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Investigating an Expeditionary Learning Project

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An Invitation to Wonder

Mary Jensen and Jodie Duckett

The first-grade students were sitting in a circle on the carpet and discussing prehistoric animals and their thoughts on how dinosaurs acted. "Why do you think the dinosaurs were so mean?" asked Luke, eagerly. He looked at his peers, waiting to hear what they thought of his question. Gradually, the children began to raise their hands in response. They related his question to fieldwork they had done, books they had read, information posted around the room, and meetings with experts on prehistoric animals. Without any adult interjection or prompting, several children concluded that since some dinosaurs were meat-eaters, they had to attack each other in order to be able to eat and that is why they were so mean. Other children contended that the parent dinosaurs were protecting their children and therefore they were being mean to the dinosaurs that were trying to hurt their families.

I sat there amazed at what the children could do. This discussion had occurred among the children. The adults were there, but only to monitor, document, and listen to what the children had to say. The children had become question-askers and had well-reasoned conclusions without any prompting from the teachers who were also sitting in the circle. It seemed almost as if the teachers were not present and that the children were just sitting together and talking about a topic of great interest. I wondered to myself, "How had this community of learners evolved?"

Introduction

Expeditionary Learning Outward Bound (2003) is a comprehensive school reform and school development model that includes: (a) the Expeditionary Learning model, (b) a planning guide for teachers and school leaders, (c) a framework for professional development, and (d) a tool for evaluation of implementation. The five core practices of the Expeditionary Learning model are learning expeditions, active pedagogy, culture and character, leadership and school improvement, and structures. *Learning expeditions* involve project-based learning and topics and questions developed by the students. *Active pedagogy* provides benchmarks for teaching across the disciplines. *Culture and character* provide benchmarks for building and sustaining a strong school culture and fostering character growth. The *leadership and school improvement* benchmarks help guide leaders in how to support high achievement and continuous improvement. *Structures* help guide leaders in how to organize time, faculties, and students in ways that support Expeditionary Learning.

As I read about the core practices of Expeditionary Learning, I became intrigued and began to question how an Expeditionary Learning Project (ELP) is built and developed in an early childhood classroom. From studies describing various Expeditionary Learning Projects, I identified five key themes in their development:

1. the importance of discussion and "Science Talk" in a project;
2. the importance of fieldwork in a project;
3. how students develop ideas in a project;
4. how a teacher promotes student ownership of learning through a project; and

5. how a teacher prepares and plans a project on an individual basis and with colleagues and students.

Teachers' written accounts of their Expeditionary Learning Projects inspired me and helped me to design a classroom investigation that would extend my own understanding. Through observations, interviews, and workshop documentation, I wanted to learn more about the evolution of a project. I wanted to observe how a project evolves and to better understand the developmental process behind it. I also believed that such an investigation of an Expeditionary Learning Project would help me, as a beginning teacher, to implement a similar project in my own classroom.

Literature Related to Implementing Expeditionary Learning Projects in the Early Years

Vaisenstein (2000) described two exploratory projects in her kindergarten classroom; they involved bubbles, puddles, and chalk. The bubbles exploration project began with a question: How can you make bubbles with what you have in front of you? She allowed her children to experiment with a variety of objects to make bubbles. Throughout this exploration, the children were observing, discussing, raising questions, solving problems, finding answers, and communicating their results. She discussed her role as a teacher in the exploration and how she initially wondered if the children would need guidance. She gradually realized that exposing the children to the real process of making bubbles allowed for them to develop their own ideas. Her role as the teacher in preparation and planning was to identify what activities and questions would truly engage the minds of the children. Freedom to explore allowed the children to develop their own ideas. Vaisenstein realized that this scientific exploration and observation process allowed children to become observers of the world and to use their observations to come up with questions or ideas to explain what they observed. In a second exploratory project, the class discussed the idea of evaporation, as they outlined puddles with chalk and saw how the puddles got smaller over time. In this exploration, the children developed their own premises, tested them, and changed them as needed. Giving children the needed time and space to work allowed them to develop their own thoughts or ideas. Vaisenstein's project descriptions helped me to recognize the importance of the teacher's role in allowing children to develop their own ideas, preparing and planning for an exploration, and promoting student ownership.

In her article, Anderson (2002) discussed the use of science talks and the importance of discussion in Expeditionary Learning Projects. A classroom project on trees began with students doing fieldwork. Each student picked a tree to examine and learned more about it by observing, touching, and looking at different parts of the tree and by discussing the height of the tree. After returning to the classroom, the teacher began a science talk by questioning students on what scientists do. Science talks are open discussions among children that center on a big question. Teachers use science talks as a way to learn about children's understanding of a concept and as an assessment tool. The talks allow children to think like scientific observers and to share their thoughts with their peers in order to build a hypothesis. Science talks can occur in the beginning, middle, or end of a project by providing a new path for research or an opportunity for the children to reflect on what they have done. Teachers set guidelines for the discussion and then open the discussion up to the students while sitting back and observing and recording the discussion. Afterwards, the teacher holds a short, but serious, debriefing on what has been discussed. The teacher assesses the science talks and uses the children's hypotheses to plan activities, fieldwork, and experiments that will help them to test their hypotheses. The role of the teacher is to provide opportunities for the children to investigate their ideas and to help them to get to a higher level of thinking. Anderson's description of the tree project reinforced for me the importance of discussion and also the role of the teacher in preparing for and planning a project.

Thulson (2004) offered another description of an Expeditionary Learning Project—a counting-worms project—implemented in his first-grade classroom. It began during a tree project when a student brought in a colony of Red Wigglers. When the children began to take an interest in the worm colony, the teacher suggested that they could conduct a periodic worm census. In six small groups, the students counted the worms. During their counting sessions, they decided to use Unifix cubes, which allowed them to represent the number of worms counted and to make visual comparisons. The worms were repeatedly counted, until one student questioned why different groups had different numbers of worms. Through discussion, the children hypothesized that the worms preferred the bottom of the tub. They decided to count worms with a scoop from the top and a scoop from the bottom. Their investigation revealed that there were more worms at the bottom of the tub. Every time the children counted the worms, new hypotheses were formulated and tested through experimentation. The children were able to develop their own ideas through discussion and experiments. This project story helped me to recognize how the teacher, by allowing the children to test their hypotheses, was respecting their ideas and promoting their ownership of the project.

Northrop and Vonck (1998) implemented a project in a summer program sponsored by the Lincoln Consolidated Schools Community Education Program. Their project was centered on a student-developed question: Is Paint Creek polluted? The question emerged from a group discussion about the creek behind the school. The students met with a local adopt-a-stream group to learn six tests that they could use to test the water and to answer their question. The six tests were adapted to their project. The tests required the students to learn about pH levels, to gauge the velocity of water, to take into account the dimensions and temperature of the creek, and to observe the surrounding areas of the creek. Although the testing strategies recommended by the Adopt-a-Stream group provided a framework, the teachers promoted student ownership of the project by inviting students to develop their own testing processes. Daily field trips to the creek were taken by the class, not only behind the school but also along the creek at various spots. Students recorded their answers and organized the information that they gathered into an informational video about the project and the creek. The video was shown to local officials and was donated to local schools and libraries. This project used discussion and fieldwork as important components of the project. The study illuminated ways that students can be allowed to use their own ideas to develop a project and ways that teachers can promote student ownership of a project.

Another key component of Expeditionary Learning projects is facilitating class discussion. Fassler's (2001) recent study of discussions in an English language learning kindergarten classroom was relevant to my understanding of this component. In her study, the researcher discussed the importance of discussing children's ideas as soon as they emerge. Fassler reported that one 5-year-old boy in the kindergarten classroom made a statement that "Spring was fighting snow." The teacher directed the attention of the class to what the boy had said and then included the rest of the class in this new discussion thread. After the teacher and the class had discussed the comment, the researcher suggested that the teacher might encourage the children to write, draw, or act out the comment. In this way, the researcher helped to extend the idea of appreciating children's spontaneous and novel comments. Through the use of open-ended questions, the teacher stimulated the children's thinking, learned more about what they thought, and encouraged them to share their ideas with others. By capitalizing on students' ideas, a teacher promotes development of their thinking and allows students to view themselves as contributing to the classroom learning community.

In another article related to project development, Marxen (1995) described the use of physics activities in a kindergarten classroom. In one episode, two children were experimenting with a ramp in the science area of the classroom. The teacher observed the

children and then encouraged the children during group time to discuss their ramp with the rest of the class. The teacher introduced the word "ramp" and allowed their discussion to evolve. From the discussion, the children developed a list of different ramps, and the teacher then suggested that they look for pictures of ramps at home. One child brought in a picture of a parking ramp, and the resulting discussion developed into a field site visit to a parking ramp. Marxen reflected on how children's experimentation and active play throughout the ramp project contributed to its success and how the teacher might extend the project to the larger idea of how things move. Another important aspect of this project was the role of the teacher. Marxen described five roles of the teacher: "a presenter, an observer, a question asker, a problem poser, and an environment organizer" (p. 216). For example, the teacher might present ideas in a large group session and later offer related exploration activities during playtime. Through questioning and observing, the teacher learns more about the children's thoughts and interests, how to interact with the children, and how to develop the curriculum and pose problems. Overall, Marxen emphasized the teacher's role in accepting children's ideas and providing a setting in which these ideas can develop.

Chard (1998) offers a complementary view of how to develop a learning project. Her book on the Project Approach provides additional ideas on ways to structure and plan a learning project. She describes a project in terms of its three phases and the roles that the teacher and children have in each phase. Phase One begins with an opening event that stimulates interest for the class. A discussion ensues with the building of a topic web and the listing of questions that the children would like to investigate. In Phase One, the teacher's concerns center around what the children know and what they can learn. Phase One resembles the initial phase of topic selection, teacher observation, and a field-site visit in an Expeditionary Learning Project. Phase Two of the Project Approach revolves around fieldwork for the project, with preparation for a visit, the actual visit, and follow-up for the visit. Another aspect of Phase Two is that children talk with experts on the topic either during a field-site visit or during a special classroom visit. The teacher's concerns in Phase Two center on fieldwork and its applications or extensions in the classroom. An Expeditionary Learning Project is similar in its emphasis on collecting, organizing, and analyzing data from field-sites and interviewing field-site experts, although fieldwork might begin earlier in this kind of project. Phase Three of the Project Approach is the culminating event. This can involve sharing, communicating, or presenting the work the class has done. Another aspect of Phase Three is making the new knowledge personal to each student. The teacher's concerns for Phase Three revolve around the culminating project and the activity that will make knowledge personal. This phase resembles the exhibition night of an Expeditionary Learning Project. Throughout the three phases of the Project Approach, children are at the center of the project and develop their own ideas and their ownership of the project. The Project Approach connects with the themes identified for an Expeditionary Learning Project in that it too recognizes the importance of discussion, fieldwork, student ownership, and teacher preparation and planning. An Expeditionary Learning Project, however, seems to provide more guidance to teachers on ways to help students develop their own ideas.

Research Questions

As I read about learning expeditions and other project work, I thought of a variety of questions that I had about the evolution of an Expeditionary Learning Project. Each question addresses a theme of interest to me that is reflected in related professional literature. My questions are:

- What is the role of fieldwork in an Expeditionary Learning Project?
- What is the role of discussion in an Expeditionary Learning Project?

- How does a teacher promote student ownership of ideas in an Expeditionary Learning Project?
- How are students able to develop ideas through an Expeditionary Learning Project?
- How does the teacher prepare and plan an Expeditionary Learning Project on an individual level and with colleagues and students?

Methodology

To help me learn more about the evolution of an Expeditionary Learning Project, I observed a first-grade class at the Upstate Charter School and documented the development of a project entitled Puppestory (Puppets and Prehistory). I collected data in a number of ways. The various types of data collection that I used helped me to triangulate my findings and to answer my research questions. I visited the classroom on four separate days while the class was working on their expedition project, including visits with a puppet expert. As I observed the project develop, I recorded and transcribed several whole group discussions, including a Science Talk. The conversations during fieldwork (i.e., visits with the puppet expert) and discussions were recorded and transcribed, and I took photographs of fieldwork, discussions, and artifacts. Interviews were done with one of the two classroom teachers as well as the children who were involved in the Expeditionary Learning Project. I interviewed the lead teacher for this project to learn more about her preparation and planning for the Expeditionary Learning Project and how she promoted student ownership of the project. The children discussed their changing ideas as they engaged in discussions, fieldwork and other project activities. In addition, I attended the Project Expedition Night, which was the puppet show on prehistory. The Upstate Charter School also held a two-day national seminar on Expeditionary Learning Outward Bound (ELOB) at the end of October. Attending this workshop and taking notes helped me learn more about how the teachers develop a project.

Data Analysis

In order to address my research questions, I coded and analyzed my data for each question. I analyzed five types of data: records of class discussions, records of interviews with students, records of the teacher's interview responses, documentation of student work, and field-notes from an ELOB national workshop and seminar. As I examined the data, I looked for themes that related to my research questions. I used color-coding to highlight these themes when they appeared in the data. As I looked through the data, I constantly compared the data that I had collected earlier in the study to the data that I had collected later (Glaser & Strauss, 1967). I also troubled the data to find pieces that did not fit with my questions or that raised additional questions (Lincoln & Guba, 1985). Through triangulation, I found similarities within these five sets of data and was able to see how the data addressed my research questions. These findings were used to set up a chart where I listed each question and then listed examples related to the question in the data. (See Appendix A.)

Findings

My coding and analysis of the data revealed that my research questions and themes were intricately connected. For example, students developed some of their ideas through fieldwork. This was apparent when children were talking about the fossils they found in an abandoned salt mine about an hour from the school or the process they used to make their puppets. Discussion during fieldwork was not only used to develop students' ideas but also promoted student ownership of ideas and aided teacher preparation and planning. Science Talks, a planned component of the curriculum, also allowed students to develop their ideas through sharing with other students. For example, in a Science Talk based on a child's question about why dinosaurs were so mean, the children shared their ideas on why dinosaurs acted as they did. The children used knowledge that they had constructed through fieldwork to support their thoughts. Many students mentioned that some dinosaurs

were meat-eaters and that these dinosaurs had to attack each other in order to be able to eat, which was why they were so mean. Throughout the project, teachers promoted student ownership of ideas in the ways they talked with the children while they were working and in large group discussions, and through the use of fieldwork in the classroom. When giving directions to the large group of children, for instance, the teacher would ask students what they thought should happen or what should be included in the activity. In this case, giving directions was used as a way to increase student knowledge about the topic. During my data collection, I found that the children were constantly developing and refining ideas in a variety of ways. Children were participating in fieldwork, holding discussions, helping to plan activities, and interacting with the teacher as well as with each other. Children were sharing their ideas and developing their ideas through writing, talking, singing, and moving. Teacher preparation and planning were connected with the fieldwork done by the class, the various discussions held, and the ability of students to develop their ideas.

As I reviewed all of the patterns of data in Appendix A, I realized that many of my findings were interconnected and that the five research themes were intertwined rather than distinct components of an Expeditionary Learning Project. Nevertheless, a number of insights for each of the five research questions or themes emerged from the data. What follows is a summary of those insights.

Discussion

Discussion played a significant role in the development of the Expeditionary Learning Project. Discussion occurred on a regular basis throughout the day. For example, the teacher held discussions about how the children should act when an expert is visiting and about the rules that should be followed when they are participating in a Science Talk. The teacher believed that discussion could be used to help children either socially or in formal learning. Discussion also was used throughout the expedition as an opportunity for children to share information with each other, to check their understanding, and to build their schema. In one instance, I observed the children participating in a Science Talk about why dinosaurs were so mean. The original question about dinosaurs being mean came from a student, but the teacher used this discussion to extend children's thinking about broader curriculum concepts, i.e., animal defenses and food chains. As the children had their Science Talk, they followed the established rules, shared their ideas, and agreed or disagreed with each other. In fact, one student stated that babies could only learn from their mom or dad. Then, later on in the discussion, she disagreed with herself, because she now thought a baby could learn from someone else, if the parents died. Children were taking their ideas and expanding on them based on what other children thought.

Fieldwork

Fieldwork was pivotal in the development of an Expeditionary Learning Project. Fieldwork is something that can be done inside and outside of the classroom. For this puppestory project, children traveled to an abandoned salt mine to dig for fossils, visited an earth museum and the local museum and science center to look at fossils, and had a puppet expert come into their classroom to teach them how to make puppets. The teachers viewed fieldwork as a tool to pique children's interest and to spark their questions. The teachers focused their planning for fieldwork on understanding what to do on a fieldtrip. For this expedition, the teachers visited the abandoned salt mine with a geologist and dug up fossils. I documented fieldwork for this project, including visits with a puppet expert, through photographs and written records of what the children did and said while they were on field visits. Each child also had an expedition folder that contained samples of the work they had done throughout the project. I looked through expedition folders, and I found reflection pages, where the first-graders had made drawings of what they saw while they were doing fieldwork at the museums. Their folders also contained rough drafts of what their puppets were going to look like. These drafts were completed with the puppet expert, whose visit was considered part

of their ongoing fieldwork. Through discussions with me about their fieldwork, the children were able to explain what fossils are and what they tell you. One child told me that fossils tell you how an animal lived and what it looked like. The children repeatedly told me that fossils are signs of an animal that can be in the forms of teeth, bones, or footprints.

Development of Student Ideas

Students developed their ideas in this Expeditionary Learning Project in a variety of ways. The children often worked in crews to develop their ideas. For example, during a background-building workshop on animals from each time period, the children were assigned to crews and asked to record facts about their animals. Each child developed and contributed three sticky notes of information about their animals. Through talking while they were writing and drawing, they deepened their understanding of the animals Deep processing also was evident in their construction of puppets. First, a visiting puppet expert taught the children how to make the puppets. Next, the children drew puppet plans for what their puppet would be made out of and what it would look like. Then the teachers helped them to construct the puppets, and the children painted the puppets and decided how their puppet would move. The puppet-making process required that the students use their knowledge of their animal to help them to build a replica of that animal. Another part of this Expeditionary Learning Project was a prehistory book. Children made individual books about the animals from the specific time period their crew had studied. Each page had to include a setting, a main character, a picture that filled the whole page, interesting details, a picture that matched the words, and important information to remember about each animal. The children contributed to the list of components for each book page, and they learned about ways to address each component when making their pages. The parameters for the book pages were decided after the children had developed a variety of schema related to the animals and were able to talk, write, and discuss each part of their pages. As the project progressed, students developed their ideas and put their ideas to use in many ways.

Student Ownership

Throughout the Expeditionary Learning Project, teachers promoted student ownership of ideas. Children were actively involved in the expedition and were building their schema. One idea that the lead teacher emphasized in her interview was the importance of children developing questions. She said that it was important that the children not see teachers as the only question-posers in the classroom. This teacher asked students to develop questions before fieldwork and before the arrival of a guest speaker, thus promoting student ownership of these activities. All around the classroom, lists of questions that students had asked were posted. The teachers and students frequently referred back to these questions to see if they had answered them or if they still had lingering questions. In addition, teachers often interacted with the students about what they were doing and helped them to build their schema. I observed a conversation between a teacher and a student where the teacher offered different suggestions for the student to consider and gently asked if maybe one of these ideas would work better. After reflecting, the student agreed that her own idea was not the best and that one of the teacher's suggestions was much better. The teacher never told the student that she had to change what she was doing; she only offered other options for consideration. The teacher also promoted student ownership by letting the children, at times, work uninterrupted without much input from her teacher.

Teacher Preparation and Planning

Teacher preparation and planning for an Expeditionary Learning Project is an intricate process that takes place on an individual basis as well as with colleagues and students. For this particular project, the process began in the last three weeks of August when the teachers got together for staff development. The process began with key documents—the school's Learning Expedition Curriculum Framework and the State Learning Standards—and a loose idea of what the teachers wanted to teach. From there, teachers identified and discussed

big ideas or concepts they wanted the children to remember in ten years. For this learning expedition, the big ideas were: living things around us have gone through changes over time and there is evidence (fossils) of what lived here long ago. Next, the teachers developed guiding questions, which are inquiry questions related to the big ideas that the children are going to investigate through the project. The guiding questions for puppestory were "What lived here long ago?" "How do we know?" and "How can fossils be clues to the past?" The final product is what brings everything together. The final product planned for this learning expedition was a prehistory book and a puppet show, which was presented to parents during exhibition night. Next, the teachers considered the flow of what the children would be doing during the expedition. Flow includes the learning experiences that the teachers have planned for the children, the fieldwork that the children will participate in as learners, and the work that will be done to complete the final product. This part of the plan was completed by a team of teachers through a process of "mucking about" or discussing and talking about their different ideas. The teachers then participated in critique sessions where other teachers noticed and wondered aloud about their plan or wrote post-it notes and stuck these notes to the plan. For this expedition, most of the initial planning was done during the summer, so the children did not play a role in that phase, but later in the project, they did contribute to what happened in the classroom. (For an overview of the Puppestory Expeditionary Learning Project and its activities, see Appendix B.)

Once an Expeditionary Learning Project has begun, the children can affect the pace of a project or can affect what is covered. For example, in this project, the teacher looked at the prehistory books that the children were making and noticed how they were talking in the present tense about prehistoric animals. As a result, the teacher initiated a group discussion on how to use the past tense to communicate what happened long ago. During an Expeditionary Learning Project, the teacher's ongoing observations of the children's work affect what is taught. Another aspect of the teacher's preparation for a project is reflection on fieldwork, which includes how the children will participate as learners. In this expedition, it was important to talk with the puppet expert about what she would be doing in the classroom. During one visit, the teacher was unhappy with how the children transferred the ideas that they had learned from the puppet expert to making their puppets. She talked with the puppet expert and had her review information in order to teach the children more about puppet construction.

The teachers plan specifically for their students during their planning time. At this time, they look at their plans to figure out what they needs to cover in various content areas and make sure that they are on target with the progression of the expedition. It also is important to keep in mind that planning and preparing for an Expeditionary Learning Project is an ongoing process and changes are expected.

Overall, the development of an Expeditionary Learning Project in a classroom requires a number of key steps or elements. The project begins with significant planning and preparation by the teachers. Once a plan is developed, the Learning Expeditionary Project is implemented in the classroom. The children participate in discussions, including daily talks and science talks, and use fieldwork to build their knowledge. The students develop ideas throughout the Learning Expeditionary Project, using drama, writing, reading, and talking. The teachers promote student ownership of ideas and activities, by encouraging children to formulate questions and to work together towards the final product. Without these key elements, an Expeditionary Learning Project would not be successful.

Significance of the Findings

When I began this investigation, I had little background knowledge of Expeditionary Learning Outward Bound. Initially, I had read a few articles on this topic and had browsed through the Upstate Charter School's website. I also knew that children at this school were involved in Expeditionary Learning Projects. Through my literature review, I found five

themes that could be found in most projects. As I began to observe in the first-grade classroom, I started to piece together what a project entailed. I realized what an important role discussion and fieldwork play in children's learning during a project. I saw how children had the ability to sit in a circle and talk with each other about the ideas, while they built their schema. Audiotapes of conversations that I had with the children allowed me to better understand how they were able to develop their ideas and produce a final product. In the classroom, I saw the ways that the teachers helped to promote student ownership throughout the project, including the display of photographs and other forms of documentation around the room and in folders. Through attending the ELOB national workshop and seminar, I learned about the kind of planning and preparation that goes into developing a successful Expeditionary Learning Project.

My findings relate to my literature review and the classroom research reported by other teachers. My observations confirmed that an Expeditionary Learning Project is similar to the Project Approach discussed by Chard (1998). The Project Approach is broken into three phases and although a Learning Expedition does not have phases, the ideas covered in the Project Approach phases can be seen throughout a Learning Expedition. For example, Phase One of the Project Approach begins with a stimulating event that sparks questions for the children. In a Learning Expedition, the children participate in fieldwork that peaks their interest and sparks questions for them. Phase Two of the Project Approach involves a variety of fieldwork. Fieldwork in and out of the classroom is a key aspect of the Expeditionary Learning Project. Phase Three includes a culminating project, which is similar to the projects presented at Exhibition Night. One difference that I found was that the Expeditionary Learning Project seems to emphasize strategies for guiding development of student ideas more than the Project Approach does.

My findings also connect back to other classroom research that I reviewed. Vaisenstein (2000) discussed the role of the teacher in planning and preparing activities that engage the children. This is a key element in an Expeditionary Learning Project. The teachers plan learning experiences that are going to engage the children and let them develop their ideas. The children need to be able to develop their own ideas through observing, discussing, raising questions, finding answers, and communicating results. The children that I observed working on an Expeditionary Learning Project were engaged in such activities on a regular basis through their work in crews and participation in discussions. Anderson (2000) discussed the use of Science Talks, and the Expeditionary Learning Project that I observed used these talks on a regular basis. The *science talk* centers on a key question like the one used in this Expeditionary Learning Project: Why were dinosaurs so mean? Teachers also use science talk as an assessment tool. The teacher in this study mentioned that she had videotaped two science talks for this reason. Northrop and Vonck (1998) discussed the teacher's promotion of student ownership of ideas by allowing them to set parameters for their project. In the Puppestory Expeditionary Learning Project, the teacher involved the students in setting parameters for what needed to be included on the pages of the prehistoric book. Marxen (1995) described the role of teacher as being flexible with time and the curriculum, allowing the children to get their materials and planning activities that challenged children on a variety of levels. These characteristics could be seen throughout the Puppestory Expeditionary Learning Project. Many times when I observed, time was not a limiting factor in the children's learning. Children were getting whatever they needed, whenever they needed it, and the activities they were participating in were challenging on a variety of levels.

The Curriculum Framework for Expeditionary Learning that the school in this study used entails a considerable amount of planning. I believe, however, that Expeditionary Learning Projects are a wonderful way for children to learn. Expeditionary Learning Projects can

help children to build their own schema. Children in an Expeditionary Learning classroom have the freedom to develop and share their ideas in the classroom. Throughout this investigation, I grew in my understanding of how to promote children's learning and their feelings of ownership in learning through discussions, including Science Talks, fieldwork, crew activities, and the use of various forms of representation.

To be able to implement an Expeditionary Learning Project, it is important to have a well-developed curriculum framework that can be used to build learning expeditions. As an area for further research, I think it would be important for teachers to learn more about how a school, such as the Upstate Charter School, developed and refined their curriculum framework.

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Appendix A. Data Categorized by Source and Five Themes of Learning Expeditions

	Discussion	Fieldwork	Students Develop Ideas	Student Ownership	Teacher Prep/Planning
Class Discussion	• Discussions on how to act with expert, and rules followed during a Science Talk • Student share work with discussions • Science Talk – Why are dinosaurs so mean?	• Children can discuss what fossils are and tell you about them • They describe fossils as teeth, bones or footprints	• Puppet Expert • Make puppet plans for individual puppets • Parameters for book - What needed to be included on each page of the prehistory book	• Talk about questions they have about the expedition • Share questions with the class • Science Talk – children share their ideas	• Teacher have a basic idea of what they want to do and get input from the students • Rules for the Science Talk • Parameters of the prehistory book
Puppet Expert	• Discussion on how they make puppets including: how puppets would move and what materials would be included	• Puppet Plans • Learning about how to make puppets • Making the puppets	• Deep processing of ideas • Learn how to make a puppet • Put ideas learned in puppet plans	• Puppets are their own ideas • Ideas are put on paper in their puppet plans	• Needed to talk to puppet expert about what will happen during the visits • Lack of communication
Pictures	• Science Talk rules were made during a discussion • Discussion with puppet expert	• Documentation through pictures - before and after fieldwork • Puppet plans/making puppets	• Crews recording facts about animals – background building knowledge • Puppets – how they used knowledge	• Questions students have around the classroom • Facts about animals	• Teachers plan fieldwork, puppets, and book • Making of the puppets with the puppet expert
Interviews with Children	• Constant discussion • Children work in crews	• Abandoned salt mine • Fossils tell you how an animal lived, what it looked like, signs of the animal • Expedition folder - reflection	• Working in crews – children talk/write/ read • Know different steps to make puppets • Use prior knowledge/ schema to build puppets	• Build on schema • Teachers are constantly helping children form schema • Teacher/student conversation on changing puppet idea	• Fieldwork, puppet show, and prehistory book • Knew their final project

Interview with Teacher	• Social aspects and formal discussions • Children share info with each other to check schema • Used student idea to approach animal defenses and food chains in Science Talk	• Pique interest and spark questions • Teacher does the fieldwork first – went to abandoned salt mine with a geologist to dig up fossils	• Crews – talk while writing/ drawing deepens understanding • Help children construct puppet but follow their directions (puppet plan)	• Children develop questions • Teacher not only question-poser • Answer questions or look for lingering questions • Develop questions before experts/fieldwork	• Looking at student work can affect the pace of the expedition • Reflecting on fieldwork on an individual basis
Site Seminar	• Discussion on planning each grade-level expedition • Check ideas with fellow teachers	• School leader/ Curriculum specialist helps set up fieldwork – get experts or plan fieldwork outside of the classroom	• Guiding questions, big ideas, and flow • All help student development	• Guiding questions direct the expedition and what the children will learn throughout the expedition	• Process – curriculum framework, big ideas, guiding questions, final product, flow • Mucking about • Critique Sessions

Appendix B. Overview of the Puppestory Expeditionary Learning Project and Its Activities

Summary: This project will focus on three time periods of prehistory (warm seas, dinosaur times, and ice age). Using local fossil finds the students will conduct in-depth investigations of animals living during those periods. The students will be grouped in crews of three to research an animal from each time period. Each child then will create a page about each of the three animals researched to include in an individual book and will make a puppet representing one of the three animals researched for the final presentation.

Big Ideas: Living things around us have gone through changes over time. There is evidence (fossils) of what lived here long ago.

Guiding Questions: Throughout the project, the students will explore the answers to the following questions:

1. What lived locally long ago?
2. How do we know?
3. How can fossils be clues to the past?

The Flow of activities for the twelve weeks of the project:

Week	Learning Experiences	Project: Prehistory Book/ Ideas – Writing Traits	Project: Puppets
One	• Read books about rock collecting • Studying/Sorting rocks	• Introduction of 6+1 Writing Traits • Read book about fossils	• Introduction to puppet show

Two	• String story • Begin timeline • Studying/Sorting rocks • Talk abut animal defenses • What does a scientist do? • Abandoned salt mine field study	• Start developing an anchor chart for ideas • Use picture as an exemplar (with some text), clear subject, details, picture matches text	• Using puppets in dramatic play • Puppets for greeting
Three	• Warm Seas Immersion • Expert visit classroom • Generating Questions • Build background knowledge at workshop (slides, poetry, text) • Sorting rocks – classify/identify	• Crews of three will research warm seas creatures (browse books) • Mini-lessons – compelling leads • Pick animal for book/puppet	• Using puppets in dramatic play • Puppets for greeting
Four	• Dinosaurs immersion • Books • Background building knowledge • Science Talk (What happened to dinosaurs?) • Generating questions	• Crews of 3 research dinosaurs • Begin research on warm seas creature • Mini-lesson – picking relevant details to support ideas • Begin draft of book page • Pick dinosaur for puppet/book	• Puppet show snippets (hook kids into characters and puppets)
Five	• Ice age immersion • Background building knowledge • Generating questions • Science talk	• Crews of 3 research ice age animals • Shared writing – generate sentences to match pictures • Finish draft of warm seas/edit • Group critique (4th graders) • Pick creature for puppet/book	• Puppet Expert – how she makes puppets to fit a certain character
Six	• Field study at earth museum • Science talk	• Final book page for warm seas creature • Writing mini-lessons	• Assign kids their puppets for show • Puppet plans- look at materials – how will you make puppet/what makes sense
Seven	• Go on a fossil walk with expert to look at strata and sketch • Field study at local museum and science center • Science talk	• Research on their dinosaur • Draft of dinosaur book page • Writing mini-lessons	• Puppet making with expert and adult help
Eight	• Field study at local museum and science center • What does a scientist do? Brainstorm ideas	• Peer critique with 4th graders • Make changes to draft • Final book page on dinosaur	• Groups begin to develop scripts for show • Warm seas – opera • Dinosaur – science talk • Ice age – spirit read
Nine	• Science talk	• Research on their ice age creature • Draft of book page	• Puppet technique with expert
Ten	• Science talk	• Peer critique with 4th graders • Make changes to draft • Final book page on Ice Age	• Finish final touches to puppets

Eleven	• Science talk	• Any final touches to each page • Conclusion page	• Critique of our puppet show by expert • Rehearsal!
Twelve	• Reflective bubble	• Post-assessment	• Exhibition night