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Barrington Bunny: case of the curious clouds a narrative picture book for symbolic play and STEM curriculum

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Barrington Bunny: Case of the Curious Clouds

A Narrative Picture Book for Symbolic Play And STEM Curriculum

By

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Early Childhood and Childhood General Education

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Submitted in partial fulfillment of the requirements of the degree of

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“I believe that at five we reach a point not to be achieved again and from whichever, after we at best keep and most often go down from. And so at 2 and 13, at 20 & 30 & 21 & 18 — each year has the newness of its own awareness to one alive. Alive- and life. “

— Margaret Wise Brown

Abstract

Adults constantly use their imagination to help them visualize, problem-solve, enjoy a book, empathize, and think creatively. Therefore, using one's imagination is a critical cognitive skill that can be used throughout life. And it is crucial for educators to encourage imagination, creativity and original ideas in childhood through pretend play, story, picture books, and narrative make-believe if we want our students to be mindful and functioning adults in society. Pretend play is also known as "symbolic play" because it involves the use of symbols. This type of symbolic thought is also needed for language and reading, as our words are symbols. Our words stand for our thoughts and ideas. Therefore, pretend play and language both involve the same underlying ability to represent things symbolically. Reading, writing, and storytelling is the verbalization of symbolic play.

Barrington Bunny: Case of the Curious Clouds can be categorized as a connected math picture book. But at its core, it is a narrative picture book. And as such, the book can be used for various topics including emotional turmoil, impulse to break social norms, acceptance, and changing of needs, among others. Finally, presenting challenging subjects in various outputs, mediums, and supported by an appropriate picture book provides young children more opportunities to understand the material (some children may learn better by reading about it, others by acting out a story, others by making something related to the topic with their hands). Therefore, children understand the material more fully and deeply because they can now think about it in several different ways, giving them a richer, and growing learning experience.

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The Picture Book:

Barrington Bunny: Case of the Curious Clouds

by Claudia Chung

1. Barrington Bunny was very fussy about the number twelve.
 2. He kept twelve glasses of water by his bed.
 3. He kept twelve combs in a row on his sink.
 4. Twelve bowties hung in a line above his twelve pairs of shoes.
 5. For breakfast, he ate four small peas, then four medium-sized peas, then four large peas.
 6. Not before he thumped his right foot six times, then thumped his left foot six times,
 7. And licked the four corners of his chair exactly three times before he sat down.
 8. Every day at noon, in rain, snow, or shine, Barrington hopped twelve times to the mulberry bush to pick exactly twelve berries for his lunch. Always.
 9. Broken leg? Twelve one-legged tuck jumps.
 10. Forgot his pants? Twelve hops in his underpants.
 11. Need to pee? Twelve hops...uh, oh....
 12. Barrington couldn't, oh Barrington wouldn't, and Barrington didn't have anything else but twelve mulberries for lunch.
 13. One morning, everything felt different.
 14. Barrington stepped outside and he wasn't alone.
- [Author's Note: A small white cloud is at his front door.]
15. He stared at it.

16. It stared back.

17. They stared at each other...for a long time.

18. And Barrington started his hops. One. Two.

19. Then Barrington turned to...

20. And they were right behind him.

[Author's Note: Two clouds are following him.]

21. "Go away," he snapped. "I am very very very busy!" Three.

22. But they didn't go away.

[Author's Note: Three clouds are following him.]

23. "I'm getting mad now!" he huffed. "I must must must get my berries for my lunch.

It's so so so important. Please leave me alone before I...LOSE MY TEMPER!" Four!

Five! Six!

24. Barrington was just about to hop again...when...

[Author's Note: There are six big clouds, creating dark shadows.]

25. "I'm crying now. See my tears?" he sniffled. "

27. If I don't get my berries for lunch, my day is ruined forever...forever...FOREVER,"

Barrington sobbed. "I just want to be left alone."

28. But they didn't leave him alone.

29. Now, Barrington felt uneasy. He had to get his berries and get home.

30. Barrington took a teeny-weeny-itty-bitty, the smallest, maybe-they-won't-even-notice hop...seven.

31. But they did.

32. And they got mad!

[Author's Note: Seven clouds blow gusts of winds around Barrington.]

33. "Ahhhhhh..."

34. "Whooooaaa"...

35. "Fiiivvvvveeeee moooooore hoooops..."

36. Barrington mustered up all the courage he had and pushed! He made three of the fastest, highest and longest jumps EVER! Eight! Nine! Ten!

37. No sound. No more wind. But no...

38. Barrington crept around to see...

[Author's Note: There are now ten big, dark clouds.]

39. "Boom!" they thundered. "Boom! Boom! Boom!"

40. Barrington ran!

41. He ran in circles.

42. He ran in swirls.

42. He ran in zigzags.

44. And Barrington ran all the way home!

45. And shut the door.

46. And went under the covers.

47. And plugged his ears.

48. And closed his eyes... for a long time.

49. Then all was quiet.

50. The storm was over.

51. Finally, Barrington peeked out from under the covers, unplugged his ears and opened his eyes to see.

52. “Wait a minute...

(Author’s Note: Small recap of the clouds, not getting his berries and the storm.)

53. “Twelve mulberries on cloudy days is too hullabaloo,” Barrington said, “Could I...do I...Should I... maybe... try something new for lunch?!”

54. “Eleven blueberries and one strawberry? Ten gooseberry berries and two raspberries? Six chestnuts and...”

The End

(Author’s Note: A wide view of how short the distance from his front door is to the mulberry bush.)

Picture Books, Meaning Making, and Dramatic Play

Small children are astoundingly flexible visual readers – they can take in packed scenes just as easily as bold, simple images; they can follow adventures in silhouettes against bright backgrounds. This openness is on par with their acceptance of magical transformations, upside-down houses and flying through space, and their tendency to anthropomorphize everything, from rabbits to trains and from dinosaurs to umbrellas. They know no boundaries. They also linger over pictures, with a time-defying immersion that grown-up readers tend to lose.

Experts distinguish between "illustrated books," where the picture complements the text, and "picture books," where the pictures come first. But in reality, the two often overlap, and words and pictures cast a combined spell. It's magic.

Author Margaret Wise Brown based *Goodnight Moon* on her own childhood ritual of saying goodnight to the toys and other objects in the nursery that she shared with her sister Roberta. The plot could not be simpler: A young bunny says goodnight to the objects and creatures in a green and yellow trimmed bedroom. There is a telephone, a red balloon, a kitten and a pair of mittens; a bowl of mush, air, and nobody. All things and beings are drifting gradually to sleep as the lights dim and the moon illuminates through a big picture window.

The narrative of *Goodnight Moon* is ambiguous and enigmatic at best, as the relationship between reality and fantasy is blended and blurred. It bounces back and forth, dreamlike, much like how we remember an imaginative play in childhood. It's a period, as Brown generalized when speaking about her picture books, the world adults take for granted

seems every bit as strange as a fairy story, and the pleasure of language lies less in what it communicates than in its sound and rhythm. In just one hundred and thirty words, accompanied by a sequence of simple yet skillful drawings by Clement Hurd, “ In the great green room/ There was a telephone/ And a red balloon/ And a picture of-/The cow jumping over the moon,” the plot moves from page to page like a hypnotic bedtime trance as the rhythm reads more like a stream of consciousness than a narrative storybook.

Home, comfort, and possessions are its central theme. Yet, Wise was able to write prose that translated and spoke to the young toddler’s psyche in a language that they understood and identified. It brings in readers who have not yet acquired and developed language skills or cognition to understand the images in front of them. However, the combination of rhythm variations, pauses, and word sounds - and the child’s need to see bright colors - entice and provoke their curiosity and their desire to pay attention. It’s a dangerous exercise to try to pull the genius out of the lyrical and prolific prose of *Good Night Moon*, as one will be left with more questions than answers.

Rebecca Lukens writes in *A Critical Handbook of Children's Literature*, “The combination of the two may provide readers with additional interpretations based on their individual personal responses to the text, the pictures, and their interactions. The role of the readers is essential in this process of ‘interanimating’ the words and pictures as they work together at the semantic level where meanings are found. The reader is an active partner in creating meaning, depending on the experiences the reader brings to the reading,” (Lukens, 2013, p. 50).

The idea of meaning-making, creativity, and imagination conjures up images of children pretending with dolls, pushing dump trucks, or dressing up as princesses or pirates. And while young children do spend much of their time in the land of make-believe during play, meaning-making is not just reserved for children's physical play but also in reading and writing stories — a verbalization of dramatic play.

According to Lukens, “In particular, more complex contemporary picture books whose dynamics include contradictions or counterpoint are open to multiple interpretations. This is important when we consider that picture books almost always have a dual reader audience, adult and child, sophisticated and unsophisticated, who will interpret both the text and illustration in different ways. Teachers, parents, or caring adults need to consider both text and illustration and their combined effects as they select children’s picture books. This consideration is important not only to effectively guide children’s responses but to also develop an attitude of inquiry that enhances the ways children can begin to communicate their aesthetic appreciation and literary understanding,” (Lukens, 2013, p. 52-53).

The rhythm of Wise’s iconic text in *Goodnight Moon* gently and quietly calms both the child and the adult reader, but three dynamics are at play, which is mutually exclusive. One, the child is hearing waves of sounds with sporadic identification of certain items in the book, and words being said out loud by the adult reader. At the same time, there is an active life long learning experience for the child who is read to as even before he or she has any concept of a book, they learn to associate reading with feelings of security and comfort. Two, the adult reader is experiencing nostalgia, childhood memories of being

read to by a loving adult and interpreting the narrative with mature understanding and appreciation. And finally, the picture book is the facilitator in a shared experience for both the child and adult reader as the adult is guiding the child through the narrative.

Three very different meaning-making experiences are taking place simultaneously within reading one story.

In *Mind and Society*, Lev Vygotsky argues that learning takes place when children play but this also relates to reading. Pretend play and language both involve the same underlying ability to represent things symbolically. Pretend play is also known as "symbolic play" because it involves the use of symbols. When we use symbols, we use something to stand for something else. In the case of pretend play, children may use one object to stand for another, such as pretending a spoon is a hairbrush, or a tablecloth is a cape. This type of symbolic thought is also needed for language and reading, as our words are symbols. Our words stand for our thoughts and ideas. Therefore, pretend play and language both involve the same underlying ability to represent things symbolically. Furthermore, Carol Garhart Mooney summarizes Vygotsky's idea in *Theories of childhood: An introduction to Dewey, Montessori, Erikson, Piaget, and Vygotsky*, "He (Vygotsky) believed that much learning takes place when children play. He believed that language and development build each other. When children play, they constantly use language. They determine the conditions of the make-believe. They discuss roles and objects and directions. They correct each other. They learn about situations and ideas they have not tried," (Mooney, 2006, p.101).

Imagination, Creativity, and Multiple Intelligence

Teachers know that each student has unique abilities and interests and that even identical twin siblings can have very different natural skills. One child may devour books and love to dance, another may love animals, and another child may love music and math. That's the beauty of human beings—we are such interesting and varied creatures. In *Multiple Intelligences in the Classroom*, Thomas Armstrong refers to Howard Gardner's foundations of multiple intelligence theory and argues that our ability to symbolize is one of the most important factors separating humans from most other species. It is rooted in using our imagination. And imagination is creativity in action.

Imagination draws on our experiences and knowledge of the world around us and combines them with the completely unknown to make something new. It also allows us to explore beyond the constraints of our environment and our reality. Armstrong argues that while it is obvious that literacy and linguistic intelligence are highly connected, it's actually all eight intelligences that are used with reading and writing. "Certain distinctive brain structures, particularly in the left hemisphere for most people, are particularly important when it comes to the processing of phonological, semantic, and syntactic aspects of words. In sum, there are strong reasons for literacy to be regarded as part and parcel of linguistic intelligence. Having said this, however, I'd like to argue that when we look at how the brain processes the actual experience of reading and writing, we can begin to see how all eight intelligences have important parts to play," (Armstrong, 2003, p. 17).

When ideas are fueled by inspiration, it's the in-between state that leads us in action. It all stems from our imagination. Humans have crossed the oceans to discover new lands, invented the means to travel the world, reached for the stars and landed on the moon because someone had the idea first. Imagination is the highest freedom of all and the one that no one can deprive us of. The greatness of creative imagination is praised not only by writers and artists but the brightest of scientific brains. Einstein famously said, "Imagination is more important than knowledge. For knowledge is limited to all we know and understand, while imagination embraces the entire world, and all there ever will be to know and understand.

Imagination, Symbolic Play, and Multiple Intelligence

It is the development of the imagination and symbolic play during childhood that adults are able to do many of the tasks that daily life demands. Adults constantly use their imagination to help them invent new things, visualize, solve problems, enjoy a book or movie, understand others' perspectives, make plans, come up with ideas, and think creatively. Therefore, using one's imagination is a critical cognitive skill that can be used throughout life. And it is crucial for educators to encourage the imagination, creativity and original ideas in childhood through pretend play, story, and narrative make-believe if we want our students to be mindful and functioning adults in society. Again, Armstrong refers to Gardner's foundations of multiple intelligence theory and the significance of symbols and our abilities to use them as human beings. "According to Gardner, one of the best indicators of intelligent behavior is the ability to use symbols. The word "cat"

that appears here on the page is simply a collection of marks printed in a specific way, yet it probably conjures up for you an entire range of associations, images, and memories.

What has occurred is the bringing to the present (re-present-ation) of something that is not actually here. Gardner suggests that the ability to symbolize is one of the most important factors separating humans from most other species,” (Armstrong, 2009, p.14).

Readers of picture books are using symbols to inter-animate the words and pictures simultaneously. Emergent readers, until they are able to read on their own, are being guided, questioned, and provoked by the adult reader. And this is happening through story, imagination, and wordplay. Vygotsky theorized that language and development build each other. As a preschool teacher, I found that one of the most crucial ways preschool children develop early reading and language skills is when teachers use interactive reading.

Vygotsky writes in *Mind in Society*, “This change is seen, too, in the fact that before a child has acquired grammatical and written language, he knows how to do things but does not know what he knows. He does not master these activities voluntarily. In play, a child spontaneously makes use of his ability to separate meaning from an object without knowing he is doing it. Just as he does not know he is speaking prose but talks without paying attention to the words. Thus, through play, the child achieves a functional definition of concepts or objects, and words become parts of a thing,” (Vygotsky, 1978, p.99). By allowing students to determine the conditions of the make-believe in the narrative, character roles, adding unfamiliar objects, and plot directions to the original story read out loud, children are able to imagine situations and ideas they have yet to

experience. In addition, their understanding deepens after peer-to-peer discussions about the story and related dramatic play that encompass acting out the narrative in some capacity. Thus, interanimating also describes children's ability and longing for meaning-making through a story and language, which Vygotsky believed comes from the child's interaction with teachers, adults, and peers. Finally, this experience is advancing children's knowledge and their cognitive development.

In *Literacy Beginnings: A Prekindergarten Handbook* by Gay Su Pinnell and Irene Fountas, it states that reality, creation, and the make-believe story happens simultaneously. "Prekindergarteners tell stories about their personal memories as well as imaginary stories. They may blend the stories of movies or television shows with other adventures they imagine or with their personal experiences. They may also retell stories they have heard read, or they may respond to the pages of wordless picture books by creating a story in their own words," (Pinnell & Fountas, 2011, p.75).

In my own preschool classroom, interactive read-aloud, followed by group discussion is a systematic method of reading that allows me to scaffold my students in understanding the book being read, the character's inner conflict that must be resolved, and the general concept of what it means to be reading. It's also a time to model strategies for making inferences and explanations and teach them vocabulary and concepts. I have also found that a storybook that is read three times in slightly different ways can increase the amount and quality of children's analytical talk as they answer carefully crafted questions.

According to Pinnell & Fountas, there are three dynamics at play with interactive read-aloud in a classroom environment. "As we've discussed, play is the basis for so

much of the learning that pre-kindergartens do. There are three essential contexts for play: (1) cognitive— exploring, asking questions, and thinking; (2) emotional — expressing feelings within the social context; and (3) creative — putting together new learning. Through play, children can be responsible for their own learning and they can use language not just to know but to show they know something,” (Pinnell & Fountas, 2011,p.74). Fundamentally, in my classroom, during the first storybook reading, we introduce the story's narrative, main character’s conflict, address and ask a few key questions, and finally ask a "why" question that calls for an extended explanation. This is accompanied by elaborations on vocabulary words and emotion identification. The second read capitalizes on children's growing comprehension of the story by providing enriched vocabulary explanations and asking additional inference and explanation questions. And the third read consists of the guided reconstruction of the story in which children recount information as well as provide explanations and commentary.

In between reads, art projects, peer-to-peer discussions, and dramatic play scenarios are explored to reinforce new ideas and concepts from the book. These techniques have shown to be effective in increasing children's engagement, understanding, and appreciation of literature in preschool and kindergarten settings. “Quality talking and listening support memory and enhance understanding. The kinds of talk that children engage in as they play (and in other contexts as well) foster risk-taking, support and demonstrate comprehension, and strengthen community,” (Pinnell & Fountas, 2011, p.74). Finally, dialogic reading can be used to assess, support oral language and vocabulary development through multiple readings, during which the teacher helps the

child become the storyteller by gradually using higher-level questions. It moves the child beyond naming objects in pictures to thinking more about what is happening in the pictures, and how this relates to his or her own experiences. Again, story, imagination, and meaning-making at its best.

The Picture Book, The Read-Alouds, And The Analysis

In my original picture book, *Barrington Bunny: Case of the Curious Clouds*, the main character immediately draws the reader into his obsession with the number twelve:

Line 1:

Barrington Bunny was very fussy about the number twelve.

There are some assumptions made in the first line. First, that the reader will know what a number is and that twelve is a certain amount. And two, that they will have some interest and curiosity about what it means to be “fussy” about the number twelve. According to theorist Jean Piaget, Barrington readers are in the preoperational stage as the picture book targets readers between the ages of three to six. In *Language and Thought of the Child*, Piaget describes this age and the child’s curiosity to be mainly focused on facts or cause and effect. “The first age is characterized by questions of place and name, the second by those of cause and time. But its very abundance leads us to look upon the ‘why’ as the maid-of-all-work among questions, as an undifferentiated question, which in reality has several heterogeneous meanings. Stern was right in pointing out that the earliest ‘whys’

seem more effective than intellectual in character, i.e., that instead of being the sign of verbal curiosity, they rather bear witness to a disappointment produced by the absence of the desired object or the non-arrival of an unexpected event. But we have to ascertain how the child passes from this effective curiosity, so to speak, to curiosity in general, and finally to the most subtle forms of intellectual interest such as the search for causes,” (Piaget, 1926, p.164). The main character’s fussiness is attributed to the idea that certain objects must be in a certain order or there will be a negative consequence. And the “why” question is, why is this character fussy about the number twelve and how will that manifest in his life? The narrative then models three sets of twelve items and Barrington’s unique relationship with the number in his daily life.

Lines 2-5:

He kept twelve glasses of water by his bed.

He kept twelve combs in a row by his sink.

Twelve bowties hung in a line above his twelve pairs of shoes.

After many read-alouds in various preschool and kindergarten classrooms, children are immediately drawn to counting along at the beginning of the book. But because the read-alouds didn’t have illustrations, I had to either use props, drawings, or flashcards. And while they didn’t ask questions about what it meant to be “fussy,” students did pick up on the implication that Barrington liked things to be a certain way. In addition, when prompted by the adult reader with questions such as “how many glasses of water did he

have in a row?” some children (ages 3-4) stood up and started to count to twelve with their fingers or made their way to the props to count it themselves. Their reaction was physical, vocal, and self-oriented. As Piaget theorized, “the preoperational stage is when children’s thinking differs most from adult thought patterns. Piaget said that during the preoperational stage children are egocentric (think of everything only as it relates to them), can focus on only one characteristic of a thing or a person at a time (for example, takes words at their exact meaning), gather information from what they experience rather than from what they are told, and overgeneralize from their experience,” (Mooney, 2006, p. 85-86).

In addition, Howard Gardner, who writes in *Frames of Mind: The Theory of Multiple Intelligence*, Barrington readers first associate symbolize themselves in the context of what is happening outside of themselves, “During the period spanning the ages two to five the child undergoes a major intellectual revolution, as he becomes able to use various symbols to refer to himself (“ me,” “my”), to other individuals (“ you,” “him,” “Mum”), (“ you afraid,” “you sad”), and to his own experiences (“ my birthday,” “my idea”).

Words, pictures, gestures, and numbers are among the multifarious vehicles marshaled in service of coming to know the world symbolically, as well as through direct physical actions upon it and sensory discriminations of it. Even in cultures where there are no personal pronouns, the same kinds of symbolic discrimination are readily made. By the conclusion of this period, the child is, in fact, a symbolizing creature, able to create and extract meanings on the level of symbol use alone,” (Gardner, 2011, p. 260).

During some readings, particularly kindergarten classes, I drew the items on the board or projector. And in the end, it was usually agreed upon that “twelve pairs of shoes is a lot of shoes!” with lots of enthusiasm and group consensus. However, it was also evident that children did not think about *why* the character was doing what he was doing, but *how* he liked to do certain things. Then as the story continues, Barrington’s rituals become more complicated and climactic.

Lines 5-7:

For breakfast, he ate four small peas, then four medium-sized peas, then four large peas.

Not before he thumped his right foot six times, then thumped his left foot six times,

And licked the four corners of his chair exactly three times before he sat down.

This part of the narrative was when children were able to clearly identify that Barrington was not an ordinary rabbit. In fact, his daily rituals of doing exactly the same things related to the number twelve were beyond their scope of “normal” behavior. In this way, they laughed with understanding as they knew the difference between what is socially correct and incorrect. Particularly, the chair licking evoked a lot of “yuck” responses. When prompted by the adult reader with questions such as “do we lick our chairs?” and “who thumps their feet before bed?” children were able to identify the character’s social abnormalities. During one reading, a kindergartener said, “he’s doing the jig,” and stood up to show us. Also, Gardner states children between the ages of two and five can not only differentiate positive and negative actions but the corresponding emotions. They

start to synthesize their experience inward and outward. “One way in which this emerging symbolizing ability is turned toward personal development is through the exploration of different roles visible (and viable) in the community. Through talk, pretend play, gestures, drawing, and the like, the young child tries out facets of the roles of mother and child, doctor and patient, policeman and robber, teacher and pupil, astronaut and Martian. In experimenting with these role fragments, the child comes to know not only which behavior is associated with these individuals but also something about how it feels to occupy their characteristic niches. At the same time, children come to correlate the behavior and the states of other persons with their own personal experiences: by identifying what is positive or negative, anxiety-provoking or relaxing, powerful or impotent, youngsters affect an important step in defining what they are and what they are not, what they wish to be and what they’d rather avoid. One’s sexual identity is an especially important form of self-discrimination that becomes confirmed during this time,” (Gardner, 2011, p. 260-261).

In this way, Barrington provokes feelings of curiosity and introduces the idea that the character is conflicted with negative emotions. It was also evident that at this point in the narrative, children also started to ask different *why* questions as Barrington was breaking the rules of social conduct: we do not lick chairs, we do not thump our feet before bed or have a dozen glasses of water by our beds. Piaget addresses this visceral reaction in children of seeing rules being broken as, “the child’s curiosity does not only attach itself to physical objects and the action of human beings, it goes out systematically to all the rules that have to be respected— rules of language, of spelling, sometimes of politeness,

which puzzle the child and of which he would like to know the why and the wherefore,” (Piaget, 1926 p.167). Then, as the story continues, Barrington’s propensity for breaking social norms intensifies.

Lines 8-12:

Every day at noon, in rain, snow, or shine, Barrington hopped twelve times to the mulberry bush to pick exactly twelve berries for his lunch. Always.

Broken leg? Twelve one-legged tuck jumps.

Forgot his pants? Twelve hops in his underpants.

Need to pee? Twelve hops...uh, oh....

Barrington couldn't, oh Barrington wouldn't, and Barrington didn't have anything else but twelve mulberries for lunch.

There is a sense of urgency to Barrington’s morning routine that is leading up to his afternoon lunch routine. It is palpable that he finds change very difficult, even crippling. It is also very evident that he lives with severe anxiety. The idea of not completing certain tasks leaves him very afraid of unseen consequences. Furthermore, Barrington is willing to go to any lengths to keep his routine exactly the same. But why? The narrative conflict is escalating in the story. And the larger question is why Barrington must stick to this routine. What will happen to him if he fails and how will he feel about it? According

to Piaget, by the age of six, children vacillate between curiosities and their motivation in asking questions. One, the question stems from direct cause and effect. And second, curiosity is rooted in theoretical and psychological thinking. “Causal explanation therefore often inclines to motivation. But the converse also happens. In addition to the ‘why of motivation’ which refer to a momentary intention (Why are you going away?) there are those which involve explanations of a more psychological nature and appeal no longer to an intention, but to cause properly so-called (Why does Daddy not know the date?) which brings us back to the first type of question. The result is that we can give no fixed form to the criterion used to distinguish causal explanation from motivation. The decision in each case as to whether the child wanted to be answered with a causal explanation or with a motivation would be too arbitrary. The criterion can only be practical and will have to adapt itself to the content of the question. When the questions refer to physical objects (natural phenomena, machines, manufactured objects, etc.), we shall class it among the ‘whys’ of causal explanation; when the question refers to human activities, we shall class it among whys of motivations,” (Piaget, 1926 p.169).

Then the antagonist is introduced in this part of the narrative. The object that will stand in the way of Barrington meeting his goal.

Lines 13-20

One morning, everything felt different.

Barrington stepped outside and he wasn't alone.

[Author's Note: A small white cloud is at his front door.]

He stared at it.

It stared back.

They stared at each other...for a long time.

And Barrington started his hops. One. Two.

Then Barrington turned to...

And they were right behind him.

[Author's Note: Two clouds are following him.]

Again, the antagonist enters the storyline, full force, and stakes are raised on all levels. It is now fully established there is a real barrier between Barrington and his goal, the berries. The protagonist doesn't put together that as he counts out loud, the same number of clouds appears. Two hops, two clouds. Three hops, three clouds. Thus, the reading experience is a combined effect of the words, illustrations, and implications. Luken refers to Perry Nodelman in *A Critical Handbook of Children's Literature*, who writes, "the pictures focus our attention on specific aspects of the words and cause us to interpret them in specific ways. As a result, a picture book contains at least three stories: the one told by the words, the one implied by the pictures, and the one that results from the combination of the first two," (Lukens, 2013 p. 49).

In *Barrington*, the implications are even greater assets to the story than what is written, as therein lies the mystery. Why does the cloud keep multiplying? Where are they coming from? What's going to happen next? Why do they appear so hostile? This is also when numbers grouping and the concept of addition comes into the narrative, bringing more

complexity and purpose to the story. The culmination of several variables make-up the rich reading experience. “The relationship between verbal and visual texts (words and pictures) matters and the ability to select an appropriate picture book with multiple layers of meaning available for discovery in both text and illustration is important.

Contemporary picture books are increasingly complex and examining them in light of their genre, artistic style, and the stories they tell take time and energy,” (Lukens, 2003 p. 51).

Lines 21-29

“Go away,” he snapped. “I am very very very busy!” Three.

But they didn’t go away.

[Author’s Note: Three clouds are following him.]

“I’m getting mad now!” he huffed. “I must must must get my berries for my lunch. It’s so so so important. Please leave me alone before I...LOSE MY TEMPER!” Four! Five! Six! Barrington was just about to hop again...when...

[Author’s Note: There are six big clouds, creating dark shadows.]

“I’m crying now. See my tears?” he sniffled. “If I don’t get my berries for lunch, my day is ruined forever...forever...FOREVER.” Barrington sobbed. “I just want to be left alone.”

But they didn’t leave him alone.

Now, Barrington felt uneasy. He had to get his berries and get home.

Barrington is now experiencing and showcasing very broad strokes of emotions, going from anger, frustration, sadness, and fear. And because Barrington readers are in the initiative versus guilt stage, according to Erikson, it is a time when the child's development can split in one of two possible directions: human potential for glory or for destruction. Here, the character dramatically vacillates between one strong emotion to the next. Meanwhile, he still believes he can reach his goal.

In my preschool classroom, these big feelings are particularly prevalent on the first day of school, performance anxiety in group settings, or failed endeavors such as tower building. And as a teacher, when speaking to my students about strong emotions such as anxiety, disappointment, and confusion, the first step is to explain that emotions are human experiences and everyone has them. It is also important to convey optimism. And that with the right strategies, negative emotions can be overcome by creating a more accurate version of a situation. And by learning to face them one step at a time, they will be better prepared for the next big emotion.

I have also come to understand that narratives and characters like Barrington can help children understand complex emotions by seeing it in others — in books and in reality. And while most young readers may not have directly experienced intense anxiety like the protagonist, fear is universal. As a book, *Barrington*, during multiple read-alouds, children were able to empathize with the character's wanting and his struggle with not being able to do what he wants. His frustration and fear of not accomplishing his intentions and goals were immediately relatable.

Margret Wise Brown observed and wondered about this concept at her time at Bank Street College. She wrote in her observation notes, “In the development of an expressive act, the emotion operates like a magnet drawing to itself appropriate material. To make words give a vicarious experience,” (Marcus, 1992, p. 78). To see familiar, yet, extremely uncomfortable emotions in characters or peers help children understand their own reactions. It gives them a context to unusual sensations that would ordinarily confuse them. New complex emotions such as “nervous” and “disappointed” are regularly introduced in my classroom as each word brings definition, definition brings familiarity, and familiarity brings understanding.

Lines 30-40:

Barrington took a teeny-weeny-itty-bitty, the smallest, maybe-they-won't-even-notice hop...seven.

But they did.

And they got mad!

[Author's Note: Seven clouds blow gusts of winds around Barrington.]

“Ahhhhhh...”

“Whoooooaaa”...

“Fiiivvvveeeee moooooore hoooops...”

Barrington mustered up all the courage he had and pushed! He made three of the fastest, highest and longest jumps EVER! Eight! Nine! Ten!

No sound. No more wind. But no...

Barrington crept around to see...

[Author's Note: There are now ten big, dark clouds.]

"Boom!" they thundered. "Boom! Boom! Boom!"

Barrington ran!

This is the catalyst and climax of the story as the character's success in reaching his goal is in the balance. Will he or won't he? How will this conflict resolve itself? What will happen to Barrington? At the same time, the narrative shifts from natural to fantastical. Thus far, Barrington's experience has been a steady progression, an escalation, bit by bit. But now, it's complete chaos.

The narrative requires the reader to dive into the character's predicament and the escalating storyline. And only by using their imagination, can the reader fully understand the character's inner turmoil. According to Erickson, in terms of their developmental stage, Barrington readers are experiencing that same explosive fantasies. "The child indulges in fantasies of being a giant and a tiger, but in his dreams, he runs in terror for dear life. This, then, is the stage of the "castration complex," the fear of losing the (now energetically eroticized) genitals, as punishment for the fantasies attached to their excitement," (Erickson, 1963 p. 225).

Imagination, visualization, and fantasy, in this case, within a picture book, allow children to experience empathy as they can literally imagine another person's life without having to actually live it themselves. Furthermore, this inner conflict experienced by Barrington is also experienced by the target readers. The idea of all or nothing, complete failure or

glory is a daily occurrence in their world. “Here the most fateful split between potential human glory and potential total destruction. For here the child becomes forever divided in himself. The instinct fragments which before had enhanced the growth of his infantile body and mind now become divided into an infantile set which perpetuates the exuberance of growth potentials, and a parental set that supports and increases self-observation, self-guidance, and self-punishment,” (Erickson, 1963 p. 225). And finally, at this point in the narrative, the story must resolve itself. Either Barrington will meet his goal or he will fail. How will he react? What will happen to the clouds? What will Barrington have for lunch? The thread that holds this story together is the progressive “why” questions that are unfolding. And this will prove to be more crucial as we reach the end of the storybook.

Lines 41-50:

He ran in circles.

He ran in swirls.

He ran in zigzags.

And Barrington ran all the way home!

And shut the door.

And went under the covers.

And plugged his ears.

And closed his eyes... for a long time.

Then all was quiet.

The storm was over.

As an author, my intention was to use the storm as a metaphor for the internal emotional turmoil experienced by the character. The inner aspect of the narrative. As a teacher, this is part of the book I would use to present and support the idea of big emotions — fear, anxiety, and disappointment, in addition to curriculum lessons. Presenting the subject of complicated emotions in various outputs and mediums accomplishes two important things. First, it gives students more opportunities to understand the material (some children may learn better by reading about it, others by acting out a story, others by making something related to the topic with their hands). At the same time, it helps all the students understand the material more fully and deeply because they can now think about it in several different ways, giving them a richer learning experience. As Piaget, “stressed the importance of play as an avenue for learning. As children engage in symbolic play (making a cake out of sand or mud, using a garden hose to be a firefighter), they make sense of the objects and activities that surround them. As they imitate what goes on around them, they begin to understand how things work and what things are for. Initially, this is a process of trial and error. However, with time and repetition, they use new information to increase their understanding of the world around them,” (Mooney, 2006, p. 80).

Ultimately, various output helps students master the subject as questions can be drawn from Barrington’s evolution in feeling out of control to being back in control. But, the twist, in the end, results with him not meeting his goal. How did this happen? And more

questions can be asked about the clouds and their natural course in the environment. Finally, did the chaos of the storm bring about Barrington's change in attitude? If so, how? What kind of revelations did he undergo? His experience is also an isolated, self-created event, which is relatable to the target readers. Gardner links this back to Freud, Erikson, and Piaget, "In the Freudian account, for example, the young child is engaged in battles with others—with his parents, his siblings, his other peers, and even the protagonists of fairy tales—all in an effort to establish his own unique presence and powers. In the suggestive language of Erik Erikson, this is a time marked by the struggle between feelings of autonomy and shame and between impulses of initiative and guilt. In Piaget's less affect-laden language, this is a phase of egocentrism when the child is still locked in his own personal conception of the world: not yet able fully to put himself into the place of others, he is restricted to his own self-centered views. He may have knowledge of himself, but it is still rigid and frozen: he can state his name and perhaps recount his physical attributes, but he is not yet sensitive to psychological dimensions, to wants or needs, to the possibility of changing roles or expectations—he remains a singularly one-dimensional creature. Troubled or not, the child of this age is described as an individual apart, one striving to establish his autonomy from others, one relatively insensitive to the world of other individuals," (Gardner, 2011 p. 260-261).

Line 51-54

Finally, Barrington peeked out from under the covers, unplugged his ears and opened his eyes to see.

“Wait a minute...

(Author’s Note: Small recap of the clouds, not getting his berries and the storm.)

“Twelve mulberries on cloudy days is too hullabaloo,” Barrington said, “Could I...do I...Should I... maybe... try something new for lunch?!”

“Eleven blueberries and one strawberry? Ten gooseberry berries and two raspberries?

Six

chestnuts and...”

THE END

The introductory conflict is never resolved as Barrington ends up not meeting his goal. Instead, he changes his needs, desires, and wants. He adapts. It’s an unexpected turn of events that provoke wonder, curiosity, and conflict. What will Barrington do next? As Piaget believed, it is an open-ended ending that draws the reader to think beyond the story. “Piaget believed that children learn only when their curiosity is not fully satisfied. He thought that children’s curiosity actually drives their learning. According to Piaget, the best strategy for the preschool curriculum is to keep children curious, make them wonder, and offer them real problem-solving challenges, rather than give them information,” (Mooney, 2006, p.80). Conclusively, picture books carry the primary task of emotional engagement. In *Barrington Bunny: The Case of the Curious Clouds*, it is a collaboration of words, pictures, and the implications of what is not being said that make-up the rich reading and learning experience. Meanwhile, although children's picture books have always been used to support young children's reading and math skills, and as

powerful implements for visual literacy, it is fundamentally a pathway toward children's emotional development.

Picture Book Characters, First Literary Experience, and Social-Emotional Intelligence

At the tender age of four, I fell madly and deeply in love. His big brown eyes made my heart pitter, and his round button nose made it patter. My guy was warm, tender and fuzzy. And yes—he was a stuffed monkey named George. Curious George.

When George had to take a spin in the washing machine and dry out in the sun, I often sang to him knowing that the process of getting clean was a dizzying ordeal. *Love is comforting*. When the mischievous boy down the road tried to steal George away, I bit him and ran as fast as I could with George in tow. *Love is fearless*. And finally, when his plastic eyeballs fell off his face, I stuck them back on with black electrical tape and pretended they were super cool shades for my super cool guy. *Love is blind*.

While I was always confident in my love for George, it was only when he disappeared that I realized the magnitude of my love. It was weeks of moping, whining and generally feeling blue when he and I were miraculously reunited. All this time, George was under the left corner of my bed! Right there under my nose! But a funny thing happened when I pulled him out. I didn't squeal with delight or dance with happiness. Instead, I cried. And when I say cry, I don't mean a girlish whimper. I mean the big fat ugly juicy cry. I cried for the time I missed him. I cried because both his ears were now falling off. But mostly I cried of relief. All was right with the world again. *Love is complete*. There are all kinds of

love. Some make you smile and feel giddy. And there are the kinds that make you fall apart. This was my first deeply personal literary experience.

As Armstrong argues in *Multiple Intelligences in the Classroom*, emotions color our very first experience with literacy. “I have to chuckle a little when I hear educators and researchers discuss reading and writing as if they were exact sciences. Perhaps they are for individuals with a logical-mathematical bent. But I suspect that for most of us, our early memories of literacy acquisition were probably not scientifically neutral experiences of learning simple correspondences between the sounds “buh” and the letter b, or the blending of “puh” with “eh” and “tuh” to make the word pet.” Instead, I’ll bet these memories were something far more luminous, set in a complex web of emotions: sitting in the arms of a loved one reading a book together, angrily attempting to write some words after a real or imagined slight writing a love note to a secret admirer, listening to a fairy tale before drifting off into dreamland,” (Armstrong, 2003, p. 82).

Unlike basic emotions, social or higher cognitive emotions, such as love, guilt, shame, pride, envy, and jealousy, are not innate, or at least considerably less innate than basic emotions, and they may be culturally dependent. The concept of social emotions emphasizes that they involve more than one individual and are thus subject to negotiations. Love is a social emotion requiring that two individuals' ultimate goals, to be happy, become equally valuable for both. My introduction to conceptually understanding the feelings of love came from losing a toy monkey and then finding it again. I felt every stage of a love affair: companionship, protective ownership, grief when it was lost, and

utter relief when it was found. And the root of this started with a storybook and a character named George.

In the opening page of H.A. Rey's *Curious George*, my first love, readers instantly recognize the character's emotion as happiness, even without the prompt from the words. In real life, monkeys do not smile, and when they bare their teeth, it is typically a sign of aggression. Yet, through anthropomorphization, as a child, I engaged with the character's emotions as if they were human.

Social emotions are directly connected to basic emotions. For instance, love can only lead to happiness if it is reciprocal. Unrequited love, on the contrary, leads to distress. Guilt comes from a contradiction between the basic emotion of joy and action that disturbs the joy. Physical disgust corresponds to the social emotion of hatred. Envy and jealousy originate in frustration from observing somebody else's happiness. This idea of our personal emotions and their connection to others is a complicated social idea that is foreign to young children. But this is gradually learned through family dynamics, socialization in schools and playgrounds, and stories. Gardner cites theorist Vygotsky in explaining this intrapersonal-centered view in childhood. "From the perspective of these observers of childhood, the child can come to know himself during this period only through coming to know other individuals. There is, in fact, no knowledge and no sense of a person that can be separated from one's ability to know others—what they are like, and how they view you. Thus, according to this account, the young child is an inherently social creature: as such, he looks to others for their interpretive schemes and draws upon these schemes as the preferred—indeed, the sole—means of discovering and gaining an

initial understanding of that person within his own skin. Where an intrapersonal-centered view of early childhood begins with an isolated individual who gradually comes to know (and perhaps care) about other persons, the interpersonal view assumes orientation toward, and a gradual knowledge of, other individuals as the only available means for eventually discovering the nature of one's own person," (Gardner, 2011, p. 261).

This dynamic can also happen during imaginative play in early childhood and the "other" person can be mind created and interaction pretended. Furthermore, picture books involving several characters encourage young readers to engage in a more complex mind-reading. In this process, readers are asked not only to understand what characters think and feel but also what they think and feel about another's thoughts, feelings and motivations.

This incentive of mind-reading is predicting and anticipating other people's actions and reactions through understanding their thoughts. Picture books depict conflicts between characters based on misunderstanding, misinterpretation, and misdirection of emotions; they also depict characters developing empathy toward other characters. Such representations demand a more sophisticated emotional response. "The vast majority of brain research studies in the field of reading and writing have tended to neglect the contribution of the emotions to literacy with their focus on the more straightforward aspects of phonological processing, lexical decoding, syntactic construction, and other technical matters. However, there is a small but growing literature that links reading and writing to areas of the brain that process emotion." (Armstrong, 2003, p. 83)

In *Barrington: Case of the Curious Clouds*, an eccentric rabbit needs to accomplish certain tasks to feel safe. A young reader might not understand the difference between what it feels like to feel safe and unsafe. And thus, misunderstand the character's motivations. At the same time, the reader might get really angry with the clouds for making Barrington feel sad and angry, not realizing that the clouds themselves are just getting ready for a storm, which is a natural phenomenon, and so on. The story is beyond reading the words but actually feeling and reacting to them. Moreover, this process of understanding and comprehension comes with repetitive reading, discussion, and maturity. And this is the ultimate experience in narratives - the unfolding.

Nonverbal Language, Artistic Conventions, and Empathy

Basic emotions are universal and can be independent of verbal language. For instance, a baby crying means their instinctual needs are not being met. More so, the physical manifestation of basic emotions, notably facial expression, but also body posture and gestures, normally do not require any special training to be interpreted correctly. Young children may not know exactly what the verbal phrases "he was sad" or "she was frightened" mean, yet they will presumably instinctively respond to the visual representation of sadness or fear.

When a toddler hits, they innately know what happened. Physically hitting someone results in pain. That's why they instinctively do it. Then, once the child acquires language, they can verbalize their emotions and engage in dynamic conversations using sounds, rhythms, and words. According to Armstrong, these are the power words. "At the

same time, when a new language is invented, when a book is written, when a word is coined, or when a sentence is uttered, society changes along with it. The young child observes and participates in the power of words.” (Armstrong, 2003, p. 99)

Also, when reading picture books with illustrations, readers also apply their knowledge of artistic conventions, which constitute another form of non-verbal language. For instance, we see characters foregrounded and in the center of the page as happy and content, whereas we see characters crammed in corners or pushed into the background as unhappy, lonely, and scared. Readers instinctively attribute happiness to characters positioned high on the page. We also connect certain moods with certain colors: red with aggression, yellow with joy, gray and black with sadness. Our emotional response to emotionally charged images is possible because we have stored memories of the represented emotion, either from real-life experience or from an earlier experience of fiction, whether verbal, visual or multi-mediums. We may not have a direct experience of extreme distress or extreme fear, but the little experience we have is sufficient to trigger the memory. Thus, learning to make these connections is a form of literacy that leads to empathy. And as such, empathy, the ability to understand other people's emotions, is arguably the most important capacity that distinguishes human beings from other living organisms.

Empathy is also one of the most essential social skills. And like all other literacies, emotional literacy can be enhanced, trained and learned. One potential way of fostering empathy in young children is through picture books. And like all fictional work, picture books represent fictional characters' emotions as well as their interpretation of each

people's emotions. However, unlike novels, or books with only text, picture books evoke our emotional engagement through images, as well as words. It's an amplification of words by images. As Armstrong candidly differentiates between two distinctive readers, true comprehensions come with feelings. And the same mechanism allows readers to engage vicariously with a fictional character's emotions resulting in an empathetic experience. "I sometimes like to ask educators in my workshops to choose the better student in a reading class: one who can tell you the main idea of a story or novel, plot the sequence, make inferences, predict outcomes, and summarize accurately, or one who feels pity or sadness when the main character in the story confronts an obstacle or rejoices when the protagonist triumphs over adversity. Naturally, school culture favors the first student, but I believe a lifetime of literacy favors the second reader. We read to more deeply experience life, the world, and ourselves. Franz Kafka once wrote that a book should serve as "the ax for the frozen sea inside, loosen the compacted soil of our fixed attitudes and stereotypes, and transform the way we think and live," (Armstrong, 2003, p. 90-91).

Armstrong associates true conceptual understanding with empathy. And because young children have limited life experience of emotions, picture books offer a vicarious emotional experience that children take part in without factual trauma in real life. In addition, reading picture books prepares children for dealing with empathy in real life. "Because written text lacks all of the nonverbal information accessible to two individuals who communicate directly face to face, the reader (and writer) must call upon the context, and use pragmatic and empathetic decision-making process in order to make

appropriate and meaningful interpretations of the written word (Sperber & Wilson, 2002). There are indications that such ‘mind-reading’ (deciphering the intentions of others) depends upon certain very specific neural mechanisms in the brain, and that such skills are fundamental to the acquisition of linguistic competence in young children,” (Armstrong, 2003, p. 98). Conclusively, readers' involvement with picture books, the textual and extratextual, inevitably interact. They can be frightened by images of creatures that they believe are dangerous, such as dinosaurs, bears, or wolves. They can also be frightened by certain settings such as dark woods or a creepy looking house. But the danger, however, threatens fictional characters rather than readers themselves. And as soon the reader acknowledges that the situation is fictional, the emotional engagement is shifted onto the characters. Consequently, then the reader is able to read the character's fear even if they did not experience the same emotion in the same context such as understanding that the character is sad without feeling distressed themselves. It may sound simple, even self-evident, and in the everyday practice of engaging with fiction, humans do this more or less automatically.

Picture Books, Meaning-Making, and Lasting Impressions

By the time I could walk, I was an epic troublemaker. I jumped, broke and tore my way through my young and uninhibited existence. Once, I even led a group of neighborhood kids to a construction site and convinced them that it was a good idea to hurl our tiny bodies on to a huge pile of sand. Later, our mothers found us, like a flock of

hummingbirds blindly ramming their tiny heads against a windowpane, but we were throwing our entire bodies into the dirt and calling it “fun.”

This is probably a parent’s worst nightmare and I would never ever condone such behavior from a child, but from what I remember, I had the time of my life! It was freeing to be fearless, exciting to do something out of the ordinary, and I felt brave. To my young eyes, this was the kind of thing that my personal heroines like Pippi Longstocking or Eloise would do — wild, offbeat and a little bit naughty.

Most recently, while perusing the Bank Street library, I rediscovered a little girl named *Madeline* who lived in an “old house in Paris that was covered in Vines.” Unlike Pippi, who had a boatload of cash and superhuman strength, or Eloise, who lived at the Plaza with her own servants as her parents had a boatload of cash, Madeline is more of an everyday heroine. No cash. No house. No servants. She lived by her wits and spunk. Contrary to popular belief, Madeleine was not an orphan. She lived at an all-girls boarding school. And while she was the smallest of the twelve children under Miss Clavel’s care, she was the star! She was fearless and feisty, with just enough haughtiness to make you love her even more. Madeline asserted her independence and bravery at every turn. From snow, ice or mice, she was game. Even the tigers at the zoo to whom she said “pooh-pooh” couldn’t shake this tiny heart.

So when poor little Madeline gets a pain in her stomach and goes to the hospital, where she has her appendix out, she doesn’t cry “oh woe as me.” I believe — although it is not in the book per se — she manned up. And then she coerced her Papa to buy her a dollhouse for being brave. When the other little girls came to see her, Madeline greeted

them in bed surrounded by flowers and candy, like a real celebrity. Her show stopper? Of course, it was her scar!

The first *Madeline* book was published in 1939, but it couldn't be more current and relevant today. The character was my entryway into being a modern-day feminist. And her story should inspire every child, but it's getting harder to do so as an ever-changing world can bring doubt and pessimism. I describe Madeline as the cutest, littlest feminist in the best possible way, as she is self-assured, bright and unwavering in her belief in herself. Isn't that what we want for all our children? There isn't a doubt in my mind that I am a feminist today because of the picture book *Madeline*.

As Armstrong states in his closing remarks in *The Multiple Intelligence of Reading and Writing*, picture books can shape how we make meaning as adults. "While scientific studies proliferate to pin down the specific mechanism of reading and writing, I am committed to the brief that literacy is nothing short of a miracle — our contemporary version of magic. To be able to see the worlds and create universes through the mere act of looking at and making marks on a page, if you really start to think about it long and hard, seems incredible — a conjurer's art or a medium genius,"(Armstrong, 2003, p. 134). Furthermore, reading all the *Madeline* books and my undying love for the character *Curious George*, shaped my understanding of books and that books were written by authors. And eventually, I wanted to be a writer. And I am. Conclusively, literacy can serve as a gateway to creative freedom and inspiring all intelligence. "We have made the mistake of isolating literacy from this rich heritage, putting it in a bare room with only a blackboard (or computer screen), and alphabet poster and some workbooks to keep it

company, an environment where reading and writing skills are nourished and supported with music, art, nature experiences, logical analyses, dramatic performances, oral recitations, emotional expression, social interaction, and a wide range of other creative nutrients,” (Armstrong, 2003, p. 135).

Language Arts, STEM, and Math

Language arts is an interactive process that involves reading, thinking, questioning, discussing, re-reading, and responding to texts. And combined with original thoughts and ideas, development of those ideas, then writing them down, students can connect meaningful literary concepts to real-life and worldly circumstances. This is not unlike the idea of tinkering in early STEM education. In other words, it’s an interdisciplinary approach to learning high-minded concepts that are coupled with real-world lessons as students apply science, technology, engineering, and mathematics. Then taking those concepts and making real-life connections enabling the development of STEM literacy and with it the ability for application in reality.

The most common definition of STEM education, according to the National Science Teaching Association (NSTA) in an NSTA News Digest article entitled, *STEM: Defying a Simple Definition* is, “STEM education makes learning “real” and gives students opportunities to see the connection between the content they are studying and the application of that content in authentic and relevant ways. STEM education is an experiential learning pedagogy in which the application of knowledge and skills are integrated through in-context projects or problems focused on learning outcomes tied to

the development of important college and career readiness proficiencies,” (Gerlach, 2012).

In early childhood education, a carefully selected picture book can serve as a platform for rich learning experiences in literacy but in various other subjects including science, technology, engineering, and math (STEM). And an appropriate picture book can facilitate discussions and new ideas as students encounter increasingly more complex texts. And educators can implement inspired lessons, intentionally integrate academics with social skill development, creating an environment in which students learn to collaborate, agree and disagree respectfully, and take responsibility for their own learning. In *Making and Tinkering with STEM: Solving Design Challenges With Young Children*, Cate Heromin defines tinkering in the same context. “This is what tinkering, making, and engineering look like in early childhood. Children initially use their senses to explore the physical properties of materials. They tinker as they take things apart, put things together, figure out how things work, and attempt to build and make creations using tools. When they are faced with a problem, children ask questions, make plans, work together, test their ideas, solve problems, improve their ideas to make them better, and share their ideas and creations with others. These are the thinking processes and actions that scientists and engineers use. These professionals, when faced with a challenge, solve real-world problems that often come with constraints, including limited materials, time, and funds to develop solutions,” (Heroman, 2017, p. 1). Further, it can be said that meaningful comprehension strategies are introduced and taught directly through read-aloud experiences for early childhood education. This ensures that students have

equal opportunity to access the text regardless of their reading abilities. Then, through guided and independent strategy practice, students learn to use these strategies to make sense of their own reading. Lessons should also include plenty of time for independent reading practice and individual conferences so that students of varying levels will be able to develop as readers at their own pace.

Taking this idea a step further, David Cooper writes in *Literacy: Helping Children Construct Meaning* that the root of meaning-making is prior knowledge, background, and comprehension. “In summary, schemata are the categories of knowledge (concepts, information, ideas) that form in readers’ minds through real or vicarious experiences. As reading comprehension occurs, readers relate the ideas from the text to their acquired or prior knowledge — their schemata. If they do not already have a schema for a particular topic or concept, they may form a new schema for it if enough information is provided. As they construct new knowledge by relating new information to already stored information, their schema continuously expands,” (Cooper, 2000, p. 10). Schemata (plural of schema) are structures that represent the generic concepts stored in our memory. Schema theory also explains how these structures are formed and related to one another as we develop knowledge. Thus, fundamentally, the area that has contributed to our increased understanding of literacy learning and reading comprehension is the schema and schema story. Humans build knowledge based on a knowledge one has already acquired.

According to Burns, she writes in the article *Building a Teaching Bridge from Reading to Math* that the same succession of knowledge and skill should be reflected in a student's

math curriculum. “In reading, there is one gatekeeper skill—decoding. It is an essential skill that gives readers access to the entire world of printed matter. However, there isn’t a comparable gatekeeper skill for math. Children must first learn to count and then add and subtract small numbers. Next, they learn about place value and work with larger numbers before moving on to multiplication and division. All of this early learning relates to whole numbers. Then students have to learn about fractions, decimals, percents, and so on. There is no one gatekeeper skill that children can practice and perfect; they must build a succession of skills,” (Burns, 2005, p. 2).

A picture book is often the perfect bridge to introduce new concepts and difficult topics as it facilitates plenty of accessible conversations about the book. As such, it has been customary for me to use picture books to support math lessons which most of my students find challenging. When cushioned with a narrative strong book with an underlying math theme, my students are not only excited to read but open to doing math in a different way. Finally, the mathematical problems and solutions that children encounter in picture books are deeper and more nuanced than most of the word problems they encounter. A picture book is the perfect low-stress introduction to a new math subject.

Barrington in the Classroom, Math Units, and Meaning Making

Storytime in my preschool classroom is special. It’s personal and intimate. And as a teacher and writer, it is a period that I feel most connected to my students. During a read-aloud, my students and I gather closely on the rug with open minds, ears, and hearts,

ready to be transported into the world of imagination. It's a dreamy, airy, and magical time as serenity immediately takes over the room and my students are calm, listening, and primed for learning.

It's been proven that these feel-good emotions associated with reading are perpetuated by our experience as infants and toddlers -- the memory of sitting in a loving grown-ups lap and being read to. All the corresponding emotions connected to safety, comfort and imaginative play associated with a book are rekindled, renewed and relived. But now, the cozy lap is a classroom, play is with others, and the voice is that of a teacher instead of a family member. And more so, as a teacher, I've come to understand that this also serves as a non-pressured entryway to new learning experiences and meaning-making opportunities.

I front-load lessons in all subjects with several read-alouds as it allows my students to work their way up to thinking about a new idea. According to J. David Cooper, literature is a powerful medium to get students excited about new subjects, topics, and conversations. "A major part of helping children develop their ability to construct meaning is to keep them motivated and excited about learning. The use of real literature has that power. For example, the younger preschooler finds a favorite book and asks someone to read it again and again. Whether the book is Dr. Seuss's *Green Eggs and Ham* or Margaret Wise Brown's *Goodnight Moon*, that child is motivated, captivated, and engaged in learning and the love of literature. The young child is experiencing a book that has natural language and is not written to conform to given grade-level standards. In reality, literature had no grade level. It is, in part, how literature is approached that makes

it easy or difficult for students to read and experience it and to construct meaning,” (Cooper, 2000, p. 16). In addition, in the article *Building Teaching Bridge To Math* by Marilyn Burns, it argues that the same structural components and approaches used in literacy can also be applied to teaching mathematics. “But there is one significant way that teaching reading and math are similar. When a child is learning to read, everybody knows that proficiency is all about bringing meaning to the printed page. For example, I can “read” anything in Spanish, since I’ve studied some Spanish, yet still not understand much of what I’m reading. Likewise, no child can be considered to be a proficient reader if he or she can pronounce the words but doesn’t understand the material. Comprehension is key to being a successful reader, and the same standard should hold true for math,” (Burns. 2005. p.1-2) In other words, comprehension is key in both subjects. And while children’s books won’t answer all of the needs for math instruction, they do serve as an important medium and purpose to build students’ interest in mathematics. There are substantial amounts of math picture books for early childhood education in the market but I have categorized into two categories: The Embedded Math Book and The Connected Math Book.

Book One: The Embedded Math Picture Books — These are books in which the plot has deliberate connections to math, but the story stands on its own as well. These books feel more natural as a read-aloud, but may require the teacher to direct the focus onto the content connections such as *Chicka Chicka 123*, *Good Night Moon 123* and *My Very First Book of Shapes*.

Book Two: The Connected Math Picture Books — These books do not have any explicit connections to math, but the teacher can create connections through read-aloud and think-aloud or class discussions. Sometimes, the teacher may challenge students to come up with the connections to math including *Madeline*, *The Very Hungry Caterpillar* and *Harold and the Purple Crayon*.

In the context of these two categories, *Barrington Bunny: Case of the Curious Clouds* can be categorized as a connected math picture book. Because at its core, it is a narrative book. And as such, the book can be used for various topics including emotional turmoil, impulse to break social norms, acceptance, and changing of needs, among others.

However, the fundamental story arc is propelled by a sequence of numbers and consecutive additions. And how the main characters react to his circumstance.

According to Jayne Sowers, who writes in *Language Arts in Early Education*, the structural format and its interpretation of a picture book are in line with where the reader is cognitively and education. “Young preschoolers are children ages three to four years. Children at this age, although definitely interested in perfecting their motor skills, mainly concentrate on the development of their thinking skills. their cognitive and problem-solving abilities increase dramatically as they determine cause and effect, sequence objects and events, and make predictions. An environment that stimulates the young child’s natural curiosity best serves the young preschoolers,” (Sowers. 2000. p. 19) In other words, the cause and effect, sequencing, and predicting is the root of literacy.

But it is also clear that all the fundamentals also apply to math basics. Again, in the article *Building a Teaching Bridge from Reading to Math*, Burns lists the best strategies and most effective opportunities to align the two subject matters together. I have synthesized some of these concepts and approaches with text from the book *Barrington*. In addition to how it could be extended in the classroom in math lessons and units.

“In reading, teachers often ask students to make predictions about what might come next; in math, they can ask students to make estimates before solving problems,” (Burns, 2004, p. 2).

Barrington Text Lines 22-23:

22. *But they didn't go away.*

[Author's Note: Three clouds are following him.]

23. *“I'm getting mad now!” he huffed. “I must must must get my berries for my lunch. It's so so so important. Please leave me alone before I...LOSE MY TEMPER!” Four! Five! Six!*

By this point in the book, the sequencing pattern has already been established. Barrington counts a jump, another cloud appears. In classroom read-aloud, students were able to quickly comprehend and predict the next number. They were also excited to count along. Educators can use physical jumping and props to reinforce sequences and patterns.

“In reading, writing and oral communication are important aspects of instruction; in math, having students write down and discuss their ideas can help them develop, cement, and extend their understanding,” (Burns, 2004, p. 2).

Barrington Text Lines 2-7:

2. He kept twelve glasses of water by his bed.

3. He kept twelve combs in a row on his sink.

4. Twelve bowties hung in a line above his twelve pairs of shoes.

5. For breakfast, he ate four small peas, then four medium-sized peas, then four large peas.

6. Not before he thumped his right foot six times, then thumped his left foot six times,

7. And licked the four corners of his chair exactly three times before he sat down.

The character's obsession with the number twelve is a critical element in the narrative.

Thus, it's firmly established from the start. Lines 2-4 are number and amount sequences.

However, lines 5-7 are variations of making the number twelve. It is now a combination of factors such as size, grouping (4X3, 6+6, 3X4).

In the classroom, play with movements, manipulatives, and props can enhance comprehension, adding another element to the amount of a dozen concepts.

“In reading, teachers do not expect children's writing to be identical, even when writing about the same topic; in math, teachers can encourage different methods for reasoning, solving problems, and presenting solutions,” (Burns, 2004, p. 2-3).

Barrington Text Lines 51-53:

51. *“Wait a minute...*

(Author’s Note: Small recap of the clouds, not getting his berries and the storm.)

52. *“Twelve mulberries on cloudy days is too hullabaloo,” Barrington thought, “Could I...do I...Should I... maybe... try something new for lunch?!”* 53. *“Eleven blueberries and one strawberry? Ten gooseberry berries and two raspberries? Six chestnuts and...”*

The ending of the book is open-ended. Instead of Barrington meeting his goal, his needs change. His learned acceptance. However, not completely. Barrington is still very much hung up on the number twelve. But it can be grouped together with different variables such as blueberries and strawberries; gooseberries and raspberries. In the classroom, students can finish the ending. Small group work would be ideal.

In reading, vocabulary instruction is integral; in math, teachers can start a word chart for math terminology, consistently use correct math vocabulary, and encourage children to do the same. (Burns, 2004, p. 3).

Barrington Text:

The End

The undetermined ending makes it an open space for interpretation. This can mean sorting, organizing and grouping for younger preschoolers. And addition and subtracting for the older students. Terms such as a dozen and half a dozen can be introduced.

Experiences, Meaning-Making, And Progressive Education

As a society, we have valued and measured speaking, reading, writing, and counting as essential skills that children needed to succeed. Some of us have believed that creativity

was an intrinsic ability that certain artistic people possessed, when in fact, it has nothing to do with being innately gifted or artistic. It does, however, have everything to do with the way we think, develop ideas, and express ourselves. Creativity is also about discovering, exploring, and inventing new things and ideas, and being brave enough to make it into a reality. Children are born innovators with a vivid imagination and a unique manner of self-expression. As a matter of fact, creativity is innate and a gift every child is born with. From a very early age, they exercise the capacity to challenge, question, and discover. And children have the keen ability to see things from a new perspective, catch a problem that nobody would even think of and arrive at an unusual, yet effective decision in solving it. And as progressive educators, it is this creativity in action that we must hone, nurture, and bring forth by creating meaningful experiences for our students in our classrooms and our schools.

As John Dewey writes in *Experience and Education*, "Everything depends upon the quality of the experience which is had. The quality of any experience has two aspects. There is an immediate aspect of agreeableness or disagreeableness, and there is its influence upon later experiences. The first is obvious and easy to judge. The effect of experience is not borne on its face. It sets a problem to the educator. It is his business to arrange for the kind of experiences which, while they do not repel the student, but rather engage his activities are, nevertheless, more than immediately enjoyable since they promote having desirable future experiences. Just as no man lives or dies to himself, so no experience lives and dies to itself. Wholly independent of desire or intent, every experience lives on in further experiences. Hence the central problem of an education

based upon experience is to select the kind of present experiences that live fruitfully and creatively in subsequent experiences. (Dewey, 1938. p. 27-28) Furthering this idea, every child is born creative and imaginative, but this capacity can be restrained if they do not have space to behave imaginatively and release their creative energy. Ultimately, they need to grow from one meaningful experience to the next, with opportunities for more creative experiences. And the more varied and multifaceted the experiences, the wider range of creative expression they gain in their early years.

To make sense of the world around them, children begin to ask themselves some basic questions and get engaged in activities that foster understanding of some basic concepts. Then, as they mature and grow, they learn to develop critical thinking and problem-solve. In this respect, the creative curriculum for preschool teaches young learners to consider alternatives, analyze, and decide how to apply them in the appropriate context. As Dewey describes as “interaction,” there is a fundamental exchange of experiences that must occur for meaningful growth and maturity. “It means, once more, that interaction is going on between an individual and objects and other persons. The conceptions of the situation and of interaction are inseparable from each other. Experience is always what it is because of a transaction taking place between an individual and what, at the time, constitutes his environment, whether the latter consists of persons with whom he is talking about some topic or event, the subject talked about is also a part of the situation; or the toys with which he is playing; the book he is reading (in which his environing conditions at the time maybe England or ancient Greece or an imaginary region); or the materials of an experiment he is performing. The environment, in other words, is

whatever conditions interact with personal needs, desires, purposes, and capacities to create the experience which is had. Even when a person builds a castle in the air he is interacting with the objects which he constructs infancy,” (Dewey, 1938. p. 43-44).

Being in a creative environment, children learn to share and interact with each other, and these are basic aspects of social learning. Singing, dancing and drama play imply the development of indispensable social skills, such as communication, sympathy, and respect. While books, games, and discussions can facilitate language, imaginative and symbolic play, analysis, and empathy. As I have asserted, it is these developments during early childhood that adults are able to do many of the tasks that daily life demands.

Adults constantly use their creativity and imagination to invent new things, visualize, solve problems, enjoy a book or movie, emphasize with colleagues and peers, come up with ideas, and think creatively. Therefore, using one's creativity is a critical cognitive skill that can be used throughout life.

Children's creativity is constantly in action when they continuously experience new things and ideas around them. And it can be encouraged through a variety of play-based activities with as many sensory experiences involved as possible. Furthermore, being creative by nature, children need physical space and time to express themselves, cope with their feelings, and behave creatively related to everything they do.

Albert Einstein said it best, “I'm enough of an artist to draw freely on my imagination, which I think is more important than knowledge. Knowledge is limited. Imagination encircles the world.”

What more could we want for our readers and students?

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