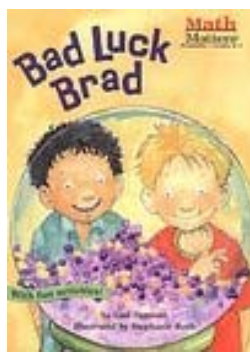


A3: Children's Literature and Mathematics

Bad Luck Brad



EDUC – 4274

Mathematics Education

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Primary/Junior 1

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BAD LUCK BRAD

Book Summary:

Herman, Gail. (2002). *Bad Luck Brad*. New York: The Kane Press.
ISBN: 0-613-53478-6

The story narrates Brad's last day of school, starting in the morning with him getting out of bed. The story then proceeds with a series of probability encounters divided into chapters. Throughout the book, the reader is introduced to probability and its mathematical terminologies, such as "more likely" and "probably". When reading, the reader can pause at each scenario and calculate the probability in each case.

In chapter one, Brad's mom had a bag of morning breakfast bars, and Brad and both his sister and brother all wanted the chocolate chip. But there is only two out of ten in the whole bag, the others being lemon bars. In order to be fair, Brad's mom had her children draw out of the bag.

In chapter two, the students had a gift exchange at school. Brad wanted a present from a boy as opposed to a girly gift. The exchange was done by drawing names out of a hat. What were the chances that Brad would receive a boy's toy when he knew that there are more girls than boys in his class.

In chapter three, Brad and his friends are at the Candy Arcade and he wanted a red gumball. He faces three machines. The first machine had mostly white gumballs, the second had mostly yellow and purple, and the third had white, yellow, purple, green, black and red ones. He thought to himself the probability of him getting a red gumball would not have been as high as his friend's who wanted a white gumball.

In the last chapter, Brad and his friend wanted to catch a movie at 4:00 PM. The movie Brad wanted to see was playing in five theaters, however, the movie that his friend wanted to see was playing in one. The boys knew that the likelihood of them watching the movie that Brad wanted to see was more likely.

Grade Level: 2

Curricular Math Strand: Data Management and Probability

Curricular Expectations:

2m83 Describe probability as a measure of the likelihood that an event will occur, using mathematical language (i.e., impossible, unlikely, less likely, equally likely, more likely, certain) (e.g., "If I take a new shoe out of a box without looking, it's equally likely that I will pick the left shoe or the right shoe.");

2m84 Describe the probability that an event will occur (e.g., getting heads when tossing a coin, landing on red when spinning a spinner), through investigation with simple games and probability experiments and using mathematical language (e.g., "I tossed 2 coins at the same time, to see how often I would get 2 heads. I found that getting a head and a tail was more likely than getting 2 heads.") (Sample problem: Describe the probability of spinning red when you spin a spinner that has one half shaded yellow, one

fourth shaded blue, and one fourth shaded red. Experiment with the spinner to see if the results are what you expected).

Discussion Questions:

Before Storytelling:

- “Bad Luck Brad. Hmm... based on the title of the book and the picture on the cover, what do you think the book might be about?” (Possible answer: Brad wanted a gumball, but maybe he didn’t get the colour that he wanted, because he is having bad luck!)
- “Which colour gumball do you think he wanted? And which one do you think he got?” (Possible answers: yellow or purple)
- “Do you think it is ‘bad luck’ that he got (purple or yellow) based on the number of purple and yellow gumballs you see here?”

During Storytelling:

- (at the end of page 7) “How many children wanted chocolate chip bars?”
- “Now if there are eight lemon bars and only two chocolate chip bars, do you think all of them could get a chocolate chip bar out of the bag?” (Answer: No)
- “How do we know this?” (Answer: Because there are three children and only two chocolate chip bars)
- “Okay, then at the most, how many children can pick out a chocolate chip bar from the bag?” (Answer: Two)
- Write on the blackboard: 2 out of the 10 and explain to the class that the number two represents the number of chocolate chip bar on the table out of the ten bars in total
- “Now let’s predict some other possibilities. What are some of them?” (Answer: 1 out of the 10 and 0 out of the 10)
- “Now how many lemon bars out of ten are there?” (Answer: 8 out of the 10)
- “Now is it more or less likely that Brad would get a chocolate chip bar?”
- (at the end of page 10) “What did Brad get?”
- “So was our prediction correct?”
- (at the end of page 19) “Why do you think Brad said that he was more likely to pick a girl’s name out of the bag?” (Answer: Because there are more girls in the class than there are boys)
- “What do you predict Brad will receive? A pony or a Commander Cody?”
- (at the end of page 23) Draw three gumball machines on the blackboard with the colour gumballs that each one contained as mentioned in the story.
- “If you were Brad, which machine would you put your quarter in if you wanted a red gumball?”
- “What reasons made you come up with this answer?”
- (after reading “But *Space Flight* is playing at 3:30, 4:00, 4:30, 5:00, and 5:30” on page 29)
- “Which movie do you think Brad and his friend will end up seeing?”
- “Why?”

After Storytelling:

- “What are the things that Brad did not get as he had initially wanted?”
- “Based on what we learned, was it just ‘bad luck’, or were there other determining factors that led to him in not getting the chocolate chip bar, the red gumball and the present?”
- “What were the factors?”

Mathematical Activity:

Supplies:

- 1 observation tally chart per scenario
- 1 bag
- Chart paper
- Markers
- Pencils
- Erasers

Environment:

Students are seated at their desks during the explanation part of the activity. Students will then form into groups assigned by the teacher. In their groups, one appointed student from each group will come up to the front of the class, and simultaneously draw a *scenario* from the bag (to be fair and to avoid confrontation). Students will then return to their groups and formulate their prediction. Over the course of the next five school days, each group will gather together to record their observations onto the observation tally chart. On the sixth school day, the class will have a vote as to the possible result to the scenarios. The leading groups will then come forward to the front of the class to share their prediction and their findings.

Activity:

1. Present the following scenarios and list of possibilities to the class:

Scenarios:

- It was sunny outside during morning recess
- We had peanuts in our morning healthy snack
- We played with a ball during gym
- There was a birthday announcement on the PA this morning
- The principal walked into our classroom

Possibilities:

- Always
- Very likely
- Sometimes
- Less likely
- Never

2. In groups of 4-5 assigned by the teacher, one member from each group will come up to draw one of the scenarios from the bag.
3. In their groups, students are to come up with a prediction to their scenario based on the possible outcomes listed.
4. Each group will receive an observation tally chart from the teacher.
5. Students are to write their scenario and prediction on their observation tally chart.
6. Through the course of five school days, each group is to colour in the picture on the observation tally chart if the situation happened on that day.
7. On the sixth day, each group is to total up their observation tally chart and based on their totals, they are asked to conclude and record the result on the chart by circling the possibilities listed on the observation tally chart (please see attached).
8. Have a class vote on the five different scenarios, and record the predictions on the blackboard.
9. Each group will then come up to the front of the class to share their findings.

Modifications/Accommodations:

- For advance learners, students could be provided with the opportunity to develop their own scenarios in which they would want to predict and investigate.
- For ELL/weaker students, they may be assigned to easier scenarios and if needed, they may have the words printed out for them by the teacher.

Scenario: It was sunny outside during morning recess

Name: _____

Date: _____

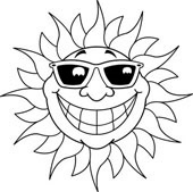
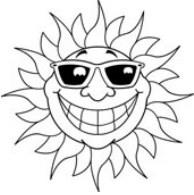
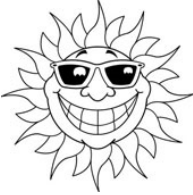
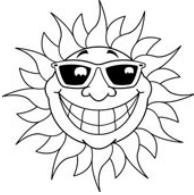
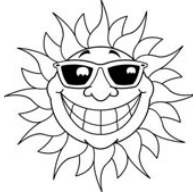
Observation Tally Chart

Scenario: _____.

Circle one of the following predictions:

Prediction: **Always** **Very likely** **Sometimes** **Less likely** **Never**

Colour in the sun on days it is sunny during morning recess:

Monday	Tuesday	Wednesday	Thursday	Friday
				

Outcome:

_____ out of the five days were sunny.

Circle the probability of the scenario happening throughout the week:

Always **Very likely** **Sometimes** **Less likely** **Never**

Scenario: We had peanuts in our morning healthy snack

Name: _____

Date: _____






Observation Tally Chart

Scenario: _____.

Circle one of the following predictions:

Prediction: **Always** **Very likely** **Sometimes** **Less likely** **Never**

Colour in the peanut on the mornings we had it for snack that day:

Monday	Tuesday	Wednesday	Thursday	Friday
				

Outcome:

_____ out of the five days we had peanuts for our morning snack.

Circle the probability of the scenario happening throughout the week:

Always **Very likely** **Sometimes** **Less likely** **Never**

Scenario: We played with a ball during gym

Name: _____

Date: _____

Observation Tally Chart

Scenario: _____.

Circle one of the following predictions:

Prediction: **Always** **Very likely** **Sometimes** **Less likely** **Never**

Colour in the ball if we played with a ball during gym that day:

Monday	Tuesday	Wednesday	Thursday	Friday
○	○	○	○	○

Outcome:

_____ out of the five days we played with a ball during gym.

Circle the probability of the scenario happening throughout the week:

Always **Very likely** **Sometimes** **Less likely** **Never**

Scenario: There was a birthday announcement on the PA this morning

Name: _____

Date: _____






Observation Tally Chart

Scenario: _____.

Circle one of the following predictions:

Prediction: **Always** **Very likely** **Sometimes** **Less likely** **Never**

Colour in the hat if a birthday announcement was made that morning:

Monday	Tuesday	Wednesday	Thursday	Friday
				

Outcome:

_____ out of the five days there was a birthday announcement.

Circle the probability of the scenario happening throughout the week:

Always **Very likely** **Sometimes** **Less likely** **Never**

Scenario: The principal walked into our classroom

Name: _____

Date: _____






Observation Tally Chart

Scenario: _____.

Circle one of the following predictions:

Prediction: **Always** **Very likely** **Sometimes** **Less likely** **Never**

Colour in the principal if he walked into our classroom that day:

Monday	Tuesday	Wednesday	Thursday	Friday
				

Outcome:

_____ out of the five days the principal walked into our classroom

Circle the probability of the scenario happening throughout the week:

Always **Very likely** **Sometimes** **Less likely** **Never**

Critique:**Accuracy: 6/6**

Probability and its terminologies were well presented and introduced to convey that certain occurrences do not just merely happen by luck, but instead is determined by certain circumstances/factors/variables. The concept is presented to show the relevance of its use in everyday situations, and the choice of words (more likely, maybe and probably) were portrayed and used correctly to emphasize this key aspect to peak interest among the students, and is made comprehensive for this age group. In regards to the story's illustrations, they were detailed, to help show the different variables (e.g. lemon bars vs. chocolate chip bars, the number of boys vs. girls in the classroom, etc).

Visual and Verbal Appeal: 6/6

The book cover sparked interest upon first glance due to the use of vivid and complementary colours (red and green shirts on the two characters, and purple gumballs against the yellow background). Also, it was very detailed in the sense that Brad, the main character had his fingers crossed, which corresponds back to the title of the book, *Brad Luck Brad*. One specific aspect which we have to commend the illustrator is the fact that multi-cultural children are being depicted to reflect the diversity of the students in the classroom. However, one minute detail in which we would criticize is the fact that there are only purple and yellow gumballs in the gumball machine, when in reality, this is an unlikely occurrence in the real world.

The story was good in showing a variety of pictures explaining the sequence of events using different angles (e.g close ups and overview) to illustrate the variables and expressions of the characters to heighten interest. Each scenario presents itself with an opportunity for the reader to make predictions as well as spark up classroom discussions.

In terms of verbal appeal, when it comes to probability concepts and terminologies, it is presented subtly and does not disrupt the flow of the story. Rather than presenting the concepts explicitly, it is delivered through Brad's personal reflections and thoughts. For example "I'll probably wind up with a pony," he thought "instead of something I *really* want."

Another point worth praising is the surprise element in chapter two in which Brad ended up receiving a boy's present in the end due to a swap, which is often children do.

Connections: 5.5/6

The scenarios presented in this book are realistic in that they are life situations that students will often experience especially since it extends beyond the school environment by incorporating events such as leisure. Together, these factors will certainly help students be engaged and comprehend the underlying use of mathematical language in describing the likelihood of something happening. Visually students are able to make connections as they see that there are diverse children being depicted in the story.

Audience: 4.5/6

The book caters to primary audiences through simple storylines and comprehensible vocabulary. The probability concepts are quite subtle so that children can enjoy the book and relate to the story without explicit identification of the math terms. The book addresses multiculturalism as Brad's classmates and friends with different backgrounds. One of the downfalls of this book is that it is more geared towards boys than girls as the main character and his friends are all males. The only time in which females are presented is in the first and second chapter.

"Wow" Factor: 5/6

Although the book scored very high in the other five areas, it did not excel on all to deserve a perfect score for this criterion. However, it is highly recommendable because students will definitely be able to relate and draw a connection with Brad's outcome of events, in addition to building mathematical vocabulary. The story brings a new mathematical perspective to everyday events, thus adding a new layer to their existing knowledge. It sparks up interest and ideas and raises questions in which students may not have necessarily have considered before (e.g. luck vs. probability).

Generally speaking, the probability concepts were presented very well in that they intertwine nicely with an original and refreshing story for young children. Overall, the book successfully helped discuss mathematics in literature and it made math more "useful, interesting, accessible, and enjoyable" (Roth and Young, 2003).

Self-Assessment: 18.5/20

When looking at the rubric, we think our overall attempt in completing this assignment was very much put forth. Our goal was not only to complete the assignment but to learn and create something that our peers could use in their future classes.

We therefore created as many questions before/during/after the reading to promote as much interaction and participation among the students as possible. Our aim was to present a series of questions to solidify the concepts and to ensure that students were following the story and making predictions along the way. Ultimately, so that students could comprehend the probability concept and to emphasize the terminologies in the story so that they can apply them. In addition to the questions, we also included some possible student responses as a guide for teachers.

The only possible downfall from our write up is that we did not present as many open ended questions as possible.

In terms of our activity, we feel that it was unique and original, and that it enabled students the opportunity to investigate and to test out their predictions. We also put a lot of emphasis in creating scenarios that students could relate to in their daily lives. Moreover, we made our activity to span over the course of a week to peak interest, as well as to provide students with the chance to take ownership and to share their ideas and results through the presentation at the end of the activity.

Bibliography

Hellwig, S. J., Monroe, E. E., & Jacobs, J. S. (2000). Making informed choices: Selecting children's trade books for mathematics instruction. *Teaching Children Mathematics*, 7(3), 138-143.

Roth-McDuffie, A. M. & Young, T. A. (2003). Promoting mathematical discourse through children's literature. *Teaching Children Mathematics*, 9(7), 385-389.