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The influence of a community-based science experience on young black children's perceptions of science

Nesbitt, James E., Ph.D.
The Ohio State University, 1991
THE INFLUENCE OF A COMMUNITY-BASED SCIENCE EXPERIENCE ON YOUNG BLACK CHILDREN'S PERCEPTIONS OF SCIENCE

DISSERTATION

Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy in the Graduate School of The Ohio State University

By

James E. Nesbitt, B.S., M.A.

* * * * *

The Ohio State University

1991

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1991
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CHAPTER I
INTRODUCTION

Theoretical Model

The theoretical base for this research has its origin in the hermeneutic phenomenological paradigm. Phenomenology is a self-critical methodology for reflexively examining and describing the lived evidence (the phenomena) which provides a crucial link in our philosophical and scientific understanding of the world (Reeder, 1986). This methodology provides a means for uncovering and describing the structures, the internal meaning structures, of lived experiences (van Manen, 1990). According to van Manen (1990), lived meaning refers to the way that a person experiences and understands his or her world as real and meaningful.

This meaning takes place within the "lifeworld" of an individual or the "world of immediate experiences". These terms are derived from the work of Edmund Husserl. His philosophical position influenced the development of this field of inquiry. Husserl believed that any understanding of the world meant a return "to the things themselves"
(Stewart and Mickunas, 1974). He defined "thing" as a phenomenon or anything that can exist in our conscious thought. These conscious thoughts constituting our experiences are not isolated events but are events influenced or shaped by our values, culture, other persons, social institutions, and practical aspects as well as other things (Stewart and Mickunas, 1974). The attempt to objectify these human experiences removes from these experiences the very essence of the experience.

Since experiences are products of the human mind, they are by nature subjective. This subjective world constitutes a temporal context for human actions and contains systems of meaning for individuals within which they understand themselves, things, and other persons (Stewart and Mickunas, 1974). The subjective lived-world is the basic context of human action and phenomenology permits the development of a description of the very essence of human action.

The interpretation of these human actions is the concern of hermeneutic philosophers. These human actions provide a context for structuring our reality about the world. Our reality of the world is a product of our experiences and these experiences form our worldview. Yet worldviews are only tentative, hypothetical, apt to be revised on the basis of new evidence and new experience (Bulhof, 1980). The worldview of children represents this
perspective since children are constantly constructing their world and incorporating new information into their already existing reality. In contrast, Kuhn (1970) states that worldviews are not so tentative but are interpretations of reality that are undoubtly resistant to change. The researcher for this study supports the perspective suggested by Bulhof (1980) since this study provides research conducted with children.

Regardless of one's perspective, worldviews have been shaped by many social and cultural influences. These views are concepts rooted in the language of the culture. This language is context-specific and phenomena are expressed and gain meaning within this context. Research studies that are sensitive to this context will offer a perspective closer to the reality of the individual.

This theoretical model provides a framework for analyzing the reasons why blacks are not going into science. Their perception of science and scientists, in addition to socio-historical influences and the socialization process affect the way blacks interpret their experiences in science. All of these factors help determine the meanings black children will attach to their experiences in science and the value they place on science and science-related careers.
Need And Rationale For The Study

Although there are many career opportunities for blacks in science, most are not making the choice to become scientists. In 1988, blacks accounted for only 2.6 percent (139,000) of all employed scientists and engineers (Malcom, 1990). They earned only 5 percent of the baccalaureates and only 1 percent of the PhD's in science and engineering (The Task Force on Women, Minorities, and the Handicapped in Science and Technology, 1989). This less than representative number of blacks in science is cause for concern.

Data from the College Entrance Examination Board in 1984, reported that 59% of the black students had taken only one course in the biological sciences and 38% and 31%, respectively, had taken only one and two courses in the physical sciences. According to Bechtel (1989), a watered-down curriculum devoid of higher-level mathematics and science courses will not prepare black students for the challenges of the science field.

The perception of science and science instruction by young black children may offer some perspective on the underpreparation and the underrepresentation of blacks in science. These conceptual processes structuring their perceptions of science experiences are personally constructed. These personally constructed views act as a
personal theoretical lens that influences how one views the
world (Clemison, 1990). The way individuals view the world
determines their experiences and their history (Myers,
1990). These views of the world are based upon one's own
particular belief system (Myers, 1990). Our beliefs are
contextually-dependent. Within this context, meanings and
values are formed. These meanings and values become the
basis for interpreting new experiences as meaningful.

What makes an experience meaningful is its immediate
fitting into the patterns of significance which we already
entertain about our lives or about that extension of them
which is society (Howard, 1982). This is referred to as the
"connectedness", or the "for-us" structuring of human
phenomena. Encouraging young black children to describe the
experiences in science that provide this "connectedness" in
their lives will promote an understanding of their reality.
This understanding may offer some insight into the
underrepresentation of blacks in science courses as well as
in science careers. This lack of representation diminishes
the pool of scientific contributions to society. This lack
of representation will also influence the way we do science;
i.e., which problems will be addressed, which problems will
receive priority in terms of research and funding, and what
methods will be used to resolve these problems.
A remedy to the current situation will require a critical analysis of the lifeworld of black children. It is not enough to implement programs, procure funds, or provide collaborative efforts between the schools and universities or businesses if we don't understand the significance or the meaning science plays in the life of the black child.

Research designed to understand black children within their socio-historical context is research that can provide meaningful answers to many of the questions related to blacks and science. As Malcom (1990) states:

Only by increasing the amount of time black children are engaged in meaningful educational activity in science; by reaffirming the historical, contemporary, and future role of blacks in science and engineering; and by valuing and recognizing participation in these fields within our communities and families can we ever expect to change the trickle of talent which currently flows from the pipeline into a flood.

p. 257

Statement Of The Problem

The research problem is concerned with revealing and understanding the perceptions of young black children who are experiencing science in a community setting. Understanding these perceptions may also help us understand some of the problems related to teaching science in a traditional classroom setting.
In traditional classroom settings, the poor performance of blacks in high school science and their marginal enrollment in the more rigorous science courses has restricted the number of blacks in the science pipeline (Anderson, 1989). Strategies that encourage the participation of blacks in science, such as community programs, may offer ideas for restructuring the science curriculum. The objective of this restructuring is to widen the pipeline of access to science careers for minorities.

The following section provides a list of terms that are related to the methodology that will be utilized to study the underrepresentation problem of blacks in science.

**Definition of Phenomenological Terms**

1. bracketing- describes the act of suspending one's various beliefs in the reality of the natural world in order to study the essential structures of the world.

2. essence- the inner essential nature of a thing, the true being of a thing.

3. hermeneutics- an interpretive methodology utilized to gain the true meaning of an experience.

4. lifeworld- the world of ordinary, immediate experiences.

5. lived meaning- refers to the way that a person experiences and understands his or her world as real and meaningful.

6. phenomenology- is a descriptive methodology utilized to describe how phenomena present themselves in lived experience.
7. reduction- in general terms, means assuming a frame of mind that facilitates coming to terms with a phenomena or experience as it is lived through.

8. reflexivity- refers to an encountering of "the self" while describing phenomena of the lived world.

9. worldview- the intellectual and intuitive interpretations of reality.

van Manen (1990) p. 176-187
Research Efforts

Science as it is practiced today is viewed as deriving its roots largely from Western (that is, European) cultural development (Malcom, 1990). While recognizing that Egyptian, Arabic, Greek, Chinese, and other cultures have made significant contributions to the ideas in science (Diop, 1974, Hilliard, 1990, von Sertima 1983), those contributions generally are not viewed as the focal point of today's science (Malcom, 1990).

Historically, the scientific contributions of blacks have never received professional recognition (Bechtel, 1989). The world of science and research was considered the private domain of white males. As a result, blacks became socialized to a greater degree into careers that were entertainment and service-oriented and less into careers that were analytical and scientific.

This socialization process is a factor influencing the way we live our lives. According to Myers (1990), our perception of the world is influenced by the way we have
been socialized. Our beliefs and values have been shaped by this process. These beliefs and values influence the assumptions that we make about our world and these assumptions are formed within a socially-constructed context. According to Mishler (1979), human action and experiences are context-dependent and can only be understood within their contexts. Research on the underrepresentation of blacks in science has utilized positivistic techniques (Thomas, 1986) or has removed or ignored the context in which an individual functions. The National Assessment of Educational Progress, 1976/1977, 1986, The Minnesota Science Assessment and Research Project (SARP), 1982, and The Science Career Predictor Scale (SCPS), 1990 are research studies that are not context-dependent. Context stripping is a key feature of standardized methods of experimental design, measurements, and statistical analysis (Mishler, 1979). We remove the subject of our studies from their natural social settings and then we randomly assign them to treatment groups as if individuals were interchangeable (Mishler, 1979). The following section will review some of this research.

Rowe (1977) identified eight factors believed to be related to the underrepresentation of blacks in science (career orientation, course counseling, expectations, access
to powerful role models, persistence, the image of science, early exposure to science, and the participation in science projects). Thomas (1986), through factor analysis of the data from a 1982 survey of four-year college students, found that an interest in science-oriented hobbies during childhood is most strongly related to an interest in high school science. Encouragement, childhood aspirations, and standard test performance were the next three most important factors exerting a positive influence on students' interest in high school science. Alick and Atwater (1990) administered the Piagetian Logical Operations Test (PLOT) to black freshmen from three historically black colleges in order to identify the kinds of intellectual development problems that may cause difficulty in chemistry. Their findings indicate that the unsuccessful students on the instrument made more mistakes in conversions and utilized incorrect reasoning. Their study concluded that blacks are in a transitional phase in logical thinking. Hill, Pettus, and Hedin (1990) developed an instrument, the Science Career Predictor Scale (SCPS), which assesses seven factors thought to be involved with science career choices. A sample of eighty-one high school students provided data for the study. The results showed black students actually had significantly higher science-career preference scores than white students.
However, blacks scored significantly lower on the measure of critical thinking ability. The study revealed that the major factor affecting science-related career decisions appears to be personal contact with a scientist.

In 1976/1977, The National Assessment of Educational Progress (NAEP) investigated student attitudes towards science. A survey was administered to 13 and 17 year old students. The attitudinal questions were categorized under three general topics: 1) personal experience with science, 2) science and society, and 3) awareness of the philosophy and methodology of science (Anderson, 1989). The data indicated that over half of the black high school students do like science (Anderson, 1989). In 1982, The Minnesota Science Assessment and Research Project (SARP), conducted a similar national survey of 13 and 17 year old students' attitudes towards science (Anderson, 1989). This survey indicated that over half of the blacks have positive attitudes towards science. In this study, both age groups reported responses higher than the national average (see Table 1). Although black students reported these favorable attitudes, they reported having fewer experiences in science than white students and they also performed below the national average on the science achievement instrument (see Table 1). In addition, the 1982 SARP study concluded that
black students find science less useful to home and family life, and are less aware of science methods and how scientists work (Anderson, 1989).

Table 1: Science Exposure, Attitudes, and Achievement

<table>
<thead>
<tr>
<th>Age</th>
<th>Science experiences (% reporting experience)</th>
<th>Science attitudes (% reporting favorable responses)</th>
<th>Science achievement (% correct)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age thirteen</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>National average</td>
<td>55.2</td>
<td>55.6</td>
<td>55.9</td>
</tr>
<tr>
<td>Black males</td>
<td>55.1</td>
<td>59.4</td>
<td>47.9</td>
</tr>
<tr>
<td>Black females</td>
<td>52.0</td>
<td>55.5</td>
<td>45.5</td>
</tr>
<tr>
<td>Age seventeen</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>National average</td>
<td>61.0</td>
<td>57.2</td>
<td>66.0</td>
</tr>
<tr>
<td>Black males</td>
<td>58.5</td>
<td>60.4</td>
<td>54.6</td>
</tr>
<tr>
<td>Black females</td>
<td>55.6</td>
<td>59.7</td>
<td>52.5</td>
</tr>
</tbody>
</table>

Source: Science Assessment and Research Project.
Note: Results of a 1981–1982 assessment of black students.

(Kahle, 1982) in an analysis of the 1977 National Assessment of Educational Progress, Attitudes Toward Science data suggests that the responses of black high school students may not reflect their informed attitudes, but rather opinions that they feel they should have. Another explanation for their positive attitudes toward science is
that blacks tend to have a positive response set. Bachman and O'Malley (1984) found that blacks are more likely than whites to respond at the positive or agreement end of Likert-type scales. Their findings are based on the data from several large and nationally representative survey measures.

The latest NAEP science assessment (Mullis and Jenkins, 1988) indicates that black students have made substantial gains in science achievement since 1986 but the performance gap relative to white students remains a serious concern. According to Anderson (1989), the average science proficiency of black students, aged 13 and 17, is at least four years behind that of their white peers. Although this body of research has existed for several years, the underrepresentation problem remains.

New Philosophies

The work of more recent philosophers of science has directed our attention to the nature of science. These new philosophies of science no longer support the idea of science as an objective, value-free investigation of the world.

Kuhn (1970) states that scientists are individuals operating within a particular paradigm: a constellation of
beliefs, values, techniques, and theories shared by the scientific community. Although these new philosophies exist, science is still being portrayed as an impersonal and unproblematic subject of study (Cleminson, 1990). Science has been decontextualized and with it, practice is decontextualized. It is taken out of the world in which it exists and it is given a being of its own and form of valuation independent of social utility (Mendelsohn, 1988). Portraying science in this particular way has contributed to its reputation of being value-free and objective. By establishing a greater sense of purpose, we can make science more accessible and relevant to a greater range of students (Cleminson, 1990). The National Science Teachers Association (1978) is fully aware of this need when it says:

Science cannot be divorced from the critical realities of contemporary life and society. Neither can science continue to be seen as value-free. Science must be studied in the context of the times and society. Thus, science has many dimensions. Knowledge is only one dimension. There are also, philosophical, moral, ethical, and practical dimensions of science.

p. 16

According to Connelly (1974), curriculum, however conceived, rests on the classical question, "What knowledge
is most worth learning?" We continue to push for mastery of "our" science, emphasizing terms, language, and laws, even though this approach decreases student interest, does not affect concept learning, and does not help or motivate students (Yager, 1986). According to Smith (1980), "What a given teacher believes, knows, and does, as well as what he/she doesn't believe, know, and do, represent what science education will be for a given child." The futuristic, historical, aesthetic, and philosophical areas of science that often interest students have been largely ignored during teacher preparation (Abimbola, 1983).

Science is (among other things) a social process (Proctor, 1988, Knorr-Cetina, 1981, and Kuhn, 1970). Science develops as a part of, and not apart from, human development and all other social activities of a particular time and it is integrally rooted in political, economic, and cultural growth and development (Hayes, 1981). If science is to be responsible to its public, students must be encouraged to reflect critically upon the uses to which knowledge has been put in the past and is likely to be put in the future (Proctor, 1988).
Analysis Of The Literature

After reviewing the literature, it is reasonable to suggest that the disparity in science participation between blacks and whites may not be related to "race" as much as to "social class". Pearson (1985) found that even among black scientists, the majority had their origins in families where the parents were professionals. Since blacks in general are overrepresented in the lower socioeconomic strata of society, the differential participation of blacks in science is probably more a function of class than race (Hill, Pettus, and Hedin, 1990). With traditional research methods, socio-economic status levels have not been controlled for in the analysis by race of student characteristics and K-12 science achievement (Ascher, 1985 and Lockheed, 1985).

According to Malcom (1990):

If one looks at the scholarship that reflects on the structure of the scientific community (that is, what we know about those who do science), it should come as no surprise that few black Americans will be found. Scientists are "made" through a process sociologist of science Merton has described as "cumulative advantage". They often come from families with college-educated parents and they tend to come from families of means, not impoverishment. Generally they attend schools where teachers can guide them and where they have access to mentors and role models outside of school.

p. 251
By contrast, many black children lead lives which could easily be characterized as cumulatively disadvantaged (Malcom, 1990). Such a notion challenges the validity of the findings from studies which decontextualize their research settings. These types of settings are not neutral or value-free because the research is conducted by someone who makes assumptions, knowingly or unknowingly, reflecting his or her values and beliefs.

The new philosophies of science have encouraged a different perspective on issues related to science. These new philosophies have created a consciousness within and without the profession calling for a critical and reflexive examination of the very thing that we call "science". If we begin to look at science through a different perceptual lens, then maybe we will gain greater insight into the concerns related to blacks and science.

Programs at the federal, state, and local level as well as the private sector have provided the context for examining some of the concerns related to the underrepresentation of blacks in science. These programs are designed to increase the opportunities in science for this underrepresented group.
Focused Programs

The National Science Foundation (NSF) and other federal agencies, such as the Department of Education, as well as the private sector have developed and supported programs (Chemstar, Biostar, Math, Engineering, and Science Achievement Programs (MESA), and Minority Access to Research Careers (MARC)) in science aimed specifically at minorities. Even though these programs receive a great deal of publicity, the federal funding targeted for such focused programs totalled only $209 million in 1990 or 2 percent of mainstream programs (The Task Force on Women, Minorities, and the Handicapped in Science and Technology, 1989). Mainstream programs, in which anyone can participate, totaled over $9 billion (The Task Force on Women, Minorities, and the Handicapped in Science and Technology, 1989). Virtually none of these focused programs have been formally evaluated even though many have shown positive results (Rotberg, 1990).

Science educators and researchers have suggested a need to build community-based and at-home programs to support science (Malcom, 1990) Linkages, a program conceived by the American Association for the Advancement of Science (AAAS) and funded by the Carnegie Corporation, provides for
establishing science instruction in a community context. This program is designed to connect science resources to community-based organizations (Malcom, 1990). This project also has the goal of effecting a change in the school-based experience of black children through state level reform of school programs and policies (Malcom, 1990).

On Target!, the program conducted by the researcher is a non-profit incorporated, locally-based science program at the community center. This program has a focus similar to that of the national level programs. It serves to provide an enrichment experience in science for underrepresented groups, it brings science resources into the minority community, and through research, the program will suggest ways for improving community and school science. This community setting will provide the context for addressing the research problem proposed in this study.
CHAPTER III
METHODOLOGY

Introduction

Phenomenology is utilized in this study because it allows the social researcher to gain an understanding of the reality of those involved in the "act of experiencing". This reality of the social agent is located and understood in a historically-established social context (Murphy and Pilotta, 1983). This contextually-bound reality is by nature a subjective reality. Statistically and empirically observable (objective) measures are inadequate for understanding the subjective nature of experiences.

For the positivist, research is concerned with observable data that can be quantified. Yet when we reduce people's words and acts to these statistical equations, we lose sight of the human side of social life (Taylor and Bogdan, 1984). Phenomenology is a humanistic approach to research that wants to know its people and tries to understand people from their own frame of reference (Taylor and Bogdan, 1984). There is a commitment to understanding social phenomena from the individuals' own perspective.
(Taylor and Bogdan, 1984). Through reflexivity, this social researcher investigates phenomena as it is situated in the consciousness of the perceiver of the phenomena. Through the process of reflection, the researcher attempts to understand the meanings individuals attach to their experiences. Young black children's perceptions of their experiences or their perceptions of the relevancy of these experiences in their daily lives are examples of the types of perceptions that the researcher is attempting to reveal and understand. In this tradition, the researcher is aware of presuppositions or assumptions they hold about a particular phenomena. "Something is a phenomenon" means that it is to be taken simply in its mode of giveness to the subject and in this mode only, excluding any further beliefs, opinions, or theories about it (Stroker, 1987). This "mode of giveness" requires the researcher to describe and interpret experiences from an individual's frame of reference.

The philosophical basis of phenomenology suggest that knowledge is an "epistomological truth" determined by an individual's unique experiences. The nature of this knowledge and the sources of this knowledge are derived from human experiences. According to Eichelberger (1989), each person has a unique set of experiences which are treated as
truth and which determine that individual's behavior.

The collection of data to assess preconceived models, hypotheses, or theories cannot provide the phenomenologist with a full understanding of what an experience means to the individual. The hermeneutic methodology provides for the interpretation of experiences from the perspective of the individual involved in the experience. This interpretation of phenomena is the received meaning of the phenomena by the individual. Hermeneutics offers the social researcher an account of reality grounded in the worldview of the individual. Hermeneutics goes beyond the surface meaning of experiences and attempts to explicate the deeper meaning that individuals attach to their experiences. These meanings are revealed as a result of thoughtful reflections upon an experience.

According to Habermas (1971), hermeneutic understanding ties the interpreter to the role of a partner in dialogue. The self-reflective dialogue inherent in this methodology (Habermas, 1971), provides the type of interaction that allows the researcher and the individual to gain a better understanding of phenomena.
Research Method And Procedures

Phenomenology is a descriptive methodology being attentive to how things appear and it is an interpretive (hermeneutic) methodology, useful when wanting to get at the meaning of something (van Manen, 1990).

To come to an understanding of the essential structure of something, we need to reflect on it by practicing a certain reduction (van Manen, 1990). According to van Manen (1990):

In reduction one needs to overcome one's subjective or private feelings, preferences, inclinations, or expectations that would prevent one from coming to terms with a phenomenon or experience as it is lived through. This condition is referred to as "bracketing".

p. 185

Bracketing is a way of thinking which provides the context for understanding the perspectives of individuals of a different social class, race, gender, or age group. This way of thinking reduces the tendency on the part of the researcher to interpret phenomena from his or her perspective alone. If a researcher does not employ bracketing while conducting research, then the researcher may only confirm what he or she already believes. For example, if researchers do not employ bracketing, they may
interpret data from their perspective only without considering the needs and values of the participants in their analysis. For example, I assumed that many of the children who stopped attending the community science program had become disinterested in science but instead the children had been scheduled to participate in other activities or had moved out of the community.

Phenomenology is not driven by a method understood as a set of investigative procedures that one can master relatively quickly (van Manen, 1990). The particular problem or question for the phenomenologist guides the method and technique. The method needs to be discovered or invented as a response to the question at hand (van Manen, 1990). This is not to suggest that phenomenology is asystematic. Phenomenology does not deny method, it is just not ruled by it.

Knorr-Cetina (1981) states in her book, *The Manufacture of Knowledge*, that method and results are dependent upon each other. She observed that results can be the result of the specific methodical selections. Therefore, what is obtained is not independent of how it is obtained, although it can be detached and removed from its construction to take on a reality of its own.
Knorr-Cetina (1981) observed how methods were selected based on the anticipated or intended results, and also how results were rejected because of the method. This effectual relationship between method and results implies that the knowledge constructed by the researcher is only one form of knowledge and not absolute truth. Kuhn (1970) adds also that our paradigm influences what we see as well as what we do not see. The implication is that our particular paradigm can determine or influence our method. Therefore, method should only guide the research, and not dictate the results.

Phenomenological research is concerned with revealing themes. Phenomenological themes may be understood as the structures that make up an experience (van Manen, 1990). A description of the themes provides a way for the researcher to gain an understanding of the phenomenon. The themes revealed in the conversations with young black children in this study may have some implications for how we teach science to young children. The number of interviews that comprised this study was based upon collecting enough data to reveal the themes in the study. The image of science and scientists, the usefulness of science to the children's lives, and the beliefs about who can become a scientist are examples of themes in science research.
Selection Of The Participants

The research participants that were selected for this particular study were young black children who were experiencing science in the context of a community-based science center. About ten to twelve different children met one day a week for about an hour to engage in hands-on science experiments. Most of the children lived in the area and regularly attended the center. These children were elementary to early middle school-aged black children from low socio-economic backgrounds. Low socio-economic status was determined by the family's eligibility for the free or reduced lunch program in the schools.

The program is voluntary and many of the activities in the program have been take-home projects. The children in the science program stated that they liked science although the majority of them stated they had had only a few hands-on experiences in science. Anderson (1989) states that this age group has the most positive attitudes and perceptions of science.

Interviews were conducted last summer (Nesbitt, 1990). They provided the means for establishing whether the interview questions for this study are relevant and appropriate and it also gave more direction to the subsequent study. The tape-recorded interviews conducted last summer also provide a means for evaluating the program.
and more specifically present the children's perspective of the program.

The children that were interviewed last summer (1990) were elementary aged children who attended at least four of the ten summer sessions. The observations and the interviews last summer were conducted before and after the children performed the science activities. The children were interviewed individually, as well as informally in a group manner, where any of the children could respond to the questions. During the interview sessions, the children were asked questions about 1) their school science experiences, 2) what they would like to do in this program, and 3) their perceptions of science and scientists.

Two of the children were selected for this research study because they participated in the initial program as well as in the subsequent sessions (1991). These children provided dialogue from an "experienced" participant perspective. The four other children included in this study were children who were interviewed last summer but did not return after last summer's session. These children provided information about the way last summer's program influenced their perceptions of and performance in science during the subsequent school year. The selection of all the children was based upon three factors; a similarity in age, a willingness to answer questions, and participation in at
least four of the ten summer sessions.

The participants were enrolled in school science last year and only one child stated that she was having difficulty with the subject. The other children perceived their experiences and performance in science as satisfactory. In the summer science sessions, the children would come to science on Thursdays if they were at the center. These children chose to come to science even when other center activities were offered.

The Site

St. Stephens, the community center that provided the setting for the program, was organized in 1919 on the south side of the city to provide services to foreign-born Catholics who were employed in the area. After the war relief efforts were completed, the center moved to the north side of the city to provide assistance to yet another unserved section of the city.

At the time of this study, the center served a large area of the north side of the city by providing social and medical services for families that needed assistance. The community center operates a Youth Services Program that offers counseling, tutoring, mentoring, and socialization/recreational programs for the targeted
population. The science program established at this center is part of the Youth Services Program.

The concept of a community-based science program developed as a result of conversations with two individuals. In an earlier study (Nesbitt, 1990), a parent stated that "children only get scientific at school and that a community house would be a good place for children to do science!" A friend also suggested this concept for presenting science to children. As a result of this communication, I called St. Stephen's Community House and talked with the Assistant Director about conducting a volunteer science program at the center. The Assistant Director referred me to the Youth Services Director who made an appointment to meet with me. Both individuals stated that doing a science program at the center was a very good idea. They believed that science as a center activity would provide an enrichment experience for the children as well as contact with me as a scientist. This belief was shared by other staff members of St. Stephen's. For example, the art teacher and the public relations staff member voiced similar comments to me.

The community science program, called On Target! Science In The Community, has been in existence since early
last summer (1989). This setting permits a researcher to do research that is not representative of the current research on blacks in science. This new area of research may offer some answers to the questions related to minority issues in science or it may provide a new perspective for solving some of the problems faced by minorities in science.

Some differences as well as similarities in doing science in a school setting and doing science in a community setting were revealed through the voices of the children. It is their philosophies and explanations that provide the major implications for improving science curricula and instruction in the schools. The descriptions and interpretations of science experiences presented here in their language allows them to communicate their own understandings. The community-based science concept provides a context for identifying and analyzing the themes that make up this understanding. This setting has fewer constraints compared to school science and may facilitate efforts encouraging the children to reveal the themes within their experiences. Constraints of research in school science, such as the structure of the school day, gaining access to a classroom, and interrupting the teachers' curriculum are not issues in this research.
Data Analysis

The two children who returned to the program were interviewed several times after they completed the science activities in order to reveal how these experiences influenced their perceptions of science and scientists. The children were also observed by me and any dialogue that took place among the children was recorded. The tape-recorded interviews provided a way for the children to describe and interpret their experiences.

The children who did not return to the program were interviewed in a different setting. There were several home visits to each child's home or visits were made to their school. The children were then interviewed for the purpose of reassessing their perceptions of the summer science program and to learn how this program may have influenced their experiences in school science. The data was analyzed to access 1) the children's current perceptions of science and 2) the children's performance in school science.

Interview questions are provided on page 34 but some questions emerged as the research was conducted. The uniqueness of each experience and the subjective descriptions and interpretations of these experiences suggested new questions to me.
The information gained from this study also suggests strategies or has implications for:

1) providing a science curriculum with a greater representation of minority contributions,
2) strengthening the current community-based science program,
3) linking science resources to minority communities, and
4) increasing the collaboration between school systems and community-based centers.

The program and the research efforts also contribute to the small volume of documented literature on community-based science programs. The potential success of this program along with the supporting research may direct more attention to the underrepresentation problem. This increased attention may encourage more support from the local, state, and federal level in terms of funding and establishing policies for community-based programs. I believe that programs such as On Target! can serve as a model for establishing community-based science programs on a national level.
**TABLE 2: Interview Questions**

1. Describe a scientist.
2. Where have you seen scientists?
3. Describe science in school.
4. Is science in school different from the science you do here?
5. Could you ever see yourself as a scientist?
6. What things do you need to become a scientist?
7. What do you think about last summer's program?
8. Why did you come to the science program last summer?
9. Did the program help you in any way?
CHAPTER IV
THE RESEARCH SETTING AND THE DATA

Introduction

Before I present the data, several topic areas should be addressed. These areas offer background information about the center and the program. The first section provides a description of typical science sessions at the center. The second section provides a discussion of how On Target! compares to school science. The last section presents a description of the participants based on observations of and dialogue with the children.

Science At The Center

In the summer, the children arrive at the center around 12:30 p.m. Most of the children arrive on the St. Stephens' bus. Others are dropped off by their parents. After a meal, the children move to the gymnasium where they break into age-related groups before they go to the various activities at the center. The center closes at 5:00 p.m. and the children either return home by St. Stephens' bus or with their families. During the school year, the majority
of the children arrive by St. Stephen's bus at 4:00 p.m. They are given snacks and then they go to an activity until the center closes at 5:30 p.m. During both sessions, in the summer and during the school year, the science program ran for an hour.

During the summer of 1990, I went to the gymnasium and asked children if they wanted to participate in science. One particular week, early in the program, a staff worker helped me by selecting children that she thought might be interested in science and would come to science on a regular basis. In order to conduct research, it was important that a rather consistent group attend the science program. This summer (1991), I recruited children for the program by yelling "science" up and down the aisles of the gameroom and also in the hallways of the center. The reaction of the children was notable. Some of the children stopped what they were doing and took this opportunity to ask what activity would take place that particular day.

Science takes place in the kid's kitchen on Thursdays. The children sit around the tables and many times we talk about their school science experiences, what science is, and what types of things they would like to do in the On Target! program. On Target! allowed the children the opportunity to be helpers in many ways. The children helped by passing out
materials, by explaining many concepts, by collecting the materials, and with clean-up. The involvement of the children in the total process of instruction, from passing out materials to clean-up gives the children a sense of responsibility in the program. This responsibility should help establish the values of independent ways of acting and thinking by the children. Perhaps, more importantly however, by becoming involved in the process of instruction, science is becoming a part of their lifeworld.

The science experience provided the children with hands-on activities dealing with concepts of the school science curriculum. Before the activities were conducted, the children were given background information about the principles behind the activities. For example, when the children blew up a balloon using baking soda and vinegar, the concept of chemical reactions was explained to them. They learned that the gas expanding into the balloon was carbon-dioxide. Another example of an activity included placing drops of water with an eyedropper on a penny to illustrate the principle of surface tension. The children also demonstrated how air takes up space by stuffing a piece of paper in the bottom of a small beaker and then they immersed this beaker upside down into a larger beaker of water. They found that the paper did not get wet although many children predicted that it would.
The science program was totally voluntary. The children decided whether they wanted to be there or not and they had the option to choose other activities the following weeks. In addition to science, they could choose arts and crafts, basketball, the gameroom, or outside activities. Science was the choice for many children although some children wanted to know ahead of time what we were going to be doing. If I repeated experiments or performed activities the children weren't interested in, some children chose not to attend. It appeared that activities, such as making slime, oobleck, peanut brittle, and mixing chemicals resulted in a large turnout. The children shared with me that they liked making a mess, doing things they thought were gross, or making things that taste good.

A professor and a graduate student from the university provided science activities for the children. They were very popular with the children as revealed by the children during the activities and also as revealed in the interviews. When the professor conducted the program, the children were involved in a lot of activities. The professor brought some dry ice to the program which fascinated the children. The children made slime and peanut brittle to illustrate the concept of polymers. While making the
peanut brittle, the children ran out of time. Many children had to catch their bus or had to leave and they were a little upset because they would not get any peanut brittle. It was interesting the way a new group of children entered the kitchen to finish making the peanut brittle after the other children left. At times, throughout the program, a few bus riders who weren't ready to leave commented that they would walk home.

When the graduate student arrived at the center, there was a group of children waiting at the door for him to do science. The graduate student brought equipment so the children could make a cloud in a jar. The graduate student discussed air and pressure with the children before the activity began. Many children revealed that this activity was their favorite. The children worked in pairs but some children didn't want to give their partner an opportunity to perform the activity. Another observation, that I made on this particular day was the enthusiasm of the children when a staff worker entered the kitchen while they were working. They yelled her name and explained to her and showed her what they were making. On this particular day, the center's art teacher came into the kitchen during the interview session. She agreed to an interview although there were no predetermined questions for her interview session. She
stated that "they (the children) absolutely love it (science), they really do."

The children told the art teacher about the different projects they made each week. She said they looked forward to making slime- "we all knew slime was coming". She stated that the children liked the formulas and even used the word formula in their discussions. She stated that "one little one told her that a formula was a recipe". She also stated that one child said that he didn't like science in school and could I (the researcher) come and be his science teacher.

She said that the children talked to her about their science experiences in the art class and also in the hallways. The fact that these children related positive experiences to staff members suggests that science was a meaningful activity for them. The art teacher stated that with the structure of the building the way it is, it would be easy for the children not to come to science if they really didn't want to be there. She said the fact that the children are waiting for me is a major accomplishment because of stiff competition with other programs and activities.

Several parents who have picked up their children have come into the kitchen where we were having science to wait
for their child. These parents were very cooperative and patient. Many parents of the children in the study were also interested in the science program and one of the parents was also concerned how well her children responded to the interview questions. Several parents related that their children have discussed the program at home.

One parent was concerned that her two children should attend the center and the science program only after their school work was finished at home. This parent believed that her children's classroom responsibilities needed to be met before the children attended the center. Her concern was based on wanting the children to do well in school. This parent as well as another parent knew what science activities the children participated in each Thursday because the children either shared these experiences with them or because the parents asked what took place in science class. This type of involvement from minority parents is contrary to the stereotype of minority parents being unconcerned about education. Many minority parents care about their children's education and have a strong interest in education although they may not actively participate in the schools (Chavkin, 1989). This program, because of its informal setting also provided parents with an easy access to their child's learning experiences.
Relationship Of Program To School Science

This science program differed from school science in several ways. In this program, the children were participants in the selection of the activities. They were given a voice in which types of things they would like to do. If children are allowed to negotiate some aspects of their learning experience, they may accept more ownership for what is taught and learned. The fact that some children volunteered to bring in materials for various activities suggests that they wanted to contribute something to the learning process.

Another difference was in the evaluation of the children's performance. In this program, no grades were given and the measure of success was based on the children's perception of their success in accomplishing the tasks. The smaller number of children and the time allotted for each task meant that the children had time to repeat an experiment until they felt they had satisfactorily accomplished the task or they repeated the experiments because they enjoyed doing them. Although some evaluative tool must be used in school to access when a student is ready to move on to the next level, this is not necessary when presenting science as an enrichment experience. The
children at the center did not have to be concerned with working for a grade. The dilemma of working for a grade versus learning for learning's sake, was not an issue for the children in the program the way it is for many students in the classroom.

The classroom culture, which includes acceptable ways of acting among peers, did not appear to influence the children's discussions in the informal setting of the On Target! program. The children shared their comments and experiences freely with each other and with me. In the community center culture, it seemed okay to get excited or become enthusiastic about science.

One objective of this program is to show that there is nothing mysterious about science; that science is an activity that occurs in our everyday lives. Another objective was to give the children a chance to share their school science experiences, their perceptions of science and scientists, and their beliefs about science. This program also serves as an enrichment experience to the activities that occur in school science. The long-range goal of this program is to provide black children with science experiences that will help prepare them for the challenges of the science field.
Gaining an understanding of the children’s ways of thinking about science is a critical type of inquiry. Additionally, when conducting research with children, it is important to understand the children’s thinking patterns. I found it necessary to listen to the children and to observe the children carefully in order that interesting science activities could be identified and designed. Similarly, classroom teachers can benefit from becoming researchers in their classrooms.

In this study, the researcher as teacher is a role that is apparent but the teacher as researcher is another role that was established. The fact that the children of the study constructed their own knowledge placed me in the role of a learner as well as teacher.

The relationship that formed as a result of the dialogue inside and outside of the science classroom and during the interview sessions allowed me to get to know the participants of the study better. This background information on the children serves the same purpose as information gathered more formally in a case study.

In a case study, the attempt is to get to know the participants and to become a part of their world and be involved with them beyond just gathering data. I believe
that I have accomplished this goal. By integrating this program within the community of the participants, I became a part of the children's world. This gave me the opportunity to get to know the children better and to observe and interact with them in many different settings; such as the gameroom, outside, in the cafeteria, and at school.

Many children have shared conversations about science outside the interview setting; such as in the hallways, in the cafeteria, and in the gymnasium. As a result of this dialogue, the researcher can provide a more accurate description of each of the participants and their beliefs about science. This may help us better understand some of the children's responses to their interview questions.

Description Of The Participants

Christy

Christy is age 10 and is in the 5th grade. She was a very outgoing and friendly young lady. She was responsible for recruiting other children to the science program. Christy liked answering questions in science class and enjoyed talking about her science experiences.

She seemed very excited about science and enthusiastic about sharing her scientific knowledge with her mother, and with me, as well as with the other children in the class.
She appears to be very proud of her scientific knowledge and likes to share that knowledge.

Christy is really concerned about doing well in school and she stated that this program offered her the opportunity to do better in school science. The fact that she made this connection suggests a rather sophisticated level of thinking. Connectedness appears to be very important for Christy.

Fernando

Fernando is age 9 and is in the 4th grade. He was a very quiet and mannerly young man. Fernando was usually one of the first children to arrive for science class. He would enter the science classroom and sit and wait for me to get started. He would usually ask "What are we going to do today?" Fernando would also examine the science equipment while waiting for me to get started.

In class, Fernando usually worked alone. He was very helpful in class. He passed out equipment and he also helped with clean-up. He really did not talk very much during classtime, but would ask questions when he saw me elsewhere.

Fernando was very serious in the science classroom at the center. He is determined to become a scientist when he
grows up. He really likes science and thinks science is exciting.

**Jess**

Jess is age 11 and is in the 6th grade. He is very articulate. His answers to the interview questions and in the science class appeared to be quite thoughtful. Jess would elaborate when answering question instead of just answering with a "yes or a "no".

Jess is very outgoing and works well with the other children. Jess has leadership qualities and he has a great sense of humor. Many times, Jess was my helper because he was very responsible and understood the concepts very readily.

**Teri**

Teri is age 10 and is in the 5th grade. She is a very quiet and mature young lady. She speaks very softly and seems a little shy. She seemed a little nervous when answering some of the interview questions and appeared hesitant about answering some questions during the interviews. Teri needed to feel comfortable and reassured before revealing some of her thoughts.

Teri would arrive early for science class and just sit and wait until I was ready to begin the class. Usually
Teri was quiet while conducting the activities and she didn't talk very much during the informal group interviews.

**Wesley**

Wesley is age 12 and is in the 5th grade. He was a very hard worker in the science class. Wesley came to science many times last summer, yet this summer he did not participate. In talking to Wesley, it appears that consistency is important for him. He tends to get involved in whatever he is doing and sticks with it.

Wesley is very quiet and works well by himself and he enjoyed being a helper in the class. Wesley liked science and he stated that he performed some of the activities at home. For example, he stated that he used his resources to make slime at home.

According to Wesley's classroom teacher, Wesley has a learning disability and reads on a second grade level. She agreed that Wesley is a very hard worker. Since Wesley has this learning disability, I believe Wesley would probably have more success in an activity-based science curriculum than in a textbook-centered science curriculum.

**Yhana**

Yhana is age 11 and is in the 6th grade. She is very inquisitive and asks many questions about science. She also
likes to share her experiences in science but not to the same extent as her sister, Christy.

Yhana had some traditional beliefs about scientists. For example, she believes that science is for men. Although she could not state her reason for believing this, she held fast to this belief. She appeared to have philosophies that couldn't be challenged very easily.

Table 3 below represents data related to the interview sessions. The interviews took place over an eleven month period of time. The three different settings for the interviews included the center, the home, and the school. Most of the participants were interviewed between two and three times for about 30 minutes or more.

Table 3: The Interview Data

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<thead>
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<th>Date</th>
<th>Setting</th>
<th>How Many Times?</th>
<th>Less/More 30 minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Christy 7/90</td>
<td>center</td>
<td>1</td>
<td>less</td>
</tr>
<tr>
<td>8/90</td>
<td>center</td>
<td>2</td>
<td>more</td>
</tr>
<tr>
<td>5/91</td>
<td>home</td>
<td>2</td>
<td>more</td>
</tr>
<tr>
<td>Fernando 3/91</td>
<td>center</td>
<td>3</td>
<td>more</td>
</tr>
<tr>
<td>Jess 7/90</td>
<td>center</td>
<td>2</td>
<td>less</td>
</tr>
<tr>
<td>8/90</td>
<td>center</td>
<td>1</td>
<td>more</td>
</tr>
<tr>
<td>6/91</td>
<td>home</td>
<td>1</td>
<td>more</td>
</tr>
<tr>
<td>Teri 3/91</td>
<td>center</td>
<td>2</td>
<td>more</td>
</tr>
<tr>
<td>Wesley 7/90</td>
<td>center</td>
<td>1</td>
<td>less</td>
</tr>
<tr>
<td>5/91</td>
<td>school</td>
<td>1</td>
<td>more</td>
</tr>
<tr>
<td>Yhana 8/90</td>
<td>center</td>
<td>1</td>
<td>more</td>
</tr>
<tr>
<td>5/91</td>
<td>home</td>
<td>2</td>
<td>more</td>
</tr>
</tbody>
</table>
**Introduction To The Themes**

The themes are presented according to how they became evident to the researcher. This ordering of the themes is based on analyzing the data and then presenting the theme that emerged first from the data.

**Theme 1- Image Of A Scientist**

The image of scientist held by young children is one important theme emerging from both the literature and the interviews. Examining this "mental picture" of scientist can provide the researcher with knowledge about the everyday things; people, events, and experiences, that influences the construction of these images.

This study revealed that young black children hold many stereotypical images of scientists; images which have been documented in the literature.

The first attempt to describe systematically this image of a scientist was Mead and Metraux's study (1957) of its presence in a population of American high school students. The composite portrait which they drew, based on their research, remains a succinct and useful description (Chambers, 1983).
The scientist is a man who wears a white coat and works in a laboratory. He is elderly or middle-aged and wears glasses...he may wear a beard...he is surrounded by equipment: test tubes, bunsen burners, flasks, and bottles, a jungle gym of blown glass tubes and weird machines with dials...he writes neatly in black notebooks...One day he may straighten up and shout: "I've found it! I've found it!...Through his work people will have new and better products...he has to keep dangerous secrets...his work may be dangerous...he is always reading a book.

p. 386, 387

Chambers (1983), in his article, Stereotypical Images of the Scientist: The Draw-A-Scientist Test outlines the procedures that he used to assess young children's depiction of a scientist. The Draw-A-Scientist Test was administered to 4807 children in 186 classes from kindergarten to grade five (approximately five to eleven years old). The following were chosen as indicators of the standard image of a scientist: (Chambers, 1983)

1) Lab coat (usually but not necessarily white)
2) Eyeglasses
3) Facial growth of hair (including beards, mustaches, or abnormally long sideburns.
4) Symbols of research: scientific instruments and laboratory equipment of any kind.
5) Symbols of knowledge: principally books and filing cabinets.
6) Technology: the "products" of science.

7) Relevant captions: formulae, taxonomic classification, the "eureka"! syndrome, etc.

By the second grade, the stereotype has begun to take root. It was not unusual for a majority of second grade pupils in a class to incorporate at least two elements of the standard image. By the fifth grade, the majority in a class are likely to show at least three or four types of indicators with a few pictures exhibiting six or seven.

The following comments voiced by the children of this study reveals some of their images of a scientist:

Table 4 provides a key giving information about the initials used in the transcripts.

Table 4: Representation Of Initials In The Interview

<table>
<thead>
<tr>
<th>Initial</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>J</td>
<td>researcher (me)</td>
</tr>
<tr>
<td>D</td>
<td>researcher (graduate school)</td>
</tr>
<tr>
<td>C</td>
<td>Christy</td>
</tr>
<tr>
<td>F</td>
<td>Fernando</td>
</tr>
<tr>
<td>J</td>
<td>Jess</td>
</tr>
<tr>
<td>T</td>
<td>Teri</td>
</tr>
<tr>
<td>W</td>
<td>Wesley</td>
</tr>
<tr>
<td>Y</td>
<td>Yhana</td>
</tr>
</tbody>
</table>

I- Individual Interview            G- Group Interview
okay,...(pause)...can anybody become a scientist?

C- (pause)...

what do you think?

C- not anybody

why?

C- (pause)...cause...(pause)...maybe you're not just born to be a scientist. Maybe you're just born to be something else.

okay, so you think...uh...people are born to be a scientist?

uh-huh

okay,...(pause)...I'm a scientist...(pause)...was I born to be a scientist?

if you're one now.

okay,...(pause)...umm...(pause)...so if you become a scientist, what does that mean?

(that I was born to be a scientist.

okay, why do you feel...(pause)...you're born to be a scientist?

(pause)...because science is...(pause)...hard and...(pause)...and you need to be...(pause)...born to be a scientist to know all the techniques and stuff.

okay,...(pause)...okay,...(pause)...but can someone...(pause)...learn...(pause)...how to become a scientist?

they can be trained...(pause)...but they probably won't be as well.
C- he (scientist) wears lot of masks...they wear lots masks...(pause)...umm...(pause) they...(pause)...they...umm...(pause)...they sit in a dark room, sometimes they float.

Fernando- 3/7/91
(I)

J- What does a scientist look like to you.
F- umm...a person that has bifocals on
J- a person that has what?
F- bifocals on
J- okay, what else?
F- and a.. (pause)...a white jacket.

Fernando- 3/21/91
(I)

J- ...I asked you what do you need to become a scientist...you said two things, brains and patience...(pause)...okay,...umm...(pause) Why do you need brains to become a scientist
F- because you need to be smart.
J- you need to be smart? why?
F- (pause)...so you can...(pause)...so when you have to do...(long pause)...hard... (pause)...math...(pause)...
J- uh-huh
F- or science thing...(pause)
J- uh-huh
F- ...you will know how to do it.
J- okay, but why do you need patience?
F- (pause)...cause...uh...it might take a year or two...(pause)...to...umm...(pause)...finish a science experiment.
Jess- 6/91
(I) j- umm...(pause)...a scientist looks like a
man...(pause)...in a white coat...(pause)
that like...uh...that works with different
things...with animals and chemicals...
(pause)...and also...umm...(pause)...soil
and different things...study...he basically
studies just about everything.

Teri- 3/14/91
(I) J- ...but I just need to know why don't you
think you can picture yourself as a
scientist?

T- (long pause)...because...umm...(pause)...all
the liquids that are on...like on TV...
you see them with...umm...(pause)...those
things...(pause)...and they're on racks and
they have liquid in it?

J- huh?

T- I couldn't see myself around those things.

J- Say that again now.

T- ...on TV...scientist they have...umm...
(pause)...something round like this.

J- uh-huh

T- ...and they have it on racks...

J- uh-huh

T- and they have liquid in it...

J- oh

T- ...round glass...

J- okay.
<table>
<thead>
<tr>
<th>Date</th>
<th>Person</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/7/91</td>
<td>Teri</td>
<td>when you think of a scientist...Describe what they look like...(pause)...When you think of a scientist...describe a scientist</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(I)</td>
</tr>
<tr>
<td>5/22/91</td>
<td>Wesley</td>
<td>J- Describe...(pause)...a scientist. Could you like look at someone and say that's a scientist?...(pause)...like what do they...</td>
</tr>
<tr>
<td></td>
<td></td>
<td>T- ...(pause)...they wear dress pants.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>J- dress pants. What else?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>T- a white jacket</td>
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<tr>
<td></td>
<td></td>
<td>J- huh</td>
</tr>
<tr>
<td></td>
<td></td>
<td>T- a white jacket</td>
</tr>
<tr>
<td></td>
<td></td>
<td>J- okay</td>
</tr>
<tr>
<td></td>
<td></td>
<td>T- umm...glasses</td>
</tr>
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<td></td>
<td>Wesley</td>
<td>W- (pause)...they have on white...umm...white clothes on sometimes.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>J- okay</td>
</tr>
<tr>
<td></td>
<td>Wesley</td>
<td>W- (pause)...sometimes they be...umm...(pause) wearing glasses...(pause)...</td>
</tr>
<tr>
<td></td>
<td></td>
<td>J- alright</td>
</tr>
<tr>
<td></td>
<td>Wesley</td>
<td>W- they walk around with a...a bag in their hands.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>J- ...a what?</td>
</tr>
<tr>
<td></td>
<td>Wesley</td>
<td>W- ...a bag.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>J- what's in that bag?</td>
</tr>
<tr>
<td></td>
<td>Wesley</td>
<td>W- a lot of bottles and stuff</td>
</tr>
</tbody>
</table>
Wesley-
5/22/91
(I)

J- describe what he has on (TV scientist)...
W- he got white...(pause)...he's a white man
J- uh-huh
W- he has on glasses and he has white clothes
    on...white shoes.
J- okay, what else?
W- ...and white socks.

J- okay, what...what does he look like?
W- He looks like...umm...(pause)...he's old...
    he's old and he got...(pause)...old hair.

Yhana-
5/25/91
(I)

J- why? why can't you see yourself as a
    scientist?
Y- (long pause)...umm...I think I would like
    be sort of scared...
J- okay, why not (picture yourself) as a
    scientist?
Y- because...umm...science is really...I think
    it's for men.
Yhana - J- okay, describe what a scientist looks like in your mind.
5/25/91

(I)  Y- (long pause)...they have a white suit maybe they sort of like experiment things...sort of like we do.

Theme 2- Influence Of The Media

According to Schibeci (1986), the literature and the media represent one of the many informal avenues for science education, along with museums, fairs, and exhibits. Of these, television appears to be potentially the most powerful of these informal avenues because children watch so much television (Schibeci, 1986).

This study supports the influence of television upon young children's perceptions of the way scientists look. The responses to the interview questions reveal that the impact of television cannot be ignored. For example,

Christy- J- okay,...umm...(pause)...Do you know any scientists that are living today...(pause) and working today?
5/25/91

(I)  C- (long pause)...no, but probably the weatherman.
he (scientist) wears lot of masks...they wear lots masks...(pause)...ummm...(pause) they...(pause)...they...ummm...(pause)...they sit in a dark room, sometimes they float.

J-okay, where have you seen these scientists doing that floating?

C-on TV...(pause)...and then when...I go to the...ummm...(pause)...to...uh...(pause)...to COSI (Center of Science and Industry).

How did you describe a scientist?

F-white coat and...
J-huh?
F-a white coat and glasses
J-...why do you...(pause)...picture a scientist this way?
F-because on TV that's...(pause)...how they dress.
J-well, where did you see them on TV?
F-(long pause)...Frankenstein.

J-ummm...(pause)...a scientist looks like a man...(pause)...in a white coat...(pause) that like...uh...that works with different things...study...he basically studies just about everything.

J-alright, where have you seen some scientists?
J-...ummm...on Mr. Wizard's World...its on...ummm...TV, Nickelodeon...
Wesley-5/22/91
(I)

J- have you seen scientists on TV?
W- uh-huh, a lot of them.
I see them on Swamp Monsters...some science.
J- what's the Swamp Monsters?
W- he...he...um...he...he a swamp...(pause)...
he looks to be a science man.

Yhana-5/25/91
(I)

J- okay, describe what a scientist looks like
in your mind.
Y- (long pause)...they have a white suit maybe
they sort of like experiment things...sort
of like we do.
J- what makes you see scientists this way?
where have you seen scientists that look
like this?
Y- (long pause)...I seen one (a scientist) in
a movie.

One girl in this study revealed the influence of museums in
describing a scientist.

Yhana-
5/25/91
(I)

Y- umm...they showed a statue of a dead
scientist
J- where
Y- umm...at art museum
J- where?
Y- in the art museum
J- in the art museum?...(pause)...okay and how
did these scientist look...(pause)....I mean
describe how they dressed and...
Y- well, they really just dressed the way they usually dress but...

J- how's that?

Y- ...umm...(pause)

J- describe what they had on...

Y- ...(pause)...umm...(pause)...plaid shirts (pause)

J- laugh

Y- ...they were old men.

Basalla (1976) examined what he referred to as "pop science" science in comics, novels, and other forms of mass media that he believed was the source for Americans, of impressions of the scientific community and its work. Pop science was to be distinguished from the "radically different" and "more restricted and sophisticated" area that is commonly referred to as "popular science" (Basalla, 1976). Basalla argued that more effort should be devoted to a study of pop science because:

It reveals some basic American attitudes towards science, technology, and the intellect. By presenting these attitudes in a popular medium and attractive form, the creators of popular culture perpetuate and strengthen them. There exists a feedback loop between widely-held American ideas of science and their popular representation in comic strips, television shows, and feature films. 

p. 261
Although it is difficult to establish causal links between images presented in popular culture and educational outcomes (Lucas, 1983), it is within reason to assume that the images presented on television can in some degree, help shape children's impressions of scientists and these impressions may be revealed in their descriptions of scientists. Therefore, we need, at the very least to ensure that the images of science and scientists in popular culture are a more accurate sampling of the range of science practice and scientists' behavior (Schibeci, 1986). The classroom science teacher is one resource for providing a realistic image of science. A community science center such as the one in the study is another context for providing this realistic image of scientists.

Although the majority of the children at the community center identified me as a scientist, their descriptions of a scientist were more consistent with the media's depiction of scientists. These children did not provide any alternate descriptions of scientists even though we had established a relationship during the program. The fact that the children revealed these stereotypical images, 1) supports the power of the media in influencing their image of scientists, 2) implies that their exposure to real-life scientist may be limited, or 3) both.
Theme 3- Researcher As Role Model

I attempted to establish a personal relationship with the participants in this program by developing an open, warm, and nurturing environment during the science class. I believe that this atmosphere is conducive for establishing a "role model" relationship between researchers and participants. The following comments by the participants suggest that the "researcher as role model" image has started to form.

Christy- 5/25/91
(1)  J- How do scientist look?
C- (long pause)...Just like you!
J- huh?
C- Just like you!

Fernando- 3/7/91
(1)  J- when you think of a scientist...I mean somebody living today...who do you think about?
F- YOU! (laugh)
J- me? okay, thank you.
F- ...why do you think of me when you think of a scientist?
J- ...umm...cause if you can do all that science stuff, you must be a scientist.
J- alright, where have you seen some scientists?

j- also...(pause)...at St. Stephens (laugh)

J- where?

j- at St. Stephens

J- where at St. Stephens?

j- in your science class (laugh)

J- who?

j- (pause)...uh...YOU!

J- okay (we both laugh)

J- okay...let me ask you this. Describe what a scientist looks like.

W- he looks like...umm...(pause)...he looks like you!

J- like me...

W- yeah.

J- (laugh)

J- Do you know any black scientists?

Y- (long pause)... YOU! (we both laugh)
This "role model" theme becomes apparent at this point and deserves attention because this relationship appears outside the center as well as in the center. In conversations with the children outside the center their discussions centered around science and my role as a scientist. Also, on days other than science day, many children ask me "are you having science today?" or if some of the children see me in the community, they recognize me and respond by saying, "Hi, Mr. Science Man.

The literature suggests that science role models may be a powerful influence over the way children perceive science and scientists. Rowe (1977) states that this factor might even affect the selection of a science career. The extent to which this factor is relevant requires more systematic research (Rowe, 1977). According to Carson (1988), there is a tremendous lack of scientific expertise on the part of most parents in the black community. Therefore, they cannot provide the same proportion of scientific role models to their children as more privileged communities might be able to provide (Carson, 1988). This suggests a need to focus our efforts on providing more professional scientific role models. Having early exposure to and interacting with professional role models in the natural and technical...
sciences have been found to be critical for recruiting and retaining students' interest and participation in mathematics and science (Malcolm, Hall, & Brown, 1976; Young & Young, 1974). As an example, the historically black colleges continue to produce a disproportionately high percentage of black scientists and engineers despite shifting undergraduate enrollment patterns from historically black colleges to predominately white colleges (Pearson & Pearson, 1985). This pattern has been attributed to the fact that the majority of academically employed black American scientists and engineers are on the faculties at historically black colleges where they provide visible role models for students as teachers, researchers, and administrators (Pearson, 1986).

This "role model" image of the researcher has powerful implication. If the role model relationship is one where the researcher is able to dispel myths about science and scientists, then the perceptions of science held by children may reflect a more accurate picture of science and scientists.

Theme 4- Personal Value
The people in the position of providing science activities to young children have the capacity to reach
children and hold their interest by providing experiences that are stimulating, challenging, fun, and interesting.

The children that participated in the science program at the center stated that their experiences were "fun". This appeared to be a common response by many children. The program was voluntary yet the attendance each week suggested that the children found something of value in the program. Through interviews, it was revealed that the theme of personal value was influencing the children's reason for attending and participating in the program.

Christy-8/9/90 (G)

D- so when you come to science...(pause)...here...(pause)...how does that make you...

j- great...(pause)...you can make things.

C- (pause)...that's what I want to do when I come to science

Christy-8/9/90 (G)

C- yeah...and...(pause)...it's real fun to learn how to do this stuff, especially when you want to be what you're doing.

Christy-5/25/91 (I)

J- okay...(pause)...what did you think of my science program last summer?

C- it was fun...(pause)...and...(pause)...we learned a lot and...(pause)...we did some stuff that we didn't even know how to do.
Christy-5/25/91 (I)  

J- okay,...umm...(pause)...why did you come to the summer program...(pause)...last summer?

C- ...then I just went to your science class (pause)...to learn some more.

Fernando-3/14/91 (I)  

J- what about my program...how did that affect how well you like science...(pause)...last summer?

F- it made me...umm...like science more.

Fernando-3/14/91 (I)  

J- Why are you coming next week?

F- so I can learn more about science.

J- why do you like science so much?

F- (long pause)...cause its exciting.

Jess-6/91 (I)  

J- okay,...(pause)...Did my program...(pause) help you in any way?

j- yeah, it helped me understand a little more about science...(pause)...umm...It also help me to...umm...(pause)...get...get more interested in science...(pause)...cause now I know that it's something fun to do.

J- okay

j- ...instead of some ordinary, boring thing
<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/7/91</td>
<td>J</td>
<td>okay,...umm...Did last summer's program help you any as far as school is concerned?</td>
</tr>
<tr>
<td></td>
<td>T</td>
<td>yes</td>
</tr>
<tr>
<td></td>
<td>J</td>
<td>okay, in what way?</td>
</tr>
<tr>
<td></td>
<td>T</td>
<td>(long pause)...it teach me to do new things.</td>
</tr>
<tr>
<td>3/7/91</td>
<td>J</td>
<td>okay,...umm...why did you come all the time last summer?</td>
</tr>
<tr>
<td></td>
<td>T</td>
<td>so I could learn.</td>
</tr>
<tr>
<td>3/7/91</td>
<td>J</td>
<td>why did you like the experiment?</td>
</tr>
<tr>
<td></td>
<td>T</td>
<td>(long pause)...it was fun to do</td>
</tr>
<tr>
<td></td>
<td>J</td>
<td>it was fun to do...(pause)...Okay, what made it so much fun?</td>
</tr>
<tr>
<td></td>
<td>T</td>
<td>(long pause)...playing with it</td>
</tr>
<tr>
<td>3/14/91</td>
<td>J</td>
<td>okay,...(pause)...why...why did you come to science today?</td>
</tr>
<tr>
<td></td>
<td>T</td>
<td>(pause)...to make slime</td>
</tr>
<tr>
<td></td>
<td>J</td>
<td>okay, are you coming next week?</td>
</tr>
<tr>
<td></td>
<td>T</td>
<td>yeah</td>
</tr>
<tr>
<td></td>
<td>J</td>
<td>why,...(pause)...what's going to bring you back next week.</td>
</tr>
<tr>
<td></td>
<td>T</td>
<td>(long pause)...I want to see...(pause)...what we're going to make next week.</td>
</tr>
</tbody>
</table>
J - What do you think about last summer's program?

W - fun

J - it was fun?

W - yeah

J - anything else?

W - (pause)...umm...(pause)...that teach me a lot
(pause)...of thing...(pause)...teach me a lot
of things to know...(pause)...and do.

Yhana-
5/25/91
(I)

J - Do you remember my program last summer. My
science program last summer?

Y - yeah

J - okay, what did you think about that program?

Y - I think it was fun and nice that you took
out time to teach us...(pause)...umm...the
...experiments about science.

Yhana-
5/25/91
(I)

J - okay,...(pause)...why did you come to my
science program last summer?

Y - because me and my sister...(pause)...we...
umm...(pause)...we never had been to St.
Stephens and we wanted to try it out and...
(pause)...and my friend...umm...the one that
told us it was fun and so we came...(pause)
and then she said science was fun and we
tried out science and we liked it...so...
(pause)...we kept on coming.
Theme 5- Connectedness

Some of the participants established a connection between the program and their home or school either by sharing their experiences with someone in the home or by sharing their experiences at school. The concern for "connectedness" in the lives of some of the participants is consistent with the theoretical framework discussed earlier and seems an important part of the culture and lifeworld of the participants.

Christy 7/19/90
7 1/90
(G)

C- Since they have science here, I can do science and then when I go back to school, I probably can learn more... (pause)...from this class and then maybe I won't get such a bad grade.

Christy- 8/9/90
7 1/90
(G)

J- what if I offered this program 5 days a week?

C- you could...umm...like, you can like...umm ...do science everyday and...umm...(pause) ...and then you could let...umm...(long pause)...you could let us...(pause)...us... umm...(pause)...like get...(pause)...get groups and...(pause)...think about what we want to do...(pause)...and...and our group would share it...just like in drama.

Christy- 8/9/90
7 1/90
(G)

J- what do you think about...umm...(pause)... if I continued this...uh...program and had a...(pause)...program in the fall...(pause) winter, spring?

C- yeah, cause...umm...(pause)...then when I come...(pause)...home from...umm...school and...(pause)...we have science and like I have a science test, I can just come over here and then...(pause)...umm...(pause)... can you like...umm...teach...help me with my thing?
<table>
<thead>
<tr>
<th>Christy- 8/9/90 (G)</th>
<th>J- What do you want me to come for tomorrow?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C- I can...umm...(pause)...I can bring my volcano book and stuff...</td>
</tr>
<tr>
<td></td>
<td>J- oh</td>
</tr>
<tr>
<td></td>
<td>C- ...and I'll bring my body...(pause)...book and I can learn about bodies.</td>
</tr>
<tr>
<td>Christy- 8/9/90 (I)</td>
<td>C- ...if you let somebody...if you let people bring in things that they know how to do... (pause)...umm...and then they share it to the class and then we do it.</td>
</tr>
<tr>
<td>Christy- 8/9/90 (G)</td>
<td>C- and...(pause)...and now I know and everyday I come home from...(pause)...from Thursdays and my mom says...(pause)...what you do in science class. Then I tell her and then... (pause) some things that I tell her she don't even know!</td>
</tr>
<tr>
<td>Christy- 5/25/91 (I)</td>
<td>C- cause...(pause)...when we was...when we was having some science...when we was talking about...</td>
</tr>
<tr>
<td></td>
<td>J- speak up</td>
</tr>
<tr>
<td></td>
<td>C- cause when we was talking about science at school...(pause)...umm...Mrs. Marble was asking us what kinds of science projects did we do during the summer and...(pause)...she would choose somebody's science project and then we would do...</td>
</tr>
<tr>
<td></td>
<td>J- okay,...(pause) did she choose any of yours?</td>
</tr>
<tr>
<td></td>
<td>C- ...(pause)...one</td>
</tr>
</tbody>
</table>
J- which one?

C- with the...umm...(pause)...with the air pump and the match, and the jar.

J- what do you think about...umm...(pause)...if I continued this...uh...program and had a...(pause)...program in the fall,... (pause)...winter, spring.

Okay, what do you say?

j- umm...(pause)...I'd say it's great, cause ...(pause)...we...I could have science every...(pause)...like when you come for tutoring...(pause)...I could have science ...(pause)...twice each day...(pause)...that would be a lot of fun.

J- well,...(pause)...well, if we had science here every single day...(pause)...of the week that we come. I would probably...(pause)...invite more people to come. I would have...(pause)...lots of things to do...(pause)...instead of sitting around going outside and things like that and just get hot and...(pause)...bored and things like that. I think if we had science everyday, I would probably...I'd probably have...(pause)...real good grades in science when I go to school and it would be...it would be a lot of fun. If we had science everyday...
Wesley- 5/22/91
(I)

J- what do you think about last summer's program?
W- fun
J- it was fun?
W- yeah
J- anything else?
W- (pause)...umm...(pause)...that teach me a lot...(pause)...of thing...(pause)...teach me a lot of things to know...(pause) and do. I do it at home all the time.

Yhana- 5/25/91
(I)

J- How did this program I did last summer help you?
Y- (pause)...like when the teacher would give us...(pause)...umm...ask us a question, he would...(pause)...umm...I would raise my hand...umm...he did one...(pause)...he asked us...it wasn't too long ago...about 2 weeks...he asked us about...(pause)...the clouds and how they form.
J- uh-huh
Y- ...and I told him...(pause)...what we had did and then...umm
J- what you have done where?
Y- at St. Stephen's
J- okay
Y- ...(pause)...and then he said he would try that...and he hasn't tried that yet.
The relationship that some children formed between their experiences in the program and their science experiences in the school suggests that the summer program experiences were examples the children felt were worth sharing with others. The children shared these experiences with me, with other staff members at St. Stephens, with their parents, with their teacher, and with each other. One girl in the study recruited other children for the program last summer by telling them to come because the program was fun.

Theme 6: Textbook-Centered Science Class

Although some children during the interviews related how the summer program became useful in their school science experiences, there appeared to be a distinct contrast between the science program at the center and the way the children experienced science in their schools. The children revealed in the interviews that science in their school was textbook-centered. Children who have difficulty in reading may have problems in a textbook-centered science curriculum and as a result may not get excited about science.

The following comments voiced by the children suggests that many of their science experiences in the classroom are textbook-centered:
Christy-8/9/90 (G)  C- reading a book and...(pause)...and just sitting up here listening to the teacher writing on the chalkboard...that's boring...but...

J- How many of you work out of a book?
C- ...and...umm...it's really boring...it's really boring, then...(pause)...umm...cause...
J- one at a time.
C- it's really boring...cause you just...(pause)...just read a book and then when you come here you really get to a...the experience.
J- experiments?

Christy-8/9/90 (G)  C- she'll (classroom teacher) ask the whole class to come and to sit on the rug and bring their books...their science books and it takes like...(pause)...an hour...(pause)...umm...and then we have to read the whole book and you raise your hand and if you don't pay attention...(pause)...about what...what we're reading, she'll make you...umm...go to your desk and write the whole page.

Jess-8/9/90 (G)  J- How many of you work out of a book?
j- Well, I work out of a book all the time, it's, it's, it's boring cause we don't get to do anything, all we get to do is talk about other animals. We don't talk about ourselves, we don't talk about our bodies or anything like that...all we...all we do is just talk about...(pause)...animals. It's...it's boring at...at school cause they...they don't do nothing, it's...it's like going to school and sitting there for the...like 5 hours.
Jess- 8/9/90 (G)

j- It's...it's a...a thick book that you got to read out of...you got to read it and... (pause)...its...you take it home for homework and you...(pause)...study for test and things like that...but...I think it...I think here...it's more fun cause at the schools, they don't have nothing really to do...(pause)...they just make us work and we don't get to have any fun like this.

T- umm...what kind of things do you do in science in school?

J- okay

T- umm...play with worms...(laugh)

Yhana- 8/9/90 (G)

Y- all you do in school...umm...(pause)...they just teach us...they just...umm...we had to read...(pause)...and what...and then...what we know about...soon as we get through reading we go right to a test...(pause)...and I think that we need to know more about it instead of just reading.

J- when you say more about it...what do you mean?

Y- just like they're doing here...umm...(pause)...they...umm...(pause)...they're showing us how to do it and instead of just talking about it.

Table 5, on the following page, presents the dates that the participants shared comments about the particular themes.
Table 5: Representation Of The Themes

<table>
<thead>
<tr>
<th>Theme</th>
<th>Christy</th>
<th>Fernando</th>
<th>Jess</th>
<th>Teri</th>
<th>Wesley</th>
<th>Yhana</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theme 1</td>
<td>5/91</td>
<td>3/91</td>
<td>6/91</td>
<td>3/91</td>
<td>5/91</td>
<td>5/91</td>
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<td>(Images)</td>
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<tr>
<td>Theme 2</td>
<td>5/91</td>
<td>3/91</td>
<td>6/91</td>
<td></td>
<td>5/91</td>
<td>5/91</td>
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<td>Theme 3</td>
<td>5/91</td>
<td>3/91</td>
<td>6/91</td>
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<td>5/91</td>
<td>5/91</td>
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<td>(Role Model)</td>
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<tr>
<td>Theme 4</td>
<td>8/90</td>
<td>3/91</td>
<td>6/91</td>
<td>3/91</td>
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<td>(Value)</td>
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<td>Theme 5</td>
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<td>Theme 6</td>
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<td>(Textbooks)</td>
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Discussion Of The Themes

According to Eichelberger (1989), phenomenologists assume that commonalities exist in human experiences. These commonalities may be referred to as themes.

The theme of "the image of scientists" and the influence of the media" are supported by comments from most of the participants (see Table 5). Their image of a scientist is that of "a man who wears a white jacket and glasses". The line of reasoning utilized by the children is based on their experiences and therefore is significant. The children's line of reasoning is also supported by the literature as referenced in the earlier part of this section. There appears to be a relationship between these two themes because the children of this study revealed that their image of a scientist was influenced by the media.

The third theme, "researcher as role model", is a theme with supportive comments from five of the participants. I believe this theme is significant due to the personal relationship that developed at the center between the children and me. The literature supports the potential role model relationship that can develop when the role model fits within the lifeworld of an individual. Although the children identified me as a scientist, they did not incorporate this belief into their descriptions of a scientist. It appears that the meaning assigned to
scientist" by the children may depend upon the context.

All of the participants made comments that supported the theme of "personal value". The children's comments suggest that they attended the science program because the program was meeting their needs in some way. The personal value from the science program is consistent with the reason why individuals choose to participate in different things.

The theme of "connectedness" appears to be related to the theme of "personal value". The connections that four of the children made between the science program and school or their home may be related to a need for consistency or continuity in their experiences. These children seem to recognize some value in establishing this connectedness in their lives. The significance of this theme is that children have different needs and many children need to know that the many parts of their lifeworld have connections to each other. Teachers should also be aware of children's search for connections and facilitate making connections between classroom science and the children's lives.

The theme of a "textbook-centered science class" was revealed by five of the participants. They shared with me that their teachers relied on the science textbook for providing instruction. Several of the children stated that science instruction that centers around reading the textbook is "boring" and is "no fun". This theme is related to the theme of "personal value". The needs that the children
establish as important in their lifeworld will influence the personal value that the children attach to their experiences. Several of the children in this study stated that there was a need to experience activity-based science instruction.

Teri's comments in the interviews did not relate as much to the themes that were established in this study. Unlike the other children, Teri's social studies textbook appeared to have more influence over her image of a scientist (see transcript, 3/14/91). Additionally, she did not establish me as an example of a living scientist nor did she reveal any need for connectedness in her life. By conducting more interviews with Teri, she may provide some insight into how she makes sense of her experiences in science.
Interpretation

The children's personal accounts of their perceptions of science and scientists has guided the research efforts of this study. The data presented represent knowledge constructed by the children of the study.

This knowledge was revealed through a methodology that encourages individuals to tell their story from their perspective and in their own voice. An interpretation of these stories is a complex process and requires a careful analysis of the data. According to McCutcheon (1981):

Interpretation serves the function of allowing a researcher and an audience to make sense of what transpired in a setting, yielding a patterned, synthesized understanding of it. Interpretation can also serve to exemplify and illuminate theory or point to inadequacies in theory. It functions, then, in facilitating the conveying to readers of the nature of phenomena explored and also in building and critiquing theory.
According to McCutcheon (1981), the several criteria for judging interpretations include: 1) sufficiency of evidence supporting an interpretation, 2) whether the line of reasoning is based on defensible assumptions and is reasoned, 3) the significance of the interpretation, and 4) whether it accords with what else is known about the phenomenon.

The process of interpretation involves the researcher in making sense of data through his or her perceptions and perspectives. McCutcheon (1981) states:

Clearly, in interpreting events, the researcher is highly involved in the creation of meaning. The researcher is the perceptual lens through which observations are made and interpreted, so the researcher profoundly affects what can be understood.

The interpretation of the knowledge that has been constructed by the children in this study offers other researchers the opportunity to share the meanings from this data. In this fashion, interpretive work is intersubjective; potentially, the audience can share the understanding and the interpretation the researcher has constructed (McCutcheon, 1981).
I believe that the interpretations and recommendations based upon the data from this study will offer the research community new insights into a problem that has had a perplexing effect on this community. Also, I believe that the hermeneutic phenomenological thought will provide a greater understanding of the reality of the children. The way they perceive their lifeworld is critical to an understanding of the way they perceive science.

The image that the children described of science and scientists revealed that the media exerts a very powerful influence on them. Within the lifeworld of the children, the television appears to shape their perceptions of science and scientists. The children's science teacher and the community science leader was not described as their image of a scientist. Although the children were able to identify these two individuals as science people, the children did not assimilate these individuals into their mental images of a scientist. The concern becomes how to establish an image of science and scientists that reflects the science community.

If we provide science instruction to children at an early age in a variety of contexts, then the children's perception of science may be disengaged from traditional images. This traditional image needs to be replaced by a
"real world" image of science and scientists. The popular image of science and scientists, documented in the literature and also revealed in the data is not consistent with the image "of those who do science".

It has been suggested by many researchers (Rowe, 1977, Thomas, 1986, and Hill, Pettus, and Hedin, 1990) that black role models might offer young black children the type of relationship that could stimulate an increased interest in science. I believe that in order to establish this meaningful relationship, the role models must be seen by the children as legitimately fitting into their lifeworld. According to Anderson (1989), minority and disadvantaged students are heavily located in low-income areas and urban schools, yet Malcom (1990) states that scientists come from families that are "cumulatively advantaged". This difference in socio-economic status needs to be analyzed to determine its effect upon the establishment of a "role model" relationship. Cultural values and concerns may be issues that need to be addressed before any assumptions can be made about the impact of black science role models on young black children.

Another concern is the image many children in the study had of their science classes. These images suggest that
science, as perceived by the children, in many elementary classrooms is not activity-based or hands-on. These perceptions lead me to believe that science in many schools has gained the image of a very disciplined and structured subject, and very boring, even at the elementary level.

Presenting science in the social context in which children structure their reality, in addition to the school setting, will provide a greater chance for children to perceive science less as a subject to study and more as an activity affecting their daily lives. According to Anderson (1989), there must be home-school-community wide efforts to raise black student's awareness of how science affect their lives and to increase their understanding of the interaction among science, technology, and society.

The community center context not only has the potential for accomplishing these goals but this context can help empower blacks. If blacks develop scientific knowledge through their own resources, science learning has the possibility of gaining greater significance in the black community. This context of presenting science in the children's particular social setting can help children develop a connection between their world and the world of science. The children who shared their experiences at home and the children who tried the activities at home are
children who have begun to incorporate these community experiences into their lifeworld.

If science education gains a more important role in the black community, then we may find increased support and involvement of parents in their child's school science experience. According to Beane (1985), a lack of support from parents is one factor contributing to a black students' avoidance of higher-level science courses. In this study, we saw evidence of parental support, although this support may not be transferred to the schools. Informal science programs provide a useful mechanism for parental involvement.

As members of the black community become more cognizant of the role of science in the community, they are in a better position to make informed decisions pertaining not only to the school science curriculum but also to science and societal issues. These decisions may bring a different perspective to the way we view science and influence how we solve scientific and societal issues. If a global perspective is indeed one goal for the 90's, then it is imperative that the black segment of our society and other traditionally underrepresented groups be represented.

Science programs in the community also provide a context 1) for research examining some of the issues that have been identified concerning blacks in science and 2) for
developing a more powerful lens for identifying and addressing such issues. Since the community is a significant part of the lifeworld of children, research that takes place in this context can offer the researcher a different perspective on issues related to blacks and science. For example, "connectedness" which was identified as a significant part of the research framework was a theme that developed from this study.

The research framework also influenced the structure of the program. It helped me gain an understanding of how the children experience phenomena and build these experiences into their descriptions of phenomena.

The goals of On Target! include gaining an understanding of the factors that the children identify as important and relevant for creating an interest in science. These needs, perceived by the children, are important considerations for establishing the rationale for this type of program. These needs must be revealed and analyzed before we can gain an understanding of the decision-making processes of young children which establish "science as a worthwhile pursuit", "science as a useful activity for everyday living", and "science as necessary for making informed decisions".
**Recommendations**

This study offers new contributions to this body of literature on the underrepresentation of blacks in science. The results of this study suggest that "children's expectations" of science instruction may be related to developing an interest in science. Many of the children in the study participated in the science program because they had particular expectations or personal needs related to science. For example, many of the children wanted to learn new things, improve their school science performance, or just have fun. If this science program met these needs or provided the children with what they expected, then their interest in the program and in science may increase. This may also help determine whether the children perceived the program as being successful.

Another factor that needs to be analyzed is the influence of stereotypes and the "fixedness" of these stereotypes on the children's thinking. The media's role in establishing these stereotypes is a factor that needs to be analyzed to determine the influence of the media upon the value individuals place on science and scientists and also the media's influence upon the selection of science careers by various cultural groups. The methodology utilized in this study provides a means for understanding the media's
influence on science. One recommendation would be to provide collaborations between science educators and the media in order to help change the media's image of scientist.

Another factor that needs to be discussed is the "school image" science versus the image of science instruction in other contexts. The image of science in the community setting may offer some implications for changing the way we do science in school. For example, the involvement of the children in the process of instruction, the activity-based science experiences, and the informal setting are several ideas that may have implications for school science.

Another factor is "what counts as science" in the minds of the children. The children's description of "what counts as science" is similar in the community context and in the school setting. I believe this to be true because the types of activities that the children suggested for the community science program were exactly the type of activities that they had read about or perhaps, had experienced in school science. For example, one child shared how she had read about volcanoes and had a volcano book and wanted to make a volcano during one of the sessions. Also, during the informal discussions, many children talked about their school science experiences.
CHAPTER VI
IMPLICATIONS AND CONCLUSION

Implications

This section will discuss the several implications that were stated in an earlier section:

1) The need for providing a science curriculum with a greater representation of minority contributions.

Since the children from the study described scientists as "white men" and could only name black scientists of the past suggests that their science curriculum does not include the contributions of black scientists or women scientists that are living and working today. A more appropriate curriculum might increase student's awareness of the current blacks and women in science. These scientist can provide the children with a greater awareness of the way blacks and women are influencing science as we know it today.

A cultural difference exists between the children and who they describe as scientists. If schools incorporate practicing minority scientists into the pages of the science curriculum; then the description of a scientist may become
more consistent with the cultural identities of the individuals providing the descriptions. The practicing minority scientist can provide an image of scientist contrary to the image found in the media.

2) Strengthening the current community-based science program.

Based on the data from the study, I should consider offering the current On Target! program more than one day a week. This decision is based on comments from the children asking the researcher to come back the following day to do science. The children's interest in experiencing science more often suggests that the program was personally valuable for them.

According to the children, another way to strengthen this community-based organization (CBO), is to offer a tutorial experience where the children can bring their science books and learn or share their knowledge.

This context for providing science instruction and for researching socio-cultural issues in science learning can serve to increase our understanding of the way young black children experience science and the way these experiences shape their perceptions of science and scientists. This
need has been recognized by organizations such as the National Science Foundation, The Urban League, and the American Association for the Advancement of Science, who provided financial support for science programs targeted at minorities. I believe that support in the form of funding and planning serves to strengthen and increase the number of community-based science programs. This study as well gives evidence of the need for such programs and the potential contributions of these programs.

3) The need for linking science resources to minority communities.

The issue of the empowerment of blacks and the increased significance of science in the black community are issues that become important when we link science resources to the black community. If scientists are moving and working within the black community, then their visibility may cause children to identify with them and incorporate them into their lifeworld.

The mobility experienced by some inner-city families, may affect the education of their children. When children move from one school to another, many times, they spend much of their time catching up and find it impossible to complete
long-term projects and assignments. The community-based science experience can serve to provide children with resources and instruction to help children who fall behind.

4) The potential of increasing the collaboration between school systems and community-based centers.

The contrast between the children's school science experience and the community center experience suggests that collaborative efforts are needed to help create experiences that complement each other and can work synergistically with one another. These efforts can help provide an experience that strengthens the school science curriculum as well as the community science curriculum. The "connectedness" that some children described between their experiences at home, in school, and in the community suggest that collaborations between schools and communities are important issues to consider. One way to provide this collaboration is to offer classroom teachers an opportunity to participate in a community science experience.
Suggestions For Future Research

The need for more research is suggested from the results of this study. For example, although the children identified me as a scientist, their images of a scientist was more consistent with the images portrayed in the media. More research needs to be conducted to understand why the media's influence is so powerful. Research efforts should also be devoted to identifying strategies which can help replace this image with a "real world" image of scientists.

The theme of "connectedness" is important for many children and this "connectedness" influences which experiences children will perceive as valuable. Research needs to be conducted to learn how this "connectedness" influences children's perceptions of science, as well as their achievement in science.

The term "scientist" needs to be understood. Research efforts should focus on gaining an understanding of the distinctions that children make when referring to a "scientist". There needs to be an understanding as to whether the term refers to a practicing scientist or to a science teacher. This distinction will influence how we interpret data.

More research needs to be conducted on community-based science organizations to gain an understanding as to how
these organizations affect school science performance, as well as children's perceptions of science. This study offers the research community some insight into these concerns but additional research is required in order to strengthen community-based science organizations.

Although the science program that I conducted has not been formally evaluated, I believe that there are ways to strengthen this program and the research efforts. Parents could become a valuable asset to the program as well as to the research efforts. They can present another perspective on the participants in the study. Classroom teachers can also provide insight about the children by revealing information about the children's performance in school science. These individuals are also a part of the lifeworld of the children and can provide significant data for this study.
Conclusion

When the researcher becomes, in a sense, a "member" of the community that is involved in the production of knowledge, the researcher is in a better position to understand the processes that led to that knowledge. Since knowledge is socially-constructed, then it follows that a clear understanding of what constitutes knowledge for a group requires social involvement within the group.

I chose a methodology that provided the opportunity to get to know the research participants and just as important, the participants also got a chance to know me. The concern for establishing a research setting that allows the participants to know the researcher was an important issue. My background and my intentions were important pieces of information that the participants had.

Giving the participants access to this knowledge is important for gaining access to their knowledge. Trust and willingness to share information occurs more readily between people that have an understanding of each other's intentions. The children understood the purpose of my presence at the community center. This purpose gave me my identity at the center. This identity influenced how and what the children communicated to me.
I believe that the term "science" even took on a new meaning for the children at the center because of the relationship that was established between the children and me. Whenever the children would come into contact with me, they made comments such as "When is science?", "I want to do science!", or "I was looking for you!" The children also tugged and pulled on me while asking about science and many children even followed me around as if I was "A Pied Piper". One boy decided not to go on a field trip just to stay at the center and do science!

I believe that these examples validate the basic assumptions about how to change the children's perceptions about science. If the children establish a personal relationship with a scientist, and then experience science as an activity that is consistent with their needs and values, then the children's perceptions of science and scientist may change. I believe that the needs and values of the participants are considerations that must become an issue if we expect to change this underrepresented group into a representative number of individuals who want to do science, whether informally, formally, or professionally.
APPENDIX A

INTERVIEW TRANSCRIPTS

Christy- pp. 100-125
Fernando- pp. 126-141
Jess- pp. 142-158
Teri- pp. 159-169
Willie- pp. 170-183
Yhana- pp. 184-202

Art Teacher- pp. 203-225
J- What's your name? Christy? What do you think about this experiment?

C- it's fun.

J- You like it? Why is it fun?

C- ...Cause...umm...you get to learn about the clouds and that's what I...(pause)...always wanted to learn about.

J- Okay

C- What kind...what kind of experiments have you been doing? ...(pause)...Okay, go ahead, tell me.

J- umm...(pause)...We did...(pause)...candy, slime,... (pause)...and...(pause)...

D- That was last week, right?

C- ...crystals,...(pause)...and...(pause)...we made... (pause)...crystals from sugar...

D- ...that's it...(pause)...you can't think of anything else?

D- Did you make clouds...clouds with dry ice, too?

C- She (Dr. Carter) put it...(pause)...(dry ice) in a bag, ...(pause)...a plastic bag and the ba...plastic bag... ble...blew up...(pause)...and then...umm...(pause)... she said...(pause)...when she took...when she opened the bag...something was supposed to happen...but nothing happened and then it was like...?? when you put ice in it...it starts bubbling and all this smoke and steam would come out.

D- Was that dry ice you put in there or regular ice?

C- dry ice

C- ...and then, if you touch the ice, you will burn yourself.

8/9/90
D- uh-huh, right...it's so cold.

D- So when you come to science ...(pause)...here...(pause) how does that make you feel?

j- Great,...(pause)...you can make things.

C- That's what I want to do when I come to science.

D- You do? Do you think coming here...(pause)...and to do the science...has helped you decide to be a scientist?

C- I'm not very good in science...(pause)...umm...I made a bad grade in science.

D- Yeah

C- ...(pause)...I made a "D".

D- Well, is...is science in school different than the kind of science you been doing here?

C- They...they make you answer questions?

J- Where? ...in school?

C- Yeah

J- Yeah

j- Yeah

J- So, how is science here different from science in school? what's another way?

C- ...and also you...(pause)...you have to answer questions are hard...like...(pause)...umm...(pause)...uh...they...they...umm...be making you...(pause)...like...(pause)...things about your body parts and stuff like that.

D- So how, do you, how do you learn about that in school...how do you find out about...say herivores and things?

C- In books...and...(pause)...you got to study real hard.

J- Okay,...(pause)...what are you going to say?
Like if... (pause)... at our school... if you like... (pause)... science... (pause)... and... (pause)... it's really important... she'll ask the whole class to come and to sit on the rug and bring their books... their science books and it takes like... (pause)... an hour... (pause)... umm... and then we have to read the whole book and you raise your hand and if you don't pay attention (pause)... about what... what we're reading, she'll make you... umm... go to your desk and write the whole page.

The things that we do about extra credit, (pause). Mrs. P. (pause)... we did... one thing... (pause)... she... umm... (pause)... if we got a bad grade in science or math or something like that she... umm... (pause)... she let us... (pause)... she let us get extra credit because she would give us like... (pause)... like a paper and then you have to write... (pause)... to your penpal or something and then if she thinks it's good... (pause)... then she'll give you extra credit if you... if you don't... if she don't think you really did good, she'll give you half of the extra credit... umm... (pause)...

... the thing I did was... (pause)... I wrote a letter to my penpal and then I told him that... umm... (pause)... I told him about... (pause)... science and stuff like that... (pause)... and then... (pause)... she said... she thought it was good... (pause)... and I got... I got a good grade... (pause)... at first I had a bad grade but then I got a good... (pause)... grade.
Christy

C- My best...(pause)...was making the clouds...(pause)...and...umm...

J- What we did today?

C- Yeah

J- You really like that?

C- Yeah...(pause)...cause...umm...(pause)...I used to look up in the sky and say...(pause)...how you make the clouds and then...(pause)...umm...(pause)...then...umm...(pause)...today, we made clouds.

J- uh-huh

C- and...(pause)...and now I know and everyday I come home from...(pause)...from Thursdays and my mom says...(pause)...what you do in science class. Then I tell her and then...some things that I tell her she don't even know.

C- umm...(pause)...because...(pause)...reading a book is...

J- What were you going to say, Christy?

C- Reading a book and...(pause)...and just sitting up here listening to the teacher writing on the chalkboard...that's boring...but...

J- How many of you work out of a book?

C- ...and...umm...it's really boring...
It's really boring, then...(pause)...umm...cause...

J- One at a time.

C- It's really boring...cause you just...(pause)...just read a book and then when you come here you really get to a...the experience.

J- experiments? 8/9/90
C- Yeah, and...umm...(pause)...it's real fun to learn how to do this stuff, especially when you want to be what you're doing.

C- My best one is health (best subject)

J- We'll finish up in a few minutes.

C- My best one is health

D- Yeah, we're almost done.

D- Coming back to what you guys have been doing here over the last few weeks...(pause)...umm...(pause)...if there's anything that you wanted to tell...(pause)...Mr. Nesbitt about...(pause)...the way you can do things here or the way to make...to make science better here, what would you tell him?

C- umm

D- How could it be better?

C- umm...If you...umm...(pause)

D- One at a time.

C- ...if you let somebody...if you let people bring in things that they know how to do...(pause)...umm...and then they share it to the class and then we do it.

J- Okay

D- You mean kids or...

C- yeah

J- Bring some of your favorite things? Huh.

C- ...and do it.

J- Okay

J- What if I offered this program 5 days a week?

C- You could...umm...like, you can like...umm...do science everyday and...umm...(pause)...and then you could let...
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umm...(long pause)...you could let us...(pause)...us...
umm...(pause)...like get...(pause)...get groups and...
(pause)...think about what we want to do...(pause)...and...
and our group would share it...just like in drama.

J- What do you think about...umm...(pause)...if I continued
this...uh...program and had a...(pause)...program in the
fall,...(pause)...winter, spring?

J- What do you say?

C- Yeah, cause...umm...(pause)...then when I come...(pause)
home from...umm...school and...(pause)...we have science
and like I have a science test, I can just come over
here and then...(pause)...umm...(pause)...can you like...
...umm...teach...help me with my thing?

C- Can you like...(pause)...people come in...(pause)...like...(pause)

C- ...umm...(pause)...Why can't you just like...(pause)...let...let...umm...(pause)...one of us...umm...come...
(pause)...come in...(pause)...one of these days this
week and we can...umm...(pause)...we can like...(pause)
...do experiments or...(pause)...talk about something
that we can do.

J- One of these days?

C- Yeah

J- You mean besides Thursdays?

C- My sister's coming in here.

J- Let her come on in.

J- You want to answer a few questions (Yhana)?

C- Can you...can you come...Can you? Can you? Can you?

J- ...other than Thursdays?

C- Yeah

J- We are going to leave it at Thursdays right now.

C- No, I'm talking about let...let...let 3 people...(pause)
let 3 people or 1 person come here and talk...(pause)...like...
somebody talk...(pause)...about...(pause)...umm...
...things that we could do instead of things that we
could not do.
J- I'm not following you on that.
D- Could do for science, here you mean?
C- Yeah
D- like what?
C- You could like...(long pause)...like volcanoes.
J- Have someone come in and tell us what we can do?
C- Yeah, cause I got a volcano book and stuff, and...
J- See, I want you folks to decide what we can and cannot do and what you would like to do...
C- I know...cause...umm...(pause)...when lava...when the stuff come out...(pause)...the stuff inside the volcano is called lava but when it comes out it's called...umm ...(pause)...mantle.
Y- "maca"
J-- mantle?
C- Yeah
C- Do you...umm...(pause)...want to make a volcano this fall?
C- Yeah
Y- to see how...to show how it erupts...???
J- Okay
J- See, I want to do some of the things you're interested in, not just (you know) things I think you're interested in. I want you to tell me the kinds of things you want to do.
C- Could you, could...(pause)...could you like do that? Can you do that though?

J- Do what?

C- Can, can you, can you like have...

C- Could you like...umm...(pause)...do what I said...umm...let somebody come and...(pause)...tell about what we can do?

J- Do we really need someone to tell us that? I mean I want, I'm relying on...uh...you to tell me what to do. See, I want you...you said you like making volcanoes...(pause)...I'd rather you tell me what you want to do...(pause)...and that's what we're going to do.

D- So what you want...you want to know what...what's possible and you want to pick out of that?...what you want to do? Is that it?

C- Yeah, cause, I can come...I can come...(pause)...I can come...(pause) Friday...(pause)...or Monday or Tuesday or Wednesday. Can I come...?

C- Can...(pause)...can I...(pause)...can...(pause)...Can I come...(pause)...Friday?

J- ...tomorrow

C- Yeah

J- I don't think I'll be here tomorrow. I thought about...

C- ...Wednesday?

J- ...coming over tomorrow to do some more interviewing...but I doubt it now since you know...we interviewed now.

C- Well, just come and I could...

C- ...and...umm...

J- What do you want me to come for tomorrow?
C- I can...umm...(pause)...I can bring my volcano book and stuff...

J- Oh

C- ...and I'll bring my body...(pause)...book and I can learn about bodies.

J- Can you bring it next Thursday?

C- Yeah

J- Okay

J- Are there any more questions?

D- Thanks alot.
J- Today, is Saturday...(pause)...May 25th...(pause)...and I'm going to interview, Christy.

J- (pause)...Okay,...(pause)...Christy, what grade are you in?

C- 4th

J- Okay, speak up

C- 4th

J- 4th grade...(pause)...okay...umm...pause

J- Do you do science in school this year?

C- No

J- No,...(pause)...okay...(pause)...has your teacher...has your teacher done any science this school year?

C- Yes

J- What did she do?

C- uh...we used salt, sugar, and baking soda...(pause)

J- uh-huh

C- and...(pause)...flour and we...(pause)...put vinegar in it...(pause)...and we stirred it up and started mixing it and

J- uh-huh

C- ...see what would happen and then we put some brown stuff in it...

J- What's the brown stuff?

C- (pause)..."excel?" something?

J- Okay,...(pause)...when did our teacher do this experiment?

C- umm...April the 20...(pause)...second

J- Okay, April...(pause)...Okay,...(pause)...how much science has your teacher done in school?
C- one

J- (pause)...Just that one?

C- nod

J- Okay,...(pause)...okay, do you...uh...do you remember uh...(pause)...my science program last summer?

C- Uh-huh

J- Okay,...(pause)...what did you think of my science program last summer?

C- It was fun...(pause)... and...umm...we learned a lot and...umm...we did some stuff that we didn't even know how to do.

J- Okay,...(pause)...umm...how did it help you?

C- ...cause...(pause)...when we was...when we was having some science...when we was talking about...

J- speak up

C- cause when we was talking about science at school...(pause)...umm...Mrs. Marshall was asking us what kinds of science projects did we do during the summer and...(pause)...she would choose somebody's science project and then we would do...

J- Okay,...(pause)...did she choose any of yours?

C- (pause)...One

J- Which one?

C- with the...umm...(pause)...with the air pump, and the match, and the jar.

J- Who did that last summer?

C- (pause)...You!

J- Oh, when...(pause)...that man came out...(pause)...Okay

J- umm...(pause) Are you interested in science?

C- uh-huh

J- Okay,...(pause)...How long have you been interested in science?
C- (pause)...uh...every since I made...every since I did a project through science.

J- When was that?

C- (pause)...when last summer...(pause)...umm...(pause). When I was in your class...(pause)...and when I was in Ms. Pavetta's class

J- What grade does Ms. Perry teach?

C- 3rd

J- 3rd grade? ...(pause)...How much science did Ms. Perry do?

C- (pause)...we had...(pause)...science mostly...(pause)...everyday...(pause)...and every...(pause)...we wouldn't have it every other day...(pause)...it would just be everyday.

J- Okay, you told me last summer that you had gotten a bad grade in science...(pause)...Is that right?

C- uh-huh

J- (pause)...Okay,...(pause)...but you don't have science this year?

C- (pause)...uh-uh

J- Okay,...umm...(pause)...why did you come to the summer program (pause) last summer?

C- (pause)...cause...(pause)...umm...I wanted to be in science after I was in Ms. Perry's class cause I wanted to be a scientist when I grow up...(pause)...but...

J- Okay

C- then I just went to your science class...(pause)...to learn some more.

J- Okay,...(pause)...could...(pause)...okay...umm...(pause) Could you ever see yourself as a scientist.

C- Yes

J- Yes,...(pause)...why?
C- (pause)...cause...(pause)...I...umm...(pause)...I don't mess up a lot in science...(pause)...and...(pause)...I like to experiment.

J- Okay,...(pause)... Do you like science?
C- uh-huh

J- Okay,...(pause)...Can anybody become a scientist?
C- (pause)..

J- What do you think?
C- Not anybody
J- Why?

C- (pause)...cause...(pause)...maybe you're not just born to be a scientist. Maybe you're just born to be something else.

J- Okay, so you think...uh...people are born to be a scientist?
C- Uh-huh

J- Okay,...(pause)...I'm a scientist...(pause)...was I born to be a scientist?
C- If you're one now!

J- Okay,...(pause)...umm...(long pause)...so if you become a scientist, what does that mean?
C- (pause)...that I was born to be a scientist.

J- Okay, why do you feel...(pause)...you're born to be a scientist?
C- (pause)...because science is...(pause)...hard and...(pause)...and you need to be...(pause)...born to be a scientist to know all the techniques and stuff.

J- Okay,...(pause)...okay...(pause)... but can someone...(pause)...learn...(pause)...how to become a scientist?
C- They can be trained...(pause)...but they probably won't be as well
J- Okay

J- (pause)...umm...(pause)...Do you know any...uh...(pause)
scientists...the names of any scientists?

C- (long pause) uh-uh

J- No

J- Do you know any black scientists?

C- (long pause)...I think he was a scientist...(pause)...the first one to do...(pause)...uh...(pause)...do a...
(pause)...open...(pause)...heart operations.

J- Okay, you...you don't remember his name. Do you remember
his name?

C- uh-uh

J- No...(pause)...okay,...umm...Do you know any scientists
that are living...(pause)...today and working today?

C- (long pause) No, but probably the weatherman?
...people...(pause)...that learn about...(pause)

J- The weatherman?

C- uh-huh

J- Okay

J- (pause)... Describe what a scientist looks like.

C- He wears lots of masks...they wear lots masks...(pause)
umm...(pause)...they...(pause)...they...(pause)...they...umm...(pause)...they sit in a dark room, sometimes they float.

J- (pause)...they float?

C- If they...if they...umm...(pause)...and...(pause)...the
machines that they try to see...(pause)...if you're
suppose to float...(pause)...or...(pause)...if you can
die in that machine.
J- Okay, where have you seen these scientists doing that floating?

C- ...moving around...talking...

J- Where, I mean...(pause)...you say sometimes they float ...have you seen scientists do this somewhere?

C- On TV...(pause)...and then when I go to the...umm.. (pause)...to...uh...(pause)...to COSI (Center Of Science and Industry)...you look real high...(pause)

J- uh-huh

C- and there's like this little...(pause)...thing that goes up...up...and up and you can see little...(pause)...little things floating in the air without dropping.

J- Okay,...(pause)...umm...(pause)...anything else about how scientist look? How do scientist look?

C- (long pause) Just like you!

J- Huh

C- Just like you!

J- Like me?...(pause)...Okay.

J- Could you tell that I was a scientist by looking at me?

J- (pause)

J- ...when you first saw me?

C- (pause)...I knew you was a scientist.

J- How did you know?

C- Cause people told me.

J- Oh, okay,...(pause)...alright, thanks a lot, Christy.
Christy

J- Christy, today is Monday, ...(pause)...May 27th and I have a few more questions to ask you.

J- My first questions is ...(pause)...what is science?

C- (pause)...umm...(long pause)...umm...the study about...(pause)...life and...(pause)...nature.

J- Okay...(pause)...you study science in school...(pause) so that's why I wanted to get a...uh...(pause)...your definition of what you think science is. ...(pause)...so do you have anything to add to that?

C- (long pause)...uh-uh

J- Okay, do you think science is important?

C- (pause)...yes

J- Why?

C- Cause if...(pause)...if we didn't have science...(pause)...then we wouldn't...(pause)...we wouldn't have...(pause)...TV,...(pause) telescopes, telephones,...(pause)...and heaters and stuff.

J- Okay,...(pause)...umm...(pause)...is there anything you dislike about science...(pause)...in school?

C- It's boring just reading a book but when you can do...(pause)...umm...the experiments its interesting.

J- Okay,...(pause)...would you like to do more experiments in school science?

C- (pause)...uh-huh

J- Okay,...(pause)...you were describing one experiment you did in school, when you took salt,...(pause)...sugar, baking soda, flour, and vinegar, you said some brown stuff? ...(pause)...what did you say that brown stuff was?

C- (pause)..."ex-nine?"

J- Huh? 5/27/91
C- "ex-nine?" or something?

J- Oh, okay, I still don't know what it is but anyway. What...what were you trying to show with this experiment? What were you doing?

C- We were seeing what would happen if we add some stuff or mix some stuff together.

J- uh-huh

C- ...and if we add vinegar...it would start sizzling... (pause)...and then it would...(pause)...kinda...(pause) rise up and then it...go back down.

J- Oh, okay,...so that was the purpose of it?

C- Uh-huh

J- Huh?

C- Yep

J- Okay,...(pause)...why do you feel we need science? I think I asked you do you think science is important? and you said yes...(pause)...ummm...(pause)...I'm asking you in a different way, why do you feel we need science or scientists?

C- (pause)...So we can have some of the things that we have now.

J- Okay,...(pause)...I believe that's it. ...(pause)...Thanks a lot.
This is the 6th or 7th week of our program...(pause)...and...(pause)...today is what, Thursday, July 19th...(pause)...and...(pause)...some of you have been here before and some of you are new. Now, today, we are going to make crystals and it's important...(pause)...to be here next week so that you can look at your crystals. It's going to take...uh...probably a week for the crystals to form...(pause)...you're not going to see the crystals form today...(pause)...alright. You are just going...uh...prepare the solution...(pause)...and get the experiment...(pause)...completed today and you are going to see your results next...(pause)...you'll see your results of...of today's experiment. That's why I took my time in the gym trying to get students...(pause)...who are going to come every week...(pause)...I want students who are committed...(pause)...who are going to come every week and some of you have been here three and four times and some of you...this is your first time. Last week, I had 14 people and I thought I was going to get all 14 same faces back but I do see some...how many were here last week?...(pause)...Just last...Wesley, you weren't here...(pause)...one, two. Weren't you here last week?

J- no?

J- Okay, just two, and I hope those two continue...so Wesley's been here before and Rita's been here before and you've been here before...

J- Okay, now...(pause)...I'm tape recording this...(pause)...and...(pause)...we are just going to have a little discussion to begin with. I heard him say that he has made crystals. Right?

J- Has anyone else in here made crystals before. This is something you can do at home. The kind we are going to make are safe. Huh. name, first.

C- My name is Christy and I made...(pause)...my crystals...(pause)...at...umm...at home because I had a project to do.

J- Okay, she made...what kind of project did you have to do?...for school.

7/19/90
J- What grade were you in when you made the project?
C- 3rd
J- 3rd grade...tell me a little bit about the project.
C- umm...(pause)...we had to...(pause)...get...umm...some kind of book and I chose the encyclopedia and I made... (pause)...I made a...some crystals and my sister helped me and then...(pause)...I copied off what the encyclopedia said do and then that's how I made crystals
J- Were you successful? Did they turn out, okay?
C- (pause)...I didn't think they would.
J- You didn't think they would?
C- We'll see how they turn out today.
J- Oh, how do you make crystals? Who know crystals...How to make crystals?
J- I think...I think you should...umm...put it in like some water...(pause)...and have you...(pause)...have boiled the...umm...salt...(pause)...have it in there and let it ...umm...take all the water out and let it sit there and ...umm...like it get shapes.
J- Okay.
J- Anybody have a watch on...(pause)...no I think its probably getting kind of late but before we get started I want to ask one more question. A lot of you kept saying, I want to come in here today...(pause)...I want to come to science...(pause)...Okay, I want to hear some reasons why you wanted to come so badly today? Alright, give me your name and your answer. Why did you want to come to science so badly today...Cause some of you kept ...you know...saying to me consistently, I want to come, I want to come...choose me.
J- Name? Why did you want to come?
C- ...because...(pause)...umm...when I was in...(pause)...I mean my name is Christy...and when I was in...umm..3rd grade...(pause)...umm...I got a bad grade in it and then since I...umm...(pause)...since they have science here,
I can do science.

J- Since what?

C- Since they have science here, I can do science and then when I go back to school, I probably can learn more... (pause)...from this class and then maybe I won't get such a bad grade.

J- Okay, good,...(pause)...very good answer.

J- Wesley?

W- ...mine would be the same like hers.

J- What answer? Let's hear you say what she said?

W- (pause)...I forgot.

J- Put it in your own words... (pause)...what did she say? (pause)... 

J- You said your answer is like hers, right?

J- Okay, what's your answer... (pause)...Go ahead. I had a bad grade... (pause)...I... (pause)...sometimes... (pause)...my... umm... my teacher never teach me science.

J- She doesn't?

J- What grade are you in?

W- 5th

J- 5th grade. You don't do science in the 5th grade?

W- nod

J- ...at all?

W- (pause)...she just teach... umm... 4th and... (pause)...3rd (pause) grade.

J- Okay, what does she have, 3rd, 4th, and 5th grades in the same classroom?

W- yeah

J- What school is that?
W- (pause)...Linden
J- Do you do any science?
W- (pause)...When I was in the 4th grade. Yeah.
J- uh-huh
J- Alright
W- I did the one you put the penny...
J- uh-huh
W- The ??? on a penny.
J- uh-huh
J- Okay, your answer is like hers...she said something about bad grades.
W- uh-huh. I forgot that one. I got me another one. I got me another one.
J- So is your reason like hers or what?
W- No
J- No, it's just that you don't do science in the 5th grade.
J- Okay
j- My name is Jess, the...(pause)...the reason why...(pause)...the reason why I like...(pause)...umm... science is because you get to...(pause)...dissect things like frogs and other animals.
J- Okay
j- ...and I think...I think that's a real neat thing.
J- Okay.
Christy and Yhana

J- Okay, today is...(pause)...Thursday,...(pause)...August ...8th...(pause)?

J- Okay

J- ...and this is the last...(pause)...time being in science until this fall and I'll come over here for the winter session and do some of the same things and I want to make slime again. How many were here when we made slime...(pause)...see you folks missed out on slime making but that's something I want to do again. Now what I want to do...you four have been in here quite a bit...

C- What about candy?...

J- ...I want to talk to...

J- Yes, candy, too.
   I want to make candy, too.

J- I want to talk to these new people here. Okay,...(pause)...what made you want to come in here today?

C- I brought them (other children) in today.

J- How many people did you tell that we were making oobleck

C- That one, that one, that one, and that one.

Y- No, you didn't. They just came with Debra.

J- ...but anyway...(pause)...the word spread...(pause)...and they heard from...(pause)...probably, Christy and...(pause)...maybe somebody told the others.

C- Christy

J- Christy- I got to learn how to say her name.

J- Alright,...(pause)...I mentioned last week how we made oobleck. Who over here can...uh...(pause)...tell me what you use? It's real easy, isn't it. How do you make it?

Y- starch and water 8/8/90
J- Just starch and water. Don't open it yet...but you got to have the right amount of starch.

J- Now you know anything about oobleck?

C- You said that...umm...(pause)...you can...(pause)...you can...umm...(pause)...you can...(pause)...beat it...(pause)...uh...(pause)...and you can...umm...take it home...(pause)...and you said...(pause)...

J- Okay, what did I say about...about oobleck.

Y- umm...(pause)...you said you can stretch...uh...you can do a lot of things with...you can have fun with it...(pause)...and you said that...umm...we would like it.

J- Yeah...(pause)...and one thing...you know...you can make it at home...(pause)...the only thing is that you have to be careful that you have the right amount of water to corn starch. Don't open it...you don't want to have too much water because if you do it's going to be too soupy...(pause)...and if you don't have enough, it's not going to be mixed right.

J- Now...(pause)...before we get started because this is the only thing we're going to do today. I see I'm going to miss this group. I enjoyed doing this, this summer (pause)...this science program with all of you...(pause) and I just want to...(pause)...ask you four since you've been here quite a while, what you thought about some of the activities because I think you've been here quite a few times so I'm asking you four since you're the only ones that...(pause)...have been here...

J- Tell me your name and then...you know...tell me what you thought about...(pause)...the science fun that we had or the science experiments we did.

J- Alright, now let me go to you and tell me, what did you like...(pause)...or why did you like the program.

Y- umm...(pause)...I want to say both of them. I like...(pause)...umm...(pause)...the program...(pause) uh...(pause)...I like...(pause)...umm...(pause)...

J- ...take your time

Y- I like the program because...(pause) you got to...uh... make things that I did even know how to make and...
(pause)...

J- ...like what?

Y- umm...(pause)...I didn't know how to make slime...

J- Okay

Y- ...and...(pause)...

J- Did you have a second reason?

Y- (pause)...uh...(pause)...and umm...(pause)

Y- I like it because it was fun...(pause)...and we got to do a lot of things...(pause).

J- okay

J- Let me go to Christy, Christy.

C- I like science because we get to learn a lot of things and...(pause)...we umm...(pause)...

J- Why did you like this program?

C- (pause)...cause it was fun.

J- ...it was fun? What was fun?

C- When we got to learn about things and...(pause)...make things...(pause)...and it was better than school science.

J- It was?

J- Why?

C- ...cause you read...you read at school science but you...(pause)...get to make the things...(pause)...that you read about in school.

J- Okay

Y- No, you don't. Not in our school.

J- She's saying you get to...(pause)...make the things that you read about.
Y- No, we don't.
J- She talking about in here.
Y- Oh, she said in school you get to read about...
J- Say it again, Christy, Christy, say what you mean again
C- In school, you read...(pause)...you read the stuff that your reading...(pause)...that...that you're hearing about...(pause)...
J- uh-huh
C- ...and here you get to make the things.
J- Okay
C- ...instead of reading a book
J- Okay
J- So it's more fun to do the experiments than to read...
C- yeah
J- ...about it?
C- ...and the...and the best...(pause)...one here when that ice...about ice.
J- Why did you like the dry ice.
C- ...cause...umm...(pause)...I never knew that dry ice could burn you.
J- Oh yeah, you don't want to touch dry ice.
J- How many of you have seen dry ice...(pause)...You folks should have been in here, we had some good things going especially when Dr. Carter came over here.
J- Describe the dry ice experiment, Christy.
C- umm...(pause)...it was...(pause)...she put it in a bag and then...(pause)...we waited a little while and then the bag...(pause)...it didn't...(pause)...blow...(pause) up.
It blew like a balloon.

C: yeah

J: It did...(pause)...What caused that? What made it do that?

C: Like at the end...(pause)...you...umm...(pause)...the thing...(pause)...she had like a big thing and it had...

Y: ...she colored it

C: ...like different colors...(pause)...

J: uh-huh

C: ...it had a different color...(pause)...it had one color in it and then when you put the ice in it...it started bubbl...boiling to the top.

J: uh-huh

Y: uh-uh, Christy. It was changing colors with the ice in it. We...she put the ice in it...that's when it started changing colors.

C: ...and then it...

J: Okay,...(pause)...what I want to do now is...(pause)...to make oobleck.
Fernando

J- Now, let's ask Fernando, ...(pause)...okay, Fernando, what did you think about today's experiment?

F- umm. I think it was fun

J- It was fun? Why was it fun?

F- Because it......

J- Come over here closer

F- ...because its gross

J- It's gross and you like things that are gross?

F- yeah

J- Okay, have you ever made slime before?

F- Umm. No

J- Okay, you want to make it again?

F- Yeah

J- Okay, I think we are going to make some next week. Okay, what is science?

F- (pause)...the study of things

J- The study of things...Okay ...umm...(pause)

J- (pause)...Could you ever see yourself as being a scientist.

F- uh-huh

J- Huh

F- Yes, because I want to be a scientist when I grow up.

J- You do? Okay, why do you want to be a scientist?

F- (long pause)...because I like science

J- because you like science? 3/7/91
Okay, what do you like about science?

F- everything
J- what's everything?
F- everything

J- You like everything about science? Okay,...umm...can anybody become a scientist?
F- yeah
J- any bod...any student?
F- yeah
J- Okay, what do...
F- ...if they want to...
J- What do you...what do you need to become a scientist?
F- brains
J- brains,...(pause)...what else?
F- (pause)...patience
J- patience, good. What else?
J- You've got something to add? Go ahead, Tameka
T- education
J- Education, okay...(pause)...Good, okay
J- So you can picture yourself as a scientist?
F- Uh-huh
J- Okay, and you want to be a scientist.
F- nod
J- Okay. Describe a scientist. What does a scientist look like to you?
F- umm...a person that has bifocals on
J- a person that has what?
F- bifocals on
J- Okay, what else?
F- and a...(pause)...a white jacket
J- Okay, what else?
F- (pause)
J- When you think of a scientist who do you think of? Okay, you told me two things.
F- (long pause)...I don't know
J- huh
F- When I think of a scientist, I think of a person in a white jacket.
J- White jacket? Do you know any...uh...black scientists?
F- umm...Booker T. Washington.
J- Booker T. Washington? Who else?
F- (long pause)
J- you don't know?
F- nod
J- Okay, umm
J- Teri, can you think of any black scientists?
T- (long pause)
J- Huh
T- Washington Carver
J- Washing...George Washington Carver
T- Uh-huh

J- Okay, anybody else?

T- No

J- No

J- How did you know George Wash...Washington Carver was a scientist? Where did you learn that?

T- I was in an In The Know Contest

J- Where was that?

T- Huh

J- In The Know where?

T- It's ...umm...(pause)...you have to study about...umm... Black...(pause)...History.

J- uh-huh

T- You have to get up on stage...you have to answer questions.

J- This was where?

T- In The Carter Room

J- Oh, here, I remember that. I remember that now. And that's where you found out he was a scientist?

T- uh-huh

J- Did you...you didn't learn that in school?

T- No

J- No, (pause)...Okay, do you learn about the different scientists in school.

T- (pause)...yeah, some of them.

J- Some of them...like who? Do you remember any of them?

T- No
J- No

J- Okay, where did you learn that...uh...(pause)... Booker T. Washington was a scientist?

F- Well, I have a post...I used to have a little picture of him...

J- uh-huh

F- ...that...(pause)... underneath it told all about him...

J- uh-huh

F- ...when he was born...

J- uh-huh

F- ...and stuff like that.

J- uh-huh...Okay...umm...What was I going to ask the two of you?

J- umm...(long pause)...umm...when you think of a scientist who do you think of?

F- (pause)...Booker T. Washington

J- Okay, what about Teri? When you think of a scientist ...I mean somebody living today...who do you think about?

T- umm

F- You! (laugh)

J- me? Okay, thank you.

J- When you think of a scientist, who do you think about (pause)...one living today...who do you think about?

T- (pause)...I don't know of any scientist living today.

J- You don't...Okay...alright...umm...I had one more question to ask both of you...(long pause)...Why do you think of me when you think of a scientist?
F- umm...cause if you can do all that science stuff, you must be a scientist.

J- Okay, (pause)...alright...umm...one more question, then we're going to call it quits. umm...(long pause)...I can't think of it. (long pause) Oh, I know I need to ask you a question, one I asked him, Teri...umm.1

J- (long pause)...What is that one I asked you, Fernando?

J- (pause) Oh, describe a scientist.

T- (pause)

J- When you think of scientist...describe what they look like. (pause)...When you think of a scientist...describe a scientist

T- (pause)...They wear dress pants.

J- Dress pants. What else?

T- a white jacket

J- huh

J- ...a white jacket

J- Okay

T- umm...glasses

J- Okay, (pause)...anything else you see when you see a scientist?

T- (long pause)...No

J- No, okay, thanks a lot for the interview. .
Today, is Thursday, March 14, 1991.

I'm going to ask you a couple of questions and the question I want to ask you is... (pause)... last week you talked about... (pause)... what a scientist looks like (pause)... I want to ask you... (pause)... why? Remember what you told me last week?... a scientist... How did you describe a scientist?

White coats and...

Huh

a white coat and glasses

white coat and glasses... alright, so how did you... (pause)... where did you get this picture of a scientist from?

(pause)... where did... I mean... how... why do you (pause)... picture a scientist this way?

because on TV that's... (pause)... how they dress.

Huh

That's how they dress

where?

on TV

on TV... so that's where... any particular show?

No

(pause)... any particular show?

No

Well, where did you see them on TV?

(noise) Hold up wait a minute
Where... where did you see them on TV then... is that where you...
F-  (long pause)...Frankenstein
J-  on Frankenstein, Okay...okay, good
  umm...(long pause) Why did you come to science today?
F-  (pause)...because I want to make more slime.
J-  (long pause)...umm...(long pause)...are...are you...are you
coming next week...?
F-  yes
J-  ...to science?
J-  Why are you coming next week?
F-  So I can learn more about science.
J-  Huh
F-  So I can learn more about science.
J-  Why do you like science so much?
F-  (long pause)...cause it's exciting.
J-  Okay, (pause)...when did you first start liking science?
F-  last year
J-  Why?
F-  (pause)...I don't know
J-  Okay, when did you first...last year...let's go back to
  last year...(pause)...Okay...umm...(pause)...Can you
tell me about when last year, you started really
  liking science?
F-  (long pause)
J-  Was it in school?
F-  (pause)...yeah, it was in school
J-  ...Okay, or was it...(pause)...it during my program or
  when...(pause)...was it before my program?
F- uh-huh
J- Huh
F- nod

J- Okay, what happened in school that made you really like science?

F- umm

J- I want you to think...(pause)...when did you really start liking science...(pause)...you said last year. (pause)...Okay, what made you start liking science. (pause)...think...you don't have to answer right away. Just think about it.

F- umm...nothing

J- Nothing? (pause)...but it had to be something (pause) to make you really...you said....when did you really start liking it then?

F- umm...(pause)...last year in school

J- Was it something your teacher did (pause) or (long pause)

F- umm...when I was reading the science book

J- uh-huh...(pause)...Okay

J- What about my program...how did that affect how well you like science...(pause)...last summer?

F- It made me...ummm...like science more.

J- Made you like science more?...Okay..but you can't think of what your teacher did?

F- nod

J- No? you just all of a sudden started liking it?

F- No, I was...ummm...reading my science book and I started getting interested in it

J- Okay, was it any certain thing that got you interested?
...in the book, were you reading a certain thing?... about a certain thing?

F- No

J- No,...(pause)...okay...(pause)...okay, good.
Fernando


J- Okay, I want...want you to try to remember...(pause)...some things we did last summer. Which experiments can you remember from last summer...that you did?

F- (long pause)...We made a plant.

J- Okay

F- (long pause)...I forgot the rest.

J- Okay, if you think about it...just tell me...that's been a while ago...that was last June...almost a year. Okay, how long have you wanted to become a scientist? (pause) When?

F- (long pause)...for a year

J- One year, that's it...(long pause)...Kinda what you told me last week...(pause)...what got you interested was reading...uh...what was it?

F- Oh, science book

J- ...reading your science book? Did you ever remember what in that science book made you...(pause)...really get interested in science?...(pause)...last week you said you didn't remember.

F- (long pause)

J- Was it any particular...(pause)...chapter, any particular topic, subject?

F- (pause) No

J- No, Okay

J- I remember...I was looking at the interviews we did last summer and you said that...uh...your mother bought you a microscope? When did she buy the microscope?

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F- (pause)...about a year ago
J- about a year ago
F- maybe two
J- Two years ago, Okay, when she bought the microscope were you really interested in science then?
F- uh-uh
J- No
J- Huh
F- uh-uh
J- No...(pause)...Okay, did you play with your microscope any?
F- (pause)...yeah, I just played with it.
J- Huh
J- Okay, umm...(pause)...I'm halfway finished, umm...(pause)
J- After you realized you wanted to become a scientist... (pause)..., did you...umm...play with your microscope more?
F- Uh-uh...It was...uh...It was broken
J- It was broken.
J- How did it get broken?
F- I don't know. It kept on falling and people kept stepping on it.
J- (laugh)...Okay...you said...I asked you what do you need need to become a scientist. You said two things, brains and patience...(pause)...Okay...umm...Why do you need brains to become a scientist?
F- because you need to be smart
J- You need to be smart? Why?
F- (pause)...so you can...(pause)...so when you have to do...(long pause)...hard...(pause)...math...(pause)...  
J- uh-huh  
F- or science things...(pause)...  
J- Uh-huh  
F- ...you will know how to do it.  
J- Okay, but why do you need patience?  
F- (pause)...cause...uh...it might take a year or two...(pause)...to...umm...(pause)...finish a science experiment.  
J- Okay, might take a year or two to finish a science experiment. Very good...(pause)...umm...Had you ever done any of these experiments...I did with you? Have you ever done any of those in class.  
F- umm...(pause)...No  
J- No?...none of them?  
F- nod  
J- Okay, ...(pause)...what kind of student are you in science? How do you see yourself gradewise in science?  
F- umm...good  
J- You make good grades? Do you get a grade for science?  
F- uh-huh  
J- You do,...(pause)...Okay, what did you get last...uh...(pause)...last time you got your grade card?  
F- umm...A+  
J- "A+" in science? (pause)....Okay, what about last year? (pause)...think back to last year, what did you get before last summer before my program?  
F- A+ ...no...(long pause)...C
J- C's

J- Okay, why do you think...(pause)...you started making...(pause)...A+'s...(pause)...this year and last year you made C's?

F- (pause)...I didn't make C's last year...I...(pause)...I made C's before last year.

J- Okay, I'm talking about...when did you make C's?

F- umm

J- What grade are you in now?

F- third

J- Okay, third grade...(pause)...now you're making what grade...In the third grade, what are you getting in science?

F- A+

J- A+'s

When did you make C's?...what grade were you in when you made C's?

F- First grade

J- First grade? What did you make in the second grade?

F- (long pause)...B's

J- B's...you actually got a science grade...(pause)...in first grade?

J- (pause)...You got a science grade in the second grade?

F- nod

J- You did?

J- Okay...(pause)...okay, what made you improve like you did...you went in the first grade from a C, 2nd grade to a B, 3rd grade to an A?

F- (long pause)
J- Why do you think you did so much better? Are you doing so much better?

F- Cause I got interested in science a little more.

J- Huh?

F- I got interested in science a little more.

J- Okay, you got interested in science a little more. Okay, ... (pause) ... good, two more questions.

J- (long pause)... umm...(pause)... describe... (pause)... when is the last time you did science in school? What day?

F- (pause)... last month

J- last month... (pause)... February?

F- (pause)... yeah, February 30th

J- February 30th? There's no February 30th

F- No, 28th (laugh)

J- February 28th, Okay...(pause)... Describe that day...(pause)... Tell me what you remember about that day in science... What time did it take place? (pause) ... How long?

F- (pause)... umm...(pause) about 9:15...(pause)... It took about a half an hour.

J- Okay, tell me more about it.

F- (pause)... umm... It was about endangered species

J- Huh?

F- It was about endangered species

J- Okay, what did you do?

F- (pause)... We read out of the science book... Then we started naming endangered species.

J- Okay (pause)... When is the last time you did an actual experiment?
F- umm... (long pause) ...last week

J- (pause) ...Now that's science!
    I asked you when was the last time you had science?

F- (pause) ...It was...It was last...last month

J- Last month...okay... (pause)...but you did an experiment
    last week?

F- uh-huh

J- Okay, that's science, too, isn't it?

F- nod

J- Okay, what did you do last week?

F- umm... made slime

J- Oh, you mean with me? Okay let me say it again, when is
    the last time you did... (pause)... science in school?

F- (long pause) ...you mean a science experiment?

J- no, just science in school...You told me when... (pause)
    when did you say is the last time you did science in
    school?

F- February 28th

J- Okay,... (pause)... that was the last time you did science
    in school... When was the last time you did an experiment
    in school?

F- (long pause)...February... (pause)... 2nd

J- You remember what you did?

F- umm...(long pause)... No, not really

J- Not really, okay.
Jess

J- About three of you...(pause)...have been in here for...
(pause)...previous activities...(pause)...My name is Mr.
Nesbitt and I...(pause)...am a science teacher and I
taught for 9 years in a middle school. How many of you
are in middle school now? Okay, the rest of you are
elementary school. Okay, one day you will be in middle
school. Anyway,...(pause)...what I...want to do is
provide you with some...(pause)...science activities...
(pause)...I think science is fun. What do you think
about science? One at a time. We are going to talk one
at a time. Raise your hand...(pause)...and let me hear
your answer. Alright, tell me your name and your answer

j- My name is Jess...umm...I think science is...umm...neat
because you get to...(pause)...learn a lot of things
about science.

J- okay

J- I'm glad to hear...(pause)...all of you like science...
(pause)...and see that's...(pause) my...one of my
purposes in...uh...(pause)...having this program...
(pause)...is, if you don't like science...I want to turn
you on to science but I'm glad...You know most of you
like science. We are going to talk one at a time and
what I want out of everybody is a commitment...(pause)
by commitment...(pause)...I mean, I want you to...
(pause)...come every Thursday if you can...(pause)...if
you're sick...(pause)...that's okay...(pause)...but then
the following Thursday, I expect to see you...if your
family goes out of town. Go! travel! cause I like to
travel cause I like to travel but if you're here and...
(pause)...you know...you belong in science I want you to
come...(pause)...because I'm going to do some fun
things. I'm also a student at the university and I met
with...uh...one of my professors today...(pause)...and
she's going to come out...(pause)...umm...(pause)...I
think August the...(pause)...2nd and she's going to do
some experiments with you. She's a chemistry teacher
and we're talking this morning about...(pause)...some
neat things that she can do and one thing that she wants
to do is...uh...(pause)...make candy...(pause)...she's
going to show you how to make candy because she can tie
(pause)...candy-making into science...(pause)...and
you are going to actually use the...uh...(pause)...sinks
and the stove and you are going to make candy that you
can actually eat...and another thing she wants to do is
(pause)...an experiment with liquid nitrogen...(pause)
(pause)...How many have ever seen liquid nitrogen...
(pause)...I know if you've been to COSI (Center of
Science and Industry), you've seen liquid nitrogen. It
can do some fantastic things which I really don't want
to go into now because I don't want to spoil the
surprise...(pause)...alright. Anybody else want...
(pause)...to tell me about science...whether they like
it or not or...(pause)...or if they like it. Okay.

J- There's so many neat things you can do...(pause)...see
that's what's...what I think is so fascinating about
science so many...(pause)...neat things you can do, and
so many amazing,...(pause)...surprising,...(pause)...unpredictable, unexpected type...uh...outcomes. Anybody
else...okay...We are going to get started.

J- A lot of you have...(pause)...you know...done experiment
in your schools so I have an idea, maybe we can have a
sharing day, like (she) can bring in...(pause)...or bring
the materials for that one experiment, (she's)
describing...(pause)...and she can demonstrate it to us.
How many would like that idea, you...(pause)...bring in
(pause)...and experiment...one of your favorites from
your school or from a book. I mean you don't have to...
(pause)...but some of you have real neat things that
you've seen...(pause)...and it would be a good idea to
share these things...(pause)...alright.

J- Now,...(pause)...on this piece of yellow paper
(attendance sheet)...(pause)...I want to say this...(pause)
My first impression of everybody in here is
that you're really interested in science...(pause)...and
I want to keep everybody...(pause)...I don't want to
lose anybody...(pause)...This is the 5th week that I
been over here...(pause)...and...(pause)...I think some
weeks I had a larger group than other weeks. Like last
week, I only had four students...probably because of the
holiday the day before...(pause)...but anyway...we have
I think 14 people and I have a helper...(pause)...and
I'm so glad I have a helper...(pause)...because that
frees me from doing a lot of things she can help me with
(pause)...So I want everybody to stay in here...(pause)
I don't want to lose one person...but listen...If you're
ill...(pause)...you know...don't tell your parents, I
got to go! I have to go!...(pause)...I'll understand...
(pause)...but if you're here, I want you in here because
I have a lot of nice things planned for you...(pause)...and then once school starts, maybe we can still continue our science program...(pause)...for some of you. How many think that might be a possibility...after school starts, you can still come over here. How many come over here after school starts? I tell you what...what we do is...(pause)...I'll have your names and numbers and I'll contact you and then if we have to meet on a Saturday, we'll do it on a Saturday morning...whatever day.

J- If...(pause)...okay, now listen...(pause)...if...(pause) listen a minute...listen...alright, listen...(pause)...okay, I want to say one more thing before we do this experiment. I think we'll have time to do it. If I get the same kids in here...we have four more times to come.(pause)...you know...(pause)...we are going...I'm going to do something special for you...(pause)...I don't want to say what it is yet cause I don't know what it is...(pause)...you listening?...We are going to do something special...(pause)...and another thing...(pause)...listen everybody...(pause)...another thing I want to do is to get T-shirts...(pause)...everybody who is committed...(pause)...listen...(pause)...I need everybody's attention...(pause)...everybody who is committed and who could come every week and who is really...(pause)...you know...active...we are talking about getting T-shirts and we are going to give ourselves a name. Alright...or hats...because I'm trying to get for this program...(pause)...and with money I can do things for you...like T-shirts, hats, whatever.
Jess

J- Why is it fun, Jess?

j- Well, ...(pause)...(umm)...basically you're making clouds and you usually see clouds up in the sky.

J- ...and now you have a cloud in the classroom

j- Yeah!

D- What kind...what kind of experiments have you been doing? (pause)...Okay, go ahead, tell me.

j- umm...(pause)...we had...we had made crystals...(pause) and we had made some...(pause)...kind of slime. Where it was made out of two different ingredients and it made just the slime...(pause)...and we made...uh...candy,...(pause) and...(pause)...we...(pause)...we made...(pause)...umm...(pause)...we done the celery, where you put a little bit of food coloring in it and the food coloring goes up the vines...(pause)...and that's about all.

D- Did you make clouds...clouds with dry ice, too?

j- Yeah!...(pause)...Yeah!

j- I liked the...I liked the part where she (Dr. Carter) got (pause)...like she got this...(pause)...umm...some kind of...(pause)...thing...(pause)...uh...it goes up...(pause)...and you put a little bit of dry ice in it and you put some kind of...umm...(pause)...chemical in it (pause)...and it...it...bubbles up and it turns different colors and then the smoke comes out and...It's neat...(pause)...It's really neat!

D- So you had fun last week with Dr. Carter.

j- Yeah!...(pause)...I wish she could come back.

D- So when you come to science...(pause)...here...(pause) How does that make you

j- Great,...(pause)...you can make things.

D- Do you think coming here...(pause)...and to do the science...has help you decide to be a scientist?

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Yeah

Well, is...is science in school different than the kind of science you been doing here?

Yeah,...yeah,...sometimes,...(pause)...its kind of different cause they have...they sometimes...they don't make a whole lot of chemicals and things like we do here.

They teach us about herbivores...(pause)...and carnivores and...uh

So how is science here different from science in school? What's another way?

Here, you can really do the experiment.

Huh

Here, you can really do the experiment.

At school, you don't really...(pause)...umm...get to take it home or anything.

...at school, you don't get to take it...take your experiments home?

No,...(pause)...you have to keep it (experiments) at school.

So how...how do you learn about that (body parts) in school...how do you...you find out about...say herbivores and things?

Its...its a...a thick book that you got to read out of....you got to read it and...(pause)...its...you take it home for homework and you...(pause)...study for test and things like that...but...I think it...I think here...it's more fun cause at the schools, they don't have nothing really to do...(pause)...they just make us work and we don't get to have any fun like this.

Let me here you folks answer this question...umm... (pause)...Do you...uh...do any experiments. I guess you answered it, but the rest of you...do you do any experiments in class,...(pause)...in school...Okay One at a time, Jess.
No, cause... (pause) ...I think we're... I think it's cause of the class, the class is always bad and things like that and we don't get to do anything

What grade are you in?
5th

How much time is spent on science?

5 minutes

A day!

The whole day?
The whole day!

So what might you do in 5 minutes

(pause)... just read a book (laugh)
... read the science book

... and that's it?

... about 5 minutes for me and they don't do nothing else other than that... (pause)... and then we go to math and science (?)

Okay

... and things like that.

Are the experiments that... (pause)... you do exactly the way the teacher tells you to do them?

... sometimes at our school... (pause)... we don't do anything... that much for science... but... (pause)... if sometimes when we go outside... we can make... we have like a sandbox in the back of our school and we can go out and play at recess and... (pause)... do other things and she would... (pause)... she would give us an X-tra grade or something like that for science.
D- When you come...(pause)...to science...what kind of experiments do you like the best...which...when you come...

j- It's...it's just like going to COSI (Center of Science and Industry)...(pause)...everyday...(pause)...Every Thursday, it's like going to COSI cause...(pause)...you get to do X-tra things that you wouldn't do at school...but it would...it would be like...(pause)...at...at COSI...you would make clouds and see how a pencil goes through a whole lot of air and it shoots through a board and things like that...and we do this about the same thing...we don't...(pause)...we don't do dangerous...

D- It's about the same here as COSI?

j- Yeah, it's like...it's like going to COSI every Thursday. It's a lot of fun.

J- Science here is like going to COSI?

Okay.

D- COSI is a lot...

j- COSI...(pause)...is a little bit more...(pause)...uh...(pause)...more

J- I missed your answer Jess, you're saying science...(pause)...that we had here?

j- Science here is...(pause)...interesting...(pause)...but I think at COSI they have a little bit more dangerous things than they do here...(pause)...but I think it's still fun coming here...(pause)...it's just like going to a miniature COSI.

D- Where...where do you think you learn more about science, at school, or at COSI, or here or...?

j- COSI

I say COSI

I say every...everywhere I go!

J- What is, Jess?

j- science

D- (pause)...science here?
J- How many of you work out of a book?

j- Well, I work out of a book all the time, it's, it's, it's boring cause we don't get to do anything, all we get to do is talk about other animals. We don't talk about ourselves, we don't talk about our bodies or anything like that...all we...all we do is just talk about...(pause)...animals. It's...it's boring at...at school cause they...they don't do nothing, it's...it's like going to school and sitting there for the...like 5 hours.

j- I think the funnest thing there...

J- One at a time.

j- I think the funnest thing at school is...(pause)...recess, cause...(pause)...you get to go outside. (laugh) Everything else...(pause)...everything else is just like going to school and...(pause)...sitting there doing nothing...(pause)...except reading...but it's helping me in my...(pause)...education.

science! (my best subject) science and math.

D- Coming back to what you guys have been doing over the few weeks...(pause)...umm...(pause)...if there's anything you wanted to tell...(pause)...Mr. Nesbitt about...(pause)...the way you can do things here or the way to make...to make science better here, what would you tell him? How could it be better?

j- But let...(pause)...I think...I think you should have that...umm...who comes, came that last Thursday, come here every Thursday. That would be fun.

J- Dr. Carter

D- Dr. Carter

j- Yeah

J- She has access to more things than I do.

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j- Yeah

J- She has access to more things than I do.

j- Yeah

J- Now, she's a chemist...(pause)...at the university...(pause)...she can do a lot of things with you.

D- She's a neat lady.

J- uh-huh

J- She'll be glad to hear this.

J- So, okay, what if what if I offered this program...(pause)...5 days a week?

j- Yeah, that'd be great...like...

j- Man, I'd probably be here every day, every second,...

(pause)...minute.

If we had science here every single day...(pause)...of the week that we come. I would probably...(pause)...invite more people to come. I would have...(pause)...lots of things to do...(pause)...instead of sitting around going outside and things like that and just get hot and...(pause)...bored and things like that. I think if we had science everyday, I would probably...I'd probably have...(pause)...real good grades in science when I go to school and it would be...it would be a lot of fun. If we had science everyday...(pause)

C- but we don't

j- ...and have like Mrs. Nesbitt...

D- Carter

j- Carter...Mrs...Mrs. Carter to come...every other day...

J- every other day. huh?

j- every other day or every Thursday or come on Thursday or something like that.

J- Last week was fun, wasn't it?
j- Oh, yeah... umm... I want to know if you could... if you
could come tomorrow.

J- Who me?

j- Yeah

J- ... and do some experiments.

j- Yeah... Do... do... umm... that... uh... thing... that starch
and water?

D- no, that's for next week.

J- I'm saving that. Won't you be here next Thursday?

j- I might not... (pause)... cause I have to go... I... I might
go to camp. ... (pause)... Also, I have visitors coming.

J- What do you think about... umm... (pause)... if I continued
this... uh... program and had a... (pause)... program in the
fall, ... (pause)... winter, spring.

J- Okay, what do you say?

j- umm... (pause)... I'd say it's great, cause... (pause)... we...
I could have science every... (pause)... like when you
come for tutoring... (pause)... I could have science...
(pause)... twice each day... (pause)... that would be a lot
of fun.
J- ...and I'm going to interview, Jess ...(pause)...Okay...
  umm...(pause)...my first question is (long pause)...

J- Do you remember...uh...what I did last summer?

j- Yeah, I remember when...uh...we had...(pause)...blew up
  the balloon.

J- Okay

j- ...made clouds

J- Alright

j- uh...I also remember when we made the...umm...(pause)...
  it was like a slime.

J- uh-huh

W- ...uh...I remember making candy,...(pause)...crystals

J- okay

j- ...(pause)...I think that's about all.

J- Okay, ...uh...are you interested in science?

j- Yeah, I like science a whole lot.

J- Why?

j- ...cause it's neat. I like...I just like..I like the way
  you get to do...(pause)...different things with...like...
  your environment.

J- Uh-huh

j- ...and also a lot of other things...(pause)...umm...you
  get to use a different kind of chemicals and experiments.

J- Okay,...(pause)

J- When did you...uh...first get interested in science?

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J: ...uh...let's see...(pause)...may be in the 4th grade. ...uh...We had made candles...

J: Okay

J: and...umm...(pause)...I...I learned that you...that you could get...uh...crayons and you can melt them down.

J: uh-huh

J: then you get a piece of string...soak it in alcohol and then...umm...melt...melt it on there.

J: Okay...(pause)...Did my program help you in anyway?

J: Yeah, it helped me understand a little more about science...(pause)...umm...It also help me to...umm... (pause) get...get more interested in science... (pause)...cause now I know that it's something fun to do?

J: Okay

J: ...instead of some ordinary, boring thing (laugh)

J: Okay, ...umm...(pause)

J: What grade are you in this year?

J: I'm in the 5th . I'll be going into the 6th.

J: Alright...umm...

J: ...this school year...did you...uh...do science in school

J: Yeah, we studied about the stars...umm...we studied about the planets...(pause)...and...umm...comets...(pause)...also...umm...It was...(pause)...Friday night...this Friday night...

J: uh-huh

J: uh...we had went to COSI,...spent the night...

J: You did

J: Yeah, and...umm...we had made comets....

J: uh-huh
j- We got to...uh...mix up...mix all the things to...
(pause) all the ingredients to the comet and...umm...put
in a plastic bag and explode it.

J- Oh, okay

j- umm...(pause)...We also got to study the stars...see
Jupiter, Venus and different things like that.

J- Alright. In school did you do many experiments this
year.

j- umm...(pause)...No,...yeah,...well, yeah...(pause)...
actually we did cause...we had got worms and studied
their...uh...bodies and different things and we were
going to dissect frogs but we didn't have any.

J- Okay, how much science would you say you did in school
this year?

j- umm...(pause)...maybe one-half...I mean maybe a half the
school year.

J- ...half the school year

j- uh...(pause)...yeah...science

J- Okay,...(pause)...uh...what did you like most about my
program?

j- (pause)...umm...I like when you made the...uh... (pause).
the slime...

J- Okay

j- umm...I like the way that...I like...(pause)...also I
like when that lady came in and she made...she put the
dry ice in...

J- Dr. Carter?

j- Yeah, and had all the water in and it just bubbled up
and made different colors.

J- Why did you like that so much?

j- (pause)...because I never knew that dry ice could do
something like that...make all the fog and everything...
J- Okay,...(pause)...umm...(pause)...Why did you stop coming to the program?

j- umm...(pause)...cause for one...I moved and its...(pause) pretty far from here and that's...that's just about all

J- Okay

J- Could you ever see yourself as a scientist?

j- (pause)...umm...maybe...I'm not sure

J- Okay, why do you say maybe?

j- because...umm...there's also different fields...I like...like math and...uh...sports.

J- Okay,...(pause)...alright...What do you like about science that would cause you to say maybe?

j- umm...because...(pause)...you get to experiment...(pause) with chemicals. I like...I like computers and different things like that and it all got to do something with science...

J- Okay

j- So that's...that's basically the reason.

J- Alright, what do you need to become a scientist?

j- (pause) a lab

J- Okay, I guess...(pause)...I'm speaking of what...what type of preparation...

j- umm

J- ...do you need to become a scientist.

j- I would...(pause)...need maybe a microscope or...umm...I...I would also need to know how to make dry ice.

J- Okay. I'm speaking of what kind of preparation in school...
J- Okay, ...(pause)...what do you mean by a good education?

j- umm...be all that you can be and...(ummm)...work as hard as possible.

J- Alright,...umm...(pause)...Is science easy or hard?

j- ...it's pretty easy

J- Why do you say it's easy

j- ...because if you listen to the directions...it shouldn't be hard.

J- Okay...(pause)...Describe...umm...what a scientist looks like to you.

j- umm...(pause)...a scientist looks like a man...(pause) in a white coat...(pause)...that likes...uh...that works with different things...with animals and chemicals...(pause)...and also...umm...(pause)...soil and different things...study...he basically studies just about everything.

J- Alright, where have you seen some scientists?

j- umm...on Mr. Wizard's World...its on...umm...TV, Nickelodeon

J- Okay

j- (pause)...and let's...also...(pause)...at St. Stephen's

J- Where?

j- ...at St. Stephens'

J- Alright

j- That's the only two places that I've seen...

J- Where at St. Stephen's?
In your science class. (laugh)

Who?

(pause)...uh...YOU!

Okay (we both laugh)

I've forgot your name.

Alright,...Mr. Nesbitt...(pause)...Okay. Can you name some scientists?

uh-huh

I don't remember his name...(pause)...

uh-huh

uh...also...(pause) let's see...(pause)...I can't remember...(pause)

Okay, well think about it.

I don't...I don't remember no one else...

Okay, but you do remember one...(pause)...you said black...

...famous

...scientist.

...the one who invented...uh...corn oil, he...he used to use...uh...peanuts...

Oh, okay, you don't remember his name?

no

George...

uh...Wash...GEORGE WASHINGTON CARVER!
Okay...(pause)...umm...(long pause)...so...umm...let's talk about my program last summer...(pause)...a little bit.

J- Do you think its a program that I should continue to have or what?

j- Yeah, I think you should continue to have it through the umm...summer...

J- uh-huh

j- umm...its something kids that...(pause)...be in, and that way they can...umm...have something to do whether they go out on the streets...

J- Okay

j- ...and getting into drugs and things like that.

J- Alright

J- I can't think of any more questions...(pause)...Okay, thanks a lot.

j- You're welcome.
J- Okay, today, I'll start with oldest, who's the oldest? Teri?

J- Okay, Teri, what grade are you in?

T- 4th

J- 4th grade? What school?

T- Linden Park

J- Linden Park?

J- Okay, what did you think about today's experiment?

T- (pause)...gooie (laugh)

J- What did we do?

T- slime

J- What did you think about it?...What did you just say?

T- gooie

J- gooie, Okay...umm...did you like the experiment?

T- (pause)...yes

J- Yes...Why did you like the experiment?

T- (long pause)...It was fun to do.

J- It was fun to do...(pause)...Okay, what made it so much fun?

T- (long pause)...playing with it.

J- Huh

T- playing with it

J- playing with it...okay...umm...What kind of things do you do in science in school?

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T- umm...read out of our science book

J- Okay

T- umm...play with worms...(laugh)

J- play with worms?...Do you do experiments?

T- uh-huh

J- Okay...umm...How often do you do experiments in school?

T- (long pause)...once a week

J- Once a week...Would you like to do it more often?

T- uh-huh

J- Do you like the experiments that you do at school?

T- uh-huh

J- Okay, umm...(pause)...You remember our program last summer?

T- uh-huh

J- What do you think about our program last summer?

T- (long pause)

J- Let me ask you in a different way,...umm...Did you enjoy the program last summer?

T- yeah

J- Okay...umm...Did last summer's program help you any as far as school is concerned?

T- yes

J- Okay, in what way?

T- (long pause)...It teach me to do new things

J- Huh

T- ...teach me to do new things
J- What we did last summer?
T- uh-huh
J- ...taught you to do new things?
J- Okay...umm...What kind of grades were you making in school before the program in science?
T- 1 and 2's
J- 1 and 2's...What does that mean?
T- A and B's
J- Is that what that means A's and B's. Okay...umm..What about after my program...did that...(pause)...affect science...as...did you...umm...
T- uh-huh
J- ...umm...
J- ...How did that affect your science? After being in my program?
T- (pause)...I got a 1
J- Huh
T- I got a 1
J- Got a 1...uh...What reason do you think you got a 1?
T- (long pause)...You learn so much in science.
J- You learn so much where?
T- in science
J- What science...(pause)...in school science or the program?
T- the program
J- My summer program? You learned so much...Okay...Were you interested in science before the program...(pause)...last summer.
T- uh-huh

J- Okay...(pause)...umm...Has that program affected how...how...interested you are....

T- (pause)...yeah

J- In what way? Has it...uh...(pause)...How has it affected your interest in science?

T- (long pause)

J- ...being in that program...how could...how has it affected your interest or what you thought of science?

T- (long pause)

J- Just tell me whatever you're thinking

T- (long pause)

J- you can't think of anything?

T- nod

J- Oh, Teri (laugh) Okay,...umm...Why did you come all the time last summer?

T- so I could learn

J- So you could learn...Did you learn something?

T- Yes

J- Okay, off the top of your head...what do you remember...what did you learn...just the first thing that comes into your mind.

T- (long pause)

J- Do you remember anything, we did...

T- We made crystals

J- crystals, okay,...(pause)...alright...umm...Did you learn something there?

T- (long pause)...How to make them
J- Okay, good...(pause)...Alright, well, Teri, that's all I'm asking you today...I want you to come next week...so I can ask you some more questions

J- What is...what is science, Teri?

T- (pause)...experiments

J- experiments?, okay...umm..., Do...could you ever see yourself as being a scientist?

T- no (chuckle)

J- Why?

T- (long pause)

J- Just tell me your honest reason, why.

T- I'm not very good in science.

J- I thought you were making A...1's

T- I know but when I...I don't think I will...(pause)...

J- Huh

T- ...be good.

J- You don't think you would be good as a scientist?

T- uh-uh

J- (pause)...Why?

J- (pause)...I mean...I'm just curious to know why...(pause)...cause see that's the kind of person I want to help...(pause)...so why don't you think you could be a scientist?

T- (pause)...I couldn't picture myself (laugh)

J- You couldn't?

T- no

J- Okay, now tell me why
J- (long pause)...that's a good answer...(pause)...but I'm just asking you why couldn't you picture yourself as a scientist?

T- (long pause)...I can't picture myself as a scientist

J- (long pause)...think Teri...That's a good answer...I mean that's you're...that's how you really feel...I'm just saying...why...(pause)...I think you answered some good questions here...you gave me some good answers...(pause)...but I just need to know why don't you think you can picture yourself as a scientist?

T- (long pause)...because...umm...(pause)...all the liquids that are on...like on TV...you see them with...umm...(pause)...those things...(pause)...and they're on racks and they have liquids in it?

J- Huh

T- I couldn't see myself around those things.

J- Say that again now.

T- ...on TV...scientist they have...umm...(pause)...something round like this

J- uh-huh

T- ...and they have it on racks...

J- uh-huh

T- ...and they have liquids in it...

J- Oh

T- ...round glass...

J- Okay

T- I couldn't picture myself around glass

J- test tubes...That's what they're called...Okay, why?

T- because...(pause)...I'm clumsy when I get around glass.
J- Oh, okay...(pause)... Now is that the only reason... You could not picture
yourself as a scientist?

T- uh-huh

J- Do you like science?

T- yeah

J- Okay...umm...(pause)... What if you weren't clumsy around
glass?

T- I would try it

J- Do you think you could become a scientist?

T- uh-huh

J- So your only reason for not thinking you could become
a scientist... is because scientist use these glass... and you're clumsy around glass.

T- uh-huh

J- Okay...umm...(pause)... So your teacher does science once a
week?

T- uh-huh

J- Okay, what did you do this week in science?

T- (long pause)...umm... We didn't have science yet this week

J- You didn't?

T- ...but last... last week... I had this egg...

J- uh-huh

T- ... I put it in vinegar...

J- uh-huh

J- Okay, what happened to it?
T- (long pause)...Well, it got...well, it was bouncy
J- uh-huh
T- You could bounce it...you could step on it and it
wouldn't smash
J- uh-huh...(pause)...
  Do you think anybody could become a scientist?
T- Uh-huh
J- (pause)...Then why can't you become a scientist?
T- (long pause)
J- You feel like anybody can...?
T- (pause)...yeah
J- You do?
T- nod
J- okay,...(pause)...Alright, thanks a lot, Teri.
  I know you're glad to leave. (laugh)
J- Teri, I'm going to ask you the same questions I asked Fernando. The first one is...(pause)...last week you described a scientist...right...

T- uh-huh

J- ....How did you describe a scientist?

T- ...(pause)...white jacket

J- white jacket, What else?

T- glasses

J- okay

J- Why...(pause)...do you desc...see a scientist in this way?...I mean...(pause)...what...(pause)...is your reason for describing a scientist this way?

T- lots of scientists back then wore glasses.

J- Okay, where did you get this image of a scientist from?

T- (pause)

J- Where did you get this image of a scientist from?

T- my social studies book

J- social studies? They had pictures of a scientist in your social studies book?

T- nod

J- ...and how were they pictured?...(pause)...you mean social studies?

T- uh-huh

J- history

T- we...I have history...

J- social studies

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T- ...there were a couple of pictures.

J- Okay, how were they looking?

T- Some had glasses and some didn't and they all...(pause) almost all of them had white jackets on.

J- Okay,...(pause)...Why...why did you come to science today?

T- to make slime

J- Okay, are you coming next week?

T- yeah

J- Why...(pause)...What's going to bring you back next week?

T- (long pause)...I want to see...(pause)...what we're going to make next week.

J- Okay, you want to see what we're going to make next week. Okay, why do you like...Do you like science?

T- yeah

J- Why do you like science?

T- (pause)...because of the experiments

J- because of the experiments?

J- When did you first start liking science?

T- When we had it at school.

J- When?

T- (pause)...the first time we had it at school.

J- Okay, when would that have been?...(pause)...How long ago?

T- (pause)...18 weeks

J- about eight...this year?...this school year?

T- nod
J- Okay...(pause)...umm...(long pause)...my program last summer...how did that...(pause)...affect...(pause)...the way you like science?...(pause)...What did you think of the program last summer...(pause)...and how it affected...(pause)...the way you...uh...like science.

T- (long pause)

J- Did you like science before the program last year?

T- (pause)...yeah

J- I thought you said 18 weeks ago?

T- (laugh) No

J- Okay, what is your real answer...take your time and just tell me when you really...it's hard...(pause)...to think back when you probably first really started liking...

T- We had science last year, too.

J- Okay, did you like it last year?

T- yeah

J- Okay, so maybe I shouldn't ask when you first started liking it...(pause)...Okay, let me ask this...(pause)...umm...(long pause)...the program I did last summer...(pause)...How did that affect...(long pause)...your feelings or...or whether or not you like science or not...(pause)...What do you think the program...I don't know if I'm asking you right?...but the program I did last summer...(pause)...did that change the way you felt about science?

T- yeah

J- In what way?

T- (pause)...You learn more

J- You learn more? (pause)...Okay...umm...(pause)...so did the program make you like science more or less or not...no difference?

T- more

J- ...made you like science more?...Okay
J- Okay, today is...(pause)...Wednesday,...(pause)...May... (pause) 22nd...(pause)...and I'm going to talk to Wesley

J- Okay, Wesley, do you remember who I am?
W- Uh-uh
J- (pause)...You don't?
W- I...I forgot your name
J- You forgot my name?...(pause)
J- Okay, speak up a little bit.
J- Do you remember what I did last summer?
W- Yes
J- What did I do last summer at the center?
W- You put this pin in this water..
J- I meant what kind of things did I do...what...(pause) what was my job last summer
W- to...umm...
J- What did I teach?
W- To teach people about science.
J- Okay,...(pause)...alright, you remember some of the experiments we did?
W- Yeah
J- (pause)...What did we do?
W- We did a...umm...penny, we put drips...(umm)...drips on a penny. Then we put this pin in this water.

J- uh-huh

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J- Oh, make it float on the water
W- Yes
J- Okay
J- Now,...(pause)...when did you do these at home? After I showed you how to do them or before I showed you how to do them?
W- After you showed me how to do them.
J- After I showed you how to do them...(pause)...Okay
J- You hadn't done them at home before I showed you how to do them?
W- umm...(pause)...yeah...(pause)...No, I didn't.
J- No, you didn't?
W- No
J- Okay, so my program showed you how to do some things at home?
W- Yeah
J- Okay,...umm...(pause)...Do you do science in school here?
W- No
J- No, science?
W- Uh-uh...sometimes...(pause)...with Mrs...with Mrs. Gold, we do.
J- Okay, what about your classroom teacher? Does she do science?
W- uh-uh
J- No
W- (pause)...Okay what does Mrs. Gold teach?
W- (pause)...she just teach...umm...(pause)...I forgot.
J- Last summer
W- Oh, last summer?
J- Remember
W- Yeah, you taught me at... (pause)... 9... when I was 9 years old... now I'm ten.
J- Right, last summer... (pause)... okay, now let's get that straight now.
J- Okay, how did my program last summer help you... (pause) in science.
W- Getting an "A"
J- "A" where?
W- school
J- here?
W- yeah
J- Okay... (pause)... (pause)... When did you first do the penny experiment at home?
W- umm... (long pause)... November
J- November
J- Did you do it at home after I showed you how to do it?
W- Yeah
J- That's when you did it at home?
W- Yeah
J- Okay... (pause)... okay... umm... (pause)... let's move somewhere else. Okay,... (pause)... now.
J- You remembered some of the things that I did last summer... like... uh... the penny experiment... (pause)... and... (pause)... what else did I do last summer?
W- This... (pause)... this thing... this pin, you put it in water...
W- I used to go to a science...(pause)...
J- uh-huh
W- in...in Alabama
J- You did
W- yeah,...(pause)... I lived in Alabama.
J- you did
J- Okay, umm...(long pause)... Are you interested in science?
W- yes
J- (pause)...When did you first get interested in science?
W- (pause)...Its a long time ago...(pause)...a long time ago.
J- Okay, how did my science program last summer help you?
W- (pause)...it helped me by getting an "A" on science.
J- An "A" on science where?
W- At Alabama.
J- (pause)...Now when were you in Alabama?
W- (pause)...umm...umm...(pause)...like...(pause)...7.
J- Well,...(pause)...I just did my program last summer.
W- I know
J- so...
W- When you taught me I was 7. I come up here at 7
You taught me at 7.
J- At what?
W- You taught me when I was 7
J- No, I didn't
W- Yes, you did
J- What's that?
W- pause...umm...(pause)...I forgot the name of it.
J- ...something I made?
W- Yeah
J- What did it look like?
W- It looked like...umm...(pause)...like...ugly...(pause) ugly.
J- What color was it?
W- It was...umm...green
J- Green and I made it?
W- Yeah,...(pause)...this summer!
J- This summer? slime?
W- Yeah
J- Okay, slime! Okay,...(pause)...Alright, when did you start doing all these things at home?
W- (pause)...every year, when you start teaching me that.
J- Okay, I meant...(pause)...when did you start doing...(pause)...these experiments at home?
W- yesterday
J- (pause)...Okay,...umm...(pause)...Did you do these experiments before I taught them to you (at home)?
W- umm...yes
J- You did them at home before I taught them to you?
W- uh-huh
J- How did you know about the penny?
W- umm...(pause)...I...I used to go to a science...(pause)
J- uh-huh
W- Then... umm... I forgot some of them...

J- Okay

J- (pause)...O...Okay... ummm... you remember why we put the (pause)... drops of water on a penny?

W- Yeah

J- Why

W- for to show what's... how... umm... a penny...(pause)... can ... much water got...

J- Okay

J- (pause)...Alright...(pause)... what I want you to... do you ... umm... What do you think about last summer's program?

W- fun

J- It was fun?

W- Yeah

J- Anything else?

W- pause... umm...(pause)... that teach me a lot...(pause)... of thing...(pause)... teach me a lot of things to know (pause)... and do. I do it at home all the time.

J- You do?

W- uh-huh

J- Okay, what... what have you done at home?

W- I done a penny... then I put drips... umm... then I put pin in the water.

J- Uh-huh...(pause)... Okay.

W- Then I made... then I started making... umm... that... umm...

J- Huh

W- ... that one thing you made.
J- You forgot what she teach?

W- she...she don't do it...she did it...umm...(pause)...last...(pause)...umm...winter...last winter.

J- Okay, does she do science a lot with you?

W- No

J- No...(pause)...okay, do you remember anything she's done in science? Mrs. Gold's done?

W- No...no

J- no...(pause)...okay

J- Why did you stop coming to my program? Last time you came was last summer.

W- I didn't stop...I didn't have time to keep coming.

J- You didn't?

W- uh-uh

J- Why?

W- (pause)...When I play some...when I play games...(pause) I don't quit that easy.

J- Oh, okay...(pause)...you still interested in science?

W- Yeah

J- (pause)...alright

W- I'm coming next Tuesday.

J- I do it on Thursdays.

W- I meant next Thursday.

J- Next Thursday,...(pause)...okay...umm

J- (pause)...So you're busy playing games now?

W- Yeah
J- Okay, well, why did you come last summer...(pause)...You didn't go to the gameroom last summer, you came to science.

J- (pause)...Why did you come last summer?

W- I wasn't busy...(pause)...I didn't want to play pool or...or nothing.

J- You didn't

W- No

J- Okay...umm...(long pause)...What did you like most about my science program?

W- everything

J- everything

W- uh-huh

J- Name...name a couple of things that you liked about my program last summer.

W - that penny, and that...(pause)...thing you put in the water...

J- Okay..

W- and you...umm...you told us how to make slime and...

J- Okay

W- (pause)...and...(pause)...I...I can't remember some of it.

J- Huh

W- I can't remember some of it.

J- You can't remember some of it? ...(pause)...Okay, umm...

J- (pause)...umm...(pause)...Could you ever see yourself...(pause)...umm...(pause)...as a scientist?...doing those things that I did for you in class.

W- Yes

J- You could?...(pause)...Why...why do you like science?
W- It'll... It'll... umm... teach me some... umm... like in high school.

J- Okay, but, why do you like science?...(pause) doing science?

W- (pause)... I just like science.

J- (pause)... Okay,... you don't know why?

W- uh-uh

J- Okay,... (pause)... Can anybody become a scientist?

W- Yes

J- Okay, what do you need to become a scientist?

W- You need to get... you have to graduate first.

J- Okay,... what else do you need?

W- you got to go to all... to all your things...(pause)... your... umm...(pause)... When you get to high school... you just... just... umm... start watching people and start making... making your like...(pause)... your science thing and you start...(pause)... still science.

J- Okay, but what... what kind of... umm...(pause)... okay,... let me ask you this. Describe what a scientist looks like.

W- He looks like... umm...(pause)... he looks like you!

J- Like me?

W- Yeah

J- (laugh)

J- Okay,... (pause)... you... you know any... uh...(pause)... scientist... any names of scientist?

W- uh-uh

J- No...(pause)... umm... (pause)... you know... do you know any scientist that are living today?
J- Do you...can you...(pause)...name any scientists that are living...(pause)...today?
W- Uh-uh
J- No
J- (pause)...Okay...(pause)...you seen pictures of scientists?
W- Yeah
J- Okay, describe...you say a scientist...(pause)...looks like me. Describe...(pause)...a scientist. Could you look at someone and say that's a scientist? ...(pause)...Like what do they...
W- (pause)...They have on white ...umm...white clothes... on sometimes
J- Okay
W- (pause)...sometimes they be...umm...(pause)...wearing glasses...(pause)...(pause)
J- Alright
W- They walk around with a...a bag in their hands.
J- ...a what?
W- ...a bag
J- What's in that bag?
W- ...a lot of bottles and stuff, ...
J- (laugh)
W- (pause)...some papers
J- uh-huh
J- Okay,...(pause)...where have you seen scientist like this?
W- ...downtown, and...(pause)...eastside,...(pause)...and Ohio Ave.
J- Okay,...(pause)...where about on Ohio Ave?
W- He...he...they'll be walking,...(pause)...sometimes they be driving, sometimes they be walking.
J- Okay,...(pause)...Any place else?
W- No
J- ...that you've seen a scientist?
W- No
J- What about in your textbooks?
W- Yeah, there are some there.
J- Have you seen scientists on TV?
W- Uh-huh, a lot of them
J- I thought you said no where else. ... (pause)...Now you're thinking, Good Wesley
W- I see them on Swamp Monsters... some science.
J- Huh
W- Swamp Monsters
J- Oh, you see them on Swamp Monsters. What's the Swamp Monsters?
W- He...he...umm...he...he...a swamp...(pause)...he looks to be a science man? ...mean man come in there and he... umm...beat them up.
J- uh-huh
J- That's a scientist!
W- ???. ..both were scientist.
J- Okay, what...what does he look like?
W- He looks like...umm...(pause)...he's old...he's old and he got...(pause)...old hair...
J- uh-huh

W- ??? he got this...umm...medicine...??? he got this...umm looks like a...umm...swamp thing, too.

J- uh-huh

W- ??? he...umm...he...umm...invent this...umm...medicine... (pause)...for swamps...(pause)...people.

J- Describe what he has on...What does he...(pause)...dress like?

W- He got white...(pause)...he's a white man.

J- uh-huh

W- He has on glasses and he has white clothes on...white shoes.

J- Okay, what else?

W- ...and white socks

J- Alright. ...(pause)...Have you ever seen any black scientists?

W- uh-uh

J- No?

J- (pause)...I thought you said me?

W- Yeah

J- Huh?

W- Yeah,...(pause)...You are the first one I've seen.

J- Oh

J- I'm the first scientist you've seen?

W- Yeah

J- Okay,...umm...(long pause)...okay, I think that's everything Wesley. This will help me out a lot cause I'm trying to find out what young black kids think about science learning and about scientist.
J- ...umm...(pause)...Would you like to become a scientist?
W- Yes
J- You would? Why?
W- It's fun...(pause)...to be a scientist.
J- Uh-huh
W- You teach a lot of little kids.
J- Okay,...(pause)...what kind of things do scientists do?
W- They...umm...(pause)...I don't know.
J- You don't know?
W- No
J- What kind of things do I do?
W- You teach us, and then you put...(pause)...pins...
J- uh-huh
W- a penny...
J- Okay,...(pause)...so...(pause)...you don't do science in
in school...(pause)...not that much just with Mrs.
Gold.
W- Yeah
J- Okay,...(pause)...the things I did...(pause)...in
science,...(pause)...does Mrs. Gold do those things
or...or...(pause)...or...(pause)...what does she do
with you in science? Do you remember?
W- No
J- You don't remember?
W- uh-uh
J- When did she do science?
W- In...(long pause)...I forgot the date?
J- You forgot?

W- Yeah

J- How much science did she do?

W- ...like...(pause)...6 or 6 or 5

J- Huh

W- 6 or 5  6 or 5

J- She didn't do much science?

W- uh-uh

J- No

W- No

J- (pause)...Okay, okay, Wesley, thanks a lot. I may talk to you some more tomorrow.

W- Okay
J- What do you think of this experiment?

Y- I like it

J- Why do you like it?

Y- ...because I never seen up close how you make a...uh... (pause)...how...uh...(pause)...cloud and I really want ...cause...I was thinking about how you make a cloud one day.

J- Uh-huh...(pause)...Okay
J- What grade are you in?
Y- 5th
J- What's your name?
Y- Yhana
J- Yhana
J- What kind of grades do you make in science?
Y- Uh...uh...uh...I made C's
J- C's
J- What do you think about the science program here at St. Stephen's, Yhana?
Y- I like it but when you're in science all you do...
(pause)...
J- What science are you speaking of? ...in school?
Y- Yeah
J- Okay, go ahead.
Y- All you do in school...umm...(pause)...they just teach us...they just...umm...we had to read...(pause)...and...
what...and then...what we know about...soon as we get through reading we go right to a test...(pause)...and I think that we need to know more about it instead of just reading.
J- When you say more about it...what do you mean?
Y- Just like they're doing here...umm...pause...they...umm...(pause)...they're showing us how to do it and instead of just talking about it.
J- Oh, okay, good.
J- So you're saying...(pause)...oh, I'm going to ask you this way. Do you do many experiments in your classroom?

8/9/90
Y- No, we only did one.
J- One, the whole school year...
Y- ...in science!
J- That's all? In...in the 4th grade?
Y- No, two.
J- What...when you were in the 4th grade?
Y- Yeah.
We did...we did the one we did with lettuce...I mean...
(pause)...
J- ...celery
Y- Yeah, and...uh...we did one about weight.
J- ...weight? ...Describe the one about weight.
Y- Okay, we...umm...took a piece of string and put...umm...
(pause)...we...uh...and we measured and stuff like that...(pause)...put...umm...metal on it and see how much it weighs and stuff like that and if you hit it and stuff,...(pause)...how far it moved and measure it.
?- You could like...can you like do test in here?
J- ...you want to have tests?
all- Yeah
J- Why?
C- because...umm...(pause)...when you do test, maybe you can learn but the stuff that we do in here, we don't even learn about in school.
J- You don't?
D- If you don't take a test that means you don't learn anything about it?
Y- No, I want to write a...ummm...essay.

all- Yeah

J- You do?

J- Well, maybe this fall, you know, when...

C- I'm smarter than my sister in essay...

J- ...you bring your books and paper over, we may do things like that, we might...ummm...(pause)...I don't know if I would give you a test,...Maybe a short evaluation. You know, to see what you've learned...something like that.

C- ...but I have to cheat for my sister, so she would get an "A".

Y- ??? right.

Y- What things,...what things we gonna make. Like what kind of stuff can we make?

Y- What kind of stuff can we make?

J- Well, in here?

Y- Yeah

J- There's so much we can do.

Y- Are there certain things?

J- As long as we have the equipment and as long as it's safe...we can do it.

Y- Whatever...whatever we say...ummm...(pause)...uh...like if we...ummm...said we wanted to make something, would you make it?

J- If I can get the equipment, which I think I can... (pause)...with my connections at (my former school) and my connections at the (university), I'll do my best to ...uh...let you do the experiment.
Y- Do you have some in your room?

J- See, I'm not teaching anymore...(pause)...I'm off...(pause)

Y- ...whose teaching?

J- ...well, I'm on a leave of absence for about a year...(pause)...but I can still borrow things from the school I left...(pause)...or I can borrow the things from (the university, so that wouldn't be a problem.
Yhana

J- Today, is...(pause)...Saturday, May 25th...(pause)...and I am going to interview...(pause)...How you say your name?

Y- Yhana

J- Yhana,...(pause)...Oh,...(pause)...Yhana. Do you do science...uh...science in school this year?

Y- (pause)...Yeah, on our first...(pause)...umm...science, we did...we had...(pause)...salt,...(pause)...corn, sugar,...(pause)...nails, and...(pause)...stuff and then we had to figure out a way to separate those things cause they were mixed.

J- Oh, Okay

Y- Separate them without using...(pause)...physical contact.

J- uh-huh

J- Okay,...uh...when did you do this experiment.

Y- Umm...(pause)...it was like...(pause)...it was...beginning...(pause)...of...(pause)...February.

J- The beginning of February.

J- How many experiments or how much science would you say your teacher did this year.

Y- (pause)...We did a lot compared to...what we...yeah...we did a lot of science.

J- You did? Can you name some things she did this year?

Y- pause...umm...(pause)...we had a test about...umm...(pause)...the greenhouse and...

J- You had a test?

Y- Uh-huh

5/25/91
Okay, I mean some experiments... Can you name some experiments?

We only had one experiment.

You only had one experiment... this...(pause)... whole school year?

Uh-huh

Okay,...(pause)...then what other kind of science did your teacher do? You said you did a lot of science. Describe the science that your teacher did.

Well,... he worked a lot on... umm... atom bombs and stuff like that...

Okay,...(pause)... I mean... if you didn't do experiments... then what did you do?

We... umm... read about it and then we have to give a def... definition...

uh-huh... so...(pause)... do you... uh... use your science book a lot?

No

No

Not anymore

What did he do? How did he teach science?

He... he would give us like 5 words each night... and we had to... umm... read about them and then write the definition...(pause)... and...(long pause)... umm...(pause)... then we had a test.

Okay,...(pause) alright

Do you remember my program last summer? My science program last summer?

Yeah

Okay, what did you think about that program?
Y- I think it was fun and nice that you took out time to teach us...(pause)...umm...the...experiments about science.

J- Okay, how did this program I did last summer help you?

Y- (pause)...like when the teacher would give us...(pause) umm...ask us a question, he would...(pause)...umm...I would raise my hand...umm...he did one...(pause)...He asked us...it wasn't too long ago...about 2 weeks...he asked us about...(pause)...the clouds and how they form...

J- uh-huh

Y- and I told him...(pause)...what we had did and then...umm...

J- What you have done where?

Y- At St. Stephens

J- Okay...

Y- (pause)...and then he said he would try that...and he hasn't tried that yet.

J- Okay... good

J- (pause)...Okay, are you interested in science?

Y- (pause) A little bit.

J- A little bit (laugh)

J- Okay,...(pause)...what kind of things are you interested in...you said a little bit...What kind of things are you interested in?

Y- math

J- No, I mean in science...you said a little bit...What kind of things in science are you interested in?

Y- umm...(long pause)...umm...(pause)...like the chemical changes and stuff...that's what I like.

J- Okay,...(pause)...why did you come to my science program last summer?
Y- because me and my sister...(pause)...we...umm...(pause) we never had been to St. Stephens and we wanted to try it out and...(pause)...and my friend...umm...the one that told us it was fun and so we...(pause)...and then she said science was fun and we tried out science and we liked it...so...(pause)...we kept on coming.

J- Okay, good...okay

J- (pause)...Okay,...(pause)...Do you feel you learned a lot in that program?

Y- (pause)...Yeah

J- Yeah...(pause)...Okay,...(pause)...what do you remember?...that we did in that program?

Y- (pause)...umm...(pause)...umm...making salt crystals

J- Okay

Y- (pause)...making plants

J- Okay

Y- ...clouds

J- alright

Y- and...(long pause)...sugar crystals

J- alright

Y- umm...(long pause)...and one I...I forgot the name of it...(pause)...but...umm...(pause)...one where we had laid the candy out on the...umm...

J- Oh,...(pause)...Dr. Carter did that...(pause)...the lady did it...

Y- Oh, yeah...

Y- and...umm...the one we took our hands and put it...(pause)...up in there it was...(pause)...I think it had flour and water.

J- Okay, corn starch and water...
Y- yeah
J- ...remember the name of that?
Y- "got..."? ...umm...
J- "oo..."
J- (pause) "oobleck"
Y- "oobleck"
J- "oobleck" ...Okay
Y- ...and we made slime
J- right!
J- Could you ever see yourself as a scientist?
Y (pause)...Well, I thought it would be fun to be one but...
J- You did?
Y- (pause)...but I didn't really see myself as one.
J- Why? Why can't you see yourself as a scientist?
Y- (pause)...umm...(pause)...I think I would be...(pause) sort of scared because they're...(pause)... they're... umm...(pause)...umm...(pause)...I'm talking about "aus"
J- Huh
Y- I'm talking about another....
J- Okay, but think about someone who does experiments and works in a lab and...and does science. Could you ever... you said...see yourself as a scientist?
Y- (pause)...No, not really.
J- Okay, you said you'd be scared...scared of what? ... (pause)...Why do you say scared?
Y- I think I'm talking about "aus"...umm...What do you call them
Y- "austro"
J- What...what do they do? Describe what they do?

Y- Well,...(pause)...they be look...they be...umm...looking for things and they be in this suit...a white suit... (pause)...and with a...umm...thing over their head and they be trying to discover things and stuff.

J- Where are they? ...(pause)...Where have you seen them?

Y- (pause)...I've watched movies about them. ...a real movie about them... because my teacher was in it...

J- (pause)...Okay...uh...I...I'm still not understanding... (pause)...Okay, they...(pause)...where are they? Are they on earth or where?

Y- Yeah, they are on earth.

J- They're on earth.

J- Okay,...(pause)...so what about another type of scientist? Could you see yourself as another type of scientist?

Y- umm...(pause)...What type of scientist?

J- Well, just... (pause)...someone who does experiments or some who...(pause)...works in a laboratory.

Y- (pause)...Oh,...(pause)...I don't really know...I...I... umm...picture myself as something else.

J- Okay, let me ask you...why not a scientist?

Y- (pause)...because...umm...(pause)...science is really... I think it's...(pause)...for men.

J- For men? ..(pause)...You do?

Y- uh-huh

J- Okay,...(pause)...umm...why?

Y- because its long and...(pause)....

J- What do you mean its long?

Y- I mean not long but...(pause)...its...(pause)...just...
(pause)...I don't know. I...(pause)...the first thing that comes to my mind...it's for...it's just for men.

J- Okay,...(pause)...okay, I would like to try to understand, though,...uh...Yhana, why do you think science is for men?

Y- (long pause)...Can I ask you something and then you ask me that?

J- Yeah, go ahead.

Y- Okay

Y- umm...(pause)...like when we do these experiments...do you get...umm...(pause)...umm...(pause)...do you have on suits and stuff?

J- Do I have on suits?

Y- uh-huh

J- What kind of suits?

Y- Any kind of suit. I just want to know?

J- I don't. No...

Y- umm

J- You've seen scientists with suits on?

Y- uh-huh

J- Okay,...(pause)...do you know of any...do you know of any women scientists?

Y- (pause)...No

J- No?...(pause)...are the scientists you know just men?

Y- ...really but I don't know their names.

J- Okay

J- Do you know any black scientists?

Y- (long pause)...You! (laugh)
J- Okay,...(pause)...okay,...umm...Do you know any other ones?

Y- ...not by name

J- Okay,...describe...(pause)...what a scientist looks like...(pause)...in your mind.

Y- (long pause)...they have...(pause)...a white suit on maybe...(pause)...they sort of like...(pause)...experiment things...just like...(pause)...we do

J- experiment?...(pause)

Y- uh-huh

J- ...things

J- Okay,...(pause)...okay,...umm...

Y- Why do you....

J- What makes you see scientists this way? Where have you seen scientist that look like this?

Y- (long pause)...I seen one in a movie and

J- Okay

Y- ...and one...(pause)...I seen one...(pause)...I didn't really see him...I just...they shoved a statue of one that's dead.

J- They what now!

J- (pause)...What were you saying about a statue?

Y- umm...They showed a statue of a dead scientist

J- Where?

Y- umm...At...art museum

J- Where?

Y- In the art museum.

J- In the art museum,...(pause)...Okay,...and how did these scientist look...(pause)...I mean describe how they dressed and...
Y- Well, they really just dressed the way they usually dress but...

J- How's that?

Y- umm...(pause)

J- Describe what they had on.

Y- (pause)...umm...(pause)...plaid shirts,...(pause)...(pause)

J- (laugh)

Y- ...they were old men.

J- They were what?

Y- They were old...

J- Old?

Y- They had...

J- You said old?

Y- uh-huh

J- Okay

Y- ...and they had...umm...(pause)...only one person...(pause)...the one I saw??? he had on blue jeans, bell bottoms...

J- (laugh) ...dressed old? Huh...(pause)...okay.

Y- ...but...(pause)...what I heard he was a good scientist.

J- Alright

J- What movie did you see a scientist on?

Y- umm...Astronomers and...umm...

J- The name of the movie was Astronomers?

Y- Astronomers and something else.
J- Okay

Y- Astronomers?

J- Okay,...how were the men...how were the scientists dressed on the Astronomers?

Y- (pause)...they had...(pause)...umm...(pause)...white... all white

J- All white?...(pause)... 

J- Okay, one more question. Let's go back to the one about ...I don't know if you thought about it anymore... (pause)...Why do you think of only men...(pause)... as scientists?

J- (pause)...If you've thought about it some more?

Y- umm...(long pause)...I always thought a person that pops up in my mind...is...(pause)...it's just for men.

J- Okay,...(pause)...alright, think about it and I'll get back with you, alright?

Y- Okay

J- Thanks alot
J- Today is Monday, May 27th and I'm going to interview... (pause)...Yhana

J- ...and my first question today is...what is science? In own words...what is science?

Y- ...it's fact, realistic, and fake

J- You take science in school... (pause)...so how would you (pause)...define...(pause)...what science is?

Y- (long pause)

J- Okay, just tell me what you said.

Y- umm...fact, and realistic,...(pause)...and...umm... things that you find out...(pause)...that happened like ...(pause)...200 years ago.

J- Okay,...(pause)...but think about what science is, alright.

J- Think about school science...(pause)...how would you define what you do in school? How would you define school science?

Y- (pause)... fun

J- Give me a definition for what science is? ... (pause)... You know we talk about science? What is science?

Y- (pause)...experimenting, things...(pause)

J- Okay

Y- ...to see if they work and stuff.

J- alright

J- Do you think science is important?

Y- (pause)...Yeah

J- Okay, why?
Y- ...because we wouldn't know a lot of things that we know now about dinosaurs and stuff...(pause)...and ...(pause) the...umm...we wouldn't...(pause)...know alot of things that we know now.

J- Okay, is there anything you dislike about science? ... (pause)...school science?

Y- (pause)...not really...only one part I didn't like...is when we had to find out...(pause)...how to touch...I mean get something out without touching it with your hands and things.

J- Oh, why didn't you like that?

Y- ...because I couldn't find out a way...

J- ...because you couldn't figure out a way to do it?

J- Okay,...(pause)...would you like to do more experiments in science?

Y- Yeah

J- Okay,...(pause)...you talked about...(pause)...I think ...(pause)...men in white...(pause)...suits and then you said something about a teacher in a movie...One of your teachers was in a movie?

Y- uh-huh

J- Well, what movie was this?

Y- (pause)...umm...(pause)...Astrono...umm...Astronomees, Astronomers

J- Your teacher was in it?

Y- Yeah

J- Okay, and he showed it to you...showed you the movie?

Y- Uh-huh

J- Alright,...(pause)...umm...(pause)...why did you?... I think you had said something about you had quit using your science books...(pause)...why did your teacher stop using the science books?
Y- (pause)...I don't know...we just...we...umm...worked on (pause)...umm...other subjects instead of science.

J- alright

J- (pause)...Why do you feel we need science or scientists?

Y- (pause)...to figure out a lot of stuff that we not... (pause)...that we don't...(pause)...that we haven't found out yet.

J- Alright...(pause)...Okay, now...umm...(pause)...I'm going to ask you this question I had asked before about....You said only...you can only see men as scientists? Did you think about that anymore? Why you can only see men as doing science?

Y- (pause)...I didn't think about it anymore but...umm... (long pause)...

J- You need to think about it some more?

Y- Yeah

J- (laugh) Okay,...(pause)...you still feel that way?

Y- Uh-huh

J- Okay,...umm...(pause)...why didn't you and your sister return...(pause)...to the program after...(pause)...this summer?

Y- Well,...(pause)...umm...we were suppose to...umm...we started coming back a little bit but...umm...(pause)...my mom said...(pause)...that...umm...we had to finish our work and stuff before we go.

J- Oh, your work where?

Y- ...in the house,...(pause)...we had to clean up and do our homework.

J- Oh, okay..

Y- ... and the days that we did come after, we had to... umm...clean up before...
J- Okay

Y- ...ummm...we go...

J- I never saw you two in science again...

Y- (pause)...after the program?

J- uh-huh

Y- (pause)...We came again.

J- You did?

Y- uh-huh

J- ...this...(pause)...school year?

Y- Yeah

J- Okay (laugh)

Y- ...and...ummm...(long pause)...we came again...you was there...I think we...ummm...(pause)...we did...ummm...(pause)...we made...(long pause)...we made...ummm...(pause)...What did we make? ...(long pause)...I think we made some...I knew it was something that we had did before...(pause)...but I didn't...

J- You can't remember what it was?

Y- (pause)...We had did it.

J- (pause)...Okay, thanks alot.
J- Do you have a few minutes.
A- Sure
J- We can interview her...Well, I can because she had...she said some kids had...umm...(pause)...made some comments about our science program.
A- ...they absolutely love it,...(pause)...they really do.
D- I'm going to go ahead...I'll just listen while I'm...
J- okay
D- ...dumping the bottles out over there.
J- alright
J- (pause)...I don't have any set questions to ask you.
A- (laugh) okay
J- What were some of the comments that the kids...
A- uh
J- ...would make.
A- It's been after...after the first couple of weeks...when they start real...started realizing that science is happening...that it's a regular program...
J- uh-huh
A- ...they started telling me about the different projects they made each week. They looked forward to slime for...
J- (laugh)
A- ...a long time...(laugh)...we all knew slime was coming ...umm...they had a great time with that...umm...They liked the formulas. They even used that word.
J- Oh, they did? 8/9/90
A- ...formula, yes. They think that's pretty neat...and one little one...I don't remember who it was right now... but...but had to tell me that a formula was a recipe... (pause)...in case, I didn't know.

J- umm

J- ...was this in art class...when you hear them...

A- umm

J- ...talking about my program

A- ...sometimes it was in art class...that's the easiest place for them to talk to me in any long length of time but a couple of them even in the halls...(pause)...umm ...some of them aren't real good at knowing what day Thursday is...so...(pause)...you know almost every day somebody asks "is it science day?" "is it science day?" (laugh)

J- You know...I know when I first started the program, it was a matter of rounding the kids up and you know after ...(pause)...umm...I think about the fifth week or so, I didn't have that problem anymore...

A- yeah

J- ...but for a few weeks...it was like...you know...

A- ...that's a major accomplishment around here!

J- right

J- Are you coming to science?...you know I had competition with basketball...

A- sure

J- ...and...ummm...the other activities...

J- ...but then today when Dan was here, you know, I had a bunch of kids waiting in front of the door wanting to come in...

A- ...and that would ???
J- ...kids I had never seen before!

D- There were kids out there waiting since 3:00.

J- for real

A- ...and with the structure...this is the way it is...it would be very easy if they didn't want to be here, not to show.

J- I know

A- ...and if they, if you didn't want to find, if they didn't want you to find them, they'd be gone.

J- (laugh)

A- let me tell you...

A- ...so the fact that they are waiting for you is a major accomplishment.

You got some pretty stiff competition.

J- I know

A- I mean with so many of the things going on here, they absolutely adore the program, they really do...(pause) ev...one kid even told me he didn't like science in school...could you come be his science teacher.

J- Could I?

A- yeah...

J- really, who was that?

A- umm...(pause)...I have to think about...(pause)...so I said...I can't...he said...okay (laugh)...ummm...

J- I...I was trying to get at an answer from the kids, you know, why...umm...(pause)...this program is so different from school science.

A- ...because they understand this...

J- I think that...(pause)...if I was in the classroom as this particular kid's teacher, he may feel different about having me there.
A- sure
J- You know
A- Well, there are no test, there are no...
J- Yeah
A- ...requirements, there's no homework...
J- yeah
A- ...you know that's all real nice.
A- ...umm...but again they're obviously having a good time and learning something or they wouldn't...it would be boring to them.
J- Didn't it sound, Dan, like the majority of the problem in school science is lack of hands-on activities...
D- yeah
J- ...except in Mike's case.
J- most of them are just reading out of a book or...uh...that cut and paste stuff.
A- yeah
D- Well, she was only in the first grade
J- ...2nd grade, yeah...
A- ???...umm...I wish that...I don't know if there is a lack of time or a lack of education of the teacher in the 2nd grade to be able to pull out those things...I mean...if you're not very comfortable in that subject and you're a 2nd grade teacher...(pause)...you're going to cut and paste, and make your...
D- ???
A- yeah
J- I always heard...
A- ...???...so many minutes a week...
J- I always heard with elementary teachers, there's a fear of science and they kind of...you know...
A- ...there's a fear
J- ...teach their favorite stuff first.

A- ...the art teachers...(pause)...or the...(pause)...schools that there are no art teachers and the schools that there is no gym teachers,...(pause)...anything that is...that is special, gets missed
J- yeah
A- ...and it's real sad.
J- ...cause one kid was saying that his teacher spends five minutes...(pause)...a day is it...a day or week?
D- a day, that was Jess
J- Jess, five minutes a day in science...
A- Jess is the one that wanted you to be his...(pause) science teacher.
J- Oh, Jess is the one...
A- yeah
J- ...and Jess really loves science.
A- yeah

J- ...every since I think Kathleen identified Jess, as...you know...a potential for my program...you know...he's been coming every week and...(pause)...his answers to the questions are sophisticated and really...
A- he's a bright boy
J- he's very bright...he's really in to science.
A- but...umm...it's sad and I don't know how to...uh...(pause)...I mean...I...I understand why it's happening, it's just that I think it's very sad that it's happening (laugh)...and I...you know...(pause)...I don't know... (pause)...the...uh...(pause)...kids that go to the
science alternative schools don't even have as many hands-on things as...

J- really
A- there's more...
J- uh-huh
A- (...the principal over there is really neat...) but...uh...(pause)...not...(pause)...not as much as I thought...I don't know with the focus being on science...you think that you'd see it.

D- ???
A- umm...(pause)...Hamilton's is one of them.
D- Oh, Hamilton, yeah
A- yeah
D- yeah, one of my close friends works there
A- Hamilton is St. Stephen's adopted school...so we do a lot with them...ummm...we're very close...we get a high percentage of their kids.

J- I would like to do a follow-up to see...ummm...if some of the...(pause)...attitudes and ummm...(pause)...achievements have improved.

A- The best way to do that would be to make sure you have (pause)...them identified with their name and numbers because our summer kids are not necessarily our winter kids.

J- I know...I heard that.
A- The kids that are here may not be here in two months...

J- They may not?
A- ...they may be here next summer.

J- Are most of the kids from the area...you know...a lot of kids are bus kids...now how far do they live.
A- umm...not very far...umm...(pause)...it's just that with the neighborhood...we don't feel like they need to walk very far to get here either...umm...we even bus the Terrace kids.

J- Do you?

A- yeah, so that tells you how close...unless they live right up 17th or right up 20th, they probably ride one of the buses.

A- umm...(pause)...the bus route goes up...(pause)...Cleveland Ave, it goes down Duxberry, a little bit...it goes around umm...(pause)...Mock Rd. area...(pause)...down...(pause)...?? it doesn't go terribly far

J- So you're saying some of these kids, I may not see this fall?

A- that's right

J- ...cause I know I asked some of them what they thought about continuing the program in the fall...

A- Jess would be here

J- ...and they said they love to be part of it

A- yeah, I'm trying to think of some of the other kids that are in here...umm...(pause)...and if there were programs such as this here, parents might make a point of bringing those kids to that program even if they're not here for the 5 day a week program and they'd likely be here on your day you have science.

J- when does the...uh...summer program end.

A- it ends a week from Friday.

A- then we're open the next 3 days.

J- so I only have one more...(pause)...one more Thursday.

D- a week from tomorrow?

A- one more Thursday

J- Oh, I didn't know that. I'll try to get names and numbers this week
A- ...and...(pause)...if...make sure...do you have a list of pretty consistent kids?

J- (pause)...yeah,...(pause)...I've taken attendance almost every week...

J- ...but I didn't get phone numbers...I guess...can I get that from the office?

A- We can get their phone numbers to you...yes

J- alright, I have a lot of names.

A- Some of the kids will be very hesitant about giving you their phone number...it's been drilled into their heads that you don't give the phone number out...(pause)...so they won't give the phone number (laugh)...they won't give you their number now, this little girl did real well...

J- uh-huh

A- umm...(pause)...some of them, some of them

J- Christy, Christy

D- Do kids sign up to come here?

A- They're supposed to...(pause)...have their parents sign them up but...

D- some just show up

A- I'll bet a good one-third of them just show up.

D- ...just show up

J- Now we'll interview Dan...(pause)...what were your impressions...(pause)...of today's...(pause)...activities.

D- I was impressed with so many kids waiting to get in here. I thought that was great...(pause)...You've obviously done a good job.

D- I think they were real fired up about...Carolyn...being here last week.
J- I think that made a difference

D- (pause)...I think as many other people that you get in (pause)...to do things like that...

J- uh-huh

D- ...you know the better...just like in your own classroom (pause)...you try to bring other people in

J- yeah

J- I know Dr. Carter did a lot of things last week and... (pause)...she ran out of time...(pause)...and most of the kids that were in here had to catch their bus and I was right in the middle of candy-making...

D- yeah

J- so those kids left...(pause)...and then a whole group of kids that didn't have to catch their bus came in.

D- came in

J- ...and just took their place...(pause)...and...you know ...so we let them just finish up...(pause)...and then... you know...

D- yeah, I had a list today, too...all of a sudden kids were gone and other...

A- in the winter, too?

A- ...we open at 3:30 p.m. ...the bus doesn't get here til 4:30 ???

D- at 4 ???

A- 4, yeah

J- What time do you close?

A- ...and then we close at 6

J- 6

J- I would have time to do at least one experiment.
A- You do it...generally, anywhere like between 4:30 and a quarter til 6.

J- that would be enough time.

D- The time it takes to gather the kids up, like today...it takes 10 minutes.

A- ...it's a little calmer, we have less kids.

D- oh, okay

A- We average about 400 kids a day during the summer... (pause)...and we are cut down because of the fair right now.

D- Oh, I see

A- and...(pause)...we would have maybe 150 a...any given day during the winter.

A- they're a little more consistent, things are calmer, they're...they're in the school routine where...(pause) ...you know you go to school and you go to this class and this class and you have gym on Thursdays

J- more structure

D- right

A- and they...they're patterned into structure...

J- uh-huh

A- there are...(pause)...less of us because the summer help isn't here so there's...(pause)...more structure because that's the only way we can do it (laugh)...you know.

A- and...umm...you know this the same...this is the same... and it's easier in a lot of ways...cause you supposedly know what's going on.

D- supposedly

J- You thought today was a lot calmer. I was going... (pause)...to say just the opposite...(pause)...probably because so kids want to come in here.
J- it's kind of hectic
A- yeah
A- yeah, well, they're getting tired.
J- it's probably the excitement
D- Well, it's getting toward the end of the summer...
A- yeah,...(pause)...and a lot of things are coming and they know...they've been here for a while and they know things real well, they...they know all our weak points (laugh)...you know...
D- after a while, they start talking about...they...know (pause)...kind of getting out of here, too, cause...
A- yeah
D- ...they're talking about going back to school and all that.
A- ...and they're getting...(pause)...tired of us. They are here from 12:30 to 5.
J- Oh, they are?
A- 5 days a week, yeah, that's a long...
D- yeah
A- ...time.
D- yeah
A- umm...(pause)...the staff is getting tired, they're getting tired, summer's getting old, they're getting bored with the same old thing.
A- school's coming up. They want to go, they don't want to go...you know...(pause)...the fair is here...they'd rather be at the fair but it cost too much to get in (laugh)...you know...so...(pause)...it's just one of those times.
J- Do you provide passes to the fair?

A- We are taking a group of...(pause)...different groups are taking a different groups of kids...

J- okay

A- ...they can't just blanket us with passes. I wish we could. In pass years, the fair gave us a lot more than they have recently...they jacked up their prices and cut our tickets.

J- $6

D- that's too bad

A- $6 is a lot

D- yeah, it is

A- you start taking families and...(pause)...

J- Is there a family rate or is it $6 per member.

A- I think the kids are...(pause)...I don't remember...there's a kid's price but...(pause)...it's like five years old and under.

D- five or six and under?

A- yeah

D- yeah, it's expensive.

D- I've got 3 kids of my own...it's tough to take them anywhere.

A- (pause)...it's tough...our kids are fairly undisciplined and you take them through the fair gates and that's the last you're going to see of them.

D- they're gone?

J- you lose them?

J- excited
A- and then...also...(pause)...ummm...our kids are real adept at ringing money out of people...that's not a blanket statement...I mean a lot of them would never do that but...

J- doing what now?

A- can I have a quarter?

J- Oh, asking for money

A- Can I have 50¢. I mean a stranger would...

D- panhandling?

A- yeah, I...I took a group of ten over there once. I would never take a group of our kids to the fair again. I spent the entire time going, "please don't ask strangers for money" (laugh)...you're wearing a St. Stephen's tag (laugh)... I mean

D- yeah

A- They would come back with 20 or 30 bucks a piece.

J- really

A- yeah, people would just like empty all the change in their pockets out and just give it to them.

D- ...cute little faces.

A- (laugh)...don't do that...you know...but...uh...(pause) it's a...it's a learned beh...they get away with that so they do it again...I mean...(pause)...gee...that's kind of neat...I asked for a quarter and got a buck and a half.

D- that's reinforcement

A- yeah

J- see, I was beginning to notice some...(pause)...a few problems in here...(pause)...like following instructions...you know...we wanted to interview...and...Dan had a few words to say and I had a few words to say and I said I need everybody to sit down...(pause)...and I couldn't get them...you know...to sit down...
A few kids were... (pause)... still up working.

right, and then... you know... they would sit down and then they would get back up.

Another part of the problem is that... (pause)... you automatically come in with your teaching skills... know how to handle a group of children... (pause)... most of our staff are social workers... (pause)... who are trained very well to deal with one on one... (pause)... perhaps, you and your family... (pause)... or you and your two friends... (pause)... I mean they do very, very well in that situation... that is not the same as having 20 or 30 kids in one room. It's a whole different... (pause) structure of discipline or having 400 of them in a room who are screaming and yelling...

For example, when the kids go to the gym after... (pause)... lunch...

yeah

... it's so wild in there, isn't it?

It's just absolutely nuts... absolutely nuts... (pause)... the reasons that the gym structure was set up has been completely lost in what's going on in there now... (pause)... It was set up so that the... so that we could tell them these are what you choices are today... you have to make a decision on what you are going to go to... these are your choices and those are the choices and then we send them, if ??? staff was here... (pause)... including ??? and... uh... (pause)... it sort of got "shove them into the gym and get them out as fast as possible" so they know as soon as they hit the gym, they're waiting to go to the gameroom... of course, that's always a big draw and you... you can't get them quiet long enough to tell them that there might be something else happening in the world... and... (pause)... sometimes it didn't happen and it doesn't take that long to lose that many kids. Some of them are 6 and some of them are 13 and letting in 13 year olds was another decision to make this year... (pause)... I don't know but... (pause)... that's tough to have a 6 year old and a 13 year old in the same group... they don't... aren't the same people.
D- that kind of surprised me, too,...kids in here were varied in age, from maybe 7, 10, 11.

A- ...and it takes...(pause)...that's one of the skills that I am very thankful to have learned...(pause)...umm but it's a tough one...?? but normally we have tutoring on Tuesdays and Thursdays...(pause)...and they can be from 6 to...umm...18 during tutoring...(pause)...cause if they good enough to get here for tutoring...I'm not going to tell them...I'm not going to tell them it's the wrong time of day,...that's just...(pause)...you walk through my doors wanting help, I'll find you somebody...(pause)...but...you know...got a 6 year old who's struggling to learn their ABC's or their +'s or...or...you know...(pause)...Oh, my goodness!...?? when we hit...multiplication every year (laugh) October is a horrible month. You know...then you have the high school kids who are struggling through whatever level they are on and they could be at any level from learning their +'s to learning calculus...you know...(pause)...it's real (pause)...interesting trying to juggle it all...

A- (laugh)...?? interview time

D- I'll finish up the...

A- ...it's frustrating sometimes that...(pause)...so much we could do and...(pause)...I'm not sure we're doing it...(pause)...and other times we're doing so much that I'm not sure what else we could stick in there.

D- yeah, right

J- I hear it's hard to get the parents involved in activities because...(pause)...I had mentioned to a staff member last Friday when she was interviewing me...I would like to...uh...(pause)...invite the parents for a couple of sessions...science sessions...(pause)...she was saying that would be difficult...(pause)...because the parents...(pause)...don't really support the programs that you have formed already.

A- no
A- In fact, we're more of a dumping site than anything else...umm...

J- yeah, most recreation centers are.

A- I get ????

J- ...and you feed them, too?

A- twice

J- Oh, you do?

A- We feed them at 12:30, when they walk in again at 3...umm...in the wintertime...we feed them dinner... (pause)...which for...(pause)...I bet a good half of our kids is their dinner.

J- what time?

A- They eat free lunch and free breakfast at school as soon as they get in between 3:30 and 4:00...(pause)... whenever they get here, they eat right away...(long pause)...usually, it's some sort of hot...(pause)...dish These kids will eat breakfast and lunch at school and dinner with us. Parents have it made. You feed them peanut butter and jelly on the weekend...you're done. I mean, you have it.

A- We also...you know...they come in here all raggedy... we're going to get them clothing out of the clothing boutique. We'll get them shoes if they don't have them (pause)...you know if mom comes in and tells us we don't have any lights because my lights have been shut off and we have no food...all of that can be taken care of here.

J- you pay the...uh...electric bill?

A- at times.

J- really

A- yeah, we're a crisis center. If you don't have electricity or if you don't have...(pause)...uh... (pause)...heat...(pause)...our services is going to step in real fast, we're trying to keep...we're trying to be able to keep the family together without that influence ...there are even times we will call them...(pause)...if
their situation warrants but...(pause)...we try to make
the family independent as possible without having to
have that ???

J- I see where families can take advantage of this.
A- oh, yeah, they do
A- they take advantage of...

J- they spend their money on something else and say, well
get...

A- even with just the summer program over here from 12:30
to 5:00, we have kids outside by 9 o'clock and there's
some still here by 9:30

J- parents just drop them off, that early, huh?
D- drop them off?

A- and...(pause)...you know then...then you get into...I
don't want to leave them sitting outside all day...
(pause)...Sure you see them sitting out there going...
you can't leave them out there but if you bring them in
(pause)...tomorrow they'll be here at 8:00.

D- yeah
J- (laugh)

A- there may by 14 of them out there...you can't win, you
know...(pause)...it's just...(pause)...it's very hard.

J- it probably would have been a better idea if we had
interviews some where else...we probably wouldn't have
had al...

D- yeah,...opening the door all the time...

J- distractions...disruptions...cause a lot of kids thought
we were still doing activities..."can I come in?", "can
I just see what you're doing?

A- something you might want to do, too, if you were able to
come early, perhaps,...(pause)...and identify your kids
early and one at a time, take them in an interview...and
have science on science time...umm...you could do that when you get here but...

J- yeah, I thought about coming on a different day to do some interviewing.

A- a lot of times, if you want to separate kids, we'll give them a piece of paper...a ticket...(pause)...go somewhere at such and such a time...(pause)...and they...even if they can't figure out where it is or what time it is, they can show somebody, "I'm supposed to be...you know...and...(pause)...if they don't know what's going on and the ticket says you're in 414 at 10:00, I'm going to send you there. You know...(pause)...be in here at 2:30 or be next door at whatever time...(pause) so that helps...

D- So this...this...this serves as a food pantry...(pause) idea?

A- We are...we are...considered a settlement house, we...(pause)...like to think of ourselves one up from your basic recreation center and we do...(pause)...just about everything...(pause)...uh...(pause)...some people say what do you do at St. Stephen's...well, you get about an hour (laugh). We have programs for the adults, we have programs for our senior citizens...(pause)...uh...we have a second building...the pink building on Cleveland Ave...

J- uh-huh

A- ...it's our second building...they're hoping to be able to build another one next door to this and have the whole complex together but...(pause)...for now we're separate but that's the crisis center...(pause)...and there is a doctor there who will do...(pause)...low care medical needs...uh...we don't do anything too major as you need...and if it's truly major, they send you on into the emergency room but...(pause)...for check-ups or prenatal care, there is a very large prenatal clinic there...umm...(pause)...physicals for...(pause)...playing basketball or football...every little kid needs a physical...(pause)...

D- yeah

A- so for $2, you can get your children a physical.
to every child...they do not have to play Santa Claus.

J- Who goes out and does all the shopping...(pause)...the staff

A- uh...we get donations from any and everyone we can.

J- Oh, okay

A- and...uh...we now have...(pause)...I think every major mall...(pause)...collects toys for us...umm...(pause)...umm...(pause) "A" collects toys for us...(pause)..."B", "C",...umm...(pause)...

A- uh, the schools collect cans for us...we usually get sale cans...

J- I was the St. Council advisor at my school, I spearheaded that...

A- yeah, so and, we'll come get them...you get them...we'll find them (laugh) we bring them...some people bring them to us...a lot of the Catholic Schools...(pause)...collect toys...

D- Do you get stuff from Charity Newsies?

A- yes, ...???

D- That's what we do at our school.

A- Secret Santa takes...(pause)...a certain amount of our kids and what we'll do is...is...(pause)...the kid that the group workers are working with individually...(pause)...umm...we turn in their name to Secret Santa and they don't go through our regular Christmas program, they get Secret Santa...they get clothes...and they...they...they do their Christmas ...you know...

A- we try to make sure there's at least one new toy under the tree for every kid.

A- ...Christmas...dinner for a couple of days...

J- How do you determine which families you want to give this to?...
A- ...uh...for shots to get into school...for your 5 year old...there is whatever level the booster shot and all that...you can get that taken care of on a sliding fee scale and most of them cost $2...we could go on...

A- if you are a senior citizen and you have three medical prescriptions for $60 a piece, you're not going to be able to swing it...There's an awful lot of diabetics...an awful lot of them do things like take insulin every other day...(pause)...they can't afford it every day. There's medications you need...(pause)...to take (laugh) you...you have to do it everyday at this time...you can't play these games. ...somebody steals all my needles...what am I going to do...Medicaid will only pay about...umm... ...it's awfully frustrating...when you're talking about...(pause)...will it last til the end of the month (money?)

A- there's a lot of need in the neighborhood but we don't ...We're building a day care center...

J- you can't do everything

A- I know...sometimes...sometimes we're doing too much.

D- yeah

A- uh...we have a massive...(pause)...massive Christmas distribution...Christmas basket program...yeah, last year we passed out...(pause)...to 3500 families.

D- that's massive

A- ...food and toys..

J- it is!

A- ...food and toys...

D- We do something at church...baskets at Thanksgiving time

A- We don't...we ask not to handle Thanksgiving...twice we...we've been approached and say "can you do Thanksgiving? we can't....by Thanksgiving, we're getting Christmas going...we shut down, literally shut down this place for three weeks and all we do is go gather...uh...(pause)...canned goods and toys from people...(pause)...for the last ...(pause)...3 years...we have made it one new toy
A- anybody who signs up...(pause)...anybody who sign up...(pause)...and...(pause)...just...(pause)...we even have some working parents who are working and...and are fairly close to the poverty line...(pause)...level...umm...There is a cut off point...it's...it's a little easier for Christmas than any other time of the year.

A- So...you know...we encourage the schools to get the word out...you got parents and families who would like to qualify...(pause)...

J- Do you do any checking to make sure they qualify or just accept what they say?

A- some

J- some

A...umm...the most checking we do is they...they use to...(pause)...be able to go...(pause)...to all the different Christmas programs...(pause)...and now there is a central clearinghouse where they check the social security number...(pause)...so if you come to St. Stephen's, Christmas, that's where you came...if you go to...umm...the Salvation Army, that's where you went.

A- they would scream at us because they say, "well, it's, it's my right if I go to all these places...If I take my time to go to these places and sign up for all these things then it's my right to get it".

A- we also have people who come in with a shopping list, Johnny wants a red bike...(pause)...Suzy wants a black...

J- sometimes we can make it too easy for people...(pause) you know...

A- ...we will have an 8 year old toy for your 8 year old daughter...you know...(pause)...we...the slip says "girl, 8"...you know.

A- we would love to give every child a bicycle but...(pause)...we give out what we get.
...and then we have...(pause)..."D" donated last year...(pause)...something like 6000 loaves of bread..."E" donated enough milk for every family to get 2 half gallons of milk.

J- ...at Christmas?

A- at Christmas

A- umm...(pause)...all the money that's collected, St. Stephen's can buy chickens at 10¢...last year, it was 15¢ a pound from "a poultry market"...(pause)...so we have chickens so everybody gets a chicken...

A- ...oftentimes turkeys and hams are donated and we give those to large families...we have...

J- ...the majority of your families are on welfare?

A- (pause)...some are not...some are...(pause)...again it depends...they have to show some proof of income...(pause)...uh...(pause)...they do have to tell us how many kids... you know...social security numbers for the kids...(pause)...birth cards for the kids...(pause)...something that tells us you have...(pause)...I'm sorry we can't just believe that you have 9 children....

A- It's funny, too, that...(pause)...the mentality...the routine that they have to go through so often and we're asking them to fill out this application...fill it out?

J- uh-huh

A- ...and...(pause)...so we just fill out the application for them. It's funny to me that I can ask a person what their income is and without blinking, they'll tell me how many, many dollars a month they get and who it's from...agencies, or welfare, or...(pause)...SSI...(pause) and then this same person is asked how many children they have and they say...???

J- they say what?

A-...why you need to know

J- Oh, why you need to know

A- what business is it of yours?
A- It's just...(pause)...so many people have asked them that question...(pause)...that they just give you that answer...what's it to you?

J- so many of them are just...
Sample Science Activities

1. We placed drops of water on a penny to illustrate surface tension.

2. The children used different brands of paper towels to demonstrate the different absorption rates.

3. I demonstrated how air takes up space.

4. We made sugar and salt crystals.

5. The children illustrated capillarity with a stalk of celery and food coloring.

6. We made an indicator with purple cabbage.

7. The children made oobleck.

8. The children made slime.

9. We planted bean, corn, and flower seeds.

10. The children mixed the chemicals, baking soda and vinegar in order to produce carbon-dioxide which expanded into a balloon.
REFERENCES


Nesbitt, J. (1990, May). *An investigation into black student's beliefs about who can become a scientist*. Research paper presented during the second year Science and Math Seminar, The Ohio State University, Columbus, OH.


Young, H., & Young, B. (1974), Scientists in the black perspective. Louisville: The Lincoln Foundation.