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PEEP Season IV Executive Summary

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October 2007

PEEP SEASON IV: FORMATIVE EVALUATION EXECUTIVE SUMMARY

PEEP and the Big Wide World (PEEP), produced by WGBH/Boston, is among the first media projects to develop a developmentally appropriate science curriculum for children ages three to five. Through its television series, Website, and outreach initiatives, PEEP aims to model hands-on science inquiry skills for preschool children through shows that are engaging and appealing, and to provide activities, ideas, and material support to their educators and caregivers. In Season IV, PEEP will launch a new “Anywhere Math” initiative, adding numbers, shapes and patterns, and measuring to the curriculum’s Content Areas and “interconnectedness” to its Unifying Concepts.

Goodman Research Group, Inc. (GRG), an evaluation research firm in Cambridge, MA and Los Angeles, CA that specializes in the evaluation of educational programs, materials, and services, conducted formative evaluation of PEEP Season IV. The purpose was to help inform development of new storylines. We conducted small group discussions with 28 children ages three to six years old, in early child care centers in Boston, MA and Los Angeles, CA, to obtain feedback about math-related episodes from earlier seasons of PEEP. The primary evaluation goals were: (1) to measure appeal and comprehension of these episodes and (2) to determine the extent to which the episodes provide an effective approach to teaching math with young children.

Two PEEP episodes were selected by WGBH, each focused on math with a slightly different format. *Peep Feet* intended to convey the one main concept of measurement, via the question, “How big is a step?” *Count Them Out* intended to convey several concepts, including counting, estimation, and division, through the question, “How big is a collection?”

In each location, one of the two episodes was viewed separately by one group of three and four year olds (younger) and one group of five and six year olds (older). Viewing was followed by a short group discussion of reactions to the episodes to identify aspects of the program that were effective in teaching the math concepts.

KEY FINDINGS

Overall, children were familiar with PEEP, were highly engaged with the episodes, and were interested in watching more. They interacted verbally with the characters while viewing and laughed aloud at the physical humor throughout the show. Based on their retelling of the stories, children understood some of the concepts of measurement after watching *Peep Feet*, and understood a bit about counting and dividing after watching *Count Them Out*. Younger children were better able to retell parts of the story with visual cues and probes from the researchers. Older children could retell much of the story independently, albeit not necessarily in sequence. Some differences in recall and understanding were evident through group discussions after viewing and those are presented here for each episode by age group.

Peep Feet

Generally, in recalling the story, younger children focused on the characters and the humor, while older children focused on the social interactions. Children understood the usefulness of a tool for measurement, but did not fully understand the following: the concept of needing a standard way

to measure; that the smaller the unit, the more you need; or that the size of a step is different for different people or animals. Even with specific follow-up questions, they could not explain why the characters were in different places after taking the same number of steps or hops.

Younger Children:

- Throughout the discussion, focused more on the characters and their actions (e.g., looking for the hat) than on the math concepts presented
- In response to specific questions, understood and were able to explain that characters were using the stick to measure how big or small they were
- Understood that Peep used his foot to measure how big something was
- Appreciated the characters' different sizes (i.e., Quack bigger than Peep and Chirp)
- Even with specific questions about what happened after the characters took six steps, they could not express that the characters were in different spots, or that it was because they did not take the same size steps; focused instead on the characters' not seeing the flower
- During the interstitial, focused on building a tower of blocks and knocking them down, rather than on measuring and comparing height

Older Children:

- Throughout the discussion, they spoke a little about measurement
- Using the pictures as cues, they were able to retell the story with detail, focusing on causal relationships and reasons for the characters' behaviors
- Understood Peep devised a way to measure and that the tool he used was the same size as his foot; explained that Quack "cheated" when they were measuring how tall they were
- Did not remember that Peep figured out that each animal's steps were different. Instead, in response to specific questions, said characters noticed there was no flower and that they were not all in the same place because the animals had tricked them
- Understood and explained the girls in the interstitial used blocks to measure their height

Count Them Out

Children in both groups appreciated the humor in this episode. In retelling the story, they focused on the counting and the sharing items fairly. Some children understood that dividing one big pile into several smaller piles does not change the amount. Most, however, focused on the counting they saw throughout the episode; they filled in the numbers where characters lost track, and they demonstrated their own counting skills during the discussions.

Younger Children:

- Without visual or verbal cues, they focused on what they liked and on characters' actions
- Throughout the discussion (and while viewing), they counted aloud in response to questions
- Understood and explained that Chirp was counting the hats to see how many she had, she forgot what came after eight, and Peep helped by counting with her
- Could not explain why Quack thought he had a bigger collection
- Were not sure about relative amounts; with one pile of split into two, some thought the piles had the same amount, while others thought there were more hats in the two piles
- Were not sure whether Quack's or Chirp's collection was bigger
- Could not explain what the characters learned about the sizes of their collections
- Did not understand that after something is broken into pieces, it has the same amount as before it was broken

- During the interstitial, most thought the plate with a lot of little pieces of cracker had more than the other plates

Older Children:

- Throughout the discussion, focused on interactions between characters
- When retelling the story, described the scene with Peep drawing Quack and Chirp
- Understood and explained that Chirp was distracted while counting and that Peep helped by repeating each number
- Understood that when Chirp made two piles, she had the same number of hats as when she had one pile; breaking one thing into multiple pieces does not change the amount
- Understood and explained that Chirp and Quack had the same number of things
- During the interstitial, recognized that the kids broke the graham cracker into pieces to share; most understood that everyone had the same amount of crackers in the end

RECOMMENDATIONS

Based on these findings, GRG makes the following recommendations:

PEEP’s writers and production team should use previous seasons’ episodes focused on Anywhere Science as a strong model for the development of Season IV episodes.

After three seasons on air, PEEP remains popular with children ages three to six. The new season should include both the types of content that have been established as interesting and effective with children as well as the new episodes focused on age-appropriate math content.

Math-related episodes should focus on only one concrete math-related concept.

After both episodes, children recalled basic elements of the show that were repeated multiple times by the characters. Presenting one math concept in simple and clear language and having characters state what they have learned should increase viewers’ recall and understanding.

The interstitial used in the math-related episodes should provide a transition to refocus viewers’ attention as well as another opportunity to present clearly the one main concept.

The interstitial effectively serves as a transition that re-focuses young children’s attention during viewing. The segment also provides an additional opportunity to repeat the math concept.

Using the established two-episode format, both episodes in a full half-hour show should focus on the same or very similar math content areas.

Recognizing the importance of repeating one concept several times when conveying math content to young children, the math-related episodes would be more effective if the full time was devoted to one topic, rather than two unrelated episodes.

In general, PEEP has effectively engaged young children and prior research has shown that the series successfully teaches science concepts to its viewers. Children enjoyed the math-related episodes and did not express confusion when discussing the stories. With increased clarity and focus on one concept per episode, the Anywhere Math initiative in Season IV should see similar success with young viewers.