

Cyberchase Teachers' Guide
Formative Evaluation
of Outreach In-School Activities for
Teachers and Students

Report for
WNET Thirteen

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EXECUTIVE SUMMARY OF CYBERCHASE TEACHERS' GUIDE EVALUATION
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This formative evaluation gathered feedback from teachers and their fourth grade children in response to two activities included in the *Cyberchase* Teachers' Guide. The user-based feedback will assist with the design of new school-based materials. The general goals for the research were to explore reactions to the guide; assess appeal and difficulties in implementation of two activities; estimate comprehension of activity content; and evaluate teacher interest in further activities.

Sample. Four fourth-grade teachers and their classes were recruited at each of three national sites in California, Florida and Massachusetts. The teacher sample of 12 included 10 females and 2 males, with 2 minority representatives. None of the teachers had seen the *Cyberchase* television series but at least half of the student sample had. Of the fourth-grade students, 275 participated in the "Count the Beats" activity (51% females, 45% minorities), and 273 participated in the "Sort It Out" activity (50% females, 47% minorities).

Procedure. Participants reviewed and implemented two activities from the *Cyberchase* Teacher Guide: "Count the Beats" and "Sort It Out." Teachers were interviewed after reading through the *Cyberchase* guide; teachers then implemented the two main activities with their fourth grade students, completed a teacher and a student survey after each activity, and were interviewed after their experience.

Reactions to teacher guide. After the initial review of the teacher guide but before implementing activities, 11 of the 12 teachers reported that they would do at least one of the activities with their students if they had received the guide in the mail. On the initial exposure, teachers reported liking the clear explanation of simple activities, the guide layout, the curriculum fit of the activities, the easily obtainable materials and the Tips bubbles. To improve the guide, teachers requested provision of full-size black line worksheets, grade level correlations, and one activity on a page.

Implementation of activities. One-quarter of the teachers had no difficulty implementing "Count the Beats;" but two-thirds noted that students had difficulty finding their pulse, and two teachers did not have enough calculators for every student in their class. In "Sort It Out," seven of the twelve teachers substituted the Guide's suggested string Venn diagram with other techniques. Two of the five teachers who used the string approach found that students focused more on the string than the sorting activity.

Comprehension of activity content. All teachers agreed that "Count the Beats" uses math skills, mainly estimation, multiplication and computation. All students could describe some sort of learning from "Count the Beats," with most saying that they learned how many heart beats they had in a certain time period or that they learned how to find or count their heart rate. Teachers reported that "Sort It Out" uses mainly logic, attribute comparison and sorting, but one-quarter of the sample did not feel the activity used math skills but was instead appropriate for their language arts curriculum. Two teachers ap-

peared to not have a complete understanding of the application of Venn diagrams. From "Sort It Out," most students felt they learned how to sort things or how to use a Venn diagram to sort things.

Appeal of activities. The activities were rated relatively high in appeal both by teachers and their students. On a scale of 1 to 5, where 5 means "liked very much," "Count the Beats" was rated at 4.3 (teachers) and 4.2 (students). Those who reported having watched *Cyberchase* were significantly more positive about the "Count the Beats" than those who had not watched the show. "Sort It Out" was rated at 4.7 (teachers) and 4.4 (students).

With respect to "Count the Beats," teachers liked most the use of calculators, estimation, the interdisciplinary quality of the activity and the hands-on aspect; however, they found that students had difficulty finding their pulse. Eight of the twelve teachers would recommend the activity, emphasizing the curriculum fit, the cross-curriculum focus and the use of hands-on real-life content. Four of twelve teachers hesitated in their recommendation due to the difficulty of finding pulses and the fit with their particular curriculum. Students liked most finding the answers of how many times their heart beats in a minute, hour, day or year; they also liked counting heart beats and feeling their pulse. Small portions of the student sample disliked the math calculations and not finding their pulse.

Teachers liked "Sort It Out" because their students had to think, sort and solve, their students enjoyed the activity and it encouraged student interaction. Nine teachers would recommend the activity because of the cross-curriculum focus and the hands-on activity. Those hesitating to recommend the activity were concerned with the time required for preparation work and class implementation. The participating students liked most sorting and figuring out someone else's sort. Small portions of the sample had difficulty with the thought process, the sorting activity and the lack of peer cooperation.

Interest in future activities. Seven of the teachers were interested in receiving activities to help their students understand about spending, saving and budgeting money. The uninterested teachers voiced a lack of need for these activities for their grade level. Seven teachers preferred to receive instructions by mail because of technology, paper and ink limitations at school as well as teacher habit. Four teachers preferred downloading from the web because of efficiency and home access. Two teachers recommended that they receive emails telling them what is available and when, because they don't have time to peruse websites. One teacher suggested making the downloaded files open for manipulation by the teacher user. The remaining teacher had no preference either way.

Conclusions. The following conclusions are based on only twelve teachers and should be considered tentative in their recommendation power. The activities were appreciated by both the teachers and their students, and students understood the main learning goals. Continue the current guide approach of clear explanations of simple activities that fit into fourth-grade curriculum. The teachers particularly liked activities that were hands-on and interdisciplinary using teamwork with easily found materials and real-life applications. They requested the addition of master black line worksheets and more examples or demonstrations of how activities work. Perhaps pdf worksheet files and numerous implementation examples could be part of the website's teacher section with links noted in the printed guide. Slightly more than half of the teachers were interested in future money activities and preferred receiving such activities via mail.

SUMMARY AND DISCUSSION

Twelve fourth grade teachers reviewed and implemented two activities from the *Cyberchase Teachers' Guide*: "Count The Beats" and "Sort It Out." Teachers were interviewed after reading through the *Cyberchase Teachers' Guide*; teachers then implemented the two activities with their fourth graders, completed a teacher and a student survey after each activity, and were interviewed after their experience. About 250-275 students participated in the activity review.

Reactions upon initial exposure

After the initial review of the teacher guide but before implementing activities, 11 of the 12 teachers reported that they would do at least one of the activities with their students if they had received the guide in the mail. On the initial exposure, teachers reported liking the clear explanation of simple activities, the guide layout, the curriculum fit of the activities, the easily obtainable materials and the Tips bubbles. To improve the guide, teachers requested provision of full-size black line worksheets, grade level correlations, and one activity on a page.

Implementation of activities

In the pre-activity interview, none of the teachers foresaw any difficulties in implementing "Count the Beats," but a number of teachers planned to substitute a different technique for the Guide suggestion of using string for the Venn diagram. They felt a string diagram would be awkward for their students.

One-quarter of the teachers had no difficulty implementing "Count the Beats;" but two-thirds noted that students had difficulty finding their pulse, and two teachers did not have enough calculators for every student in their class.

In "Sort It Out," seven teachers substituted the Guide's suggested string Venn diagram with other techniques. Two of the five teachers who used the string approach found that students focused more on the string than the sorting activity. Two teachers appeared to not have a complete understanding of the application of Venn diagrams.

Perception of math in activities

All teachers agreed that "Count the Beats" uses math skills, mainly estimation, multiplication and computation. Teachers reported that "Sort It Out" uses mainly logic, attribute comparison and sorting, but one-quarter of the sample did not feel the activity used math skills but was instead appropriate for their language arts curriculum.

All of the students could describe some sort of learning from "Count the Beats," with most students saying that they learned how many heart beats they had in a certain time period

and that they learned how to find or count their heart rate. From “Sort It Out,” most students felt they learned how to sort things or how to use a Venn diagram to sort things.

Appeal of activities

Both activities were rated quite high in appeal by teachers and their students. With respect to “Count the Beats,” teachers liked most the use of calculators, estimation, the interdisciplinary quality of the activity and the hands-on aspect; however, they found that students had difficulty finding their pulse. Eight of the twelve teachers would recommend the activity, emphasizing the curriculum fit, the cross-curriculum focus and the use of hands-on real-life content. The remaining teachers hesitated in their recommendation due to the difficulty of finding pulses and the fit with their particular curriculum. Students liked most finding the answers of how many times their heart beats in a minute, hour, day or year; they also liked counting heart beats and feeling their pulse. Small portions of the student sample disliked the math calculations and not finding their pulse.

Teachers liked “Sort It Out” because their students had to think, sort and solve, their students enjoyed the activity and it encouraged student interaction. Nine teachers would recommend the activity because of the cross-curriculum focus and the hands-on activity. Those hesitating to recommend the activity were concerned with the time required for preparation work and class implementation. The participating students liked most sorting and figuring out someone else’s sort. Small portions of the sample had difficulty with the thought process, the sorting activity and the lack of peer cooperation.

Potential for further activities

Seven of the teachers were interested in receiving activities to help their students understand about spending, saving and budgeting money. The uninterested teachers voiced a lack of need for these activities for their grade level. Seven teachers preferred to receive instructions by mail because of technology, paper and ink limitations at school as well as teacher habit. Four teachers preferred downloading from the web because of efficiency and home access. Two teachers recommended that they receive emails telling them what is available and when, because they don’t have time to peruse websites. One teacher suggested making the downloaded files open for manipulation by the teacher user. The remaining teacher had no preference either way.

Conclusions

The following conclusions are based on only twelve teachers and should be considered tentative in their recommendation power. The activities were appreciated by both the teachers and their students, and students understood the main learning goals. Continue the current guide approach of clear explanations of simple activities that fit into fourth-grade curriculum. The teachers particularly liked activities that were hands-on and interdisciplinary using teamwork with easily found materials and real-life applications. They requested the addition of master black line worksheets and more examples or demonstrations of how activities work. Perhaps pdf worksheet files and numerous implementation examples could be part of the website’s teacher section with links noted in the printed guide. Slightly more than half of the teachers were interested in future money activities and preferred receiving such activities via mail.