GOODMAN RESEARCH GROUP, INC.
Program Evaluation • Consultation • Market Research

PEEP Explorer's Guide
Summative Evaluation

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EXECUTIVE SUMMARY

PEEP and the Big Wide World (PEEP), produced by WGBH/Boston since 2004, was the first media project to create a developmentally appropriate science curriculum for children ages three to five years old. Through its television series, website, and outreach initiatives, PEEP aims to model hands-on science inquiry skills for preschool children and to provide activities, ideas, and material support to their educators and caregivers.

Goodman Research Group, Inc. (GRG), a research firm that specializes in the evaluation of educational programs, materials, and services, conducted external formative and summative evaluation of PEEP for the series' fourth season. During the 2010-2011 academic year, GRG conducted a national summative field test study of the PEEP Explorer's Guide in early childhood education (ECE) classrooms. GRG assessed changes in 30 teachers' science-teaching practices after using the Explorer's Guide with their students over the course of one school year.

While a few teachers were familiar with the PEEP series and had watched it on TV, most were not familiar with the PEEP Explorer's Guide before the study and had not received training for using it with students. Most had access to a personal computer, and about half had access to the Internet in their classrooms.

The majority of teachers were White women with at least a two- or four-year college degree. On average, they had been teaching for 10 years. During the study, they worked in a range of school types and settings with children who were three to five years of age. Most students were White and spoke English in school and at home.

FINDINGS

The PEEP Explorer's Guide was very well received by teachers, students, and families. GRG's summative evaluation revealed that the curricular design of presenting one topic through different activities and over an extended time had the intended impacts on the professional audience of early childhood educators.

- With its ease of use, clear instructions, and variety of activities, the PEEP Explorer's Guide can serve well as a solid year-long science curriculum.

- Offering effective and engaging activities for students, that are easy for teachers to lead, the Guide fulfills a real need in early childhood classrooms. It increases teachers' quality of teaching and their comfort with leading hands-on inquiry science activities.

- The Guide provides accessible materials and ideas for engaging and retaining parental involvement in the classrooms, which benefits teachers as well as students and their families.

Throughout the school year, the participating teachers used at least part of all six PEEP Explorer's Guide units with their students, and their response was similar across all units. The following findings are based on teachers' reports.

- The Guide met teachers' needs for science teaching throughout the year and teachers were highly satisfied with all aspects of the Guide.
- The Guide was easy to access online and the activities were easily incorporated into teachers' curricula. The units were easy to use, with just the right number and variety of activities.
- The Guide included new activities that teachers reported they had not seen in other curricula.
- The Guide's science, language and literacy, and early math goals for students were met and the activities were appealing to children.
- Teachers learned new content, new techniques, and gained new insights about their students' interests and found it easy to share general and science-related information with parents.
- Parents were excited to see their children's work and enthusiasm and tried some of the activities at home.
- Teachers planned to use the Guide again and to share it with others.

IMPACT

The evaluation supports the effectiveness of the Explorer's Guide in achieving the professional audience impacts it was designed to address. As a result of using several PEEP units and activities:

Preschool educators reported that *the quality of their inquiry-based science teaching had improved.*

- Teachers reported that the PEEP teaching approach of repeated exposure to one topic over time was unique compared to their typical science teaching.
- After using PEEP, more teachers had all students doing PEEP science activities rather than offering a choice to do a different activity either in small or large groups.
- After implementing PEEP activities, teachers perceived fewer challenges to leading hands-on science activities.

***Preschool educators reported spending more time doing science investigations* in their classrooms.**

- While using the PEEP Explorer's Guide, nearly all teachers reported they spent three to four weeks on a science unit, which was an increase of at least one to three weeks for nearly half of them.
- The majority of teachers offered science every week and/or every day while using PEEP, compared to offering science a few times a month in prior years.

- The majority of teachers reported incorporating science into more classroom activities more often during the PEEP field test than they did before using the Guide.

Preschool educators reported they were *more comfortable conducting hands-on science activities and investigations in their classrooms.* Teachers reported significantly higher comfort in:

- Guiding children in hands-on science activities.
- Trying new materials or activities themselves before using them with children.
- Asking children open-ended questions during hands-on science activities.
- Asking children to share their discoveries with each other during science activities.
- Incorporating science into free play options outside.
- Incorporating science into circle time activities.

RECOMMENDATIONS

Given a wide reach, PEEP has the potential to advance knowledge and practice of informal science education on a very large scale. GRG recommends that PEEP producers highlight the ease of use of the Explorer's Guide and the opportunity for higher-quality science teaching that benefits teachers, students, and families as they promote and distribute the PEEP curriculum.

Not all ECE classrooms have Internet access. GRG recommends that tips for implementation are included in the Guide making it clear that teachers can conduct activities with or without video and present the same high-quality experience to their classroom students.

Parental involvement is a valuable and valued part of children's learning. GRG recommends the Guide include even more specific suggestions for ways to involve parents in the PEEP science activities. Suggestions include offering concrete tips for bringing parents into the classroom to assist with or lead certain activities, asking parents to donate supplies, holding an open-house, and sending home letters to introduce and update parents about the curriculum. Extension activities could also be set up such that children would present their at-home work to their classes after working with their families.

GRG recommends that future evaluation examine the added benefit of enhanced parental involvement. Any ways in which the school experience may be extended at home and that home experiences may be shared in the classroom will likely benefit children's overall development. It would be helpful to obtain empirical support for the benefit of this type of parental involvement in children's school experience.

GRG recommends continuing to offer resources and letters in Spanish as well as English to meet the needs of more classrooms and to serve as a means to encourage participation and involvement by more families.

INTRODUCTION

PEEP and the Big Wide World (PEEP), produced by WGBH/Boston, was the first media project to create a developmentally appropriate science curriculum for children ages three to five years old. Since its inception in 2004, through its television series, website, and outreach initiatives, PEEP aims to model hands-on science inquiry skills for preschool children, as well as provide activities, ideas, and material support to their educators and caregivers.

Goodman Research Group, Inc. (GRG), a research firm that specializes in the evaluation of educational programs, materials, and services, conducted an external evaluation of PEEP for the series' fourth season. The NSF-funded evaluation of PEEP's interrelated program elements included both formative and summative components.

This report documents findings from GRG's summative evaluation, a field test study of the expanded educational resource, the PEEP Explorer's Guide. In efforts to advance knowledge and practice of informal science education via their PEEP curriculum, WGBH's strategy is to introduce thematic units with the goal of exposing students to a concept, with multiple activities around that concept.

SUMMATIVE EVALUATION GOALS

During the 2010-2011 academic year, GRG conducted a summative field test study of the PEEP Explorer's Guide in early childhood education (ECE) classrooms. WGBH developed three new units to add to the existing three-unit Explorer's Guide and held train-the-trainer webinars through associations with three partnering organizations: National Association of Child Care Resource & Referral Agencies (NACCRRA), National Education Association (NEA), and National Head Start Association (NHSA). The field test study invited ECE teachers to use at least four of the six Explorer's Guide Units with their students over the course of one school year.

GRG assessed changes in teachers' science-teaching practices after using the PEEP Explorer's Guide over an extended period of time and examined potential barriers to using the curriculum throughout the course of a year. The evaluation also sought to measure the following professional audience impacts and indicators of effectiveness. As a result of using several PEEP units and activities:

- The quality of inquiry-based science teaching by preschool educators will improve.
- The amount of time spent by preschool educators with science curriculum in their classroom will increase.
- Preschool educators' comfort level using science curriculum in their classrooms will increase.

METHODS

RESEARCH DESIGN

In collaboration with series and outreach producers at WGBH, GRG designed a one-group pre-post national field test study with ECE teachers. In addition to an online survey before and after use of the Guide, teachers completed post-unit surveys, describing their implementation and rating their satisfaction with each unit soon after completion.

RECRUITMENT/SAMPLE SELECTION

WGBH conducted four online webinars in May and June 2010 that were designed to introduce the PEEP Explorer's Guide to teacher-trainers with the intent that attendees would then train early childhood educators to use the Guide in the classroom. Evaluators observed two of the webinars. Webinar attendees who planned to share information about the PEEP Explorer's Guide with their teachers notified WGBH staff. WGBH sent GRG contact information for those trainers.

Between May and November 2010, GRG sent information about the field test research opportunity to prospective participants. GRG sent information to those trainers provided by WGBH, and asked them to share it with teachers in their schools and centers. Additionally, GRG distributed information about the research directly to preschool teachers via websites and other organizations related to early childhood education. ECE teachers completed a brief screening survey describing their school setting and their interest in participating in the study. See Appendix A for full details about GRG's recruitment and retention strategies throughout the course of the study.

DATA COLLECTION

GRG developed and programmed an online pre-survey, post-unit surveys, and post-survey for the teachers to complete throughout the course of the field test study. In September 2010, GRG launched the pre-survey to 84 teachers who had initially indicated an interest in the study (i.e., since May 2010). In all, 42 teachers completed the pre-survey. After four weeks, and every two weeks throughout the course of the study, GRG emailed all participating teachers a link to the post-unit survey. Teachers were instructed to complete the post-unit survey within a week of completing each unit they conducted with their classroom students.

Surveys were designed to create a profile of teachers and their classrooms, examine teachers' typical science-teaching approaches before they used the PEEP Explorer's Guide, and assess changes in teaching (i.e., quality of hands-on instruction, time spent on science activities, and comfort with science teaching) as a result of using the PEEP activities. Post-unit surveys and the final post-survey also included questions to assess teachers' satisfaction with the Guide

including ease of use, perceptions of children's enjoyment and learning outcomes, and comments or suggestions.

Several teachers who expressed interest in using the Explorer's Guide and participating in the research did not ultimately participate in the study. Typical reasons provided included both personal and professional scheduling conflicts, changes in teaching status, and IT issues. In order to determine whether any of those teachers ultimately used the Guide during the school year, GRG developed and administered online a brief "non-respondent survey." The survey was designed to assess whether teachers had used any of the units with their students and, if so, their perceived outcomes on the variables of most interest to WGBH. Eighteen teachers completed the non-respondent survey.

Additionally, in spring 2011, WGBH planned to follow up with webinar attendees to assess the reach of the Guide as a result of the trainings. GRG designed and programmed an online survey that WGBH emailed to all webinar attendees. Questions included whether or not trainees trained others, shared the resources, used the Guide with students themselves, and perceived outcomes of use if relevant. In all, 39 respondents completed this follow up survey.

See Appendix B for copies of all survey instruments.

RESULTS

The following sections present a profile of study participants and summarize findings from the field test study over the course of the school year, with a focus on the key intended impacts. In several areas, comparisons are made between participants' typical teaching approaches *before* using PEEP and their strategies *during* implementation of the PEEP activities. Where relevant, only those teachers who completed both the pre- and the post-surveys are included. In addition, where applicable, responses to the two additional data collection activities (i.e., non-respondent survey and webinar attendee follow-up survey) are integrated with findings from the overall evaluation of the PEEP Explorer's Guide.

STUDY PARTICIPANTS AND THEIR USE OF THE PEEP EXPLORER'S GUIDE

Similar to national trends in ECE teacher characteristics, (Saluja, Early, and Clifford, 2002) all but three of the 30 participating teachers were women, and the majority of them were White. Most had completed either a four-year or two-year college degree and 10 had a Masters Degree or other graduate degree and/or hours. On average, they had been teaching 10 years, ranging from one to 25. Specifically regarding early education training, the majority had attended professional development and taken undergraduate courses; a third of the sample had graduate courses in early childhood; a few listed specific curriculum-related training. See Appendix C for a detailed profile of participating teachers.

Participating teachers worked with children ages three to six. On average, class sizes met the NAEYC (2006) recommended 1:10 staff-to-child ratio, with an average of 20 students (average: 11 boys and 9-10 girls). Most teachers (n=20) had one classroom assistant or more than one (n=6); four teachers had no assistant.

The sample represented a variety of school types and settings, including private (n=11), public (n=8), and parochial (n=2) schools. Seven were in Head Start centers, and one was in a Jewish Community Center. Ten teachers were in schools with Title 1 status, 15 were not, and five teachers were not sure.

- Fifteen were in suburban areas,
- 9 were rural,
- 4 were urban, and
- 2 described their school setting as "county."

The majority of children in the classrooms were White (average=13 children). On average, classes comprised one or two students who were Hispanic or Latino, Black or African American, or Asian. Across all of the teachers, very few of their students were English language learners, with an average of 3 (range = 0 to 30). Most teachers reported their students spoke either English (n=21 teachers) or Spanish (n=17 teachers) at home. See Appendix C for a detailed summary of student race/ethnicity, and other languages spoken by students.

Technology in the Classrooms

Most teachers had the technology needed for using the PEEP Explorer's Guide in their classrooms.

Most teachers had the technology needed for using the PEEP Explorer's Guide in their classrooms, including a personal computer, TV, Internet connection, and printer. More had access to a VCR than to a DVD player. Over the course of the study, a few teachers reported they were not able to access or use the video; some of them remained in the study and some did not complete it due to this constraint. Table 1 shows the number of teachers with access to various technologies in their classrooms.

Table 1
Teachers' Access to Technology for use in the Classroom

	# of teachers
Personal computer	21
Television	20
Printer	17
VCR	16
Internet connection	16
DVD player	7
SMART Board/Interactive White Board	7
None of the above	1

N=30

Prior Familiarity with PEEP

Most participating teachers were not familiar with PEEP or the Explorer's Guide before participating in the current study.

Before they began the study, eight of the teachers (just over one quarter of the sample) were already familiar with PEEP. They had watched episodes on TV or online (www.peepandthebigwideworld.com), and half of them (n=4) had played games on the PEEP website. One or two teachers each had used other resources offered via the website (e.g., read suggested books, printed out coloring pages, watched clips on YouTube.com or kids.discover.com).

Two teachers reported they had used the PEEP Explorer's Guide prior to their participation in this study. One started during the current school year and the other had used the Guide some time in the past two to three years.

The majority of study participants (n=23) had not attended any training about how to use the PEEP Explorer's Guide in the classroom[1]. Among the seven teachers who had, three attended a training at their child center. The others attended either at a conference (n=1), a webinar (n=1) or both a conference and webinar (n=2).

[1] Had there been a portion of teachers who had attended a PEEP Explorer's Guide training, we would have analyzed key outcomes for differences between teachers who had or had not been trained. These analyses were not conducted, however, since so few teachers had attended a training prior to the study.

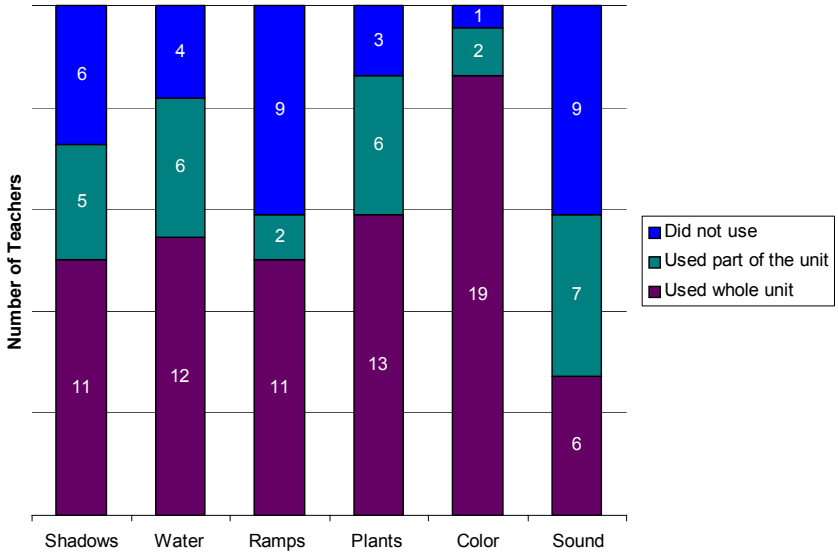
Classroom Curricula

About two thirds of the sample, 19 out of the 30 teachers, used a core curriculum in their classrooms and 14 of them said the curriculum included science. Nine teachers who did not have science in their core curriculum reported using an additional/external science curriculum with their students. Appendix C lists the various core and external curricula teacher used.

Implementation of the PEEP Explorer's Guide

Throughout the course of the school year, participating teachers used at least part of all six PEEP Explorer's Guide units with their students. Color and Plants were used in full by the largest number of teachers while Ramps and Sound were used by the lowest number of teachers. Still, 13 teachers used at least some of the activities in those units as well. See Figure 1.

Figure 1
Units Used in Whole or Part throughout the Year



N=23

Teachers implemented the PEEP activities as producers had intended. The strategies used support research that suggests that "skilled teachers" are those who interact intentionally with children engaged in science exploration; this helps to extend children's knowledge and reasoning (NIEER, 2010).

Key findings from post-unit surveys include:

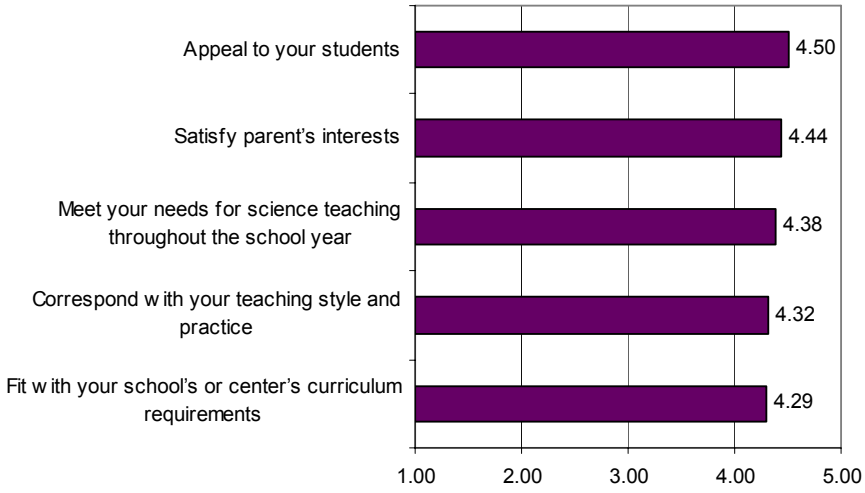
- Teachers used the activities in ways that the producers had intended (e.g., they spent three to four weeks on average, per unit; they played alongside their students to model science inquiry skills; they encouraged children to share discoveries with one another).
- Units were easy to use; teachers felt they had just the right number and variety of activities.

- Activities were perceived as educational and appealing to the children; teachers reported that the hands-on activities sustained children's interest for 10-15 minutes.
- Teachers felt the stated Learning Goals for students for each content area – science, language and literacy, and early math – were met through the units.
- The Guide was informative for teachers as well. They learned new content, new techniques, and gained new insights about their students' interest in these content areas.
- Teachers' response to the units was similar across all six topics

A full description of teachers' use and impressions of the units is included in Appendix D.

Regarding their overall experience with the PEEP Explorer's Guide, on average, teachers believed the Guide met their needs very well for science teaching throughout the school year. It is the producers' hope that early childhood educators will use the Guide throughout an entire school year rather than selecting a small number of the units and treating them as supplemental curriculum. Using a scale from 1 (*Not at all*) to 5 (*Completely*), teachers reported that the Guide also appealed to their students and satisfied parents' interests as well as their own. See Figure 2.

Figure 2
Teachers' Impressions of the Guide as Year-Long Curriculum



N=23

Teachers were *very* to *extremely* satisfied with the PEEP Explorer's Guide. About half of the teachers reported they did not use some of the Guide's components. Shown in Table 2, on average, teachers were *very* to *extremely* satisfied with all aspects of the Guide; all elements were rated between 4 and 5 on a scale from on a scale from 1 (*Not at all satisfied*) to 5 (*Extremely satisfied*).

In particular, teachers were satisfied with the videos, stated learning goals, teacher reflection questions, and the indoor and outdoor activities.

Lack of classroom internet access was a barrier to use of the supplemental PEEP videos.

Table 2
Teachers' Satisfaction with Aspects of the PEEP Explorer's Guide

	N	Mean (Scale: 1-5)
The Online Videos	13	4.69
Stated Learning Goals	22	4.64
Teacher Reflection Questions	22	4.64
The Indoor Activities	21	4.62
The Outdoor Activities	21	4.62
Family Science Letters	18	4.61
Classroom Preparation: Materials List	22	4.50
Classroom Preparation: Recommended books	22	4.45
Classroom Close-Up Features	22	4.45
The Teacher Preparation section	22	4.41
Correlation to Head Start Outcomes	13	4.23
Spanish Versions of the Resources	7	4.00

"It enhanced how I normally would teach science. It helped me shape how I develop my questions and how I effectively engage students."

Teachers found it *very* to *extremely* easy to access the Explorer's Guide online and to follow the activity directions. It was easy for teachers to incorporate the activities into their curriculum over the course of the year (See Table 3).

Table 3
Ease of Implementation of the Explorer's Guide

	Mean (Scale: 1-5)
Access the Explorer's Guide online?	4.45
Follow the activity directions?	4.41
Incorporate the PEEP activities into your curriculum over the course of the year.	4.00
Gather the necessary materials for the activities?	3.73

N=23

Response to our two follow up surveys (i.e., non-respondent survey and webinar follow-up survey) illuminated some of the reasons for sample attrition within this study. Among those teachers who initially expressed interest in participating in the PEEP Explorer's Guide Research Study, and who did not ultimately participate, 18 teachers completed GRG's non-respondent survey, through which we aimed to assess their use and impact of the Guide. About half of them (n=8) had used at least some activities from each of the six units with students during the past academic year, and the remainder (n=10) had not used the Guide with students.

The following are reasons that teachers did not use the Guide:

- Did not have time to fit units/activities into their regular curriculum
- Did not have time to review the Guide
- Do not work with children in a classroom (webinar attendees only)
- Activities did not fit with their regular curriculum
- Did not have permission from school/center director

Commenting on their overall experience with the PEEP Explorer's Guide, teachers' reflections were extremely positive, "*overall fun and very informative,"* and most reported plans to use it again and share it with others.

> "*I loved it and plan to use all the units with my own child again and share with more parents."*

Teachers shared general and science-related information with parents before and during their use of the PEEP Explorer's Guide.

Research has shown that parents as well as teachers play a critical role in encouraging and supporting children's science learning (NSTA, 2009). Before the study, teachers reported several ways they typically shared general and science-related information with parents, and then after the study they reported how they shared PEEP-related information during the year. Most of the parent interaction before and during PEEP was similar; most common at both times were in-person communication, along with newsletters and classroom bulletin boards. Teachers also shared PEEP-related information via "*photo displays and notes"* and by providing *"materials with extension activities."*

Specifically related to science, nearly all teachers reported they gave parents ideas for science activities they can do with their children, both before and during the study. Table 4 shows different ways teachers encouraged parents to support their children's science experiences at home, including take-home pages, sharing links to websites, and books. During PEEP activities, more teachers sent tip sheets home to parents (i.e., the PEEP Family Science Letters).

More teachers sent take-homes on science activities for parents (provided via the PEEP Family Science Letters), during PEEP than they did before PEEP.

Table 4
How Teachers Encouraged Parents to Support Children's Science-Related Experiences at Home

	# of teachers	
	Before PEEP	**During PEEP**
Give parents ideas for science activities they can do with their children	16	16
Give parents take-homes to read (such as one-page tip sheets or fact sheets) on science activities (PEEP Family Science Letters)	7	16
Share links to websites with science-related information and/or video	7	3
Share science-related books	7	8
Hold parent workshops	3	0
Share science-related educational videos (non-PEEP)	2	0
Use parent-leaders to share information with other parents	2	0
Other, (E.g., Science-related homework)	2	0
Shared PEEP videos	--	4

N=23

Teachers shared information about the PEEP activities with parents, and parents were excited to be connected and to see their children's enthusiasm about the science activities.

While using the PEEP units for this study, nearly all teachers (n=17) asked children to share PEEP activity experiences with their families, and several (n=4) sent home PEEP videos. Among them, several encouraged and reminded the children to tell their parents what they did. For example, "*I asked the children to talk about what we did in class today. When parents picked up, I reminded the child then.*" A few sent information and ideas home with the children: "… *newsletters to parents describing our science activities to the parents and giving them suggestions on questions to ask their children to prompt their memories,*" as well as pictures of some of the activities they did in the classroom. A couple of teachers noted that children shared information with parents on their own, "*without any prompting."*

In response, teachers described that those parents who gave feedback about the activities, or about the family science letter take-home, were quite positive and "*excited to see their child's enthusiasm*" about the experience; a couple of teachers said that several parents tried activities at home *"and anticipated the next science letter"* while others noted, "*Many of the parents spoke with me about their children's general enthusiasm for the activities we were doing in class and the children's desire to do these activities at home with Mom and Dad.*"

Several teachers explained that parents enjoyed the letters as an opportunity to stay *"connected to the class."*

> *"The parents were very positive toward the focus on science. They enjoyed the newsletters and thought of it as a bonus feature to keep them updated on what we were doing."*

> *"Some would ask about the projects we did because the children would talk about it or I would send pictures home to them."*

Very few teachers (n=4) said that parents did not comment at all on the take-home letters.

A few teachers recommended that increasing parent involvement would be one way to help more teachers incorporate the PEEP units throughout the year. Suggestions included asking parents to donate supplies, having an open-house and/or sending home letters to introduce the curriculum, and inviting parents to assist in the classroom.

RESULTS: TEACHER OUTCOMES

IMPACT AND INDICATORS OF EFFECTIVNESS OF THE PEEP EXPLORER'S GUIDE

The primary areas of professional audience impact of the PEEP Explorer's Guide that were assessed through the summative field test study were:

- The **quality of inquiry-based science teaching** by preschool educators will improve.
- The **amount of time spent** by preschool educators with science curriculum in their classroom will increase.
- Preschool **educators' comfort level** using science curriculum in their classrooms will increase

Indicators of impact included teachers' reports of perceived improvement, increased time spent, and increased comfort with teaching children and leading hands-on inquiry-based science. Teachers used the PEEP unit activities according to the producers' recommendations, such as:

- Repeated exposure to a topic
- Use over an extended period of time
- Conducted various different types of activities
- Modeled behaviors and encouraged children to share and reflect on their findings

Evaluation findings outlined below show that, resulting from this use, the intended impacts were achieved with early childhood educators.

Teachers reported that the PEEP teaching approach of repeated exposure to one topic over time was different from their typical teaching, and was very effective in helping their students to understand the unit topics.

Preschool educators reported that *the quality of their inquiry-based science teaching had improved* after they used several units of the PEEP Explorer's Guide.

Overall, teachers reported that the PEEP teaching approach of repeated exposure to one topic over time was *very* effective in helping their students to understand the unit topics. The average rating was 4.32 out of a possible 5. This perception was the same among those teachers who completed the non-respondent survey.

The majority of teachers (n=14 out of 23 study participants and n=5 of the 8 teachers who completed the non-respondent survey) agreed that PEEP's curricular design of presenting one topic through different activities and over an extended period of time differed from how they typically approached science. Most of these teachers noted the Guide provided "*more ways to incorporate science activities daily and… simple ways."* They appreciated that the units included many different ideas, hands-on experiences, and different activities from which to choose.

"I learned to restrain myself from solving the problems for them. By stepping back and allowing them to discover 'what happens next' the children were able to contemplate and speculate what the outcomes would be."

Others highlighted the use of different media; they did not "*just rely on books for resources."* Even if they did not have Internet access for videos in the classroom, teachers could "*record some and bring it in for [the children] to watch."*

A couple of teachers noted the key difference was the detail and cohesiveness of the curriculum that helped them to "*use our science theme throughout the week, not just on Thursdays."*

A few teachers (n=3) were not sure that the PEEP approach differed; they explained that they sometimes do and sometimes do not use that type of approach. For example, "*Some learning I like to do as time permits but when doing plants, I do that as a study of one thing. So I go both ways in how I teach science.*" Those who reported that the curriculum did not differ from their typical approach (n=5) were already using PEEP's approach, "…*usually stick to one science approach at a time to make sure the children understand the concept I'm teaching*" or "*When I do a specific topic I try to extend the topics with extra activities and books*."

Both before and during the PEEP activities, the majority of teachers described their usual approach to science teaching in the classroom as "*almost entirely hands-on exploration*." Nearly all also noted they used books and demonstrations, more than half typically used video or other media, and just under half brought in visitors to help with science units. After the study, a slightly larger proportion of teachers reported doing *almost entirely hands-on exploration* while using the PEEP activities. See Table 5.

Table 5
Participants' Usual Approach to Teaching Science: Before and During PEEP

	# of teachers	
	Usual Approach	**During PEEP**
Almost entirely hands-on exploration	16	17
Some hands-on exploration	6	3
Very little hands-on exploration	1	2

N=23

Teachers reported a lot of variety in the ways they teach and offer science. Both before and during PEEP, they offered science activities at various times throughout the day, and they used both large and small group for discussions and exploration.

Before and during PEEP, teachers taught science both in small groups, either with everyone working on the same activity or with some children working on science while others worked on something else, and in one large group with all children doing the science activity. Most provided a designated science area, as well as providing access to science activities throughout the classroom. A few teachers reported having science activities available outside the classroom and outdoors.

Before PEEP, about half of the teachers offered children a choice to do a science activity or not. This differed slightly during PEEP, when relatively fewer teachers offered the choice; more teachers had all students doing the PEEP science activities without a choice to do something else either in small or large groups. Also, during PEEP, teachers reported using large group discussion on the

carpet before breaking into smaller groups for "*exploration and experimentation."* See Table 6.

Table 6
Student Arrangements While Teaching Science

	# of teachers	
	Before PEEP	**During PEEP**
Small groups	18	17
One large group	16	13
Other: (E.g., One on one, and independent work, discovery table)	5	3
How Science is conducted in Classrooms		
Kids work in small groups, some working on science activities and some working on a different activity	10	13
All kids have the choice to do a science activity, some choose to participate and some do not	13	9
All of the kids do a science activity at the same time, in small groups	10	12
All of the kids do a science activity at the same time, in a large group	10	11
Where Kids Go To Do Science Activities in the Classroom		
Designated science area in the classroom (e.g., a science table)	13	11
Science activities can be found anywhere in the classroom	12	7
Several different science areas throughout the classroom	5	9
Designated science area outside of the classroom	5	8
Other before PEEP: "Outdoors" Other during PEEP: "Carpet for watching video and discussion"	4	6

N=23

Teachers appreciated the fact that the Guide included new activities not seen in other curricula they had used in the past. *"I LOVED all of the experiments and would say that Water was our favorite followed by Ramps. We intend to use this program for years to come."*

As a way to help other teachers incorporate PEEP activities throughout the course of a year, a couple of specific suggestions included, "*Read each unit thoroughly. There is a lot of 'meat' to each unit"* and "*It was most helpful to do activities in small groups."*

"Awesome lessons! I have taught more science this year then I have in the past. Look forward to using the units again next year!"

***Preschool educators reported they spent more time doing science investigations* in their classrooms after they used several units of the PEEP Explorer's Guide.**

Before participating in the study, teachers typically spent between one and four weeks on a single science topic or unit (see Table 7). During the year, while using the PEEP Explorer's Guide, nearly all teachers reported they spent three to four weeks on a science unit, which was an increase of at least one to three weeks for 10 teachers. Six of the eight teachers who completed the non-respondent survey spent from three to up to six weeks on a single PEEP unit.

Most teachers (n=16) reported that the time they spent on a single science topic or unit while using PEEP was more than (n=9) or about the same as (n=7) their science teaching in the previous year.

Table 7
Average Number of Weeks Spent on Single Science Topic or Unit

	# of teachers	
	Before PEEP	**During PEEP**
1 week	9	1
2 weeks	6	2
3-4 weeks (one month)	5	17
5-6 weeks	2	2
7-8 weeks (two months)	1	0
More than two months	0	0

N=23

Teachers conducted science activities more frequently while using PEEP than they did than before PEEP.

Both before and during the study, the majority of teachers reported they typically offered science *every week* or *a few times a month* throughout the course of a school year. Very few conducted science activities less frequently than once a month (Table 8-A).

During a typical *week* when science is taught, teachers offer science multiple days in the week (Table 8-B) and during a typical *day* when science is taught, half of the teachers had science activities available to the kids all day (Table 8-C). Even with this high frequency of science teaching before they used PEEP, teachers offered science more frequently while using PEEP. Those teachers who offered science no more than a *few times a month* before PEEP, offered it *every week* or *every day* during PEEP.

All but one of the eight teachers who completed the non-respondent survey spent three to five days on science during the week, with three teachers saying this reflected more time than usual. Similarly, most of those who completed the webinar follow up survey (and used PEEP themselves) incorporated science into their classrooms *a few times a week* or *every day* and reported that this was more often than before using PEEP.

Table 8
How Often Science is Available in Classrooms throughout the School Year

	# of teachers	
	Before PEEP	**During PEEP**
A. Science Availability in Class Throughout the Year		
Every day	11	11
Every week	5	9
A few times a month	5	2
Once a month, every month	0	1
Every other month	2	0
Every few months	0	0
Once or twice during the year (for example, once in the fall and once in the spring)	0	0
B. Number of Opportunities per Week: Typical Week of Science Teaching		
Five days (every day)	8	9
Four days	5	7
Three days	5	3
Two days	2	2
One day	3	1
C. Number of Opportunities per Day: Typical Day of Science Teaching		
Science activities are available for the kids at any time throughout the day	13	10
Kids have 4 or more opportunities to do science throughout the day	0	3
Kids have 3 opportunities to do science throughout the day	4	3
Kids have 2 opportunities to do science throughout the day	3	5
Kids have 1 opportunity to do science in a day when science is available	3	1

N=23

The majority of teachers reported incorporating science into more activities more often during PEEP than they did before using the Guide.

After using PEEP, teachers in the study reported that the frequency with which they implemented several specific science teaching strategies, *a few times a week* or *every day*, was higher than in previous years. With the exception of *incorporating science into the free play options in the classroom*, which nearly half the teachers (n=9) reported they did with the same frequency as before using PEEP, the majority of teachers claimed they incorporated science into more activities (e.g., circle time, small group, free play outside of the classroom) more often than they did before using PEEP. See Tables 9 and 10.

Table 9
Frequency of Science Teaching Techniques While Using PEEP Units

	A few times a month or less	About once a week	A few times a week	Every day
Incorporate science into the classroom curriculum.	1	2	6	12
Incorporate science into circle time activities.	1	6	11	3
Incorporate science into small group activities.	2	1	14	4
Incorporate science into the free play options in the classroom.	2	0	8	12
Incorporate science into the free play options outside the classroom.	3	4	5	10
Use related video when teaching a science topic.	10	2	5	1

N=23

Table 10
Frequency Relative to Prior Years

	Less than before	The same as before	More than before
I incorporate science into the classroom curriculum.	3	6	12
I incorporate science into circle time activities.	3	5	13
I incorporate science into small group activities.	2	5	14
I incorporate science into the free play options in the classroom.	2	9	10
I incorporate science into the free play options outside the classroom.	2	6	13
I use related video when teaching a science topic.	3	3	7

N=23

"It was such a great opportunity. I am very grateful to have shared in this experience. If at all possible, I'd like to continue using these resources in my program, to also include video usage."

Four of the teachers who participated in the study did not use video with the PEEP activities, and therefore did not comment on their frequency of using video when teaching a science related topic. Regarding ways to make it easier for teachers to incorporate PEEP units throughout the year, two teachers who were not able to access the video suggested making sure to use the videos along with the units, "*I would have other teachers use the PEEP videos. We did not get to use them and I think teachers and students would enjoy them.*"

Teachers expressed increased comfort after using several of the PEEP units, for example, "science inquiry is not that hard to implement," "…science can be incorporated into daily activities,"

Preschool educators reported they were *more comfortable conducting hands-on science activities and investigations in their classrooms* after using several units of the PEEP Explorer's Guide and they perceived fewer challenges to doing so.

Teachers' ratings of their comfort using various activities and teaching strategies in the classroom were high, on average, before they began using the PEEP activities. After using the Guide with their students, ratings of comfort with several strategies increased, but not to a statistically significant degree.

When teachers reflected back on their comfort before they had used the activities, however, their post-PEEP ratings revealed statistically significant increases in conducting several classroom activities related to hands-on science investigations. These are highlighted in Table 11 and shown graphically in Figure 3.

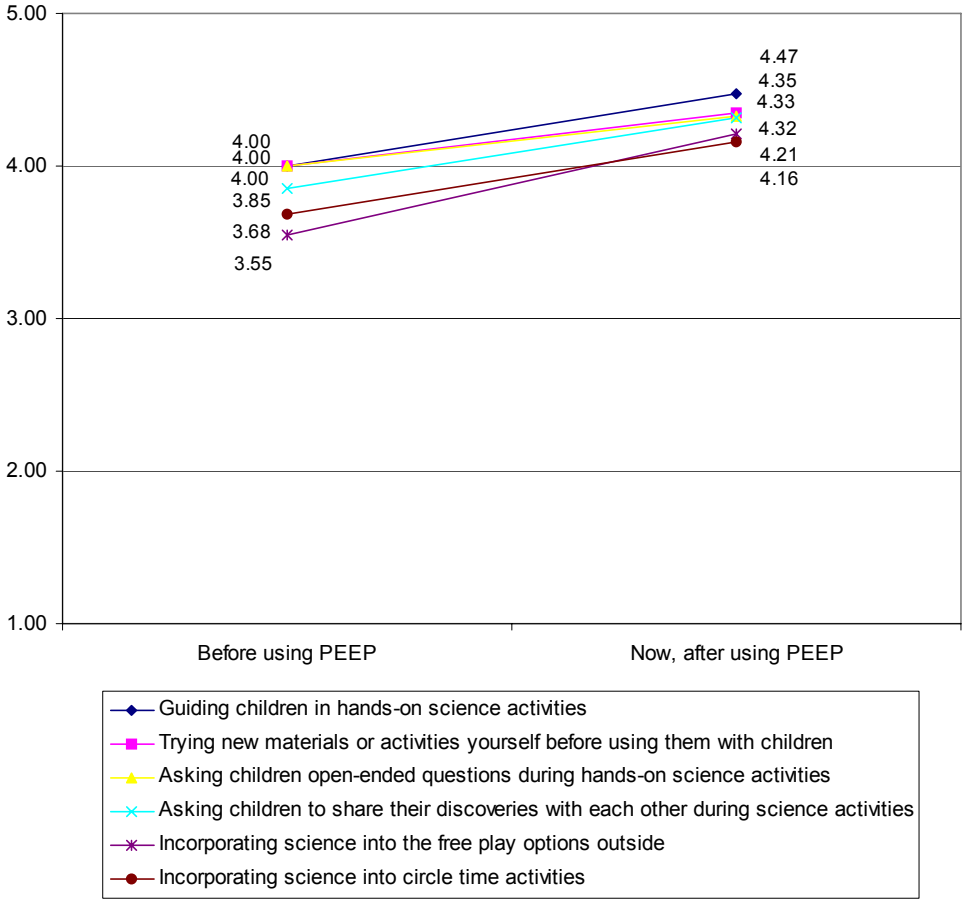
Teachers who completed the non-respondent survey also rated their comfort in these same areas after using PEEP, and they reflected back on their comfort before PEEP. All ratings were around 4 (*very comfortable)*. Most of the teachers who completed the webinar follow-up survey and who had used PEEP activities with students reported that after PEEP they were *extremely comfortable* (n=6 out of 13) guiding children in hands-on science activities, whereas before using PEEP, the majority was *somewhat comfortable* (n=6) doing so.

Table 11
Comfort Using Science in the Classroom: Before and After PEEP

	Before Using PEEP	Now, after using PEEP
Reading books about science topics	4.33	4.52
Guiding children in hands-on science activities*	**4.00**	**4.47**
Trying new materials or activities yourself before using them with children*	**4.00**	**4.35**
Teaching language and literacy during science activities	4.28	4.28
Getting children excited about science	4.20	4.35
Asking children open-ended questions during hands-on science activities*	**4.00**	**4.33**
Asking children to share their discoveries with each other during science activities*	**3.85**	**4.32**
Incorporating science into the free play options outside*	**3.55**	**4.21**
Incorporating science into small group activities	3.95	4.20
Incorporating science into the free play options in the classroom	3.95	4.19
Encouraging children to reflect on their hands-on science experiences	3.80	4.19
Incorporating science into circle time activities*	**3.68**	**4.16**
Teaching math during science activities	4.00	4.09
Responding when a child asks a science-related question and you don't know the answer	3.95	3.90
Using related video when teaching a science topic	3.73	3.73

N=23
* *Statistically significant difference.*

Figure 3
Changes in Comfort Using Science in the Classroom



N=23

Teachers reported increased comfort in guiding children in hands-on science activities, asking children open-ended questions, and asking children to share their discoveries with one another, along with perceiving fewer challenges to leading these types of activities in their classrooms.

After using the PEEP Explorer's Guide, several areas that teachers perceived as challenges to leading hands-on science activities had decreased significantly. In particular, the following were seen as **less of a challenge after implementing PEEP** activities throughout the year:

- Access to necessary materials
- Access to equipment
- Access to teacher resources for activities
- Getting children excited about science.

Other areas that decreased substantially, yet did not reach statistical significance:

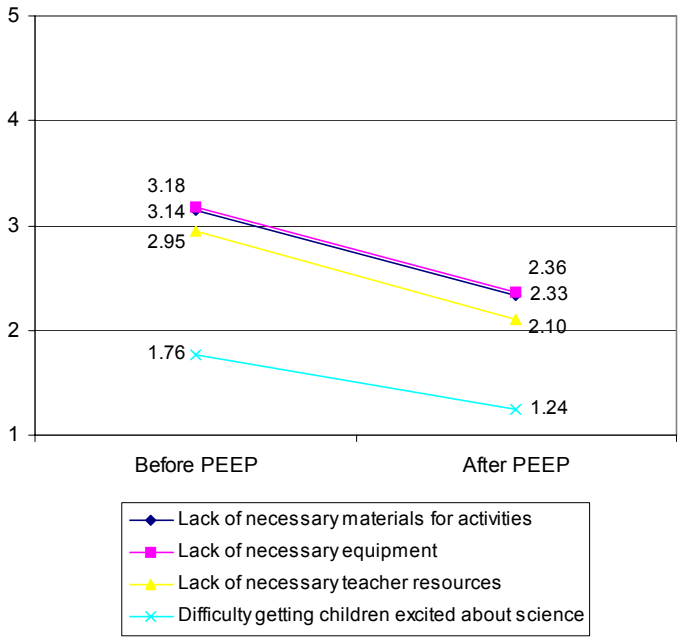
- Classroom time constraints
- Classroom space constraints
- Needing to meet the center's standards and requirements
- Student discipline issues

Table 12
Perceived Challenges to Leading Hands-on Science Activities

	Before PEEP	After PEEP
Classroom time constraints	3.33	2.81
Classroom space constraints	3.05	2.52
Lack of necessary materials for activities*	**3.14**	**2.33**
Lack of necessary equipment *	**3.18**	**2.36**
Lack of necessary teacher resources*	**2.95**	**2.10**
Needing to meet my center's standards and requirements	2.43	1.90
Difficulty integrating supplemental science into our core curriculum	2.20	1.85
Difficulty getting children excited about science*	**1.76**	**1.24**
My own comfort with science	1.67	1.67
Students' language barriers	1.95	1.76
Students' lack of interest in particular topics	2.27	1.86
Students' discipline issues	2.82	2.32
Parents' wishes for student outcomes	1.65	1.55

N=23
** Statistically significant decrease over time.*

Figure 4
Perceived Challenges to Hands-On Science: Before and After PEEP



N=23

Regarding ways to help teachers incorporate the PEEP units throughout a school year, about half of the teachers in the study suggested that "*all teachers should use this resource*" and should just *"give it a try"* because it is easy to use, the necessary preparation is already done, and the kids and teachers both *"loved it."*

> *"I'd encourage other teachers to give it a try. They would realize that the hard work has been done and that they could enjoy the fun along with the students."*

CONCLUSIONS AND RECOMMENDATIONS

Based on findings from the field test study, we conclude that, PEEP's curricular design of presenting one topic through different activities over the school year differed from how teachers typically approached science. Moreover, the curriculum effectively met the impact goals of the PEEP Explorer's Guide**.**

The PEEP Explorer's Guide, with its ease of use, clear instructions, and variety of activities, fulfills a real need in early childhood education classrooms.

The Guide increased comfort in an area considered a challenge among early childhood educators. A 2010 NRC report pointed to the fact that more emphasis is placed on literacy in classrooms, and too little time is spent on science and math, because pre-K teachers are less comfortable teaching science and math (NIEER, 2010).

After using PEEP units, teachers were enthusiastic about how easy it was to acquire the necessary materials and implement activities with their students, to engage the students, and to help students as well as themselves learn new content and skills.

The variety of PEEP activities leads early childhood educators to perceive clear and notable improvement in the quality of their inquiry-based science teaching.

Teachers reported that the PEEP curriculum offered many more activities and ideas than did other curricula they had previously used, it extended the time spent on a single unit and enhanced the way they taught. They recognized that they were able to lead students in such a way as to ask open-ended questions and let the children take the lead in discovery.

PEEP activities make it easy for teachers to spend more time on science activities and investigations, particularly per a single topic or unit.

Teachers reported that the way they taught the PEEP units differed from their previous teaching. Many of them spent more time on a single science unit than they had in prior years; the majority offered science every week and/or every day while using PEEP. Those teachers who offered science no more than a *few times a month* before PEEP, offered it *every week* or *every day* during PEEP.

The format and style of the PEEP Explorer's Guide increases teachers' comfort leading children in hands-on inquiry-based investigations.

The areas in which teachers showed increased comfort were reflective of goals of the PEEP curriculum. Teachers were more involved in the science activities with their classroom students, and felt comfortable taking activities further than they had typically done in the past. For example, they encouraged students to share science discoveries with one another before ending an activity and moving on to something new.

The PEEP curriculum serves well as a year-long curriculum in early childhood classrooms.

Teachers reported that PEEP offered more science activities and contributed to a different and improved way of teaching science, in addition to their own increased comfort and confidence in leading inquiry-based science with their students.

Furthermore, teachers believed that kids enjoyed the science activities and that parents were excited about the curriculum as well as their children's enthusiasm about the activities. All of these findings suggest the PEEP Explorer's Guide is well-positioned as a solid year-long science curriculum.

> ***Based on the above five conclusions, GRG recommends that PEEP producers highlight these as benefits to teachers, teacher-trainers, and students, as they promote and distribute the PEEP curriculum.*** *Given a wide reach, PEEP has the potential to advance knowledge and practice of informal science education on a very large scale.*

The wholly electronic format of the PEEP Explorer's Guide will likely limit some early childhood classrooms from full or partial implementation.

Close to half of the teachers in this research had limited or no access to the web in their classroom. A couple of teachers explained that they discontinued use of the curriculum and participation in the study because of this, while a few others used the activities without the accompanying video.

> ***GRG recommends offering alternatives for teachers who cannot incorporate video, to ensure that all users will have the opportunity to present the same high-quality experience to their classroom students.*** *One teacher in this study taped PEEP segments at home to show in the classroom. WGBH should consider options that would increase access to the PEEP video content (e.g., provide screenshots that teacher can print, instead of downloading full video clips). Additionally, WGBH can repackage the materials and convey to teachers that all activities can be used alone or with video.*

Engaging and retaining parental interest in involvement in ECE classrooms can be considered an asset of the PEEP Explorer's Guide.

While using PEEP, nearly all teachers asked children to share PEEP activity experiences with their families. More than double the number of teachers sent take-homes on science activities for parents (provided via the PEEP Family Science Letters), during PEEP than they did before PEEP. Teachers described that those parents who gave feedback were quite positive and "*excited to see their child's enthusiasm*" about the experience; a couple of teachers said that several parents tried activities at home and looked forward to learning more about the classroom activities.

GRG recommends the Guide include even more specific suggestions for ways to involve parents in the PEEP science activities. *Teachers suggested concrete tips for involving parents, which included bringing parents into the classroom to assist with or lead certain activities, asking parents to donate supplies, having an open-house and/or sending home letters to introduce the curriculum. Extension activities could also be set up such that children would present their at-home work to the class after working with family.*

GRG recommends that future evaluation examine the added benefit of enhanced parental involvement. *Any ways in which the school experience may be extended at home and that home experiences may be shared in the classroom will likely benefit children's overall development. It would be helpful to obtain empirical support for the benefit of this type of parental involvement in children's school experience.*

The PEEP Explorer's Guide is well-positioned to meet the needs of families with English language learners.

Although the current study sample did not have many Spanish-speaking families, the format and style of activities lends itself well to a similar high-quality implementation and activity execution in other languages.

GRG recommends continuing to offer resources and letters in Spanish as well as English *to meet needs of more classrooms and to serve as a means to encourage participation and involvement by more families.*

The PEEP Explorer's Guide was very well received by teachers, students, and families. Summative evaluation revealed that the intended impacts on the professional audience of early childhood educators were achieved when teachers used multiple PEEP activities over the course of the year.

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Appendix

Appendix A: Full details about GRG's recruitment and retention strategies throughout the study

Appendix B: Copies of all survey instruments

Appendix C: Detailed profile of participating teachers and their classrooms

Appendix D: Full description of teachers' use and impressions of individual units

Appendix A: Full Recruit and Retention Details

GRG collaborated with WGBH to develop and program an online registration screener for teachers to complete if they were interested in learning more about the research opportunity. Preschool teachers learned about this registration screener and were invited to participate in the Explorer's Guide field test study through several methods:

1) When visitors to the PEEP website reviewed the Explorer's Guide Units, the registration screener appeared as a pop-up form for them to complete; this pop-up remained on the website from May to July 2010.
2) GRG posted a link to the registration screener on the GRG Facebook page and on other websites and Facebook pages related to early childhood education.
3) WGBH forwarded to GRG the names of webinar attendees (i.e., teacher-trainers) who reported that the teachers they worked with might be interested in using the PEEP curriculum. GRG emailed those attendees information about the research and a link to the screener for them to share with teachers in their centers (i.e., teachers would be the study participants).
4) GRG emailed the registration screener directly to preschool teachers in GRG's internal participant database, as well as to other preschool teachers for whom we had an email address.

Between May and September 2010, GRG emailed information about the study, including a link to the registration screener, to prospective participants. In all, 84 teachers expressed interest in learning more about the study, slated to begin in September. In August 2010, GRG sent a link to an online confirmation survey to the teachers who had completed the registration form earlier in the summer. Five email addresses bounced back, and one teacher responded that she was no longer teaching preschool aged children. By September, 29 of those teachers confirmed they would participate when the study began. GRG sent the pre-survey to all of those who initially expressed interest.

The following table outlines ongoing retention efforts implemented throughout the study period.

Ongoing Retention Activities

Evaluation Activity	Dates
Sent teacher-trainers a detailed letter about the study with a link to the registration form to forward to their teachers.	5/28/10, 6/4/10, 7/29/10, 8/2/10
Posted online registration form on PEEP website	8/8/10
Sent link to registration form to preschool teachers in GRG's participant database	8/10/10
Posted link to registration form on Facebook pages related to early childcare education	Throughout August and September 2010
Conducted an online web search for preschool teachers and emailed 30 teachers inviting them to participate in the study; sent link to registration form.	8/19/10
Sent link to registration form to people on a Harvard Education and a Tufts Education email list.	8/23/10
Sent confirmation email to teachers who completed the registration form to tell them they were selected for the study. Provided additional information about the study and asked them to confirm participation.	8/17-9/14
Sent pre-survey to teachers and multiple reminder emails. Total number filled out pre=57	September 17, 2010-November 2010

Sent pre survey to new list of teachers (N=8) provided by WGBH from November training in Boston.	11/9/10
Sent out Unit Surveys to those who completed pre survey.	10/17/10 and every two weeks thereafter.
Sent a general study reminder/description of where to find the units to all participants.	10/26/10
Made phone calls to participants who had not completed any Unit surveys.	Beginning of November.
Sent an email to all participants asking them to confirm participation and let us know what Units they had completed and when they were planning to begin subsequent Units. - 17 teachers responded and confirmed their continued participation. - One teacher was not sure if they would continue. - 2 teachers responded to report that they were no longer participating. Followed up with non-responders with phone calls. - 3 teachers said they were still participating. - 2 teachers said they were no longer participating.	12/7/11
Sent an email to all participants about extending the study to May so that they would have time to complete more Units.	2/8/11
Sent personalized emails to participants who had completed zero, one or two Unit surveys, asking them if they were still participating, how many units they had completed, and when they were planning to complete additional units. - 4 teachers responded to this email saying they were still participating. Followed up with non-responders with phone calls.	3/4/11
Ongoing emails and phone calls to participants who had completed zero or one unit survey.	March and April 2011
Followed up with teachers who had completed fewer than 3 unit surveys	April 2011
Sent a heads up email to participants about upcoming final post-survey.	4/25/11
Launched post-survey to teachers who completed 3 or more Units. Sent three reminder emails.	5/2/11
Launched post survey to all remaining teachers. Reminded them to complete the unit survey for any units they had completed. Sent email reminder.	5/31/11

Appendix B: Copies of all survey instruments

Welcome to the PEEP Explorer's Guide Pre Survey!

Your opinion counts! Goodman Research Group, Inc. (GRG) is working with the producers of PEEP to learn about teachers' experiences using the PEEP Explorer's Guide in the classroom. We want to know how easy or difficult it is to integrate PEEP science activities into your regular classroom routine. We welcome your suggestions for ways to make it easier for PreK and Kindergarten teachers to use PEEP activities over the course of a school year.

Before you begin using the PEEP Explorer's Guide, please take about 10 minutes to complete this survey about your familiarity with PEEP, your usual classroom practices, and your comfort level and experience teaching science. Over the next few months, we will ask you to complete a brief survey after each PEEP activity unit you complete, and one final survey at the end of the study. Your survey responses will be kept confidential.

As a thank you for your full participation, at the end of the study, we will send a $100 honorarium, in the form of an electronic gift certificate that you can use to purchase supplies for your classroom or center.

We're happy to answer your questions! Please contact Kate Parkinson at Goodman Research Group: parkinson@grginc.com or 866-577-4377.

Let's get started! To begin the survey, enter your ID number, found in the invitational e-mail, in the box below and then click the "Login" button. By entering your ID number and clicking on the Login button, you are agreeing to participate in this survey. Your participation is voluntary and you are free to stop the survey at any time.

Please enter your ID #:

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Instructions

Some instructions before we get started ...

Navigating: As you move through the survey, use the "Back" and "Next" buttons at the bottom of the screen. Please do not use your browser's back button or your responses might be lost.

Submitting: When you reach the end of the survey, click the "Submit" button. If you exit the survey before submitting it, your responses will not be saved, so please complete the survey in one sitting. Also, your session may time out if you spend more than 15 minutes on any one page, so please keep moving through the survey once you've started it.

FAMILIARITY WITH PEEP

Were you familiar with *PEEP and the Big Wide World* before this research study?
Yes
No

With which aspects of *PEEP and the Big Wide World* are you familiar?
Check all that apply

None, I've never seen or used PEEP resources before
I've watched it on TV
I've watched it on the PEEP website (www.peepandthebigwideworld.com)
I've watched in on YouTube.com
I've watched it on kids.discover.com
I've played games on the PEEP website
I've done activities (Anywhere Science or Anywhere Math) suggested on the PEEP website
I've printed out activity or coloring pages from the PEEP website
I've read books suggested on the PEEP website
I've used the PEEP Explorer's Guide

Have you ever attended a training about how to use the PEEP Explorer's Guide in the classroom?
Check all that apply

Yes, a training at a conference
Yes, a training at my center
Yes, via webinar
No

>If they have used the Explorer's Guide:
For how long have you been using PEEP Explorer's Guide activities in your classroom?
Started this year
Started last year
For 2-3 years
For 4 or more years

>If they have used the Explorer's Guide:
Which PEEP Explorer's Guide units have you used?
Check all that apply for each unit

	I have not used this unit	**I've used the full unit, including all of the recommended activities**	**I've used some, but not all of the activities in this unit**	**I've used video clips from PEEP that are recommended with this unit**
Shadows				
Water				
Plants				
Color				
Sound				
Ramps				

YOUR CLASSROOM PRACTICES

How many children are in your classroom?
__ # boys
__ # girls

What race(s)/ethnicities are the children in your classroom?
(*Write the number of children in each box.)*

_____ American Indian or Alaska Native
_____ Asian
_____ Black or African American
_____ Hispanic or Latino
_____ Native Hawaiian or Other Pacific Islander
_____ White
_____ Other; please specify [textbox]

How many children in your classroom are English language learners? _____

What language(s) do the children in your classroom speak at home?
Check all that apply

English
Spanish
Other: [textbox]
Other: [textbox]

How many classroom assistants do you have, if any?
Radio buttons

0
1
2
3

How old are the children in your classroom?
Check all that apply

3 years old or younger
4 years old
5 years old
Other (describe) _____

Which of the following do you have access to for use in your classroom?
Check all that apply

Television
VCR
DVD player
Personal computer
Internet connection
Printer
SMART Board/Interactive White Board
None of the above

In your classroom, do you use a particular core curriculum?

Yes; Name of curriculum: [textbox]
No
I'm not sure

Does the core curriculum include science?

Yes
No
I'm not sure

Do you use any science curriculum (this would be separate from a core curriculum)?
Check all that apply

No additional science curriculum
AIMS
FOSS Kits
Galileo Resources
GEMS
Mudpies to Magnets
Science Literacy Centers
Young Scientist Series
Other: Please list [text box]

YOUR EXPERIENCE WITH TEACHING SCIENCE

Which of the following describes your usual approach to teaching science in your classroom?
Check one

Very little hands-on exploration
Some hands-on exploration
Almost entirely hands-on exploration

What other ways do you teach science?
Check all that apply

Using books
Using video or other media
Using demonstrations
Bringing in visitors
Other:

When you teach science, are students in
Check all that apply

Small groups
One large group
Other: [text box]

Where do kids in your classroom go to do science activities?
Check all that apply

Designated science area in the classroom (for example, a science table)
Designated science area outside of the classroom
Several different science areas throughout the classroom
Science activities can be found anywhere in the classroom
Other; Please describe: [text box]

For the next few questions, please think about when, how, and how often kids have the option to do science in your classroom throughout the school year.

Which of the following describe ways that science is conducted in your classroom?
Check all that apply

All of the kids do a science activity at the same time, in a large group
All of the kids do a science activity at the same time, in small groups
Kids work in small groups, some working on science activities and some working on a different activity
All kids have the choice to do a science activity, some choose to participate and some do not

How often is science available in your classroom throughout the school year?

Once or twice during the year (for example, once in the fall and once in the spring)
Every few months
Every other month
Once a month, every month
A few times a month
Every week

During a typical week when you are doing science with your kids, how many days in that week is science offered?
Radio Buttons

One day
Two days
Three days
Four days
Five days (every day)

On a day when science is available, how many times do kids in your classroom have the opportunity to do science throughout the day?
Check all that apply

Kids have 1 opportunity to do science in a day when science is available
Kids have 2 opportunities to do science throughout the day
Kids have 3 opportunities to do science throughout the day
Kids have 4 or more opportunities to do science throughout the day
Science activities are available for the kids at any time throughout the day

What is the average number of weeks you spend on a single science topic or unit?

1 week
2 weeks
3-4 weeks (one month)
5-6 weeks
7-8 weeks (two months)
More than two months

How comfortable are you doing the following in your classroom?
For each, indicate whether you have done this or not (Yes/No). If yes, then rate your comfort: 1-Not at all comfortable; 2-A little; 3-Somewhat; 4-Very; 5–Extremely comfortable;

	Have you done this?	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
Trying new materials or activities yourself before using them with children	Yes / No					
Incorporating science into circle time activities	Yes / No					
Incorporating science into small group activities	Yes / No					
Incorporating science into the free play options in the classroom	Yes / No					
Incorporating science into the free play options outside	Yes / No					
Reading books about science topics	Yes / No					
Teaching language and literacy during science activities	Yes / No					
Teaching math during science activities	Yes / No					
Using related video when teaching a science topic	Yes / No					
Getting children excited about science	Yes / No					
Guiding children in hands-on science activities	Yes / No					
Asking children open-ended questions during hands-on science activities	Yes / No					
Encouraging children to reflect on their hands-on science experiences	Yes / No					
Asking children to share their discoveries with each other during science activities	Yes / No					
Responding when a child asks a science-related question and you don’t know the answer	Yes / No					

How much of a challenge are the following when leading hands-on science activities with children in your classroom?

1-Not at all challenging; 2- A little; 3- Somewhat; 4-Very; 5 – Extremely challenging

	(1)	(2)	(3)	(4)	(5)	NA
Classroom time constraints						
Classroom space constraints						
Lack of necessary materials for activities						
Lack of necessary equipment						
Lack of necessary teacher resources						
Needing to meet my center's standards and requirements						
Difficulty integrating supplemental science into our core curriculum						
Difficulty getting children excited about science						
My own comfort with science						
Students' language barriers						
Students' lack of interest in particular topics						
Students' discipline issues						
Parents' wishes for student outcomes						
Other challenge: [text box]						
Other challenge: [text box]						

YOUR INTERACTION WITH PARENTS

In which of the following ways, if any, do you share information about your program with parents?
Check all that apply

In person during drop off or pick-up
By email
By phone
Through a newsletter
On a bulletin board in your classroom
During parents' nights/workshops
During regular group meetings with parents
During scheduled one-on-one conferences with parents
None of the above
Other; describe: [text box]

Do you provide any of the above in your students' home language (other than English)?
Radio Buttons

Yes
No, but I am interested in doing so
No, and I am not interested in doing so
Does not apply; all of my students speak English

Which of the following do you currently do to encourage parents to support their children's science-related experiences at home?
Check all that apply

Give parents ideas for science activities they can do with their children
Give parents take-homes to read (such as one-page tip sheets or fact sheets) on science activities
Share science-related educational videos
Share science-related books
Share links to websites with science-related information and/or video
Hold parent workshops
Use parent-leaders to share information with other parents
None of the above
Other, Describe: [text box]

The following background questions are for descriptive purposes only.

Are you:

Female
Male
Prefer not to respond

What is your race/ethnicity?
Check all that apply

American Indian or Alaskan Native
Asian
Black or African-American
Hispanic or Latino
Native Hawaiian or Other Pacific Islander
White
Prefer not to respond

What is the highest level of education you have completed?
Radio buttons

Some high school
High school diploma or GED
Some college/trade school
Associate's (2 year) college degree
Bachelor's (4 year) college degree
Master's degree
Multiple master's degrees
Doctorate/other post graduate
Other: Describe *Text box*

How many years have you been an early childhood teacher? ___

What formal education and/or training (if any) have you completed in early education?
Check all that apply.
No formal education or training
Undergraduate courses
Graduate courses
Professional development
Science curriculum training: Please specify: *Text Box*
Other: Please specify: *Text Box*

THANK YOU! Your responses have been submitted.

PEEP Explorer's Guide
Unit Feedback Form

Welcome to the PEEP Explorer's Guide Unit Feedback Form!

Your opinion counts! Goodman Research Group, Inc. (GRG) is working with the producers of PEEP to learn about teachers' experiences using the PEEP Explorer's Guide in the classroom. We want to know how easy or difficult it is to integrate PEEP science activities into your regular classroom routine. We welcome your suggestions for ways to make it easier for PreK and Kindergarten teachers to use PEEP activities over the course of a school year.

Thank you for completing the PEEP pre survey! As you know, over the next few months, we will ask you to complete a brief survey after each PEEP Unit you complete, and one final survey at the end of the study. Your survey responses will be kept confidential.

As a thank you for your full participation, at the end of the study, we will send a $100 honorarium, in the form of an electronic gift certificate that you can use to purchase supplies for your classroom or center.

We're happy to answer your questions! Please contact Kate Parkinson at Goodman Research Group: parkinson@grginc.com or 866-577-4377.

Let's get started! To begin the survey, enter your ID number, found in the invitational e-mail, in the box below and then click the "Login" button. By entering your ID number and clicking on the Login button, you are agreeing to participate in this survey. Your participation is voluntary and you are free to stop the survey at any time.

Please think about the PEEP Explorer's Guide Unit you just completed as you answer the following:

Unit: _____

How many weeks did you spend on this unit with your children?
Check one.

1 week
2 weeks
3 weeks
4 weeks
5 or more weeks

What did you think of the **number** of activities that were included?	Just right	Too many	Too few
What did you think of the **variety** of activities that were included?	Just right	Too much	Not enough

On average, for how long did your students stay interested in the hands-on activities for this unit?

Less than 5 minutes
5-10 minutes
11-15 minutes
16-20 minutes
More than 20 minutes

How easy was it to do the following?
1=Not at all easy; 2=A little easy; 3=Somewhat easy; 4=Very easy; 5=Extremely easy.

If you did not do an item listed, please select NA (Not Applicable)

	1	2	3	4	5	NA
Gather the listed materials needed for the activities?						
Find the recommended books?						
Incorporate streaming video?						
Try out the activities on your own before implementing with students?						
Follow the suggested "how-to"/Teacher Tips when doing activities with your students?						
Incorporate this unit's activities into your existing core curriculum?						
Incorporate this unit's activities into your additional science curriculum if you use one?						
Do the suggested indoor activities?						
Do the suggested outdoor activities?						
Ask open-ended questions to keep the activity going?						
Get children to reflect on their experiences?						

For each question, mark the box that describes how often you experienced it while implementing this unit with your students.
Check one per row.

How often…	**None of the time**	**Some of the time**	**Most of the time**	**All of the time**
Were you able to find space in your class to set up the activities?				
Did you make changes to the activities?				
Did you show related PEEP video?				
Did you read suggested books?				
Did you send home the related family materials?				
Did you play alongside your students to model science inquiry skills?				

Overall, how appealing were this Unit's activities for your children?
Check one.

Not at all appealing
A little appealing
Somewhat appealing
Very appealing
Extremely appealing

What would you say <u>the children</u> in your class learned about the topic during this unit?
[text box]

What new things did <u>you</u> learn about the content area?
[text box]

To what extent were the stated Learning Goals for each content area met through this unit?
1=Not at all; 2=only a little; 3=somewhat; 4=Mostly; 5=Completely

	1	2	3	4	5	Don't Know
Science goals						
Language and Literacy goals						
Early Math goals						

How helpful were each of the following areas of the Explorer's Guide as you implemented <u>this unit</u> with your students?
1=Not at all helpful; 2=Only a little helpful; 3=Somewhat helpful; 4=Very helpful; 5= Extremely Helpful
If you cannot rate any item below, please select NA (Not Applicable).

	1	2	3	4	5	NA
Roll Up your Sleeves! Teacher Preparation						
Free Exploration						
Indoor Activities						
Outdoor Activities						
Teacher Reflection						
Classroom Close-Up						
The recommended books						
The recommended video on the PEEP website						
Family Science Letter take-home						
Correlation to Head Start outcomes						

Did you have your children try any of the <u>indoor</u> explorations?
Check one.

All of them
Some of them
None of them

Did you have you children try any of the <u>outdoor</u> explorations?
Check one.

All of them
Some of them
None of them

Please share some examples of your children's reactions to the activities in this unit. Think about the following as you answer:

- → How long kids were engaged with any one activity, during free exploration and/or during guided activities
- → Comments kids made that showed how they were thinking about the topic and/or about what they learned or understood
- → Questions kids raised to you and/or to one another as they were working

[text box]

PEEP VIDEOS

Which video segments did you view with your students?
(Check all that apply.)

PEEP animated story program segment that was provided: English audio
PEEP animated story program segment that was provided: Spanish audio
"Kids Explore" live-action clips that were provided: English audio
"Kids Explore" live-action clips that were provided: Spanish audio
Other video clips that I chose (not PEEP clips)
I did not use video segments with my students

If you showed video segments, which type did you prefer?
Check only one.

I preferred to show the animated PEEP story
I preferred to show the Kids Explore live-action clips
I thought both (animated and live-action) were equally good.

If you preferred animated to live-action, or vice versa, please explain your preference and describe how you used the video segments.

If you used video with Spanish audio, please describe the value this resource added for you students' experience.

Check box for: I didn't use the Spanish audio
[textbox]

Please share any final comments or thoughts you have about this unit.
[text box]

Thank you.

PEEP Explorer's Guide Post Survey

Which PEEP Explorer's Guide units did you use with your students over the past school year?
Check all that apply, even those that you may have only partially used.

	Used whole unit	Used part of the unit	Did not use
Shadows			
Water			
Ramps			
Plants			
Color			
Sound			

Did the PEEP Explorer's Guide curriculum design of presenting one topic through different activities and over an extended period of time differ from how you typically approach a science topic?
Check one.

Yes
No
Not sure

Please explain. [text box]

How effective was the PEEP teaching approach of <u>repeated exposure to one topic over time</u> in helping your students to understand the unit topics?
Check one.

Not at all effective
Only a little effective
Somewhat effective
Very effective
Extremely effective

YOUR SCIENCE TEACHING EXPERIENCES

Please think about the way you taught science over the past school year, while using the PEEP Explorer's Guide with your students. It may or may not have been different from style of teaching science in previous years.

Which of the following describes your approach to teaching science in your classroom over the past year, while using the PEEP Explorer's Guide Units?
Check one

Very little hands-on exploration
Some hands-on exploration
Almost entirely hands-on exploration

When you taught science over the past school year, using the PEEP Explorer's Guide Units, were students in
Check all that apply.

Several small groups
One large group
Other: [text box]

In the past several months, while using the PEEP Explorer's Guide Units, where did kids in your classroom go to do science activities?
Check all that apply.

Designated science area in the classroom (for example, a science table)
Designated science area outside of the classroom
Several different science areas throughout the classroom
Science activities could be found anywhere in the classroom
Other; please describe: [text box]

Which of the following describe ways that science was conducted in your classroom while using the PEEP Explorer's Guide Units?
Check all that apply.

All of the kids did a science activity at the same time, in a large group
All of the kids did a science activity at the same time, in small groups
Kids worked in small groups, some working on science activities and some working on a different activity
All kids had the choice to do a science activity, some chose to participate and some did not

How often was science available in your classroom over the past school year, while you were using the PEEP Units?
Check one.

Once or twice during the year (for example, once in the fall and once in the spring)
Every few months
Every other month
Once a month, every month
A few times a month
Every week
Every day

During a typical week when you were doing PEEP science Units with your kids, how many days in that week was science offered?
Check one.

One day
Two days
Three days
Four days
Five days (every day)

On a day when science was available, while you were using the PEEP Units, how many times did kids in your classroom have the opportunity to do science throughout the day?

Kids had 1 opportunity to do science in a day when science was available
Kids had 2 opportunities to do science throughout the day
Kids had 3 opportunities to do science throughout the day
Kids had 4 or more opportunities to do science throughout the day
Science activities were available for the kids at any time throughout the day

In the past school year, while using the PEEP Units, what was the average number of weeks you spent on a single science topic or unit?

1 week
2 weeks
3-4 weeks (one month)
5-6 weeks
7-8 weeks (two months)
More than 8 weeks

How did this compare to your science teaching last year?
Check one.

We spent more time on a single science topic or unit this year
We spent less time on a single science topic or unit this year
We spent about the same time on a single science topic or unit this year

How comfortable are you doing the following in your classroom now?
For each, indicate whether you have done this or not (Yes/No).

If yes, then rate your comfort:
1=Not at all comfortable; 2=A little; 3=Somewhat; 4=Very; 5=Extremely comfortable

	Have you done this?	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
Trying new materials or activities yourself before using them with children	Yes / No					
Incorporating science into circle time activities	Yes / No					
Incorporating science into small group activities	Yes / No					
Incorporating science into the free play options in the classroom	Yes / No					
Incorporating science into the free play options outside	Yes / No					
Reading books about science topics	Yes / No					
Teaching language and literacy during science activities	Yes / No					
Teaching math during science activities	Yes / No					
Using a related video in teaching a science topic	Yes / No					
Getting children excited about science	Yes / No					
Guiding children in hands-on science activities	Yes / No					
Asking children open-ended questions during hands-on science activities	Yes / No					
Encouraging children to reflect on their hands-on science experiences	Yes / No					
Asking children to share their discoveries with each other during science activities	Yes / No					
Responding when a child asks a science-related question and you don’t know the answer	Yes / No					

How much of a challenge were the following when leading the PEEP hands-on science activities with children in your classroom?

1=Not at all challenging; 2=A little; 3=Somewhat; 4=Very; 5=Extremely challenging

	(1)	(2)	(3)	(4)	(5)	NA
Classroom time constraints						
Classroom space constraints						
Lack of necessary materials for activities						
Lack of necessary equipment						
Lack of necessary teacher resources						
Needing to meet my center's standards and requirements						
Difficulty integrating the PEEP Units into our core science curriculum						
Difficulty integrating the PEEP Units into our other supplemental science curriculum						
Difficulty getting children excited about science						
My own comfort with science						
Students' language barriers						
Students' lack of interest in particular topics						
Students' discipline issues						
Parents' wishes for student outcomes						
Other challenge: [text box]						
Other challenge: [text box]						

Over the past school year, while using the PEEP Units, how often did you do the following?

	Almost never	Every few months	About once a month	A few times a month	About once a week	A few times a week	Every day	NA
Incorporate science into the classroom curriculum.								
Incorporate science into circle time activities.								
Incorporate science into small group activities.								
Incorporate science into the free play options in the classroom.								
Incorporate science into the free play options outside the classroom.								
Use related video when teaching a science topic.								

How does this level of incorporating science compare to what you did before trying the PEEP Explorer's Guide activities with your class?

	A lot less than before	A little less than before	The same as before	A little more than before	A lot more than before	NA
I incorporate science into the classroom curriculum.						
I incorporate science into circle time activities.						
I incorporate science into small group activities.						
I incorporate science into the free play options in the classroom.						
I incorporate science into the free play options outside the classroom.						
I use related video when teaching a science topic.						

How comfortable were you doing the following in your classroom at the beginning of the school year, BEFORE using the PEEP Explorer's Guide with your students?

1=Not at all comfortable; 2=A little; 3=Somewhat; 4=Very; 5=Extremely comfortable

	(1)	(2)	(3)	(4)	(5)	NA
Trying new materials or activities yourself before using them with children						
Incorporating science into circle time activities						
Incorporating science into small group activities						
Incorporating science into the free play options in the classroom						
Incorporating science into the free play options outside						
Reading books about science topics						
Teaching language and literacy during science activities						
Teaching math during science activities						
Using a related video in teaching a science topic						
Getting children excited about science						
Guiding children in hands-on science activities						
Asking children open-ended questions during hands-on science activities						
Encouraging children to reflect on their hands-on science experiences						
Asking children to share their discoveries with each other during science activities						
Responding when a child asks a science-related question and you don't know the answer						

The developers of the PEEP Explorer's Guide hope its 6 separate multi-week Units will be used by preschool and kindergarten teachers throughout an entire school year. This would be instead of using only one or two Units as a supplemental curriculum.

For the next few questions, please think about how these multi-week units worked for you, as you incorporated approximately four of the Units into your classroom work over the past school year.

To what extent did the separate multi-week Units:

1=Not at all; 2=Only a little; 3=Somewhat; 4=Mostly; 5=Completely

	1	2	3	4	5	Not sure
Meet your needs for science teaching throughout the school year						
Correspond with your teaching style and practice						
Fit with your school's or center's curriculum requirements						
Appeal to your students						
Satisfy parents' interests						

Considering ALL of the PEEP Explorer's Guide Units you used this year, how satisfied were you with the following aspects of the PEEP Explorer's Guide:

1=Not at all satisfied; 2=A little satisfied; 3=Somewhat satisfied; 4=Very satisfied; 5=Extremely satisfied

	(1)	(2)	(3)	(4)	(5)
The Teacher Preparation section					
Classroom Preparation: Materials List					
Classroom Preparation: Recommended books					
The Indoor Activities					
The Outdoor Activities					
The Online Videos					
Classroom Close-Up Features					
Correlation to Head Start Outcomes					
Stated Learning Goals					
Teacher Reflection Questions					
Family Science Letters					
Spanish Versions of the Resources					

How easy was it to do the following throughout this year?

1=Not at all easy; 2=A little easy; 3=Somewhat easy; 4=Very easy; 5=Extremely easy

	1	2	3	4	5
Access the Explorer's Guide online?					
Gather the necessary materials for the activities?					
Follow the activity directions?					
Incorporate the PEEP activities into your curriculum over the course of the year.					

FAMILY INVOLVEMENT

In which of the following ways, if any, did you share information about the PEEP science Units and activities with parents?
Check all that apply

In person during drop off or pick-up
By email
By phone
Through a newsletter
On a bulletin board in your classroom
During parents' nights/workshops
During regular group meetings with parents
During scheduled one-on-one conferences with parents
None of the above
Other; describe: [text box]

Which of the following did you do to encourage parents to support their children's science-related experiences at home while using the PEEP Explorer's Guide Units?
Check all that apply

Gave parents ideas for science activities they can do with their children
Gave parents PEEP Family Science Letter take-homes to read
Shared PEEP videos
Shared other science-related educational videos (not PEEP)
Shared science-related books
Shared links to websites with science-related information and/or video
Held parent workshops
Used parent-leaders to share information with other parents
None of the above
Other, Describe: [text box]

Did you provide any of the above in your students' home language (other than English)?
Radio Buttons

Yes
No, but I am interested in doing so
No, and I am not interested in doing so
Does not apply; all of my students speak English

Did you ask children to share any PEEP Explorer's Guide Unit-related experiences with their families?
Yes
No

If yes, please describe.
[text box]

What feedback, if any, did you get from parents regarding the family science letter take-home?
[text box]

What suggestions would you share with other teachers to increase their success incorporating the multi-week PEEP Explorer's Guide Units in their classes through the course of a school year?
[text box]

Please share any final comments or suggestions you may have about the PEEP Explorer's Guide.
[Text box]

Thank you.

PEEP Explorer's Guide Study
NON-RESPONDENT SURVEY

Did you use any of the PEEP Explorer's Guide with your students over the past school year?
Yes
No

If no:

Please check all of the reasons that you did not use the PEEP Explorer's Guide this past school year.
Did not have time to review the Guide to determine whether units or activities would fit with our regular curriculum
Did not fit into our regular curriculum
Did not have permission from school or center director
Did not have time to fit units or activities into regular curriculum
Other; please describe:

If Yes:

Which PEEP Explorer's Guide units did you use with your students over the past school year?

	Used the whole unit	Used part of the unit	Did not use
Shadows			
Water			
Plants			
Color			
Sound			
Ramps			

Did the PEEP Explorer's Guide curriculum design of presenting one topic through different activities and over an extended period of time differ from how you typically approach a science topic?
Check one.

Yes
No
Not sure

Please explain. [text box]

How effective was the PEEP teaching approach of <u>repeated exposure to one topic over time</u> in helping your students to understand the unit topics?
Check one.

Not at all effective
Only a little effective
Somewhat effective
Very effective
Extremely effective

<u>YOUR SCIENCE TEACHING EXPERIENCES</u>

Please think about the way you taught science over the past school year, while using the PEEP Explorer's Guide with your students. It may or may not have been different from your style of teaching science in previous years.

In the past school year, while using the PEEP Units, what was the average number of weeks you spent on a single science topic or unit?

1 week
2 weeks
3-4 weeks (one month)
5-6 weeks
7-8 weeks (two months)
More than 8 weeks

During a typical week when you were doing PEEP science Units with your kids, how many days in that week was science offered?

One day
Two days
Three days
Four days
Five days (every day)

How did this compare to your science teaching last year?

We spent more time on a single science topic or unit this year
We spent less time on a single science topic or unit this year
We spent about the same time on a single science topic or unit this year

For each item below, indicate whether you have done this or not (Yes/No). If yes, then rate your comfort doing the following in your classroom NOW, AFTER using the PEEP Explorer's Guide?

1=Not at all comfortable; 2=A little; 3=Somewhat; 4=Very; 5=Extremely comfortable

	Have you done this?	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
Trying new materials or activities yourself before using them with children	Yes / No					
Incorporating science into circle time activities	Yes / No					
Incorporating science into small group activities	Yes / No					
Incorporating science into the free play options in the classroom	Yes / No					
Incorporating science into the free play options outside	Yes / No					
Reading books about science topics	Yes / No					
Teaching language and literacy during science activities	Yes / No					
Teaching math during science activities	Yes / No					
Using a related video in teaching a science topic	Yes / No					
Getting children excited about science	Yes / No					
Guiding children in hands-on science activities	Yes / No					
Asking children open-ended questions during hands-on science activities	Yes / No					
Encouraging children to reflect on their hands-on science experiences	Yes / No					
Asking children to share their discoveries with each other during science activities	Yes / No					
Responding when a child asks a science-related question and you don't know the answer	Yes / No					

Over the past school year, while using the PEEP Units, how often did you do the following?

	Almost never	Every few months	About once a month	A few times a month	About once a week	A few times a week	Every day	NA
Incorporate science into the classroom curriculum.								
Incorporate science into circle time activities.								
Incorporate science into small group activities.								
Incorporate science into the free play options in the classroom.								
Incorporate science into the free play options outside the classroom.								
Use related video when teaching a science topic.								

How does this level of incorporating science compare to what you did before trying the PEEP Explorer's Guide activities with your class?

	A lot less than before	A little less than before	The same as before	A little more than before	A lot more than before	NA
I incorporate science into the classroom curriculum.						
I incorporate science into circle time activities.						
I incorporate science into small group activities.						
I incorporate science into the free play options in the classroom.						
I incorporate science into the free play options outside the classroom.						
I use related video when teaching a science topic.						

How comfortable were you doing the following in your classroom at the beginning of the school year, BEFORE using the PEEP Explorer's Guide with your students?

1=Not at all comfortable; 2=A little; 3=Somewhat; 4=Very; 5=Extremely comfortable

	(1)	(2)	(3)	(4)	(5)	NA
Trying new materials or activities yourself before using them with children						
Incorporating science into circle time activities						
Incorporating science into small group activities						
Incorporating science into the free play options in the classroom						
Incorporating science into the free play options outside						
Reading books about science topics						
Teaching language and literacy during science activities						
Teaching math during science activities						
Using a related video in teaching a science topic						
Getting children excited about science						
Guiding children in hands-on science activities						
Asking children open-ended questions during hands-on science activities						
Encouraging children to reflect on their hands-on science experiences						
Asking children to share their discoveries with each other during science activities						
Responding when a child asks a science-related question and you don't know the answer						

What suggestions would you share with other teachers to increase their success incorporating the multi-week PEEP Explorer's Guide Units in their classes through the course of a school year? [text box]

Please share any final comments or suggestions you may have about the PEEP Explorer's Guide. [Text box]

Thank you.

PEEP Explorer's Guide
Webinar Attendee Survey

Last summer—in May or June —you attended a webinar about a preschool science resource, the PEEP Explorer's Guide. (You'll recall PEEP and the Big Wide World is a series airing on public television.) Goodman Research Group, Inc., an evaluation firm in MA was contracted by PEEP's producers to conduct evaluation of this guide. Please help us by answering these questions about your experience with PEEP after the summer webinar. Your feedback will help ensure free teacher resources like these remain available. Thank you!

After participating in the PEEP webinar, did you share information about the PEEP science resources with and/or train any teachers to try the activities in their classrooms?
Yes
No

If yes:
About how many teachers did you train?
I did not train any teachers but I shared the information with one or more teachers.
1 to 5
6 to 10
11 to 15
16 to 20
20 to 30
More than 30

How many of the teachers you trained used the guide?
_____ teachers used the guide.
_____ teachers did not use the guide.
I do not have information for _____ teachers.

Among those teachers you trained:
About how many used the guide? ____
About how many did not use the guide? _____

If no:
Do you plan to train any teachers to use the guide in the future?
Yes; about how many? _____
No

Did YOU personally use any of the PEEP activities with students?
Yes
No

If no:
Please check all of the reasons that you did not use the PEEP activities.
I did not have time to review the Guide to determine whether units or activities would fit with our regular curriculum
Activities did not fit into our regular curriculum
I did not have permission from school or center director
Other:

Do you plan to use the PEEP Explorer's Guide in the future?
Yes
No
I'm not sure

If yes:

How comfortable are you guiding children in hands-on science activities NOW, AFTER using the PEEP Explorer's Guide?
Not at all comfortable
A little
Somewhat
Very
Extremely comfortable

Over the past school year, while using the PEEP Units, how often did you incorporate science into your classroom?
Almost never
Every few months
About once a month
A few times a month
About once a week
A few times a week
Every day

How does this level of incorporating science compare to what you did before trying the PEEP Explorer's Guide activities with your class?
A lot less than before
A little less than before
The same as before
A little more than before
A lot more than before

How comfortable were you guiding children in hands-on science activities at the beginning of the school year, BEFORE using the PEEP Explorer's Guide with your students?
Not at all comfortable
A little
Somewhat
Very
Extremely comfortable

Thank you.

Appendix C: Profile of Participating Teachers and their Classrooms

Profile of Respondents

Similar to national trends in ECE teacher characteristics, (Saluja, Early, and Clifford, 2002) all but three of the 30 participating teachers were women, and the majority of them were White. Most had completed either a four-year or two-year college degree and 10 had a Masters Degree or other graduate degree and/or hours. On average, they had been teaching 10 years, ranging from one to 25. Specifically regarding early education training, the majority had attended professional development and taken undergraduate courses; a third of the sample had graduate courses in early childhood; a few listed specific curriculum-related training (e.g., PEEP Explorer's Guide webinar). See Appendix X for a detailed profile of participating teachers.

	# of teachers
Gender	
Female	27
Male	3
Race/ethnicity*	
American Indian or Alaskan Native	0
Asian	4
Black or African-American	2
Hispanic or Latino	3
Native Hawaiian or Other Pacific Islander	0
White	22
Highest level of education completed	
Some high school	0
High school diploma or GED	0
Some college/trade school	2
Associate's (2 year) college degree	8
Bachelor's (4 year) college degree	10
Master's degree	5
Multiple master's degrees	1
Doctorate/other post graduate	2
Other (E.g., Masters plus graduate hours; certification)	2
Formal education or training in early education	
Professional development	21
Undergraduate courses	16
Graduate courses	10
Science curriculum training: (e.g., "PEEP seminar in Boston")	4
Other (e.g., AAS, National Board Certification)	6
No formal education or training	1

N=30

**For Race/Ethnicity, participants were invited to select one ore more options as relevant.*

Profile of Participating Classrooms

Participating teachers represented a variety of school types and settings, including private (n=11), public (n=8), and parochial (n=2) schools. Seven were in Head Start centers, and one was in a Jewish Community Center.

- Fifteen were in suburban areas,
- 9 were rural,
- 4 were urban, and
- 2 described their schools setting as "county."

Ten teachers were in schools with Title 1 status, 15 were not, and five teachers were not sure.

On average, classes had 11 boys (range=5 to 40) and 9 to 10 girls (range=1 to 57). Teachers worked with children ages three to six. The majority of participating teachers had one classroom assistant.

- Four teachers reported they had two assistants,
- two had 3 assistants, and
- four had no assistant.

Ages of Children in the Classes

	# of teachers
3 years old or younger	18
4 years old	21
5 years old	13
6 years old	2

The majority of children in the classrooms were White (average=13 children). On average, classes comprised one or two students who were Hispanic or Latino, Black or African American, or Asian.

Classroom Students' Race/Ethnicity

	Average # of Kids	**Range**
American Indian or Alaska Native	<1	0-5
Asian	1	0-11
Black or African American	1-2	0-17
Hispanic or Latino	2	0-30
Native Hawaiian or Other Pacific Islander	<1	0-9
White	13	1-26
Other (E.g., Pakistani, Haitian, India)		

Across all of the teachers, very few of their students were English language learners, with an average of 3 (range = 0 to 30). Most teachers reported their students spoke either English (N=21 teachers) or Spanish (N=17 teachers) at home. Other languages spoken by their students included:

- Chinese
- Hebrew
- French
- Indian
- Cambodian
- Urdu
- German
- Haitian Creole
- Portuguese
- Navajo
- Sign Language
- Tagalog
- Korean

Core Curriculum with science:

- 8 used Creative Curriculum
- 3 used Curiosity Corners
- 2 used Galileo
- 1 each used:
    - High Scope
    - Harcourt
    - Fireflies
    - State or school district approved curriculum
- One teacher used a curriculum she created.

Most teachers reported they did not use any additional science curriculum in the classroom. Among those who did, curricula included:

- Galileo (3 teachers)
- FOSS (2 teachers)
- Young Scientist Series (2 teachers)
- PEEP (1 teacher)
- GEMS (1 Teacher)
- Mudpies to Magnets (1 teacher)
- Science Literacy Centers (1 teacher)

Appendix D: Full description of teachers' use and impressions of individual units

GRG invited teachers to complete a brief feedback form about each unit they implemented. The form gathered information about implementation and perceived outcomes. A total of 26 teachers provided feedback on a total of 89 unit implementations. See Table A-1 for a breakdown of feedback forms per unit. We received the most feedback for the Color and Shadows units.

Table A-1
Number of Feedback Forms, by Unit

	Number of forms	Percent of sample
Shadows	18	20%
Water	13	15%
Plants	13	15%
Color	21	24%
Sound	11	12%
Ramps	13	15%
Total	**89**	**100%**

Implementation

On average, teachers spent three weeks on each unit and reported that the hands-on activities sustained children's interest for 10-15 minutes. Teachers felt the units included just the right number and variety of activities. On average, teachers found it very easy to use the units. See Table A-2.

Table A-2
Percentage of Respondents with Ratings of *Very* or *Extremely* Easy

How easy was it to do the following?	% very/extremely easy
Do the suggested indoor activities?	89%
Follow the suggested "how-to"/Teacher Tips when doing activities with your students?	86%
Try out the activities on your own before implementing with students?	84%
Incorporate this unit's activities into your additional science curriculum, if you use one?	83%
Ask open-ended questions to keep the activity going?	81%
Incorporate this unit's activities into your existing core curriculum, if you use one?	79%
Gather the listed materials needed for the activities?	73%
Do the suggested outdoor activities?	71%
Get children to reflect on their experiences?	64%
Incorporate streaming video?	62%
Find the recommended books?	60%

Teachers were able to find space in their classrooms to set up the activities and, most of the time, they played alongside their students to model science inquiry skills. Typically, they did not make changes to the activity. See Table A-3.

Table A-3
Percentage of Respondents with Ratings of *Most* or *All* of the Time

How often…	Most or all of the time
Did you play alongside your students to model science inquiry skills?	93%
Were you able to find space in your class to set up the activities?	90%
Did you make changes to the activities?	15%

The majority of teachers read the suggested books (82%), sent home the related family materials (74%), asked children to share their discoveries with each other (96%), and asked open-ended questions. The majority also taught language and literacy (97%) and math (83%) during the science activities. Compared to other units, while using the Water unit, a smaller percentage of teachers asked children to share their discoveries with each other (76% for Water vs. 94% or higher for the other units; $p<.05$).

On average, teachers found the various areas of the Explorer's Guide very helpful as they implemented the units with their students. See Table A-4.

Table A-4
Percentage of Respondents with Ratings of Very or Extremely Helpful

	% very or extremely helpful
Free Exploration	100%
Indoor Activities	100%
Teacher Reflection	98%
Classroom Close-Up	98%
Outdoor Activities	95%
Family Science Letter take-home	95%
Correlation to Head Start outcomes	95%
Roll Up your Sleeves! Teacher Preparation	94%
The recommended books	92%
The recommended video on the PEEP website	89%

Unit surveys indicate teachers had children try out some (52%) or all (47%) of the indoor explorations as well as some (63%) or all (30%) of the outdoor explorations.

Teachers used the PEEP video segments with their students in more than half (57%) of their implementations, both the PEEP animated story program segment as well as the "Kids Explore" live-action clips (in English), which they found equally good. Only three of the implementations we received feedback on featured us of the Spanish segments/clips and only six of the implementations featured other non-PEEP video clips.

Perceived Outcomes: Students

On average, 83% of the activities were either *very* or *extremely* appealing to children. Teachers felt the stated Learning Goals for each content area – science goals, language and literacy goals, and early math goals – were mostly met through the units. See Table A-5.

Table A-5
Percentage of Respondents with Ratings of *Mostly* or *Completely* Met

	Goals *mostly* or *completely* met
Science goals	90%
Language and Literacy goals	89%
Early Math goals	72%

Some of the specific things that teachers reported their children learned during the units are noted below:

Shadows – noticing shadows outdoors and indoors and awareness of their own shadows versus other shadows, that shadows are made by light, that they can create and move shadows, how to change the size of their shadows by moving in relation to the light source (magnification), that shadows move when the sun moves across the sky and that the brightness of the light effects the visibility of the shadow, the difference between a reflection and a shadow, new vocabulary (e.g., sunlight, shadows), using their imaginations

Water – how vital water is to our lives, that water does not have shape, what sinks and what floats and that air in an object makes it float and that you need to take out the air to make something sink, that items can float in salt water, that water can flow if it travels down hill, that water is a powerful force, that some surfaces absorb water and others do not, about evaporation, pouring, squirting and pumping, cooperation/sharing

Plants – about the life cycle and the physical characteristics and functional parts of plants, that there are a wide variety of plants/seeds, how seeds/plants grow and use soil and sun and water, that some plants are edible, math skills (e.g., by keeping graphs, comparing and contrasting), taking responsibility for something, creativity and imagination (e.g., when using materials)

Color – that colors are everywhere and you can make different colors and different shades of colors by mixing them (including how adding white or black to a color will make it darker or lighter), primary colors, and that "*life is so much more interesting with color*"

Sound – to stop and listen to sounds that they hear everyday and that if they really listen they can hear sounds they have never heard before, that even though they are not actively making sounds their body generates sounds, that different thing make different sounds when used in different areas, that some sounds are higher and some are lower in tone, that we can change sounds

Ramps – the concept of using ramps for accessing places that they couldn't access without a ramp, that the shape of an item affects how it rolls/slides, that ramps can make things go faster, the difference between rolling and sliding

Perceived Outcomes: Teachers

Most teachers learned something about the content areas on which the PEEP Explorer's Guide focuses. Only a few teachers (some of whom had taught similar units before) made comments such as *"there was not a lot of new material or learning"* or that *"everything was a refresher."* And, as one teacher put it, *"While I do not believe that I learned anything new about inclined planes per se, I very much appreciated the fact that the unit materials broke ideas down into the most basic of concepts."*

For the most part, teachers' written responses to an open-ended question about what they learned conveyed that they were pleasantly surprised by some new content learning, for instance that nighttime and clouds are really considered shadows, that certain objects floated rather than sank, that onion stems can grow to a foot tall in two weeks, that various color shades can be obtained by adding more of a component color or white/black, detecting differences in high and low/deep sounds, etc. Teachers also described new techniques they acquired for teaching the content area. *"I learned how to make the shadows appear darker and lighter,"* commented one teacher. *"I really like the idea of how you could mix colored cellophane; I had never though of that,"* said another. Many of the teachers' comments emphasized this latter point that teachers had not thought of some of the activities on their own.

In addition to techniques, teachers also gained new insight about their science teaching in general, for example, that *"science inquiry is not that hard to implement," "that science can be incorporated into daily activities," "the importance of letting the children take the lead and to ask open-ended questions to help them take the lead,"* and *"learning to look at the fine details to put together the larger picture."* One teacher elaborated on her teaching insights in this way: *"I learned to restrain myself from solving the problems for them. By stepping back and allowing them to discover 'what happens next' the children were able to contemplate and speculate what the outcomes would be."*

Finally, teachers discovered how interested children are in these topics. Comments that serve as examples of this theme include: *"I didn't realize something as simple as a shadow could be so interesting for children." "[I learned] that children are fascinated by plants and trees and that they feel a great sense of wonder and excitement when they realize that they can grow a plant or a tree themselves!"* In the color unit, in particular, teachers also gained insight into children's thinking about skin colors and racial differences, commenting that children were *"so much more accepting that adults."*

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