptive and maladaptive patterns of behavior beginning in infancy.

Coping

Coping is an intentional physical or mental action, initiated in response to a perceived stressor, which is directed toward external circumstances or an internal state (Nijboer, 2007). Coping strategies can be adaptive, maladaptive, or involve an ecological support system that includes nurturing parents, families, community, teachers, and the adults can buffer the impact the stress. Though many maladaptive coping strategies such as eating disorders, substance abuse, and self- harm have roots in early childhood, teachers have the opportunity to explicitly teach developmentally appropriate coping skills. These could include singing, art activities, and teaching children how to self-sooth.

Support systems such as families and communities are crucial to childhood development and reducing toxic stress that children encounter (Bronfenbrenner, 1979). Bronfenbrenner's research revolved around ecological systems that explained how the contexts that an individual interacts with can affect one's life. For example, experiences at a parent's workplace can affect a child. If the parent has a difficult day at work this potentially can impact the family's evening. If a parent has a great day, the impact of the evening would probably look different. Knowing a child's context and their influence can help teachers meet the direct needs of the child, so as to support healthy development to reduce the toxic stress.

When children live with long term stress the results can "cause changes in the brain and body that lead to disease and have a deleterious effect on educational and developmental outcomes" (Shanks & Robinson, 2013, p.162). Neurologically, stressors impact children and may lead to poor health issues (Shanks & Robinson, 2013; Berry, Blair & Granger, 2016).

Several activities and strategies that can be used to ease a child's stress include play (Feldman, 2019), storytelling (Lee-Potter, 2006), art, mindful breathing, and yoga (Nijboer, 2007). Play and storytelling are common forms of therapy used to treat Post Traumatic Stress Disorder in young children (Kaminer & Eagle, 2010). For example, the child interview (a therapeutic technique) is commonly used with children who have witnessed violence as a form of storytelling where feelings are revealed. Mindful breathing and yoga with young children has been shown to decrease anxiety, enhance attention, and improve social skills (Diaz et al., 2012). Teachers who provide their students with a wealth of adaptive coping strategies in the early childhood classroom support the development of all children, but especially those who experience chronic stress and trauma.

Safe Spaces

Safe spaces and trauma sensitive classrooms are spaces in which teachers intentionally provide resources and support for children that experience stress that is either within the normal experiences of stress or chronic and severe stress. These spaces can benefit students' social-emotional development and reduce behaviors that require intervention.

Supports such as establishing consistent routines, communication with students ahead of time about unexpected changes in their schedule, and modeling healthy coping skills, self-regulation and developmentally appropriate choices that facilitate autonomy are crucial elements for success (Statman- Weil, 2015). Just as adults require time and space to regulate emotions when we experience stress and anxiety, children too need intentional space to work through difficulty. Marion (2019) suggests creating a private space, cozy corner, or relaxation station in preschool classrooms is a strategy that prevents problem behavior.

Private spaces should be developmentally appropriate for young children and offer some means of privacy, and seclusion from other children while still allowing the child to be monitored by an adult. The literature specifies this space is for children to choose when they identify the need, not as a punishment (Maich et al., 2019). The space should facilitate the expression of everyday emotional regulation and act as a support for children experiencing chronic stress. (Maich et al., 2019). Teachers must model for children how to use the private space in the classroom. Students can choose to "take a break" in this space when they notice their boundaries or limits have been crossed and need time to "recharge" or teachers can facilitate the use of the space as an alternative to a problem behavior (Coleman, et. al., 2013). The space serves as a positive reinforcer for emotional regulation because ideally the positive, comforting feeling is delivered immediately after entering the space.

Some common components of a private or safe space (Maich et al., 2019) are: pillows, (child height) walls that allow for a sense of privacy, visual prompts, curtains, sensory materials, comfort items, family photos and timers. Activities should be individual, calming, and prompt self-regulation strategies such as deep breathing, problem-solving or identification of emotions. This space should have well defined, concrete expectations that should be explicitly taught, posted in the center and reinforced. Entry into this space may be visual (a break card) or verbal (asking the teacher for permission) with similar exit procedures. Time limits are recommended. For example, students may be allowed two five- minute breaks per day, which should be based on individual situations (Maich et al., 2019)

As is true with any intervention, communication and cooperative relationship with a child's family is necessary to provide the child with consistent behavioral expectations across environmental conditions (Coleman, et. al., 2013). Relationships are the core component of effective behavior guidance with young children. Nurturing positive relationships with children and families is a good first step in understanding how a private space might work for your classroom.

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Los niños respondiendo y lidiando con el estrés en el aula de la primera infancia

Michelle Grantham-Caston and Jeannete Bankston

Los primeros años en la vida de un niño son un momento crucial para el desarrollo del cerebro y donde el estrés puede desempeñar un papel fundamental en comprometer el desarrollo neurológico (Zadina, 2014; Zull, 2011). Fink (2019) explica que el estrés físico y mental se caracteriza por una mayor excitabilidad ante una situación adversa percibida y la falta de control. Esta respuesta fisiológica normal y adaptativa es una reacción a una amenaza que es percibida. Los niños pueden experimentar estrés debido a conflictos entre compañeros, conflictos familiares, cambios y transiciones, como la llegada de un nuevo hermano o mudanzas, condiciones extremas como son el hambre, el frío intenso, estar enfermo durante un largo período, abuso, conflictos armados, consumo de drogas y alcohol y la presión académica (Feldman, 2019; Nijboer, 2007; Statman- Weil, 2015). Los maestros tienen la oportunidad de construir aulas sensibles al trauma y espacios seguros que guíen a los niños en el desarrollo de estrategias de autorregulación y capacidad de resistencia para mediar los efectos negativos del estrés.

El estrés y el desarrollo de los niños pequeños

En sus vidas, cada niño experimentará algo de estrés. El estrés no representa una amenaza para el desarrollo a menos que se repita y persista como lo es el estrés crónico o tóxico (Centros para el Control y la Prevención de Enfermedades (CDC por las siglas en inglés], 2019). El estrés tóxico, es definido por Shanks y Robinson (2013), como la "activación fuerte, frecuente o prolongada del sistema de manejo del estrés del organismo". (pág. 162). Por ejemplo, cada vez que un niño percibe una amenaza, su organismo responde activando así el sistema límbico, el cual involucra las emociones, motivación, memoria y regulación de la conducta, lo que desencadena cambios en todo el cerebro y el cuerpo que nos equipan mejor para "pelear o escapar." Sin embargo, cuando este sistema de respuesta se activa repetidamente, el organismo se adapta estructural y neurológicamente, lo que afecta la capacidad de desarrollarse y funcionar normalmente en ausencia de factores estresantes.

Las experiencias adversas de la infancia (ACE, por sus siglas en inglés) pueden tener efectos acumulativos en la salud y el comportamiento a lo largo de la vida. Estas experiencias pueden ser el resultado de eventos traumáticos que incluyen abuso, violencia, salud mental familiar o problemas con el uso de sustancias. En los adultos, el estrés tóxico se correlaciona con el comportamiento de riesgo, las enfermedades cardíacas, la diabetes, el abuso de sustancias y la muerte prematura (CDC, 2019). Como educadores de la edad temprana, podemos comenzar a mediar estos efectos identificando a los niños que están experimentando estrés y apoyando su autorregulación y resistencia al estrés. Los niños pequeños comunican el estrés a través de una variedad de conductas. Se puede observar que algunos se lastiman a sí mismos y a los demás, son retraídos, lloran, tienen pérdida de apetito, se expresan con gritos, palabrotas, muerden sus uñas, demuestran fatiga, se resisten a ir a la escuela o ir a casa, (Fink, 2017; Nijboer, 2007; Santelman, 2014; Statman-Weil, 2015).

En el aula, a través del juego, los maestros podemos observar evidencias de estrés y trauma (Feldman, 2019). Para un niño, el juego es

una forma que da sentido a su mundo y el cual puede verse como un esfuerzo para comunicarse con los adultos. En el juego podemos ver como los pequeños recrean situaciones de violencia, trauma o fatalidades, que demuestran como "adaptan sus juegos a las limitaciones del conflicto y demuestran su perseverancia en sus juegos frente al peligro letal". (Feldman, 2019, p. 289). A menudo, los niños que han experimentado algún trauma a menudo demuestran comportamientos como gritar, golpear, correr o ignorar lo cual puede ser erróneamente diagnosticado como un desorden de atención y de conducta oposicional (Statman-Weil, 2015). Es crucial que en el aula los maestros documenten las conductas que se observan durante el juego como ejemplos que sirvan para evidenciar el desarrollo cognitivo, incluyendo las habilidades de autorregulación y de desarrollo social, lingüístico y motor que poseen los niños.

Autorregulación

La autorregulación es la capacidad de identificar, controlar y expresar emociones y pensamientos a través del comportamiento. Los niños desarrollan habilidades de regulación emocional y regulación cognitiva gradualmente a través de los primeros años de la infancia (Florez, 2011). Este desarrollo depende de sus interacciones con sus maestros, personas a cargo de su cuidado y compañeros. Según Flórez, "los niños deben convertir las experiencias en información que puedan utilizar para regular sus pensamientos, emociones y comportamientos" (p. 47). Cuando los niños pequeños tienen un adulto de confianza que sirve como una base segura, pueden superar las situaciones difíciles y practicar la autorregulación. Esta capacidad metacognitiva es crucial para el éxito en la escuela, lo que significa que aquellos que no desarrollan estas habilidades antes de comenzar las experiencias escolares están en desventaja. (Le & Wolfe, 2013).

Zimmer-Gembeck (2017) descubrió que la autorregulación está relacionada con el apego en los niños pequeños. Es probable que los niños que poseen relaciones positivas de apego aprendan a lidiar con el estrés adecuadamente desde la seguridad de su relación con un adulto o persona responsable. Sin embargo, los infantes y niños pequeños con apego inseguro no tienen la misma oportunidad que los niños pequeños inseguros quienes tienen más probabilidad de depender en su autorregulación desarrollada durante los primeros años y menos probabilidad de depender de las experiencias de regulación durante los primeros años en el aula (Zimmer-Gembeck, 2017). Cuando los niños no tienen la oportunidad de practicar la autorregulación en los primeros años de vida, es más probable que necesiten ayuda para lidiar con el estrés en sus primeros años de escuela (Le & Wolfe, 2013; Nijboer, 2007). Por lo tanto, hay que reconocer la importancia del apego con los cuidadores como la base para los patrones de comportamiento adaptativos y desadaptativos que inician desde la infancia.

Supervivencia

La resistencia a los efectos de los desafíos es una acción física o mental intencional, que surge como respuesta a un factor estresante que se ha percibido, y que se dirige hacia circunstancias externas o un estado interno (Nijboer, 2007). Las estrategias de resistencia pueden ser adaptativas, desadaptativas o involucrar un sistema de apoyo social que incluye a los padres, las familias, la comunidad y los maestros, y a los adultos que pueden atenuar el impacto del estrés. Aunque muchas estrategias de resistencia no son positivas o desadaptadas, como los trastornos alimentarios, el abuso de sustancias y las autolesiones, tienen sus raíces en la primera infancia, en el aula los maestros tienen la oportunidad de enseñar explícitamente destrezas de manejo y respuestas apropiadas. Estos podrían incluir cantar, expresión a través de las artes, y aprender formas para calmarse a sí mismos.

Los sistemas de apoyo, como las familias y las comunidades, son cruciales para el desarrollo infantil y la reducción del estrés tóxico que puedan enfrentan los niños (Bronfenbrenner, 1979). La investigación de Bronfenbrenner en torno a la teoría de sistemas ecológicos explica cómo estos sistemas sociales con los que interactúa un individuo pueden afectar la vida de uno. Por ejemplo, las experiencias en el lugar de trabajo de un padre pueden afectar a un niño. Si el padre tiene un día difícil en el trabajo, esto puede afectar potencialmente las experiencias en el hogar. Si un padre tiene un gran día, el impacto probablemente se vería diferente. Conocer el contexto de un niño y su influencia puede ayudar a los maestros a atender las necesidades del niño, y a apoyar apoyar un desarrollo saludable y así reducir el estrés tóxico.

Cuando los niños viven con estrés a largo plazo, los resultados pueden "causar cambios en el cerebro y organismo causando enfermedades que pueden tener efectos perjudiciales en la educación y su desarrollo" (Shanks & Robinson, 2013, p.162). Estas experiencias pueden llevar a diversos problemas de salud. (Shanks & Robinson, 2013; Berry, Blair y Granger, 2016). Muchas de las actividades y estrategias que se pueden utilizar para aliviar el estrés de un niño incluyen el juego (Feldman, 2019), la narración de cuentos (Lee-Potter, 2006), el arte, la respiración consciente y el yoga (Nijboer, 2007). El juego y la narración de cuentos son formas comunes de terapia utilizadas para tratar el trastorno de estrés postraumático en niños pequeños (Kaminer y Eagle, 2010). Por ejemplo, las entrevista (una técnica terapéutica) se usan comúnmente con niños que han sido testigos de violencia como una forma de terapia que permite al niño examinar sus sentimientos. Se ha demostrado que la respiración consciente y el yoga disminuyen la ansiedad, mejoran la atención y las habilidades sociales (Díaz et al., 2012). Los maestros que proporcionan a sus estudiantes estrategias adaptativas en el aula infantil contribuyen al desarrollo de todos los niños, pero especialmente ayudan a aquellos que experimentan estrés crónico y trauma.

Espacios seguros

Los espacios seguros y las aulas sensibles al trauma son espacios donde los maestros proporcionan intencionalmente recursos y apoyo para los niños que experimentan estrés y que vivan las experiencias normales de estrés o estrés crónico y severo. Estos espacios pueden beneficiar el desarrollo socioemocional de los estudiantes y reducir los comportamientos que requieren intervención. Los apoyos como lo son el establecimiento de rutinas consistentes, la comunicación sobre cambios inesperados en su horario de trabajo, el modelaje de habilidades de resistencia saludables, la autorregulación y las opciones apropiadas para el desarrollo que facilitan la autonomía son elementos cruciales para alacazar el éxito frente al estrés (Statman-Weil, 2015). Así como los adultos requieren tiempo y espacio para regular las emociones cuando experimentamos estrés y ansiedad, los niños también necesitan un espacio intencional para superar las dificultades. Marion (2019) sugiere que crear un espacio privado, un rincón

acogedor o una estación de relajación en las aulas preescolares es una estrategia que previene el comportamiento irregular.

Los espacios privados deben ser apropiados según el nivel del desarrollo de los niños pequeños y ofrecer algunos formas de privacidad y aislamiento de otros niños, al tiempo que permiten que el niño sea monitoreado por un adulto. La literatura especifica que este espacio es para que los niños lo elijan cuando sientan la necesidad de usarlo y no como un castigo (Maich et al., 2019). El espacio debe facilitar la expresión de la regulación emocional cotidiana y servir como un apoyo para los niños con estrés crónico (Maich et al., 2019). Es importante que los maestros modelen para los niños cómo usar el espacio privado en el aula. Los niños pueden optar por "tomar un descanso" en este espacio cuando noten que se sientan sobrecargados y necesitan tiempo para "recargarse" así como los maestros pueden facilitar el uso del espacio como una alternativa a un comportamiento problemático (Coleman, et. al., 2013). El espacio sirve como un refuerzo positivo para la regulación emocional porque idealmente la sensación positiva y reconfortante se percibe inmediatamente después de entrar en el espacio.

Algunos componentes comunes de un espacio privado o seguro (Maich et al., 2019) son los siguientes: almohadas, divisores o paredes (a la altura del niño) que permiten una sensación de privacidad, visuales, cortinas, materiales sensoriales, artículos de confort, fotos familiares y relacionadas con la época. Las actividades que ofrece este tipo de espacio deben ser individuales, que inviten a la calma y con estrategias de autorregulación, como la respiración profunda, la resolución de problemas o la identificación de emociones. Este espacio debe tener expectativas bien definidas y concretas que deben ser claramente enseñadas, conocidas en el aula y reforzadas. La entrada a este espacio puede ser visual (nombre del area) o verbal (pedir permiso al maestro) con procedimientos de salida similares. Se recomienda tener límites de tiempo. Por ejemplo, permitir dos descansos breves al dia siempre de acuerdo a las situaciones individuales (Maich et al., 2019)

Como ocurre con cualquier estrategia de intervención, la comunicación y la relación cooperativa con la familia son necesarias para proporcionar al niño expectativas de comportamiento consistentes a través del contexto y espacio (Coleman, et. al., 2013). Las relaciones son el componente central en el apoyo al desarrollo efectivo de la conducta con los niños pequeños. Fomentar relaciones positivas con los niños y las familias es un buen primer paso para comprender cómo un espacio privado podría funcionar en el salón de clases.

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High Quality Learning in Pre-kindergarten Centers: Full STEAM Ahead!

Lisa Colvin, Anna Fox, Melissa Roberts Becker, Erin M. Pearce and Lauren Reasor

Marissa[1] is a teacher candidate who feels apprehensive about working with young children. She will complete her clinical practice in a pre-kindergarten classroom but has thus far had limited experiences working directly with early childhood learners in her teacher preparation program. She knows foundational concepts and theories about early childhood education and has read about the importance of play as learning. Her early childhood curriculum course professor explains that the class will be designing play-based centers with a STEAM focus that will be aligned to the state standards, and they will be implementing the centers in four weeks at the field site. Marissa is excited about this project but nervous about completing it successfully.

A goal of university undergraduate early childhood teacher preparation programs is to create meaningful experiences that allow teacher candidates to learn theory and evidence-based best practices they will carry into their classrooms as professional educators. They should have direct interactions with young learners to apply coursework to the real world. Curriculum which includes integration of the Science, Technology, Engineering, Arts, and Mathematics (STEAM) disciplines is a current trend that is introduced in methods courses, and it is ideal for field experiences that allow teacher candidates to practice applying those methods. Additionally, inservice pre-kindergarten teachers are exposed to the buzzword 'STEAM' and know they should be including STEAM in their curriculum. However, they may not understand what STEAM is or be provided professional development training to understand fully how to implement it in a way that is developmentally appropriate for young learners. Designing field experiences where teacher candidates have opportunities to learn and practice STEAM implementation in school settings with pre-kindergarten students while their teachers observe has been successful for this university program. Consider these common perspectives of teacher candidates and pre-kindergarten teachers:

Elsa is a pre-kindergarten teacher at the school where the early childhood STEAM center project will be implemented. As a 12-year veteran teacher, she has hosted teacher candidates in her classroom as a cooperating teacher in numerous times and is familiar with the early childhood STEAM centers project. However, she desires more information on how to integrate STEAM learning during center time. It seems overwhelming to add an extra component to her already very busy schedule with her young learners. She has always had the understanding that STEM curriculum was reserved for older students and has felt unsure how to confidently implement STEAM centers, which materials she might need, and how this could benefit her and her students. Having a school environment which encourages growth mindset and being willing to incorporate practices that help her students become critical thinkers and high achievers, Elsa is eager to observe her class work with the university teacher candidates during the STEAM centers event. She is intrigued and has the support of her administration to integrate STEAM into current thematic units.

[1] All the names are pseudonyms.

process has been narrowed in the early childhood classroom to include three steps: Explore, Create, and Improve (Berger, 2018). These three steps can occur as students cook, build gumdrop bridges, or create their own mini-fishing pole.

Educators tend to think of the 'A' in STEAM as visual arts. Although painting, drawing, and sculpture satisfy the Art component, other areas such as literary and performance arts (theater, dance, and music) have potential to "reveal science and culture in distinct ways that are complementary to our traditional ways of understanding science" (Segarra et al., 2018, para. 5). Including playful opportunities for young children to be creative through artistic expression such as sketching, photography, and origami can increase spatial intelligence, a critical attribute of STEM professionals (Segarra et al., 2018).

Mathematics can also be embedded in STEAM projects in numerous ways. Although number and operations typically occur in STEAM activities, educators should also ponder the ideas of implementing geometry (patterns), algebraic reasoning, and measurement. Adding these components aid children in making sense of the world around them.

STEM/STEAM at a Glance

The basis for science, technology, engineering, and mathematics education (STEM) grew from concern that American students could not compete globally in the areas of science, mathematics, and engineering. With a desire to have a more informed and competitive populous, education policymakers continue to encourage educators to shift their focus toward the inclusion of STEM in public education. Educators are expected to spotlight and merge the STEM subjects into problem-solving formats.

What is STEAM?

STEAM learning incorporates visual arts, physical arts, and language arts in an applicable and integral manner to enhance creativity and problem-solving skills within the STEM disciplines. Science is defined as the "systematic knowledge of the physical or material world gained through observation and experimentation" (dictionary.com, n.d.). Although this definition encompasses physical, life, and earth and space sciences, most early childhood educators often focus only on life sciences (Donegan-Ritter & Zan, 2018). This is regrettable since many STEM activities can occur with the physical and earth and space sciences that lead children to gain knowledge by exploring phenomena, especially cause-and-effect relationships. Although often regarded as the utilization of high-tech tools such as computers and tablets, *technology* actually refers to the "human-made world", establishing all tools are forms of technology (Donegan-Ritter & Zan, 2018). Therefore, any tool such as magnifying glasses, computers, binoculars, smartphones, and plastic test tubes can be used as technological devices in STEAM lessons. Engineering is defined as "a systematic and often iterative approach to designing objects, processes, and systems to meet human needs and wants" (National Research Council, 2009, p. 49). In the early childhood classroom, teachers can utilize the engineering design process to engage students in various developmentally appropriate STEAM activities. The engineering design process involves identifying problems, creating solutions, testing the solutions, revising the solutions based on the testing results, and then testing them again until the desired results are achieved. This

Instructional Practices in STEM/STEAM

The directive to incorporate STEM/STEAM in the classroom often comes without proper training concerning the content or pedagogy needed for successful implementation (Eckman et al., 2016). As the deliverer of new knowledge, the success or failure of STEM in a classroom is largely dependent on the teacher's willingness to learn new content and pedagogy (Haney et al., 2002). The educator's view of their own competence and skills towards STEM education greatly influences their STEM instructional practices (Aldemir & Kermani, 2017; Alexander et al., 2014; Hedlin & Gunnarsson, 2014; Park et al., 2016) and ultimately, whether or not they plan and execute new ideas through more complex lessons (Kallery, 2004). Although teachers are aware of the benefits of integrated science instruction, many continue to feel inadequate and anxious towards their own content knowledge in science and their ability to support their students' scientific comprehension (Hedlin & Gunnarsson, 2014; Pendergast et al., 2017). It is, therefore, no surprise that teachers often shy away from STEM subjects or teach them as separate entities rather than using best practices with an integrated, problem-based learning approach (Campbell et al., 2018).

However, participating in STEM professional development opportunities has been found to deepen educator content and pedagogical knowledge, leading to increased confidence and positive attitudes towards STEM education (Alexander et al., 2014; MacDonald et al., 2020). This ultimately results in improved instructional practice and improved student achievement (McDonald, 2016; Perry & MacDonald, 2015). Thus, training in STEM pedagogy and familiarity with STEM content for both preservice and inservice educators, especially in the early childhood classroom, is of utmost importance (Park et al., 2016).

STEAM in the Early Childhood Classroom

While research suggests there is a dire need for STEM education during the middle school years (Lin et al., 2020; Rodriguez, 2018; Sondergeld et al., 2020), the significance of introducing STEM concepts to early childhood should not be overlooked. A positive correlation exists between the frequency of early STEM experiences and a student's STEM trajectory (Watts et al., 2014). In addition, Eshach (2006) posits that a STEM curriculum and integration of the engineering design process encourages curiosity and enhances cognitive development in the younger learner. In fact, early childhood educators often incorporate an 'A' for art, design, and humanities, transforming STEM into STEAM education (Radziwill et al., 2015). By incorporating the arts, younger learners are able to use artistic expression as they problem solve through creativity, a skill which is esteemed in the fields of science, technology, and engineering (Ceschini, 2014).

Project Goals

This project began as an assignment for the undergraduate early childhood curriculum and environments course in the fall of 2011. The goals for the project were to involve teacher candidates in active construction of designing standards-based, developmentally appropriate center activities for the children at a partnership elementary school. At that time, the centers were not connected with a theme. Over the next few years, themes were included that were aligned with the district's pre-kindergarten curriculum. From there, more focus was given to the design of the centers to be play-based, include STEAM integration, and have a more general thematic connection such as the theme examples included in this article: Fall, Spring, Nursery Rhymes, and Oceans. A pre-kindergarten teacher commented that her students will "benefit because in our classroom we also have themes, and it also relates to the real world" (F. Marks, personal communication, April 20, 2020). Another teacher added, "Choosing familiar themes that the students have already been exposed to only helps to build on what they've already learned. Plus, the activities continue to build

on our students' academic vocabulary skills" (Y. Andrews, personal communication, April 20, 2020).

The pre-kindergarten center project is based on the National Association for the Education of Young Children (NAEYC). Developmentally Appropriate Practice (DAP) remains a pillar for the education of young children. DAP includes five essential strategies for the benefit of the young learner. First, the effective educator develops a community of learners within the classroom. The children learn to support and care for their peers. Empathy and compassion are modeled by the teacher. Next, the environment, lessons and learning activities are designed to enhance the social, emotional, physical and cognitive development of young children. Each student's strengths and areas of challenge are considered as learning is planned. As such, the curriculum is planned to address the whole child, all areas of development. Before, during, and after learning, the teacher applies authentic assessment of the children's development and learning process. Finally, educators establish reciprocal relationships with families. When students' families become involved in the learning process, everyone benefits (NAEYC, 2020).

Play is the primary method for learning in the life of a young child. While play includes a wide variety of activities, a definitive definition presents a challenge. From a list of common characteristics of play, four attributes emerge as essential to understand the term, play. The attributes are activity level, choice, motive, and mindset. Play involves the active manipulation of materials found in the environment. Through interactions (large and small muscles), knowledge and understanding are constructed. Children's choice adds an important element to play. As the child selects a play event, he finds the activity intrinsically rewarding and pleasant. In turn, this measure is the motive to engage in play. The process of play, rather than a final product, is paramount to the child. Finally, the child's mindset in play suspends reality. Children are able to explore possibilities and scenarios without being tethered to reality (Henniger, 2018).

An integrated curriculum matches the real-world experiences of both children and adults (Korgh, 1995). For instance, the natural experience of preparing for the day involves an alarm, self-help to get dressed, nutrition from breakfast, oral hygiene to clean teeth, and artistic flair to prepare hair. STEAM provides similar integration of several content areas for the Developmentally Appropriate Practice (DAP) curriculum. The hands-on experiences offered in each of the content areas enhances the natural way young children learn (Isenberg & Quisenberry, 2012). Integrating all aspects of STEAM provides children the time needed for in-depth learning, rather than small blocks of time for each content area, seemingly unrelated to one another.

Project Process

Contextual Factors

Teacher candidates visit the pre-kindergarten classrooms to meet the teachers and students, observe the environments, and observe and interact with the children during play time. Contextual factors of the field site are gathered regarding the district, school, and pre-kindergarten classrooms. Teachers share the following information about their students: gender, race/ethnicity, age, language, culture, achievement and developmental levels, and interests. They also share skills that students have acquired thus far in the school year that could provide background knowledge for the learning activities that will be presented during the center time.

Planning, Design, and Alignment with Standards

A theme for the centers is selected followed by the planning and design of the centers. Teacher candidates typically work with a partner to research developmentally appropriate learning events related to the theme and align their chosen center with the state pre-kindergarten standards. They choose a center that will have opportunities for children to play and discover while also providing engagement in two or more of the STEAM areas.

Implementation

On event day, teacher candidates set up their centers in a central location, and teachers bring the students to the room where they may choose centers to play for an undesignated amount of time. Pre-kindergarten students may choose to visit all centers and may return to those that are their favorites. One pre-kindergarten teacher commented, "The child is given the responsibility to decide when to move to the next center. The students love this freedom as the teachers closely monitor to make sure everyone gets an opportunity to try out all the activities" (M. Ryan, personal communication, April 16, 2020). Teacher candidates engage with students by introducing their centers, participating with students by modeling, teaching, and elevating the experience with academic vocabulary and questioning techniques to increase oral language and cognitive development. They encourage social and emotional development as well as they engage with the students. In addition, they observe students closely and collect anecdotal assessment information that will provide evidence that students are learning during their play experiences.

Reflection

After the event, teacher candidates reflect on this experience by responding to the following questions:

1. **Describe:** How did you plan your center to engage students in play-based, developmentally appropriate STEAM learning?
2. **Analyze:** What did the center experience, text readings, and course experiences in the university classroom demonstrate or reveal to you, and how did your center provide opportunities for children's physical, intellectual, emotional, and social development?
3. **Plan:** How can you use the information gained from your center implementation in your field placement?
4. **Future Impact:** What have you learned from this experience that you will be able to apply in your future classroom?

STEAM Themes

This STEAM centers project is an assignment for an undergraduate teacher preparation course in early childhood curriculum and environments. The project is typically implemented once during the fall and spring semesters at the field experience school site. This chart lists four themes that have been implemented with example centers for each theme over a 2-year time frame. Each center is correlated with the STEAM areas addressed within the learning experiences. To be considered a STEAM center, two or more areas of science, technology, engineering, arts, and mathematics must be included.

Figure 1: Topics with STEAM Integration

Topic	Description	S	T	E	A	M
Year 1: Fall Theme						
Fall Sink & Float	Children predict which fall objects (such as acorn, mini pumpkin, leaf, and squash) will sink or float, test, and graph on a pocket chart	S		E		M
Pumpkin Pie Seek & Sensory Bag	Children push and squish pumpkin pie filling in large plastic bags to find fall-themed and curricular items (such as 1 capital letter P, 2 orange circles, 3 leaves, and 4 acorns)	S				M
Fall Paper Tube Construction	Children use fall-decorated paper tubes and straws to construct from provided visuals and imagination	S		E		
Fall Foliage Masterpieces	Children observe photos and video of fall trees, use cotton balls and sponges to create fall tree paintings, and take pictures or videos of their creation and share with their families through the technology app Seesaw	S	T		A	
Apple Towers	Children use cinnamon-scented clay and small artificial apples to alternately stack, count, and build apple towers	S		E		M
Year 1: Spring Theme						
Modeling Clay Garden	Children use cookie cutters to make rose-scented modeling clay flowers and count colored beads to decorate petals	S			A	M
Florist Shop	Children use artificial flowers to create arrangements in vases or clay pots and engage in dramatic play to buy/sell arrangements using pretend money with cash register	S	T	E	A	M
Flower Garden Marble Painting	Children use marbles dipped in spring colors to roll and paint flower petals and glue flower plant parts (stem, leaves, and roots) creating a class garden display	S		E	A	
Dirt Dig	Children use gardening tools to dig in bin filled with gardening soil, plants, and plastic animals (such as 2 worms, 3 snails, and 4 beetles) and investigate with hand lenses	S	T			M
Garden Sensory Bin	Children dig through a bin filled with black beans and pumpkin seeds, artificial flowers and plants with matching laminated photos, and magnetic numerals to match by counting beans and seeds	S				M

The STEAM Dream: Everyone Wins!

Teacher Candidates' Perspective

Following the implementation of the early childhood STEAM centers project, teacher candidates complete a critical reflection over their experiences with the pre-kindergarten students. They reflect on such topics as the importance of aligning learning activities to the standards, play as learning in the early childhood classroom, developmentally appropriate practice, and the integration of STEAM into their center project. Prior to the center project event day, many teacher candidates may have limited experiences interacting with pre-kindergarten children. This project provides an opportunity for teacher candidates to interact with and closely observe young children in action with all these critical aspects of early childhood combined.

One teacher candidate reflected, "One major point I took out of this experience is I need to have hands-on centers. Students learn a lot more and retain that knowledge when using this approach. After observing the students in the STEAM center, I learned how skills are developed. In the future, I plan to create hands-on activities,

collaboration opportunities, and centers promoting skills development" (Y. Rearson, personal communication, May 17, 2020).

Another teacher candidate summed up her experience, "As a future early childhood educator, I learned teaching pre-kindergarten is more than just learning standards. When creating this project, I knew that a center had to have certain requirements to be effective and appropriate. When I looked for ideas, I had to add STEAM integration to it and also make sure it was appropriate" (B. Dotson, personal communication, May 20, 2020).

Learning early childhood concepts and theory in the university classroom provides a critical foundational basis for teacher candidates' decisions regarding the design and creation of their STEAM centers. When they have the opportunity to collaborate with peers to design appropriate child-centered learning activities that they actually implement with pre-kindergarten children, they see firsthand how careful planning, based on theory and evidence-based

Figure 1: Topics with STEAM Integration *continued*

Topic	Description	S	T	E	A	M
Year 2: Nursery Rhymes						
Itsy Bitsy Spider	Children use rain gutters, a pitcher of water, and a spider (made from hosiery and yarn) to test the speed of the spider's descent with degree of incline and amount of water	S		E		M
Twinkle, Twinkle, Little Star	Children use star-shaped cookie cutters, glitter, baking soda, and vinegar to make erupting or twinkling stars and use cotton swabs for gold/silver glitter paint on stars placed on black construction paper	S			A	
Hey, Diddle Diddle	Children play a real violin, a toy violin, and construct and play pretend violins using recycled boxes and rubber bands	S		E	A	
Hickory Dickory Dock	Children investigate various real-world clocks and use toy mice magnets to place on a magnetic clock face (1 mouse on 1:00, 2 mice on 2:00, etc.)	S	T	E		M
Mary, Mary, Quite Contrary	Children investigate flower plant parts with hand lenses, plant flower seeds in cups with soil, and track progress of the flower's growth by drawing, measuring, and taking weekly photos	S	T		A	M
Year 2: Oceans						
Ocean Sensory Bin	Children dig through beach sand to find and count plastic ocean animals with matching laminated animal photos, shells, and coral	S				M
Coral Reef Construction	Children watch a coral reef video and use pipe cleaners, laminated ocean animal photos, and clay to construct coral reefs and take pictures or videos and add to the classroom Freckle account for all to view	S	T	E	A	
Fish Collage	Children observe photos and video of fish in oceans and use various medium (such as markers, paint, tissue paper, and glitter) to create fish for a class ocean display	S	T		A	
Bubble, Bubble, Color Mixing	Children use food coloring to drip into water and straws to blow bubbles into the water and observe how the colors mix	S			A	
Kinetic Sand Castle- Building	Children use homemade kinetic sand, beach toys and cookie cutters, shells, sticks, and other materials to build sand castles	S		E	A	

early childhood practices, is carried out in the real world. A teacher candidate shared her deep realizations that connected theory to practice for her. "I had an idea in my head of what I thought working with pre-kindergarten students would be like, but this project helped open my eyes and gave me a new perspective. This helped me understand the importance of researching STEAM projects and understanding the standards and developmental stages of young students. This project also helped me fully grasp the concept of play and learn and the benefits that go with it. I was able to see the benefits of play while working with the students during this project. I was able to connect the learning in my courses with the center project we created" (P. Clark, personal communication, May 20, 2020). Another teacher candidate added, "This center activity really opened my eyes to the power of play. In the modern school setting, academics are pushed so hard that play slips through the cracks. Play, inquiry, and socialization are vital to young children's development in all areas. This STEAM center activity proved that teaching through play is possible" (L. Rudder, personal communication, May 20, 2020).

Pre-Kindergarten Teachers' Perspective

Pre-kindergarten teachers reported numerous benefits for their students in the areas of cognitive, physical, and social and emotional development as well as oral language development. By participating in the STEAM centers event, their students can make connections to classroom content and themes and transfer these experiences to their classroom learning. One teacher commented,

"These centers contribute to the cognitive development of our students because the children participate in planned centers that focus on a variety of cognitive skills such as math, science, literacy, and creativity. The centers give them opportunities to practice math skills while digging in dirt or shopping at a pumpkin patch (i.e. counting bugs to match the numeral on cards, paying for items at a pumpkin patch), sorting items by different characteristics (i.e. color of leaves, items by season), and exploring items using their senses (i.e. pumpkins or popcorn)" (L. Broomer, personal communication, April 22, 2020).

Another teacher added,

"These STEAM centers induce excitement for the students, and they are intrigued to see new materials to explore other than what we have in the classroom. The university teacher candidates demonstrate affection for the pre-kindergarten children, and they enjoy being loved and cared for. These centers help the students be confident speaking with people they have never seen before" (F. Marks, personal communication, April 21, 2020).

Teachers noted that their students gained deeper understanding of concepts with the thematic approach and STEAM integration. One teacher said,

"It seems to benefit our students because it gives students the opportunity to collaborate, problem solve, and create. One (STEAM) activity used tubes and straws and had students solving problems with how to connect each tube to another one to create what they were wanting to build" (L. Broomer, personal communication, April 22, 2020).

Another teacher continued,

"Exposing our students to activities that integrate two or more aspects of STEAM allows the children to see how some aspects go hand-in-hand. Just because an activity is primarily science-based doesn't mean it can't have math, engineering, or art components as well, along with the vocabulary enrichment they receive" (Y. Andrews, personal communication, April 20, 2020).

One of the pre-kindergarten teachers summed up the experience and benefits of the project for the pre-service educators:

"This project benefits the teacher candidates because they get to see where students begin with their schooling in pre-kindergarten. They are able to see the developmental levels of students from language/communication skills, social/emotional skills, to academic skills. It also benefits them because they must examine and become familiar with the pre-kindergarten standards so they are able to create hands-on activities that will be engaging, developmentally appropriate, and still meet the academic skills in the standards. Having the opportunity to create these STEAM center activities shows the teacher candidates that a variety of skills can be taught through play and that all children benefit from each activity if planned correctly. When interacting with a student during an activity, the teacher candidate gets to practice quickly observing a child and then adapting their level of questioning or instruction to meet the level of that child" (L. Broomer, personal communication, April 22, 2020).

Professors' Perspective

The pre-kindergarten centers project had been part of the early childhood courses for several years. By adding the STEAM focus to the assignment, learning for both the pre-kindergarten children and teacher candidates increased exponentially. As the teacher candidates investigate the intentional application of each STEAM area, they discover the natural strengthening of their planned unit. They seek new ways to incorporate science into the math lessons, which provides a new dimension to the learning. With the STEAM elements combined in the centers, teacher candidates observe children explore various ways to solve problems, which increases critical thinking. As children observe their peers approaching problems and activities in different ways, they learn to value differences in thought processes. This lesson was not lost on the teacher candidates. Several noted they were amazed at the diverse learning processes observed!

The STEAM content areas complement each other and cause teacher candidates to take a deeper dive into the content. As they discover new aspects of content, they can effectively scaffold the center learning to empower discovery learning. Teacher candidates are able to do this successfully by asking the children open-ended questions. To discover the answers, children are challenged to think critically and collaborate with their peers. Many of the children become more self-directed in seeking solutions to the questions posed and effectively communicate their thought processes to peers and teacher candidates.

Including a STEAM-focus transforms a common assignment into an authentic professional development experience. Teacher candidates are challenged to increase content knowledge, create effective learning experiences, support higher-order thinking skills, scaffold learning with essential questions, and expand their developing pedagogy.

Conclusion

The overall goal of the project is to prepare teacher candidates to develop STEAM instruction within the context of early childhood education in a rapidly changing and complex world. Training pre-service teachers to design STEAM-focused learning experiences is as valuable for early childhood teachers as it is for young children (Jamil et al., 2018). The authors discussed the importance of training that provides opportunities to understand and experience STEAM pedagogy for preservice and inservice teachers. Their study found a connection between training and building confidence, which leads to an increase in implementation of STEAM instruction in the classroom.

STEAM instructional-designed experiences provide 21st-century skills to the youngest students. Young children are natural problem solvers, and educators can elevate learning opportunities by incorporating various facets of STEAM to increase rigor and challenge. It becomes imperative that teachers receive training and are confident they have the skills to design instruction and also embrace the worthiness of the STEAM approach. As teacher candidates indicated in their feedback, having the experience of creating STEAM learning experiences and then implementing the centers with pre-kindergarten students increased their capacity to understand the STEAM approach. Likewise, the inservice teachers indicated they had a better understanding of STEAM once they observed their students actively engaged in the centers. By being present and observing the centers in action, inservice teachers were afforded the opportunity to learn and have confidence that they too could incorporate the STEAM approach in their developing pedagogy.

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Playing with the Standards: Meeting Rigorous Standards through Play-Based Learning

Ellen McKenzie

a focus on high-stakes testing in schools (Miller & Almon; Yogman et al.). In 2010, the United States began adopting the Common Core State Standards (CCSS) for English Language Arts and Math (Miller & Almon). Subsequently, numerous International Baccalaureate (IBO) schools have adopted the CCSS worldwide (IBO, 2013). Scholars have pointed that the confusion over the connection between play and learning has also led to the loss of play in kindergarten classrooms (Anderson; Martin; Miller & Almon).

This article addresses the following questions: Is there a place for play-based learning in a standards-based curriculum for children? Furthermore, what constitutes play and what

Around the world, on every continent, and in every country, children play (Edwards, 2000). Though culturally contextualized (Heyi, 2020), play is a global common childhood experience (Edwards, 2000). There are cultural variations in children's play activities, and though play looks and sounds different across the world, there are also commonalities. For example, variations of Hide and Seek are played worldwide (Wood, 2013), jumping games are played by children from the American suburbs to villages in Africa (Asante & Mattson, 1998), and most cultures have versions of marbles and ball and stick games (Ryan, 2020).

Though scholars find it difficult to articulate a definition of play (Danniels & Pyle, 2018; Eberle, 2014; Yogman et al., 2018), mounting research supports play as the most effective way for the young child to learn (NAEYC, 2020; Stipek, 2017). However, even with compelling evidence supporting self-selected and teacher-directed play (UNICEF, 2018; White, 2012; Yogman et al.), play is disappearing from kindergarten programs in many countries, including the United States (Anderson, 2016; Martin, 2020; Miller & Almon, 2009). Concurrently, other countries are instituting play-based teaching demands on early childhood teachers (Danniels & Pyle, 2018). The marginalization of play in kindergarten is partly due to rigorous academic standards and
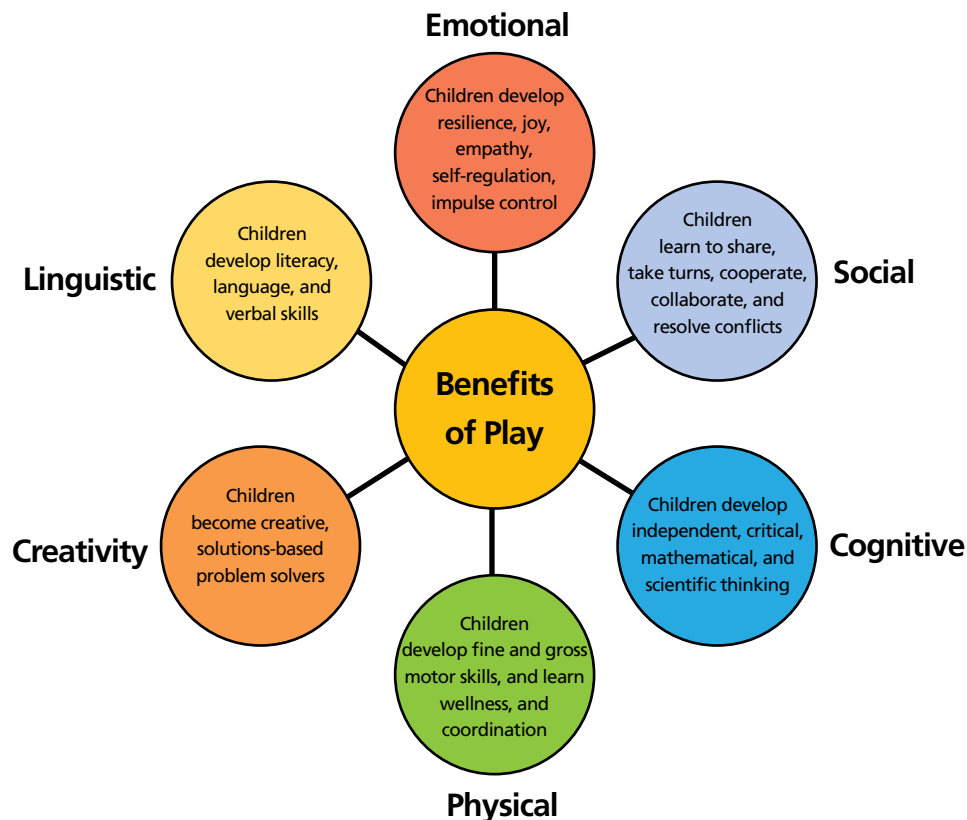
do children learn from playing? To answer these questions, this paper discusses current research on play, defines play-based learning, presents a continuum of play-based learning that clarifies types of play and their use for teaching, and links play to rigorous national standards for kindergarten.

What is Play?

When hearing the word play, many things come to mind, such as fun, joy, and amusement. When I think of playing, memories of childhood flood my thoughts: swinging in a park singing silly made-up songs with my best friend, digging in the sand with a plastic shovel at the beach, and playing dress-up in my mom's clothes with my cousin. Though it is easy to imagine play, scholars struggle to find a definition that encompasses all of what play means. This ambiguity is partly due to the dynamic nature of play, the immense variety of behaviors play encompasses (Vandenberg, 1978), and its lively, indefinite, and complicated nature (Eberle, 2014).

Although a universal definition for play remains elusive, common characteristics have been identified (Danniels & Pyle, 2018; NAEYC, 2020; Yogman et al., 2018). Play is universal, happens in all countries and cultures (NAEYC), is intrinsically motivated, immerses the

Figure 3. The benefits of play by category

2009; Ginsburg, 2007; White, 2012), physically (Gunter et al., 2007; White, 2012), and academically (Toub et al., 2016; Tominey & McClelland, 2011). Furthermore, play lays the groundwork for spatial, mathematical, and scientific thinking (Fisher et al., 2010; Schulz & Bonawitz, 2007). Children make a plan and follow through with it during play, learn from mistakes, try things, and take risks, often using real-life scenarios to apply math and science concepts. Children reason logically, analytically, deductively, and inductively during play, and develop creativity and higher-level thinking. Play is so valuable to the child's development that the United Nations (UN, 1989) declared that every child has the right to play, and the American Academy of Pediatrics (AAP) believes that play is integral to a child's learning within the academic environment (Ginsburg, 2007). Similarly, the Centers for Disease Control (CDC, 2010) reported that play can boost academic achievement by impacting cognitive skills and school behavior. In addition, play is critical for a child's healthy growth (Ginsburg, 2007; VanHoorn, 2014; Yogman et al., 2018). As shown in **Figure 3** above, there are six distinct areas in which play benefits child development: physical, cognitive, emotional, social, creative, and linguistic.

child in the moment, and is spontaneous and enjoyable (Mraz et al., 2016). Play is a foundational activity in early childhood and a primary influence on the young child's development (NAEYC; VanHoorn et al., 2014). In play, children express their sense of self, intellectual development, social capacities, understanding of themselves, and understanding and use of their bodies. According to NAEYC, play is the central teaching practice that facilitates young children's development and learning.

According to Froebel, "play is the highest expression of human development in childhood for it alone is the free expression of what is in a child's soul" (Froebel, 1912, p. 50). Vygotsky (1976) defined child's play as an activity that is wanted by the child, imaginary, and has rules made by the players. Montessori (1964) believed that play is the work of children. There is a consensus among academics, pediatricians, and educators that play has social, physical, and emotional rewards and is intrinsic, spontaneous, and fun (Miller & Almon, 2009; Yogman et al., 2018).

The Benefits of Play for Learning

Research has historically supported the value of play as an impactful teaching strategy (Bowdon, 2015; Bruner, 1983; Copple & Bredekemp, 2009; Piaget, 2001; Vygotsky, 1976). Play has multiple benefits across all developmental domains (Ramani, 2012; Yogman et al., 2018), supporting the child's development socially (Farver & Howes,1993; Fisher et al., 2010), emotionally (Dore et al., 2015; Russ, 2014; Whitebread and O'Sullivan, 2012), cognitively (Bergen,

1. Play helps children develop emotional competencies, including resilience, joy, confidence, self-esteem, independence, empathy, and self-regulation (Martin, 2020; Miller & Almon, 2009), as well as strategies to cope with fear, anger, and frustration (White, 2012; Carlson & White, 2011). Play fosters thinking that children need to overcome impulses and successfully control their behavior (Carlson & White). It provides children with opportunities to build resilience and learn tools to deal with trauma (McKenzie, 2021). Furthermore, play promotes desire, motivation, and mastery (White, 2012), and provides a safe place to explore gender and gender expressions (Martin, 2020). Play helps the child learn to regulate emotions (Fraser & Galinsky, 2010).

2. Play affords a venue for children to develop social skills and the expectations of their culture by mastering scripts for how to behave in society (Carlson et al., 1998; Farver & Howes,1993; Vygotsky, 1976). Furthermore, children learn social competence through play (Wenner, 2009), such as sharing, resolving conflicts with peers, and self-regulation (Singer et al., 2006; Whitebread & O'Sullivan; Russ; Yogman et al., 2018). Vygotsky (1976) posited that a child could learn social interaction rules and be their best self through play.

3. Play affords a fertile place for children to develop their cognitive skills (Yogman et al., 2018). When playing, children develop independent, critical, mathematical, and scientific thinking, and play engages the child in exploration, hypothesis testing, and discovery (White, 2012). When children play with blocks and manipulatives, they can test theories, learn about cause and effect, and informally engage with mathematical ideas (Kinzer et al., 2015; Ness & Farenga, 2007). Children experiment with math and science ideas during play by testing hypotheses, measuring, classifying, counting, and sorting (Gelfer & Perkins, 1988; Ness & Farenga; Piaget, 2001). They generate solutions to convergent problems during play (Sylva, 1977), thus laying a foundation for higher-order thinking and Science Technology Engineering and Math (STEM) concepts (Bergen, 2009; Ginsburg, 2007; White, 2012). Play fosters a child's metacognitive development (Whitebread & O'Sullivan, 2012).

4. Play promotes physical development and helps children develop healthy lifestyles (Gleave & Cole-Hamilton, 2012; White, 2012, Yogman et al., 2018). Children develop fine and gross motor skills, learn wellness, and improve coordination during play. Running, swinging, climbing, kicking balls, riding tricycles, and jumping develop the child's gross motor skills. Playing with blocks, drawing, painting, and puzzles develop the child's perceptual and fine motor skills. Children gain health benefits from play and physical activity such as aerobic endurance, stimulation of major organs, and strength (Ginsburg, 2007). Furthermore, active play increases the child's bone mineral content (Gunter et al., 2007). Overall, play helps the child build a healthy body and an active mind.

5. Play encourages children to become creative, solution-based problem solvers using their vivid imaginations (Miller & Almon, 2009; Russ, 2014; Saracho, 2002). Play not only allows - but demands - creativity by challenging the child's brain in a way that rule-following does not afford (Wenner, 2009). During play, the child experiments with items in the environment, leading to the development of creativity and problem-solving skills necessary for tackling novel problems (Johnson, 2015). During play, children use divergent thinking (Anderson, 2016), constantly producing new ideas and scenarios (White, 2012).

6. Finally, children also develop literacy, language, and verbal skills during play (Martin, 2020; Miller & Almon, 2009; Yogman et al., 2018). Play provides rich opportunities to use and develop lan-

guage skills, thus increasing a child's vocabulary (Anderson, 2016). Children use more complex language during play, speaking more frequently and in longer sentences (Fisher et al., 2010). Children develop skills in oral language, phonological awareness, alphabet recognition, spelling, decoding, concepts of print, and storytelling (Anderson, 2016; Singer et al., 2006). When children pretend, they develop speaking and listening skills, forming their narratives, the basis for reading and writing (Howes & Wishard, 2004). These skills lead to advances in literacy learning, such as reading comprehension, and the ability to convey verbal and written ideas (Nicolopoulu et al., 2006). Play offers the ideal method of instruction for the developing child, in which the characteristics of both the young child and play combine to create a synergistic impact on children's learning (UNICEF, 2018; VanHoorn et al., 2014; White, 2012).
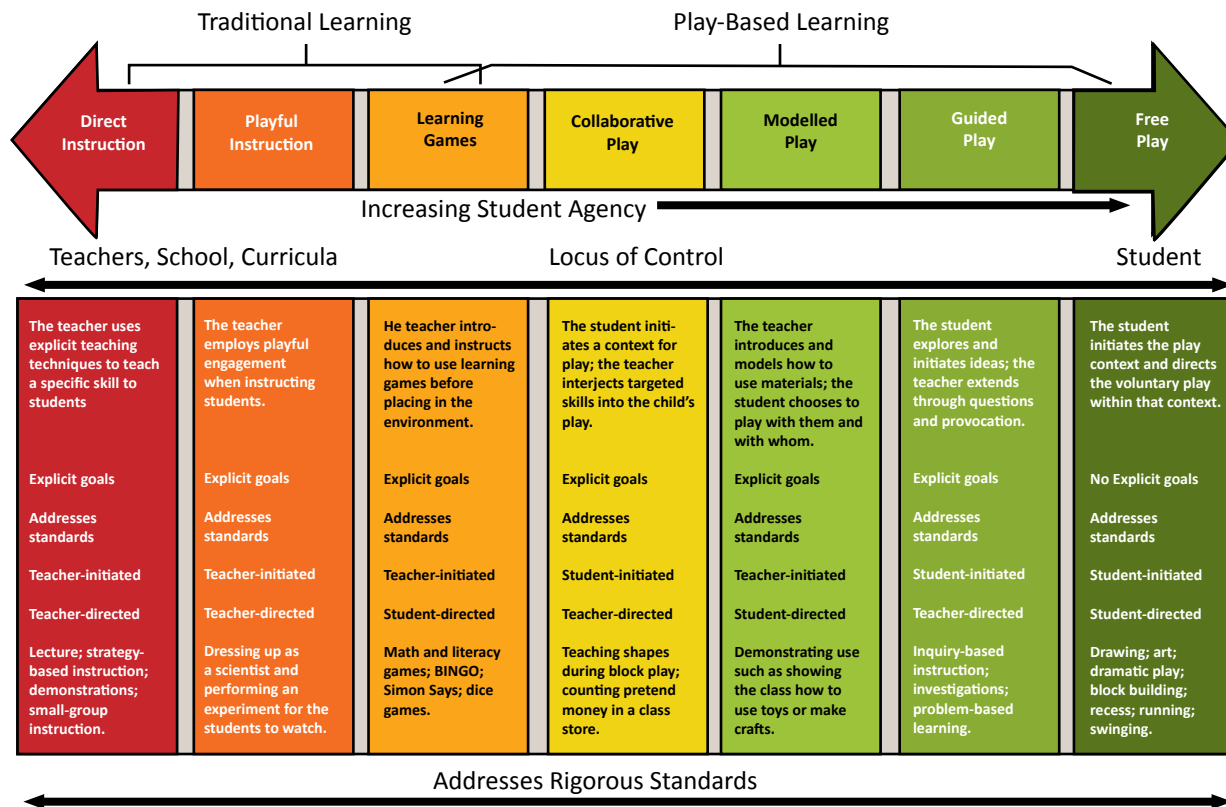
The Loss of Play in Childhood

In contrast to these multidimensional benefits of play for the young child, there is a growing acknowledgment that the young child's opportunity to play has been "compromised, colonized, and denied" (Murray, 2018, p. 336). The American Academy of Pediatrics (Ginsburg, 2007, Yogman et al., 2018) believes play is essential for healthy child development, yet in the United States, there has been a sharp decrease in child's play in recent decades. Children are losing their right to play for a variety of reasons such as family lifestyle changes, lack of safe outdoor play spaces, a focus on preparation for adult roles, reliance on devices to entertain children, and after-school enrichment programs (Ginsburg; Yogman et al., 2018). The Covid-19 pandemic impacted play in homes, neighborhoods, and schools because playdates were unfeasible with playgrounds closed due to social distancing (McKenzie, 2021).

Schools in the US mirror this trend, in which many kindergarten classes across the country have witnessed a steady decline in time dedicated to playing (Lynch, 2015). Beginning with the report by the US National Commission on Excellence in Education, A Nation at Risk (1983), the focus on early childhood classrooms has shifted towards standards and accountability (Ginsburg, 2007; Yogman et al., 2018). Another educational overhaul, No Child Left Behind (2001), placed the focus of learning on math and literacy skills, resulting in the over-academicization of kindergarten, scripted curricula, high-stakes testing, an increased emphasis on state standards, and a pushing down of first grade. Teachers of very young students are pressured to fill lesson plans with highly structured, teacher-initiated direct instruction of rigorous academic tasks. As a result, children spend more time receiving direct instruction focused on academics and limited time enjoying art, science, music, physical education, and play (Anderson, 2016; Bassok et al., 2016).

In 2010, the Alliance for Childhood (Almon & Miller, 2010) released a position statement on the Common Core Standards Initiative (CCSS), stating concerns over the use of nationalized early childhood standards. Rigorous standards in the early years have the potential to lead to long hours of direct instruction in literacy and math, inappropriate use of testing, and a higher incidence of didactic instruction in kindergarten and preschool classrooms. State and national mandates, scripted curricula, reading as a first priority in schools, nationalized standards, and mandatory statewide testing in kindergarten leave little space or time for play.

Figure 4. Developmentally Appropriate Teaching Practices with Embedded Play Continuum (McKenzie, 2023).

Traditional Learning — Play-Based Learning

Increasing Student Agency →

Locus of Control: Teachers, School, Curricula ← → Student

Direct Instruction	Playful Instruction	Learning Games	Collaborative Play	Modelled Play	Guided Play	Free Play
The teacher uses explicit teaching techniques to teach a specific skill to students	The teacher employs playful engagement when instructing students.	He teacher introduces and instructs how to use learning games before placing in the environment.	The student initiates a context for play; the teacher interjects targeted skills into the child's play.	The teacher introduces and models how to use materials; the student chooses to play with them and with whom.	The student explores and initiates ideas; the teacher extends through questions and provocation.	The student initiates the play context and directs the voluntary play within that context.
Explicit goals	Explicit goals	Explicit goals	Explicit goals	Explicit goals	Explicit goals	No Explicit goals
Addresses standards	Addresses standards	Addresses standards	Addresses standards	Addresses standards	Addresses standards	Addresses standards
Teacher-initiated	Teacher-initiated	Teacher-initiated	Student-initiated	Teacher-initiated	Student-initiated	Student-initiated
Teacher-directed	Teacher-directed	Student-directed	Teacher-directed	Student-directed	Teacher-directed	Student-directed
Lecture; strategy-based instruction; demonstrations; small-group instruction.	Dressing up as a scientist and performing an experiment for the students to watch.	Math and literacy games; BINGO; Simon Says; dice games.	Teaching shapes during block play; counting pretend money in a class store.	Demonstrating use such as showing the class how to use toys or make crafts.	Inquiry-based instruction; investigations; problem-based learning.	Drawing; art; dramatic play; block building; recess; running; swinging.

Addresses Rigorous Standards

A no-nonsense, no play, academics-based, direct instruction view of learning is the norm in many American kindergartens and classrooms worldwide where standards-based learning has been adopted (Almon & Miller, 2010). However, numerous countries are beginning to re-embrace Froebel's ideals concerning play.

[in] play the child ascertains what he can do, discovers his possibilities of will and thought by exerting his power spontaneously. In work he follows a task prescribed for him by another, and doesn't reveal his own proclivities and inclinations; but another's. In-play, he reveals his own original power (Froebel, 1887, p. 233).

For example, Finland is a global leader in high test scores, yet has historically valued play as a teaching strategy (OECD, 2014), with children spending only four hours a day in school, which is mostly spent playing. In Singapore, known worldwide for high-ranking school systems, massive education reform has resulted in play-based teaching in kindergarten (Ting, 2007). Similarly, early learning centers in China, once notorious globally for its rigid school systems, have embraced play-based and discovery learning (Ting, 2007). Canada has instituted mandated play in their early years curriculum, valuing play as the most impactful way for the young child to learn (McCain, 2020; Peterson et al., 2015). Further, Sweden, Australia, the United Arab Emirates, and New Zealand have also adopted play-based teaching practices for kindergarten and early childhood (Danniels & Pyle, 2018).

The need is today for teachers to find developmentally appropriate ways to incorporate mandated standards into their teaching. A rigorous approach to kindergarten is not necessarily at odds with developmentally appropriate education (Mraz et al., 2016). As discussed in the next section, developmentally appropriate practice includes a range of teaching strategies. Therefore, teachers must choose the most appropriate strategy for children's learning.

Continuum of Developmentally Appropriate Learning

Young children learn from a broad range of developmentally appropriate practices (DAP), ranging from direct instruction to free play (NAEYC, 2020). Within each learning strategy whether a direct teaching session or child-selected play, either the teacher or child or both initiate and direct the learning (Hassinger-Das et al., 2017; Zosh et al., 2017). In addition, some strategies have explicit goals associated with learning, while others have implied goals (Hassinger-Das et al.).

Playful learning, or play-based learning (P-bL), is employed when teachers have a specific goal or outcome and use hands-on, experiential, playful materials and lessons in order to reach these goals. Play-based learning is a continuum ranging from free play to learning games, and at each level there are elements of student agency and teacher direction (Hassinger-Das, 2017; McCain, 2020; Mraz et al., 2016; Pyle & Danniels, 2017; Zosh et al., 2017). Building on previous play continua, this author developed and refined a play-based learning continuum to include who initiates and directs play, the level of student

agency, and a description and example of the play type. These elements are situated within a continuum of developmentally appropriate teaching strategies, including traditional teaching strategies of direct instruction and playful teaching. The range of DAP teaching practices employed by kindergarten teachers is illustrated in **Figure 4**.

Traditional Instruction

The first teaching strategy on the continuum is direct instruction (DI), which is a traditional approach whereby the teacher initiates and directs the learning, and the students are receivers of information (Hassinger-Das et al., 2017; Zosh et al., 2017). DI has explicitly stated goals and objectives, is linked to curricular objectives and standards, and is one of the many ways DAP methods to teach the young child (NAEYC, 2020). Though effective in many ways, DI has the very least possible amount of student agency.

Affording slightly more student agency, *playful instruction* (PI) is teacher-driven and teacher-chosen and meets objectives and standards (Hassinger Das et al., 2017). In PI, the teacher employs playful engagement, such as dressing as a scientist to perform a science experiment. During PI, the teacher directs the learning in a fun and playful way, but the learning is still conveyed via a direct approach. Both direct and playful instruction benefit students, but each is teacher-directed, curriculum-focused, has specific outcomes and academic goals, and is linked to standards (Hassinger-Das et al., 2017; Zosh et al., 2017).

Play-based Learning: Variety of Experiences

In contrast to these direct instruction strategies, play-based learning (P-bL) is a teaching approach that involves child-directed elements in a playful environment with a level of teacher scaffolding and guidance. It features specific objectives and is linked to specific standards (Danniels & Pyle, 2018; Hassinger-Das et al., 2017; Zosh et al., 2017). Children engaged in PL have a balance of child-initiated play with the support of engaged teachers who provide focused experiential learning, active scaffolding and support (Miller & Almon, 2009; Pyle & Danniels, 2017). Play-based learning is best employed when teachers seamlessly enter and exit the child's play, have specific goals or outcomes planned, and use hands-on, experiential, playful materials to reach goals. The learning environment is purposefully filled with toys and materials that stimulate the child's natural curiosity and creative nature in a playful classroom where teachers guide focused learning with activities full of rich experiences (Miller & Almon). Teachers are active participants -observing, recording, conferring, participating, guiding, and questioning while the child is at play.

Learning through games is the most prescriptive, structured type of P-bL (Pyle & Danniels, 2017). Learning games have preset rules, a specific structure, and are typically used to practice and promote discreet skills in literacy and math. They are linked to specific learning outcomes and can be commercially sold, teacher made, and part of a math or literacy series. Learning games are teacher- or curriculum-directed and have more student agency than traditional strategies, but less than the other P-bL strategies (Pyle & Danniels, 2017). Teachers can increase student initiation and agency by allowing students to pick who they play with and which games they play.

Collaborative play (or co-opted play) is initiated by the child and represents a collaboration between the teachers and students during play (Hassinger-Das et al., 2017; Zosh et al., 2017). Collaborative play is entered by the teacher and temporarily teacher-directed to interject learning goals and objectives during play. Teachers must be careful not to 'hi-jack' the child's play or disrupt the play scenarios (Goouch, 2008; Pyle & Danniels, 2017). Collaborative play can happen seamlessly, with the teacher carefully watching and knowing what to watch for, then using their understanding of the child, their development, and the curricular expectations to infuse small learning moments.

Modeled play occurs when a teacher introduces and models how to play with learning materials and explains their use before placing them in the learning environment (Edwards, 2000). According to Edwards, modeled play permits teachers to directly demonstrate concepts to students, has specific learning goals and outcomes, and is linked to curricular expectations. The student has full agency of when to play with the materials, but the teacher retains control over the direction in which the play occurs.

Guided play (or guided inquiry) allows for student agency and active, engaged learning with teacher scaffolding of goals and objectives (Hassinger-Das et al., 2017; Zosh et al., 2017). In guided play, the teacher sets up provocations for the child to explore, gently and subtly interjecting questions and provocations to nudge learning, and the student directs the play scenarios (McCain, 2020). Guided play is a play-based learning strategy embraced in many International Baccalaureate schools which supports constructivist learning (IBO, 2013).

Free play is completely child-directed and child-initiated. Child-initiated play is selected by the child, builds on the child's initiative, and is directed by the child, with active teacher scaffolding and support (Hassinger-Das et al., 2017; Miller & Almon, 2009; Zosh et al., 2017). The learner is free to make choices about exploring their world with teachers who are actively engaged in the child's learning and play scenarios (Miller & Almon). The student chooses the play context and directs their play within that context. There are no explicit goals connected to the play, though standards can be accomplished during play.

From free choice to learning games, each type of play provides a place for children to learn essential skills and dispositions. Thus, play and learning are inseparable. Although children are constantly learning from play, some types of play have explicit goals, are aligned to academic standards, and are a better fit for differing types of lessons (Epstein, 2014). All levels and types of play provide teachers with rich opportunities to help students meet rigorous standards in kindergarten. Due to the self-selected nature of free play, teachers cannot ensure that each child will choose the type of play best suited to their specific skills. Thus, when teachers link academic expectations to play-based learning, they can assist students with meeting rigorous standards through play.

Aligning Standards with Play

When teachers utilize intentional teaching by combining open-ended experiences, student voice and choice, and teacher guidance, they use play as a teaching strategy to scaffold children's learning. Hence,

teachers help children meet rigorous standards such as the Common Core State Standards (CCSS) (National Governors Association, 2010). CCSS are articulated for English Language Arts (ELA) and Math for students in kindergarten through 12th grade, whereby rigorous benchmarks are defined for student expectations of learning in these two key areas. The next sections provide examples of alignment of play-based learning with CCSS for ELA and Math and hands-on experiences in early childhood classrooms.

Early Literacy Skills and Play-Based Learning

Through play, children develop early literacy skills and dispositions towards reading, writing, listening, and speaking (Martin, 2020; Anderson, 2016; Miller & Almon, 2009). In DAP classrooms, foundational skills are embedded into meaningful learning where children have opportunities for in-depth and sustained play (Anderson, 2016; Roskos et al., 2003; Singer et al., 2006). When teachers link early literacy to children's play, the world of print becomes meaningful and pleasurable. Children have multiple opportunities to read books, write, sing, speak, play with words, interact with letters and print, and practice their developing literacy skills in meaningful ways using developmentally appropriate materials and teaching methods (Anderson, 2016; Roskos et al., 2003; Singer et al., 2006). Young children need content-rich, play-based instruction with multiple opportunities, as well as ample time to strengthen language skills and concepts (Roskos et al., 2003). This must occur in a developmentally appropriate learning environment filled with appropriate materials and resources. This teaching approach affords plentiful opportunities to meet rigorous academic standards utilizing strategies from which the young child learns most effectively. Children are always learning and, although all play can be related to academic outcomes, some types of play-based learning are better suited to particular outcomes and standards (Epstein, 2014).

Walking through a play-based classroom, one might see a small group of children in a pretend post office. Skyler writes letters, addresses them, and buys stamps from the mailperson of the day, Yuka, who delivers them to small student mailboxes. Before releasing the activity to the children, Ms. Marsha used a modelled play strategy to teach the children how to write a letter, placing stationary, paper, envelopes, play stamps, an address book, and a mail cart in the dramatic play area. These children are meeting Common Core literacy standards CCSS.ELA-LITERACY.L.K.1, demonstrating command of the conventions of standard English capitalization, punctuation, and spelling when writing. In another area of the room, Mr. Cris is playing a rhyming game with Kokoro, Luca, and Jayden. He is using learning games to help students develop foundational skills to meet Common Core standard CCSS.ELA-LITERACY.RF.K.2, including the goal of demonstrating understanding of spoken words, syllables, and sounds, and more specifically recognizing and produce rhyming words - CCSS.ELA-LITERACY.RF.K.2.A. In the corner of the classroom, Kai, Rufus, Toby, and Bailee are retelling The Three Little Pigs using puppets and a puppet stage. Ms. Sayako, their ELL teacher, briefly interjects herself into their play, asking guiding questions to help them with their reading comprehension. She is using co-opted play to support their learning and helping the students meet Common Core reading literacy standards, specifically asking and answering questions about key details in a text and retelling familiar stories, including key details and meeting CCSS.ELA-LITERACY.RL.K.2. In

the library area of the classroom, Hudson and Wendy have chosen a stack of early readers and are taking turns reading to each other. These children are using free choice play to enjoy books and develop reading fluency while meeting Common Core reading skills, such as CCSS.ELA-LITERACY.RF.K.4 by reading emergent-reader texts with purpose and understanding. **Table 1** describes these literacy play areas, along with the materials best suited to each area, student learning objectives, related standards, and the types of play best suited to the skills to be developed.

Mathematical Thinking and Play-Based Learning

Similar to the Common Core ELA standards, the Math standards are also attainable through a play-based approach (Stipek, 2017). NAEYC (2020) encourages early childhood programs to supply hands-on materials and ample time to practice and learn mathematics through P-bL. Activities critical to the mathematics education of the young child include measuring, counting, comparing, constructing, and playing games (NAEYC). Through these activities, children can develop the skills and dispositions outlined in the CCSS for math (Ness & Farenga, 2007).

Math manipulatives are beneficial for teaching important key concepts, including sorting, ordering, patterning, making sense of numbers and math operations, measuring, exploring spatial relationships and geometric shapes, solving problems, and making connections among mathematical concepts (NCTM, 2000). Further, manipulatives assist students with developing deeper conceptual mathematical understandings and allow for the demonstration of ideas (Shaw, 2002). Students who learn math through the use of manipulatives make substantial gains in their ability to verbalize mathematical understandings, relate math to real-world situations, learn and work collaboratively, think divergently, and express problems and solutions with a variety of mathematical symbols (Kinzer et al., 2016; White, 2012). The CCSS for math can be embedded into play areas and met through play-based learning (Stipek, 2017).

Looking around a kindergarten classroom where play is the main teaching strategy, one would see many play-based activities that are relevant for instilling math learning outcomes (Epstein, 2014). Jillian, Sentaro, and Joshua build a house for animals in the block area. Mr. Turnbull, their EAL teacher, temporarily co-opts their play, seamlessly entering the play scenario to ask about the shapes they are using, clarifying their understandings, and gaining assessment data. The students are meeting CCSS objectives for math, including naming shapes regardless of their size or orientation CCSS.MATH.CONTENT.K.G.A.2, identifying whether shapes are flat or solid; CCSS.MATH.CONTENT.K.G.A.3, and composing simple shapes to make larger shapes CCSS.MATH.CONTENT.K.G.B.6. In another area, Eliza and Eric take out a commercially prepared math game. They take turns spinning a spinner and adding and subtracting small items from a playing board, each hoping to be the first one to get to ten. Eliza and Eric are using learning games to meet CCSS for math by representing addition and subtraction in a variety of ways which meets CCSS.MATH.CONTENT.K.OA.A.1, and adding and subtracting within ten . Before placing the game in the learning environment, Ms. Jacy uses modelled play to show students how to play the game with the students. Rian, Juan, and Jackie are huddled around a small round table with a chalk board,

Table 1. Literacy play areas, materials, and types of play linked to Common Core ELA Standards

Literacy Play Area, Objectives, Materials	Standards Addressed	Play-Based Instruction				
		Learning Games	Co-Opted Play	Modelled Play	Guided Play	Free Play
Alphabet Area **Objectives:** Students sort, alphabetize, form, write, and match letters, form words, and practice letter recognition. **Materials:** magnetic letters, magnetic boards, alphabet trains, plastic letters, sorting trays, stamps, foam letters, stencils, alphabet matching mats, drawing boards, wax sticks, alphabet games, word cards, word family mats, word family spinners, and alphabet games.	Name all letters of the alphabet and demonstrate letter-sound correspondences, including vowels.	√	√	√		√
Phonics and Phonemic Awareness Games **Objectives:** Students segment words, onset rimes, isolate and manipulate initial, medial and ending sounds, and produce rhyming words. Students match items with same sounds, manipulate sounds, and blend and segment words. **Materials:** small toys, games, sound sorting mats, picture cards, Elkonin boxes, chips, linking blocks, and target word lists.	Recognize spoken words, syllables, and sounds, rhyming words, onset-rimes, and substitute sounds.	√	√	√		
Partner Reading **Objectives:** Students read to a partner, to self or to a stuffed animal. Students choral read, take turns reading pages, and picture read. They ask and answer questions, and work on oral reading skills. **Materials:** books, small pointers, whisper phones, high frequency word cards, stuffed animals, and puppets.	Retell a story and ask and answer questions about a text. Demonstrate basic book knowledge. Read emergent-reader texts with purpose and understanding.		√	√		√
Retelling Area **Objectives:** Students retell familiar stories. Students identify characters, setting, and the problem and solution in stories. Students retell familiar stories, sequence events in stories, ask questions, and listen to partners tell stories. **Materials:** books, felt figures, puppets, puppet stage, question cards, magnetic boards, figures and sequencing cards.	Retell familiar stories-key details, characters, settings, and major events. Recognize common types of texts, and name the author and illustrator of a story.		√		√	√
Big Book Area **Objectives:** Students ask and answer questions about text, retell familiar stories, identify characters, setting and plots, follow words from left to right and top to bottom, and engage in reading activities with purpose and understanding. **Materials:** big books, pointers, fly swatters, high frequency word cards, a big book easel, comprehension wands, who, what, when, where and how cards, pencils, markers, and props.	Ask and answer questions about a text. Retell familiar stories, identify characters, settings, and major events. Demonstrate book knowledge.		√	√	√	√
Write the Room **Objectives:** Students practice word recognition and writing skills. **Materials:** notebooks, word cards, dry erase boards, pencils, markers, pens, glasses with no lenses, clipboards, and the word wall.	Understand features of print. Read high-frequency words. Write letters for sounds.		√	√	√	√

Table 1. Literacy play areas, materials, and types of play linked to Common Core ELA Standards *continued*

Literacy Play Area, Objectives, Materials	Standards Addressed	Play-Based Instruction				
		Learning Games	Co-Opted Play	Modelled Play	Guided Play	Free Play
Word Work Games **Objectives:** Students practice phonics and word analysis skills. Students manipulate hands-on materials to form words, while focusing on word families, vowels, and high frequency words. **Materials:** word cards, word tiles, word games, word family sets, flash cards, and dry erase boards.	Know and apply grade-level phonics and word analysis skills in decoding words.	√		√		
Writing Area **Objectives:** Students practice handwriting skills, write stories using developmental and inventive spelling, and correct and publish their work. **Materials:** dry erase boards, markers, erasers, sand trays, chalkboards, chalk, notebooks, booklets, writing rubrics, and handwriting posters.	Understand basic features of print. Draw, dictate and write stories. Add details to writing. Spell simple words phonetically. Use end punctuation.		√	√	√	√
Listening Area **Objectives:** Students follow words left to right, top to bottom, while making connections between the text and illustrations. Students read along with pre-recorded stories. **Materials:** tape player, books on tape, books, a CD player, books on CD, iPads and story websites, listening logs.	Retell familiar stories. Identify characters, settings, and major events. Compare & contrast adventures & experiences of familiar characters. Use question words.	√	√	√	√	√
Puzzle Area **Objectives:** Students extend early literacy skills as well as visual acuity by using puzzles that promote early literacy learning. **Materials:** alphabet puzzles, rhyming word puzzles, letter and sound matching puzzles, and environmental print puzzles.	Recognize letters of the alphabet. Understand opposites.	√	√	√	√	√
Poetry Area **Objectives:** Students extend their understanding of early literacy skills, rhyming words, concepts of print, and practice new and novel words. **Materials:** laminated poems on chart paper, poetry journals, poems on sentence strips, books of poetry and journals for writing their own poetry.	Ask and answer questions about unknown words in a text. Recognize types of texts. Produce rhyming words. Explore word relationships and nuances in word meanings.		√	√		
Pocket Chart **Objectives:** Students practice concepts of print, high frequency words and oral reading. **Materials:** pocket chart, laminated lines from stories, words, pointers, sentence strips, markers, photos of students, names of students, and sentences.	Ask and answer questions about unknown words in a text. Use frequently occurring prepositions. Produce and expand complete sentences in shared language activities.	√	√	√		√

construction paper, markers, scissors, and a few non-standard measuring tools such as paper clips and unifix cubes on the table. Together they read the chalked message, "How long is your foot?' and Ms. Doka offers them a further provocation, "Can you trace your foot and measure it? Who has the longest foot?" Quickly the group of learners pull off their shoes and begin tracing their feet. Ms. Doka is using guided play to help the learners meet CCSS.MATH.CONTENT.K.MD.A.1 in math, including describing measurable attributes of an object and directly comparing two objects with a measurable attribute in common to meet CCSS.MATH.CONTENT.K.MD.A.2. At the learning rug, Sana and Moira are repeating a favorite activity. They use teddy bear counters to create a pattern around the edge of the carpet, working collaboratively to create and continue a pattern. They chose this free choice play activity and are making sense of problems and persevering in solving them, thus meeting Common Core Standards for Mathematical Practices. **Table 2** details math play areas, materials, learning objectives, Common Core Math Standards, and the types of play best suited for meeting the standards.

Conclusion

This article contributes to an enhanced understanding of the importance of play to the young child's development. It builds on previous research stating that children must play to develop socially (Hirsch-Pasek & Golinkoff, 2003), emotionally (Whitebread & O'Sullivan, 2012; Dore, Smith, & Lillard 2015), cognitively (Bergen, 2009; Ginsburg, 2007), physically (White, 2012; AAP, 2013), linguistically (Martin, 2020), creatively (Saracho, 2002), and mentally (Toub et al., 2016). It also demonstrates that, in response to increasing pressure to conform to top-down standards, teachers can balance student-initiated learning and teacher-directed play (Stipek, 2017). This balance is possible when teachers create lively, active lessons that engage students in their learning, then provide support for the child's developing skills, dispositions, and understandings through developmentally appropriate play. This article makes several significant contributions to research and practice by introducing a developmentally appropriate teaching continuum, a clear

Table 2. Math play areas, materials and types of play linked to Common Core State Math Standards

Math Play Area, Materials, Objectives	Standards Addressed	Play-Based Instruction				
		Learning Games	Co-Opted Play	Modelled Play	Guided Play	Free Play
Number Sense Area **Objectives:** Students understand numbers in base ten. **Materials:** numeral and number cards, dice, ten frames, and assorted small items for counting.	Compose and decompose numbers from 11 to 19 into ten ones. Identify greater than, less than, or equal to amounts. Compare numerals between 1 and 10. Count items up to 20.	√	√	√		
Counting Toys **Objectives:** Students learn number names and the count sequence, count objects and compare numbers. **Materials:** counters, 100 charts, 10 frames, math games.	Classify, count and sort objects. Count forward beginning from a given number. Count to 100 by ones and by tens. Connect counting to cardinality. Know that the number of objects is the same regardless of arrangement. Count to answer "how many?" questions about up to 20 things.		√	√	√	√
Measuring Center **Objectives:** Students compare measurable attributes, classify objects and count the number of objects in categories. **Materials:** units such as cubes, links, chains, classroom scale, items to measure.	Describe measurable attributes of objects. Directly compare two objects with a measurable attribute in common. Compare numbers as more and less and describe the difference.		√	√	√	√
Sorting Games **Objectives:** Students sort common objects into categories and classify objects. **Materials:** shapes, small toys, and sorting trays.	Sort objects into categories and count them. Analyze and compare two- and three-dimensional shapes of in different sizes.	√	√	√		√
Graphing Games **Objectives:** Students classify objects and count the number of objects in each category. **Materials:** graphs, graphing games, manipulatives, and graphing sheets.	Count and classify objects. Understand greater than, less than and equal to. Compare two numerals.	√	√	√	√	
Addition and Subtraction Games **Objectives:** Students understand addition as putting together and adding to, and subtraction as taking apart and taking from. **Materials:** dominoes, dice, recording sheets, and counters.	Add and subtract within 10. Record math thinking using drawings and equations.	√	√	√	√	
Geometry Area **Objectives:** Students identify, describe, and compose shapes. **Materials:** shape patterns, shapes, pattern blocks, and sorting trays.	Describe objects using names of shapes. Name and identify 2 and 3 dimensional shapes. Draw shapes. Compose simple shapes to form larger shapes.	√	√	√	√	√

definition for play-based learning, and detailed examples of how to integrate play with rigorous standards through many types of play and play-based learning. By offering these practical tools and theoretical insights, this article helps clarify the muddy waters of play-based learning and provides educators with a compass for navigating increasingly demanding state standards.

Although this article has begun to fill the gap in research on teacher's use of play, future research is needed on several fronts. Further studies are needed to gain understanding of teacher use of play-based learning, demonstrate how they use it to meet state/provincial and national standards, and measure kindergarten learning in play-based classrooms compared to learning gains in traditional classrooms. Additionally, there is a need for longitudinal studies to ascertain long-term differences in gains in traditional versus play-based kindergarten classrooms.

Through structured, teacher-directed play and scaffolded, child-initiated play, teachers can balance learning and play while using the synergistic symbiosis that play creates for the young child. With careful planning, kindergarten teachers across the United States and globally can meet all of the articulated Common Core State Standards through play-based learning. Wake up, America. It is time to play!

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Supporting Development in Infants and Toddlers

Karen Walker

Infants learn many skills when they enter the world – cooing, babbling, smiling, sitting up – and all children reach these developmental milestones at their own pace. Some toddlers are walking and talking well before they celebrate their first birthday, others are still cruising – grasping a sturdy adult hand or piece of furniture – and just speaking a few words. Slight differences in the rates of developmental progress are normal and are no cause for concern (Zubler et al., 2022). A child may just need to be exposed to a skill and be given time to practice it. But significant delays, even those that can be attributed to premature birth, a difficult pregnancy, or heredity, may indicate that a child needs our extra support or intervention to ensure they reach their full potential. Childcare centers use assessment tools such as HighScope Child Observation Record or Teaching Strategies Gold to record authentic assessments and track the development of children in their care. Families can visit the Centers for Disease Control and Prevention (CDC) website for helpful list of Developmental Milestones and download a Milestone Tracker app.

Infants who are not rolling over, sitting up, crawling, or walking much later than developmentally appropriate may have a physi-cal developmental delay, also known as gross motor delay. Gross motor skills involve large muscle movements, while the use of small muscles for grasping and hand-eye coordination are fine motor skills. Very often, physical development may not be progressing as it should because of lack of opportunity. Many infants spend too many hours each day in some type of equipment – carrier, swing, car seat, or high chair. The American Physical Therapy Association refer to this as Container Baby Syndrome (CBS). Extended time in a device that contains movements limits time for infants to kick, turn their head side-to-side, wiggle, and move in ways to develop strength and coordination that lead to sitting, standing, and walking (LaBotz, 2020).

Because the incidence of CBS rose dramatically after the American Academy of Pediatrics introduced its Back to Sleep campaign in the 1990s, they have more recently introduced "Back to Sleep, Tummy to Play," reminding parents that infants need tummy time every day to foster muscle strength, coordination, and movement. Beginning at birth, infants should spend short, supervised sessions on their tummies to aid in development and exploration. Babies should always sleep on their backs, but time on their tummies helps with core strength, rolling over, and lifting up on their arms.

Playing Peekaboo is a favorite of most typically developing infants. To play, an adult, or older child, hides their face, then pops back into view and says Peekaboo! This simple, classic exchange with infants is an important part of cognitive and social development. Around six to nine months of age, infants begin to understand that just because who can no longer see something or someone, they still exist. They will look for the toy that got covered by a blanket, or the person who is hiding their face. Jean Piaget labeled this object permanence, an important milestone in a baby's brain development (Piaget, 1963). Peekaboo is also important for social interaction as it involves an interest in another person, making eye contact, and turn taking.

Showing no interest in social interactions could be an indicator of a developmental delay.

Another important social interaction that is a developmental milestone is joint attention – when two people pay attention to the same thing (Moore & Dunham, 1995). When an adult, or older child, is holding a four- to six-month old infant in their lap looking at a book or toy, the infant should be gazing at the same book or toy, not looking away. Joint attention does not require spoken language but is a crucial social and communication skill important for language development. Shared book reading, finger plays, and rolling a ball back and forth can help improve joint attention.

Remember that a mild difference in development is considered normal and moderate delays in speech, language or motor development do not always indicate a problem but are considered a risk factor for later learning difficulties. So, document your observations, recording only what you see and hear. You can add an objective summary to the anecdotal record but be systematic. Think about what strategies you have tried to help the child – what works, and what doesn't? Ask another teacher to observe the child. Are they noticing the same things? Talk to the child's parents.

Are they having the same concerns? By reinforcing successful strategies at school with what works at home, you may be able to resolve the problems without needing further intervention. But sometimes a consultation with a pediatrician and referral to an early childhood intervention specialist is needed to ensure the child receives the support they need to be successful in the future.

Dr. Karen Walker is an assistant professor of early childhood education at Texas A&M University-Commerce. She serves on the SECA and TXAEYC governing boards. Her research interests include early literacy and play. She frequently presents at conferences locally, nationally, and internationally, including the United Kingdom, Kenya, and Ireland.

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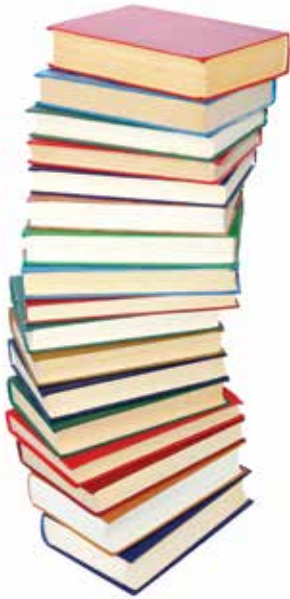
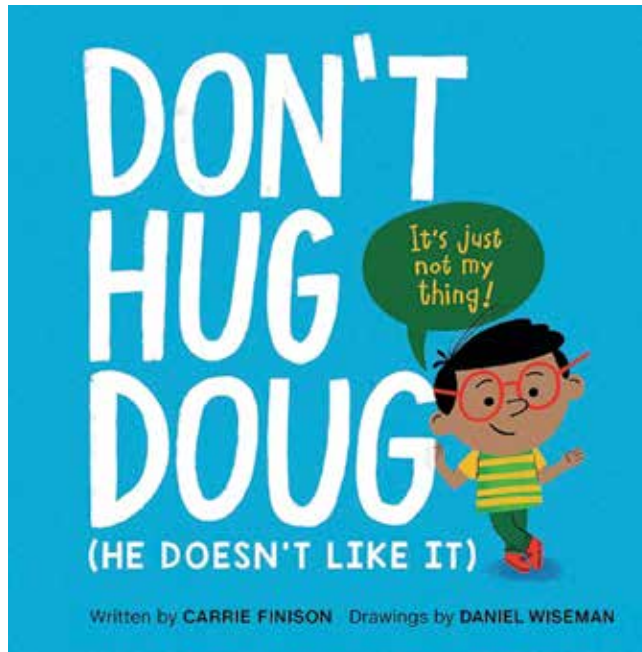# Children's Book Review

By Dina Costa Treff

Don't Hug Doug

Hugs are not for everyone, and that's okay. In Carrie Finison's book, *Don't Hug Doug: (He Doesn't Like It,)* a young boy shares many reasons against hugs. He prefers other greetings and exchanges, especially high-fives. *Don't Hug Doug* discusses consent with young children using an amusing tone and entertaining illustrations. Teaching consent is fundamental, even during the early years of life. Finison's story about Doug not only helps to provide children with the basic understanding of asking and respecting another's boundaries, but is an excellent reminder for adults too.

Don't Hug Doug: (*He Doesn't Like It*) is written by Carrie Finison and illustrated by Daniel Wiseman. children ages 2-6 years old and for grades Preschool-2nd Grade.

Los abrazos no son para todos, y eso está bien. En el libro de Carrie Finison, *Don't Hug Doug: (He Doesn't Like It)*, un niño comparte muchas razones para no querer los abrazos. En el cuento vemos como el prefiere otros saludos e intercambios, especialmente chocar los cinco. *Don't Hug Doug* discute el concepto del consentimiento con los niños pequeños usando un tono divertido e ilustraciones entretenidas. La enseñanza del consentimiento es fundamental, incluso durante los primeros años de vida. La historia de Finison sobre Doug no solo ayuda a proporcionar a los niños la comprensión básica de preguntar y respetar los límites de los demás, sino que también es un excelente recordatorio para los adultos sobre su importancia aunque estos sean niños pequeños.

Don't Hug Doug: (*He Doesn't Like It*) está escrito por Carrie Finison e ilustrado por Daniel Wiseman. Es un libro apropiado para niños de 2-6 años y para preescolar al 2do grado. ,

Dina Costa Treff is the Lead Teacher of the Preschool Program of the Child Development Lab at the McPhaul Center College of Family and Consumer Science, University of Georgia.

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