

Rochester Institute of Technology

RIT Digital Institutional Repository

Theses

4-9-2009

Linking community revitalization, urban agriculture, and elementary education

Mary Alexis Blondrage

Follow this and additional works at: <https://repository.rit.edu/theses>

Recommended Citation

Blondrage, Mary Alexis, "Linking community revitalization, urban agriculture, and elementary education" (2009). Thesis. Rochester Institute of Technology. Accessed from

This Thesis is brought to you for free and open access by the RIT Libraries. For more information, please contact repository@rit.edu.

Linking Community Revitalization,
Urban Agriculture, and Elementary Education

*A thesis submitted to the
Environmental Science Program at
Rochester Institute of Technology
In partial fulfillment of a Master's Degree*

By

Mary Alexis Blondrage

Under the faculty guidance of

Professor M. Ann Howard, JD

April 9, 2009

Submitted by:

Mary Alexis Blondrage

Date

Accepted by:

M. Ann Howard, JD, Thesis Advisor

Date

Elizabeth Hane, PhD, Thesis Committee

Date

Eileen Marron, MS, Thesis Committee

Date

Summary Page

1. **Thesis title:** Linking Community Revitalization, Urban Agriculture, and Elementary Education

2. **Thesis Committee Members:**

M. Ann Howard, JD, Thesis Advisor

Elizabeth Hane, PhD, Thesis Committee

Eileen Marron, MS, Thesis Committee

3. **External Sponsor:**

North East Neighborhood Alliance, Rochester NY

Rochester Institute of Technology Environmental Science Program

4. **Abstract:**

A university/community partnership in Rochester, NY was the context for this research addressing the development of collaboration between local elementary School 45 and the community's agriculture education initiative. At the school and community's request, a possible partnership was researched to find the appropriate linkage that would address both the school and community's needs. Participatory action research was the framework for the qualitative research methodology. Data are presented from various sources including extensive participant observation, field notes, in-depth interviews, and document review.

The findings indicated diverse implications for the consideration of a school-community partnership, and highlighted the importance of organizational and community dynamics, ownership of information for decision making, balancing competing assets, and appropriate school curricula. Ultimately, it was assessed that a partnership is currently not a viable action for the community or the elementary school to take. This research also supports a larger understanding of the importance of community involvement, school policy, and the importance of environmental science education.

Table of Contents

1. Problem Statement	5
2. Literature Review and Research Content	5
2.1 North East Neighborhood Alliance (NENA)	6
2.1.1 NENA Structure and Goals	7
2.1.2 The Vineyard	10
2.2 Rochester City School District	12
2.2.1 No Child Left Behind	13
2.2.2 Integrating Environmental Science	15
2.3 School-Community Partnerships	17
2.3.1 Extracurricular Science Programs in the United States	18
3. Methodology	21
3.1 Key Participants	22
3.2 Pre-Immersion Project Development	23
3.3 Description of Participatory Observation Methods	26
3.3.1 Scientific Rigor	26
3.3.2 Ethical Considerations	27
3.4 Summer Learning Community	29
3.5 Interview and Survey Methods	31
3.6 Document Review	31
4. Findings and Analysis	32
4.1 Community Dynamics	32
4.1.1 Greater Rochester Urban Bounty (GRUB) Dynamics	35
4.1.2 RIT Learning Community Dynamics	37
4.1.3 University-Community Dynamics	39
4.1.4 School 45-Community Dynamics	41
4.2 Community Ownership of Decision Making	41
4.2.1 Balancing Assets within the Vineyard	43
4.2.2 GRUB Initiative Oversight	44

4.3 Appropriate Science Education Programs in a Community Based Organization	45
4.3.1 Science Education Programs within GRUB	47
4.3.2 Why Emphasize Environmental Science?	49
4.3.3 Science Education at School 45	52
4.3.4 The Hurdles of a Science Program	53
5. Future Research	54
6. Conclusions	54
Bibliography	57
Appendix	
A: Teacher Survey	58
B. Developed Curriculum	60

1. Problem Statement

Through the partnership formed between the community-based organization North East Neighborhood Alliance (NENA) in Rochester, New York and Rochester Institute of Technology (RIT), community leaders have a desire to attract local youth in order to engage them within their neighborhood. Further, a classroom teacher requested that consideration be given to bridge NENA's initiatives and goals of community youth empowerment with those of a local elementary school. The potential learning venue for this partnership is the Vineyard, a 2.69-acre urban farm that is located three blocks from the elementary school. In order to benefit both the requests of the community and of the school, several questions arose: 1. What is the history and current status of the community organization both from an organizational standpoint as well as future goals? 2. How can New York State and district science standards be addressed and aligned while emphasizing environmental science and community empowerment and growth? 3. How should appropriate education transfers occur between the community-university partnership and the elementary school?

2. Literature Review and Research Context

A literature review was conducted to help develop methods to address the questions put forth in the Problem Statement. The literature review and research context incorporated a wide scope of appropriately related topics to ensure well-supported reasoning for methods and subsequent analysis. Materials in the literature review and research context include a history of both the community organizations as well as the

physical assets that the community owns. National and local science educational materials with emphasis on environmental science were also reviewed. Also, a summary of current literature related to elementary education standards and community organizations is included.

2.1 North East Neighborhood Alliance

An essential first step in developing a partnership with any organization is an analysis of the organization's structure and goals. In the context of urban settings, each community organization, by definition, is unique with respect to its own community's resources and goals. For this project, the history of the formation of the North East Neighborhood Alliance (NENA), as well as the current goals and resources must be understood to determine how to create and integrate an appropriate partnership with a local school.

Rochester, NY, the home of the NENA initiative, like many other large cities, struggles with various community problems such as quality of public education, safety, and economic concerns. To address these issues, numerous local resident groups around the city have developed to tackle both narrowly focused and widespread problems. NENA was formed in 1993 when the New York State Department of Social Services Neighborhood Based Alliance (NBA) offered community groups a chance to apply for grants for community improvement. At the time, Rochester was divided into 39 neighborhoods. Three of these neighborhoods, Upper Falls, South Marketview Heights and North Marketview Heights combined to submit a proposal under the name North

East Neighborhood Alliance. NENA's proposal included a planning process which incorporated, "six main focal points: Community Economic Development; Housing and Energy Conservation; Public Safety; Health and Human Services; Youth; and Governance" (Zwahlen et al., 2003). The coalition was awarded the NBA grant in 1994 and NENA began to formalize a neighborhood council. Bylaws of the NENA Council require that 51% (a majority) of the 35 member council be community residents. This bylaw requirement in particular drives the community's acceptance of any changes to existing systems such as a farm management plan for their urban agriculture initiative.

2.1.1 North East Neighborhood Alliance Structure and Goals

With the grant from NBA, and the demographic data for Sector 10, NENA delineated three organizational goals. First, to ensure the effectiveness and longevity of the community organization, empowerment of the Council and community members needed to be incorporated into all aspects of goal planning and implementation. Community empowerment is an important principle for the organization. This is emphasized by a former NENA council member; "We came up with the definition that empowerment means ownership, ownership of resources, ownership of processes and ownership of the rules" (Zhahlen et al., 2003). While outside partners may have a short-term impact by introducing new knowledge, the organization and the community need to incorporate the new information into their resources in order to maintain long-term worth. Because the community members thoroughly understand the needs of the community, placing resources in the hands of the community members creates a direct

connection between resources and goals. With the ownership of resources and goals, the community then has rights over the decision making process regarding all of their community assets. This gives the community more power in their local region, and the ability to create meaningful change.

The second organizational goal of NENA was to delineate separate legal entities for the development and planning components. NENA separated the land buying group into the Community Land Trust (CLT) and the economic development planning group into the Community Economic Development Corporations (CEDC). While the CLT is responsible for deciding which land areas to purchase and for identifying and acquiring purchasing funds, the CEDC is involved as an oversight committee in planning for the usage of the lands. (Zhahlen et al., 2003). This research is focused on the Greater Rochester Urban Bounty, the community agricultural initiative. The NENA CLT purchased the land cultivated as part of the agriculture initiative in 1996.

The third organizational goal of NENA was to create appropriate interactions with other community groups working within Sector 10. Three of the pre-existing Neighborhood Preservation Corporations (NPC) for these neighborhoods are the North East Block Club Alliance (NEBCA), Marketview Heights Association, and the Coalition of North East Associations (CONEA). NEBCA focused on North Marketview Heights and addressed primarily housing development and ownership of houses. The Marketview Heights Association focused on South Marketview Heights neighborhood and worked on crime prevention and public safety, and CONEA, located in Upper Falls, concentrated on

youth development. The leaders of the NENA initiative did not want to duplicate services provided by these existing community-based organizations and therefore maximized the existing resources by including them in the planning and administration process for the larger goal of comprehensive community development for these three neighborhoods using a market approach, further described in the NENA Strategic Neighborhood Action Plan (SNAP). NENA is particularly concerned with economic development due to their beliefs that ownership, in the form of businesses, housing and land, is a type of empowerment for the community. NEBCA remains particularly connected to the agriculture initiative by sharing personnel and administrative oversight.

In 1996, the NENA Community Land Trust, Inc. (CLT) was established to purchase property in the neighborhood on behalf of several resident-driven initiatives, including the Greater Rochester Urban Bounty (GRUB). CLT is the owner of several parcels within the northeast neighborhoods, including the Vineyard, a 2.69-acre produce and fruit farm, the foundation of all GRUB activity. As the GRUB initiative has grown, NEBCA has assumed primary responsibility for the operations, planning and administration of the GRUB initiative. Oversight for GRUB is provided through the NEBCA board of directors, comprised of neighborhood residents, and the GRUB advisory council, comprised of technical experts, university representatives and neighborhood residents.

Through GRUB and the Vineyard, resident organizers have built the foundation for ready access to healthy, affordable, culturally acceptable food for the people in the

neighborhood and created the opportunity to generate wealth in the neighborhood through food-based economic activities, including expanded ownership of the means of production and exchange of food; GRUB also serves as a major neighborhood-based resource to provide health and nutrition information for neighborhood residents, including neighborhood youth.

2.1.2 The Vineyard

The Vineyard is the central farming location for GRUB. It is located at the intersection of Hempel and Sanders Streets in Rochester, NY (Figure 1). It is a triangular parcel of land that they have cultivated since 1999. The land historically was used as a farm and had lain fallow since the 1980s until it was acquired by CLT for use by GRUB. The Vineyard has a gazebo, which is utilized by NENA, GRUB, the community, and their partners for meetings and celebrations. A grape arbor was built that also houses meetings and events during the summer. During the 2006 growing season in the Vineyard there were 45 rows with approximately 3500 tillable feet of planting space. There are four raised boxes where herbs are grown. Currently, the farm grows a wide range of vegetables and fruit trees. The vegetable crops include multiple varieties of tomatoes, peppers, collard greens, eggplants, okra, peas, horseradish, onions, and herbs. The fruit trees include peaches, apples and pears. All crops are grown without the use of chemical fertilizers, pesticides, or herbicides.

Figure 1: Vineyard 2006 (Courtesy Monroe County GIS)



In addition to providing growing space, the Vineyard is an example of open space within the neighborhood. The opportunity of an open space in the Sector 10 community leads to various potential uses and development of community assets within the open space. While the agricultural component of the Vineyard is a prominent use of the open space, there are other community interests and assets that also must be managed. The

Vineyard is used for community events, birthday and anniversary parties, artist demonstrations and music performances, and community festivals.

2.2 Rochester City School District

School No. 45 is a public elementary school in the City of Rochester, conveniently located next to the Vineyard. Incorporating experiential education into the core science curriculum at school No. 45 is one of the current initiatives for the NENA-RIT partnership. The Vineyard could be used as a venue for School No. 45 teachers to administer the science curriculum to their students and enhance environmental education while following the New York State Core Curriculum for Elementary Science. By developing critical awareness of what is needed for environmental sustainability, the students will eventually, with further education, be able to integrate personal and political choices for consumption, production, and technological development of scientific ideas. Because many environmental issues have multiple social components, the need for social foundations at the base level in environmental education is evident (Kim 2003). The foundation level is critical for all forms of education and for the application of knowledge. The principal goal is to aid citizens, especially young children, in becoming environmentally knowledgeable to achieve and maintain a vibrant balance for the equality of life. The goal is that higher awareness and sensitivity to the environment would be acquired and the attitudes and concerns toward the environment would encourage active participation in environmental improvement and protection. There would be a cooperative effort between the School No. 45 and The Vineyard to establish

the Vineyard as a classroom for Kindergarten through sixth grade students. Through the combination of The Vineyard experience and classroom learning associated with the State's core science requirements, students would have a better sense of their environment and greater pride in their community, while still fulfilling and understanding the state requirements.

2.2.1 No Child Left Behind

In an attempt to close the gap in educational achievement between children of more affluent US families and those considered less privileged, the federal government enacted the No Child Left Behind. The goal of this act is to increase the standards of accountability for states, districts, and schools by focusing more on standard-based education. Standard-based education is the idea that learning will be based on set goals for all students to achieve. These standards will be known by the teacher, the student, and the parents in order to ensure that all assignments and lessons are aligned with the standards. NCLB requires that all public schools administer a statewide-standardized test annually to all students. Because of the lack of national standard uniformity and the pressure to pass all students, one of the primary concerns for the NCLB is that effective inquiry teaching strategies will be reduced and teachers will start "teaching to the test" (Marx and Harris, 2006).

The pressure of NCLB accountability, in which all students in grades 3-8 are assessed on language arts and mathematics annually, has led principals and teachers to direct time and resources towards these subjects thus diminishing time for some subjects

such as science and social studies. However, even prior to NCLB, elementary school science had been considered undervalued by many in education (Marx and Harris, 2006). The National Institute of Child Health and Human Development (2005) also reported an unequal attention to language arts and math over science and other subjects. They reported that only 6% of instructional time was spent on science while language arts and math received 56% and 29% respectively. While the NCLB can be held accountable for the unequal focus on literacy and math, research also shows that in order for students to receive high-quality science instruction, the elementary classroom teacher must consider himself or herself well qualified to teach science. Many elementary teacher education programs currently do not have the additional funding to prep future teachers in science education (National Academy of Sciences, 2007).

Because many elementary school administrators and teachers are reluctant to allow time for science instruction daily, science education at the secondary level will be a challenge because students will lack the foundational information. Freedman (1998) had to strongly link his elementary science curriculum to state standards in reading, writing, and mathematics in order to make science acceptable in the elementary classrooms they researched. The study suggested that over time the pressure to adopt science education might be reduced because of the ease of linking science to literacy and math in the classroom. There is also hope that by combining the various curricula there will be a movement towards inquiry and experiential based education and away from simple memorization (Freedman, 1998).

2.2.2 Integrating Environmental Science – A multidisciplinary subject

According to Shepardson (2005), many children's conceptions are based on their observations, social interactions, and language with others. In his study, Shepardson, investigated 81 students' ideas about what defines an environment and how these ideas may change across educational experience. Many of the students in this study believed that humans are not part of the environment; or that humans are not found in places thought of as environments.

Arcury and Christenson (1993) believe that understanding of environmental issues depend on personal characteristics such as education and income:

“For environmental education, this interpretation argues that it is only by improving the quality of life of the entire population through increased income and education that we can expect to improve environmental knowledge, world view, concern, and actions.”

The Human Exceptionalism Paradigm (HEP) is a form of the dominant social paradigm and in this theory, humans are conceived of as being exempt from the laws of nature, and are in fact rulers over the natural world (Arcury and Christenson, 1993). It is possible that the children from the two studies cited above are following this paradigm and not realizing it. Dunlap (1980) argues that movement from the HEP to the New Environmental Paradigm (NEP) will get people to understand that humans are a part of the natural world and are actually governed by its rules. By teaching individuals that there are limits to human economics and population growth, we can assume that humans

will then take responsibility to use natural resources wisely. Environmental education at a young age will help the shift from HEP to NEP and help to ensure future sustainability of the natural world.

In the United Kingdom, several efforts have been made to include organic farming as part of the National Curriculum. Recently, teachers from varying backgrounds came together to discuss the possibilities and successes of organic farming in the classroom. The hands-on approach to learning would revolve around establishing and appreciating organic methods but also using these skills as a vehicle to teach and develop children's knowledge and understanding of basic science (Bartel, et al., 2003). A garden would be an effective teaching tool for all primary school ages and could be used across various curricula as suitable. Various scholastic activities can be carried out using a garden such as experimentations, data collection and analysis, mathematical projects, and also artwork linked to shape size, color, and textures. At a middle school in Berkeley, California, a program has successively brought the educational value of organic farming into the classroom. This particular initiative is called the Edible Schoolyard. This one-acre urban garden is the classroom to a thoughtful, curriculum-based program designed to connect students with the earth and the environment (Fusco and Barton, 2001). The educators involved in this project have described it as a "seed to table" experience where the students are involved in everything from preparing the soil and planting, tending, and harvesting their crops. The teachers also observe that this year-round process enables the children to develop an understanding of environmental stewardship, the interconnectedness of people to one another, to their community, and to

the earth. The time spent in the garden is also an integral part of the students' science curriculum, where practical examples of everything from soil erosion to photosynthesis are shown. The hands-on approach to learning their science has proven very beneficial to not only the students but to the teachers as well. The ability for the teacher to teach a concept from a textbook and then to actually have the opportunity to go outside and see the concept first-hand is such an important instrument for learning and understanding. Reflection and constructive criticism by and from the teachers is encouraged and actively applied in order to get a sense of how the program is working and could be improved (Fusco and Barton, 2001).

2.3 School-Community Partnerships

School-community partnerships exist in many forms with varying goals. Some of these goals include civic engagement, inquiry-based education, and/or farm-to-school lunch programs. For the School 45-GRUB partnership, the partnership requires equal opportunities for decision-making from both groups also while keeping the goals of both the school district and the community organization in mind. To further understand the potential for a successful partnership it is important to assess the appropriate methodology for this to occur within the school and community. One way to assess the best method to be used for this project is to look at case studies of other partnerships. In particular, categorizing characteristics and actions of both the schools and community organization may help to determine what type of partnership is feasible.

2.3.1 Extracurricular Science Programs in the United States

Garden Mosaics is an international program, sponsored by the Department of Natural Resources, Cornell University, which integrates community action and science education. The program combines intergenerational mentoring and community action with science learning. Youth participating in Garden Mosaics conduct investigations focusing on the role of community gardens in their neighborhood, the connection of gardeners' planting practices to their cultural heritage, and urban weed control. The youth then report the results of these investigations to online databases, which are used for a number of purposes. For example, results from the Community Garden Inventory will be used by the American Community Gardening Association to build a case for the importance of these urban settings for community development and food security (Bartel et al., 2003). Results from the Weed Watch investigation will be used to help a Cornell agronomist develop an environmentally-sound urban weed control program.

Through engaging youth in collecting data that are used for political, scientific, and educational purposes, Garden Mosaics incorporates inquiry, youth as contributors, and positive youth development values. In addition to posting the results of their investigations online, Garden Mosaics youth use their interviews and observations to help define an action project that benefits the garden and their community. For example, in the progression of talking with local gardeners, youth in Sacramento, California learned that the available gardening plots in a neighboring community did not meet the demand for gardening space among community members. The youth worked with a landscape

architecture student to design a community garden space adjacent to their school garden. Youth participating in Garden Mosaics write a report on their action projects, including a section on their reflections about the work they accomplished, and post them on the Garden Mosaics website. Thus, the Garden Mosaics action projects concentrate on issues related to authentic participation, planned action, and critical reflection.

It should be noted that Garden Mosaics is a self-contained program within the Cornell Cooperative Extension and functions as the actual link between community initiatives and local school districts. Garden Mosaics provides the necessary resources to the schools in order to get their students involved at the community level. Planning is completed by Garden Mosaics from the programming and supervisions of community garden projects to transportation to and from program sites.

The Ross School, in Suffolk County, New York, is an alternative school that has created an interdisciplinary curriculum that focuses on an education that meets the needs of the future. The Ross School incorporates a substantial amount of curriculum and hands-on experience to compliment their Wellness Nutrition goals. All students receive 6-8 classes each year in nutrition, and visit local farms as a vital part of the program. The Ross School teaches through cultural history- students are encouraged to pay attention to everything from how different foods have moved around the world, to what various cultures eat. Integrating study units with the menu, Ross School Cafe prepares dishes using local and authentic ingredients to replicate foods from other cultures and time periods. Some recent examples are the Mayan Food Day, Menu from Minoan Crete,

Ancient Rome and Indian menus that highlighted the role of food and agriculture of the time period. (Roth and Lee, 2004).

The Vermont Food Education Every Day (FEED) program has introduced a unique partnership with various groups in order to address childhood obesity, poor nutrition, and the disconnect between food and local farms. Within this program, school curriculum focuses on the development of farms, growing of foods, and the nutrition of these foods. While the objective is to provide extra curriculum to Vermont schools, it is not the goal to create another add-on to an already overwhelming day for teachers. Instead, FEED finds practical ways in which to integrate required State content and skills by using food, farms, nutrition, and agriculture as the theme. For example, at one school first and second graders learn about varied life cycles of organisms in their area. Learning how to harvest honey included an explanation of a honeybee life cycle. Fourth and fifth graders at this same school learn how to read nutrition labels while also learning how to calculate daily caloric intake. Children at the middle and high school level study the geology and landscape of their environment and how these aspects affect soil viability. (Roth and Lee, 2004)

Hands on experiences are a way of smoothing the progress of student learning. When connections are made between the classroom activities and the actual lives of students, lessons have intrinsic meaning and therefore knowledge is effortlessly retained (Roth and Lee, 2004). In the perspective of science, nutrition, and food, when integrating

environmental sciences into teaching, students can better relate the information to their everyday interactions with society.

3. Methods and Procedures

Due to the school and community-based subject matter of this research, participatory action research was used. Participatory action research is an acknowledged mode of experimental research that focuses on the effects of the researcher's direct actions of practice within a community with the goal of improving the quality of the community (Reason and Bradbury, 2001). R.L. Dilworth explains in his article that participatory action research is not one-sided but should benefit both the problem in question and the involved party,

“A core principle of action learning is that you bring people together for reasons that are beyond just problem resolution. Problems need to be solved, but the primary value is in the learning that occurs. Building learning capacity of an organization boosts organizational performance. Therefore the employment of action learning is more strategic than tactile. The goal is dynamic equilibrium, with learning and change intertwined” (1998).

Qualitative methods were chosen to allow the observation of individuals and also the interactions between individuals involved in the community and school operations. These interactions were important to help assess the appropriateness of a school-community partnership. Data collection was conducted by the primary researcher and included participant observation, document review, surveys and semi-structured individual and group interviews.

3.1 Key Participants

Observations of several groups and their partners provided the necessary information in order to address the problem statements. These groups included NEBCA, GRUB, the RCSD Elementary School 45, and NENA-RIT.

The community leaders of the northeast neighborhood of Rochester have a long successful history of community participation, and are the main contacts for much of the activities involved with NEBCA and GRUB. Mrs. Shirley Edwards was, prior to her death in September 2008, the executive director of the Northeast Block Club Alliance, but also donated a substantial amount of time to GRUB in the form of management oversight, planning, and labor. Mr. Bob Vickers' responsibility during the summer of 2006 was the construction project manager of the new agricultural education center that was being built at the Vineyard. The finished building houses a large two story meeting room/classroom, commercial kitchen, and possible housing for the Vineyard caretaker. At the time of construction, Mr. Vickers was responsible for ordering products, managing both hired and volunteer labor, and overseeing local Edison Technical High School students who help with construction while learning the construction trade. Mr. Vickers was also a daily presence at the Vineyard, and was available for advice about Vineyard projects and activities.

Mr. Johnnie Johnson, also known as "Brewster", was the volunteer farm manager for the 2006 farm season at the Vineyard. He is a local community member, who was introduced to the Vineyard through Mr. Vickers. Although his position was entirely voluntary, he was responsible for assigning the daily tasks at the Vineyard, and making

sure that all Community Supported Agriculture (buying club), restaurant, grocery store, and co-op orders were met. He was responsible for the oversight of many of the student groups and neighborhood youth who worked or volunteered at the Vineyard.

Along with the perspective of the community leaders, the views of several Rochester City School District personnel were also pertinent to the authenticity of the research. Carlos Leal, the former Assistant Principal of Mary McLeod School 45, became a major advocate for the school-community initiative. As the Assistant Principal, Mr. Leal was responsible for tasks such as scheduling, ordering textbooks and supplies, and coordinating support services. Most importantly, for the context of this research anyway, Mr. Leal served as a liaison between School 45 and community groups and also as the school's coordinator of curriculum. The latter role required Mr. Leal to ensure that all faculty members were following New York State and district curriculum guidelines.

Mrs. Jennifer Wolford represented the classroom teacher perspective. She provided insight on classroom activities and routines. Her thoughts and ideas represented those of other classroom teachers in the school. Mrs. Wolford's classroom became the primary setting for the research. The techniques employed and the opinions set forth by the classroom teacher were held in high regard when it came to implementing a potential school community partnership.

The NENA-RIT partnership was integral to the participant observation, as the researcher gained access to the community through this partnership. Many of the interactions observed during the participation period included individuals from this

partnership. The administrators for the NENA-RIT partnership are M. Ann Howard and Meredith Dalton.

M. Ann Howard, a professor in the department of Science, Technology, Society/Public Policy, has been involved with the NENA-RIT partnership since 1999 when NENA was identified by the Rochester Commissioner of Community Development as one of the active community organizations working for positive change and a potential community partner interested in working with local universities. Professor Howard's current responsibilities are to help guide the partnership through the constant dynamic changes and demands of the partnership, monitor student involvement and develop new programs associated with the partnership.

Meredith Dalton was hired in 2001 to coordinate the increasing participation of RIT students with the community organization. Ms. Dalton's responsibilities included acting as the liaison between the community participants and faculty, staff and students and to make sure everyone is communicating and all needs are being met. (Note: Ms Dalton left RIT in October 2008.)

The Rochester Institute of Technology Student Learning Community for the 2006 summer season was comprised of university students who were involved with GRUB and the Vineyard in various projects and for varying amounts of time. The RIT Summer Learning Community allowed students working on different projects to discuss successes and problems, and help create solutions together. The RIT Summer Learning Community also fostered a better understanding of participant observation by allowing the students to discuss and reflect on their immersion experiences.

3.2 Pre-Immersion Project Development

A meeting with School 45 Assistant Principal Carlos Leal took place in winter of 2006. This meeting allowed for the primary researcher to tour the school, meet the faculty and staff, and also set some of the parameters of the research. School facilities were evaluated and considered for future research and lesson use. The facilities that would be most useful to the lessons planning were a greenhouse, which is located on the second floor of the school, and also potential garden space on the backside of the school building. Mr. Leal was also given the opportunity to express his questions or concerns for the project. This process set the foundations for how the research would be conducted, with whom, and when. Once the initial meeting had taken place, the researcher was partnered with the classroom teacher. This particular classroom teacher showed interest in the prospective partnership with NENA-RIT and volunteered her class of second-graders to be involved with the preliminary research.

During the remainder of the winter and spring, the researcher observed daily classroom activity and procedures. It was during this time that the researcher also became familiar with the school and state curriculum.

3.3 Description of Participant Observation Methods

Participant observations took place in two settings, at the Vineyard during the 2006 Summer Learning Community activities and at School 45. While participant observation began informally during the winter of 2006, those events will not be included in the final data. The first interactions were to gain a sense of appropriateness for the project, what level of access to people and places would be available, and to become

acquainted with most of the individuals and groups. The official recorded participant observation period began during March 2006, and concluded in April 2007. The participant observation period included various depths of participation and a variety of events, including community affairs, school functions, and classroom activities. The researcher performing participant observation during the 14-month research period recorded approximately 550 hours.

3.3.1 Scientific Rigor

Credibility is an important construct when it comes to whether scientific rigor has been achieved during qualitative research. Throughout this study, credibility was achieved through broad immersion in the research field, giving the researcher multiple opportunities to assess the complexities of the community and school environment.

With the method of participation observation, care must be taken to avoid over-involvement in the research setting to avoid creating partiality within the qualitative results. This was established by allowing both academic and community peers, throughout the summer and school year, to analyze the data as it progressed. The advice and criticisms from these peers allowed the researcher to reduce bias. Experts in the area of education research were also consulted during initial analysis in order to gain validation of the findings.

3.3.2 Ethical Considerations

Since a teacher originally approached the NENA-RIT Partnership with the idea of a school-community partnership from School 45, initial entry into the setting was easy. However, as the research progressed, continued efforts were needed to ensure that

participation would be open and voluntary in all instances. In the school setting interviews were essential to gain insight on teacher and administration processes and opinions. This requirement posed an ethical concern to the protection of participant interests with regard to anonymity and confidentiality.

To address these concerns, the researcher first applied and received permission from the RIT Internal Review Board to conduct interviews. The IRB's mission is to ensure the protection of human participants in research projects, and that research projects conducted at RIT pose a greater benefit than risk to the participants. The IRB requires that all researchers who intend to include humans in their projects submit an application. The application process required the researcher to delineate any potential participant risks, create an informed consent form, and provide a list of potential survey questions. The informed consent form provided information to the interviewee, explaining that the interview was entirely voluntary, and could be terminated at any time without risk of repercussion. For this research, quotes from interviewees used in Chapter 4 will remain confidential, and will only include the year of interview. The interviewees were provided contact information for the researcher and research advisor, and informed that they could revoke their information and their consent to participate at any time.

3.4 Summer Learning Community

The major portion of the participant observation in the community began the first week of June 2006. Eleven RIT students worked in some capacity with the GRUB organization during the 2006 summer season. The students first met at RIT for four days of classroom discussions and exercises to prepare for work in the community. The RIT

student group read background literature produced by the NENA initiative that explained the history and purpose of the community initiative. Literature pertaining to participant observation and working with communities was required reading. Discussions about participant immersion and the importance of documentation were also integral to the RIT student orientation.

Once work began, RIT students met collectively during bi-weekly group meetings. The students were required to work at the Vineyard at least 4 hours a week. The schedules were then given to the community members to help plan how they would use the labor. RIT students were required to record their hours worked at the Vineyard in a notebook in the tool shed on site and to maintain personal reflection journals that were submitted online.

Learning communities are groups of individuals who share information and advice. The learning community created during the summer 2006 was an important tool for this research because it provided an opportunity for feedback as well as group brainstorming for any issues or concerns for the research. The RIT student learning community for the summer began during student orientation, and was facilitated by orientation exercises. This learning community was comprised of the RIT students, staff coordinators, and neighborhood representatives. Meetings were held every other week during the summer, which helped to increase the strength of the RIT summer student learning community. While many students interacted on a regular basis throughout the summer, these meetings allowed all of the students to talk about progress and problems

within their own projects within the NENA-RIT partnership. The learning community then offered support by offering suggestions or relating similar experiences. The meetings offered a chance to reflect on what events and interactions had occurred in each student's project since the last meeting. This helped increase the researcher's understanding of the community as well as the NENA-RIT partnership. While information assembled from these meetings involved direct participation in each of the student's projects, the meetings acted as informal interviews to allow insight into how other transfers of information were occurring through other projects within the partnership.

3.5 Interview and Survey Methods

The nature of the research project required the opinions of several key participants. As already indicated, the two main groups were community members and the elementary school personnel. The purpose of the interviews was to find correlations among the agendas of each group in order to assure a positive and useful program for all involved. Interviews provided the individuals an opportunity to offset the limitations of participant observation and any researcher bias. The individuals who eventually were interviewed were selected based upon their interaction with the Vineyard and School 45. Suggestions of additional potential interviewees were gathered from individuals with whom the researcher interacted at the school and throughout the 2006 summer season. The individuals were contacted by email and phone to determine their interest in voluntarily participating in a semi-structured interview.

A semi-structured question format was chosen for several reasons. First, a semi-structured question format provided a more natural conversation-like dialogue between the interviewer and interviewee, in comparison to a more structured format that would not allow for questions developed during the interview. This was important because it was flexible enough to allow for questions to be developed and explored in the interview when new and unknown information was provided to the interviewer. However, the semi-structured format also allowed for similar questions to be asked across all of the interviewees. This was an important aspect to allow for the comparison of answers between interviewees. The questions were developed to obtain information about a few specific areas, and it was beneficial to have all of the interviewees address each of the topics. Each interviewee had a different level of involvement and background that they brought to the experience, so questions were tailored to better fit each individual experience.

In some cases a survey was a more appropriate way to obtain information. While the interviews allowed the researcher to obtain information from a select few key players, the survey allowed input from a very large group to be incorporated without the time constraints. The survey allowed the researcher to investigate the thoughts and opinions of all the teachers within School 45 that would possibly take advantage of a school-community partnership. The information obtained would be crucial when setting the parameters of the proposed program. The survey was designed and written so that if the teacher chose to fill it out they were thus providing consent while knowing their answers would remain anonymous.

3.6 Document Review

Participant observation and interview and survey data were supplemented with an ongoing review of several documents that would guide the researcher towards an appropriate education program. These documents included the New York State Elementary Curriculum Standards, the Rochester City School District Science Curriculum for second grade, the RCSD School Health Index, and GRUB publications. While school-community partnership feasibility was being investigated, so was the ability to correlate New York and school district learning objectives. In order for the school and students to fully appreciate the partnership, the curriculum must stay intact while providing a unique teaching setting. The School Health Index encouraged curriculum to be tailored towards showing students how care for themselves nutritionally, physically, and mentally. Review of GRUB publications allowed the researcher to further analyze the goals and intentions for the northeast neighborhood citizens.

4. Findings and Analysis

The findings and analysis portion of this project builds from the foundation of understanding the dynamics within and between current major community groups (NENA-RIT, GRUB) with the Vineyard to establish perspective of organizational operations and subsequent capacity for appropriate ways for which School 45 may be incorporated so that all participants are benefited. This was accomplished through participatory observation and post-observation interviews and surveys. From this, an understanding was developed of ownership of decision-making regarding Vineyard

operations and the importance of school goals and needs. Also, based on the participatory observations, a section on the importance of balancing competing interests was included to offer more support for the understanding of why school-community partnerships and programs are vital to not only a community's growth but also to the growth and well-being of the child. Finally, an analysis was done to determine what programs would be appropriate and supported by a school-community partnership.

4.1 Community Dynamics

As witnessed through participatory observation, there are many influential groups and individuals associated with GRUB. These groups and individuals form a dynamic relationship with GRUB; they come to the Vineyard with their own experiences, and affect the interactions at the Vineyard in different ways. They also change internally, either due to experiences with the Vineyard or from outside factors, which causes these groups and individuals to rarely maintain static in their group characteristics. However, the range of dynamics both inside each group and between all of the groups involved with the Vineyard establishes the level of appropriateness and capacity for any school program between any of the involved groups. One approach that can help evaluate the capacity for a school program is to assess the dynamics of the major participating groups. For this project, the dynamics of the NEBCA/GRUB organization, RIT learning community, NENA-RIT partnership, and School 45 were analyzed.

4.1.1 Greater Rochester Urban Bounty (GRUB) Dynamics

The GRUB organization characteristics that have the highest impact on the success of a school program are funding structure (to support the agricultural initiatives)

and the number and qualifications/skills of employees. The GRUB organization has undergone numerous changes in its funding since the Vineyard's purchase in 1999. The Vineyard currently has a higher level of expenses than available funding. The primary cause for the difference between monetary inputs and outputs is that the Vineyard provides opportunities for many other activities besides agriculture initiatives. During participatory observation, it also was noted that agricultural volunteer labor was used for many other non-agriculture activities, decreasing the overall potential income for the Vineyard. Because GRUB desires to balance so many competing interests, the Vineyard agricultural operations are not currently sustainable. The Vineyard requires an initial funding investment to cover the cost of the hiring of laborers and farmers. This will help establish agriculture methodologies that work in coordination with other competing assets in order to create a sustainable or even profitable agricultural operation.

The community leaders recognized this need for initial funding early on and the leaders began to apply for grants. The largest source of funding for the Vineyard was a grant from the W.K Kellogg Foundation, which began in 2002. This grant allowed for a short period of time in which great progress was made in the profitability of the Vineyard. The funding allowed the GRUB organization to hire more workers, which directly impacted the profitability of the Vineyard and enabled the workers to concentrate on the agricultural initiatives as well as other community programs. The funding also allowed for the GRUB organization to support the work of an increasing number of RIT students.

However, in 2004 the Kellogg funding was terminated, leaving GRUB with minimal funding overall. This monetary change forced the layoff of all the Vineyard employees. Because of this loss, staffing at the Vineyard was comprised of community volunteers and RIT students. Although these volunteers were able to successfully carry out the agricultural tasks, there were few extra labor hours to devote to other community programs or projects. Also, with a staff of volunteers, the higher turnover rate reduces the possibility of developing and maintaining outside community programs.

While the funding fluctuates within the GRUB organization, the community organization has established a core base of community volunteers who continue to assist with Vineyard operations. The primary agriculture tasks of planting, growing, and harvesting are the focus for the Vineyard's agriculture initiative. Therefore, funding is directly connected to any potential progress to expand the initiative past the growing and limited sale of produce. Also directly connected to funding is the number and qualifications of employees available for strictly agriculture related tasks (labor, marketing, etc.). The individuals within the organization also change the dynamics of the group and therefore the organization's capacity to accept school based programs. The Kellogg grant had allowed for the hiring of a GRUB coordinator, a farm coordinator, a farmer, two produce-marketing personnel, and 5 laborers. During this period at the Vineyard, a farmer with a substantial background in farming was hired. The loss of experienced farmers and laborers put a toll on the efficiency and direction of Vineyard operations. The organization could no longer focus too much on outside programs

without emphasizing first the daily needs of the Vineyard, especially during the growing and harvesting season. As one Vineyard volunteer explained,

“The priorities of the organization change when you don’t have the funding. It’s like what do we do first? Who gets the priority? I say [the Vineyard], but that’s just me. The Vineyard is the like heart of the operation. People know the Vineyard and they expect us to be here. [The Vineyard] is where the action is. Almost everything else happens because of what happens [at the Vineyard].”
(Interview, 2007)

The dynamics within the GRUB council itself also play a role in creating the level of capacity for RIT student projects. The GRUB council is made up of a variety of individuals who affect the interactions of all the participating groups. These individuals advise on issues involved with the Vineyard operations, labor and any other Vineyard concerns. This council must also interact and coordinate with the other committees who plan events at the Vineyard.

4.1.2 RIT Learning Community Dynamics

As previously described in Section 3.2, the RIT learning community associated with the GRUB organization grew out of other community-based partnership projects started by RIT Professor M. Ann Howard in 1999. The NENA-RIT community-based learning community began with individual student interest and has continually grown to include and employ more students during the summer growing seasons, as well as supporting part-time student work during the academic year. The RIT learning community consists of RIT students and staff who participate in work through the GRUB organization. The learning community is an ever-changing group of students and

projects affiliated with GRUB. The members support one another's work through providing a space to express ideas as well as providing labor to help with each other's projects. The learning community also provides a platform for information and knowledge exchange with neighborhood leaders and residents. The types of projects that the students are involved with has changed with the community needs over the years. While the majority of projects are connected to the Vineyard and its agricultural component, some projects have worked with aspects of the NENA initiative that do not include an agriculture focus. Student projects have been as diverse as RIT disciplines themselves and have included agriculture business plans and marketing, project evaluation, interior design for the housing initiative, asset mapping through Geographic Information Systems, phytoremediation, photojournalism, civil engineering, photography, and environmental science. The NENA-RIT partnership has been the host of two Environmental Science Master's thesis: one in agriculture education and one in farm management. The RIT learning community is primarily a community-based learning project group, and the students are informed that they will be participating with members of the community as the medium for education. The community-based learning aspect of the projects creates a unique component to the learning community, which draws students with openness to experiencing learning through non-traditional techniques.

The RIT learning community student's wages were paid through funding from grants. The RIT learning community's capacity to build the number and quality of projects is based partially on available funding. While RIT also has the added benefit of

being able to offer academic credit for work on projects, the majority of students would not be able to participate if funding was not available for compensation for work. Ms. Dalton's position of a grant administrator helps stabilize the limiting aspect of funding for the RIT learning community.

The context in which the RIT learning community leaders function with the community leaders sets the tone and capacity for student projects. Because of this, the project coordinator, Meredith Dalton, helped to evaluate the appropriateness of RIT student projects for the NEBCA/GRUB organizations. This was done through Ms. Dalton's own participant observation and interaction with community leaders and members. The RIT learning community coordinator first had to establish relationships with the community leaders to open trusting communication lines to be able to discuss potential community and student projects.

Because the RIT learning community leaders have developed trusting, working relationships with the community leaders, it has paved the way for other student projects and increased the potential for success.

4.1.3 University-Community Dynamics

The combination of these two dynamic and changing groups, the community organization and RIT, leads to the ever-changing dynamic of the NENA-RIT partnership. The interactions between the organizations within this partnership create relationships, characteristics, concerns and possibilities that go beyond the individual groups. However, because each of the individual groups is constantly changing, the interaction between the groups also changes. The number of participants within the community and

from the university changes yearly, if not more often. This fluctuation causes university-community goals to be reprioritized as the people and therefore the individual goals of these people changes.

The change within the partnership must be constantly understood by the participating groups to be able to most effectively transfer knowledge between the two groups. Through participant observation during the 2006 season, it was observed that direct participation in both GRUB meetings and RIT learning community meetings would help to create the understanding of where each group was with its goals. This participation would also help familiarize the researcher with the participants from both groups so that the communication pathways existed to allow for the quicker transfer of knowledge about each group's status.

Another aspect of the dynamic NENA-RIT partnership that affected all student projects, including this project, was the aspect of acculturation. The two organizations, NEBCA/GRUB (as well as School 45 which falls within the GRUB jurisdiction) and the RIT summer learning community, are from separate communities with different backgrounds in culture and education. Although there was the orientation period during the first week of the RIT learning community's participation, it was not intended to fully prepare students for the differences in culture within and between the various groups. The acculturation process for all of the participants was developed slowly throughout the summer and was greatly enhanced through direct participation with members from the other groups. Through acculturation, the relationships between the groups (and between individuals within the groups) were deepened, and allowed for the opportunity to ask

other questions about the projects. For the purpose of this project, it was important to understand the community's interests in promoting environmentally conscious efforts within the local elementary school while factoring in sound science.

4.1.4 School 45-Community Dynamics

During the primary grades, learning about civic engagement and community assets are a major part of the New York state curriculum. The main focuses are the importance of community history, how to be a good citizen, and what makes up a community. Through civic engagement students can develop an understanding of civic concepts and gain civic skills, including those related to political knowledge, critical thinking, communication, public problem solving, and community asset building. When working with young students growing up in a poverty-stricken urban community, the ability to show ownership and appreciation for such an area becomes critical for the classroom teacher.

“Some of these students never get the chance to make this place a home. Their parents or in some cases legal guardians have no choice but to move – and move often, uprooting entire lives as they go. If you ask a child to draw their home or their family, the picture becomes a mess of various people and ‘things’ – such as clothing or their favorite toys... In all my years [at School 45] I hardly ever see a drawing of just a house or a yard with trees. The urban area with which my students are accustomed to, I guess, makes [the students] believe that home is just a cement block.” (Personal interview, 2007)

GRUB assets require the volunteer hours of the community members and the initiatives and goals set forth by GRUB and NEBCA would greatly benefit from increased local support and volunteered time. Having the recognition and support of the

local school district allows for GRUB to reach out to members of the community that may not be aware of GRUB initiatives and the Vineyard.

“[School 45] students and their families should be aware of their surroundings. They should know that right in their own backyard is a beautiful community-operated farm with the ability to grow fresh fruits and vegetables. The Vineyard should be a place where families from the community can go and literally get their hands dirty. I’m not sure if some of [School 45] students have ever even played in the dirt. The fact that this farm is as close as it is to [School 45] should be more than enough reason for the students to be able to participate in a real-life, yet unique, community asset.” (Interview, 2007)

As noted in chapter 2, in order for a school-community partnership to work, both parties must feel as though they are benefitting from the other. In order to determine the needs of the school as far as working with a community organization, the researcher conducted surveys among the faculty members of School 45 (Appendix A). The surveys provided the researcher with data about how the school felt about a partnership, their expectations for a partnership and whether or not they actually understood the significance of a community partnership. Many of the teachers believed that the main goal of a school-community partnership was to create a better community in which their students live. When asked what they thought was the most important goal for a partnership, the majority of the teachers surveyed agreed that connecting students to their community was top priority.

The information gained from the surveys tied very well into the goals and priorities of the community. However, while the intentions for the use of the Vineyard as a way to engage students within the community are both evident and important to both

the school and GRUB, the use of the Vineyard as a teaching venue for the sciences showed to be more difficult to implement.

4.2 Community Ownership of Decision Making

Community ownership of assets is vital to the building of and maintenance of these sustainable assets. To own the sustainable assets, the community must own the decision making process for each of these assets. The GRUB council has to make numerous decisions about the assets both within their own organization as well as with any outside partner groups that help support the various initiatives. This section delineates why developing an appropriate relationship with outside groups and community youth affects the nature of Vineyard operations and the morale of all those involved.

4.2.1 Balancing Assets within the Vineyard

Even though GRUB is currently not funded through external grants and maintains no paid employees, the agricultural initiative has built a large support network of assets including space, equipment, volunteers, and donors. Within the space of the Vineyard, assets must be balanced between projects that are related to both agriculture and education.

The Vineyard space is home to a growing number of agriculture related projects. Also, a growing number and variety of outside groups visit, volunteer, and use the Vineyard each year. The projects and groups require a portion of the already limited resources, as well as coordination. One of the projects that compete for resources is the Agriculture Education Center. This Education Center is located on the property. The

construction of the building during the 2006 season required labor-sharing with the agriculture-based crew. Equipment sharing was also required for the construction. Because the building is being constructed alongside the main access road in the Vineyard, there were periods of time during the 2006 growing season where construction equipment and materials blocked this road, restricted agricultural tasks, and hindered the process to load produce for Community Supported Agriculture members and the Public Market.

During the 2006 season, the community youth workers at the Vineyard required significant amounts of labor for instruction and supervision. Because of limited labor at the Vineyard, the youth workers during the 2006 season did not have an expanded program developed to teach them other life skills. In previous years, the youth had a separate supervisor that coordinated and organized which agricultural tasks would be done as well as additional experiential activities. With the help of the youth supervisor, the farmer and supervisor could organize and balance the youth resources, at the same time improving the quality of the experience for the youth. The community's funding structure during the 2006 growing season did not allow for a youth supervisor, and there was an exponential effect on the amount of hours required for youth supervision because of the disorganization. Many times, Vineyard volunteers would have to spend time correcting the youth's work because they were not well-supervised. Harvesting done by the youth during the 2006 season were rarely weighed or recorded. There was a lack of standardization of harvesting, washing and weighing due to the lack of supervision.

The relationship with School 45 was established during the 2006 growing season and thus created yet another competitor for space and resources at the Vineyard. During

this time, the researcher was still establishing how to incorporate an appropriate school program with Vineyard activities so it was imperative that GRUB personnel approved all visits by the school children. This was done to ensure that Vineyard personnel would be available to aid in supervision and guidance. One of the elementary students' projects required an entire row of space to plant pumpkin seeds. The pumpkins produced from these plants were not to be used for the Vineyard, but rather were grown for demonstration for the students. In total, visits by the elementary students required about ten hours total of labor by RIT students and community volunteers. While ten hours may seem insignificant compared to the total amount of volunteer work hours, the elementary student group was just one of many school groups to visit. As noted by another Vineyard volunteer, the hours required by the different youth groups quickly added up and significantly impacted the amount of labor available for agricultural tasks.

4.2.2 GRUB Initiative Oversight

All of the initiatives through NEBCA and GRUB pose great benefits to the community, so it is difficult for the community leaders to decide which initiatives should be given priority and resources. Coordination and balancing of resources and initiatives can improve support for all of the initiatives. During previous years of greater external funding, there was a GRUB coordinator who helped to oversee all of the events and programs at the Vineyard. This coordinator was responsible for overseeing the farmer, marketing director, volunteer groups, youth programs and other activities on site. During this period, additional projects and assets affiliated with the Vineyard space were acquired. When the W.K. Kellogg funding was terminated, the coordinator was

terminated as well. The build-up of projects and the subsequent termination of the coordinator made it very difficult for the individuals involved with the various projects and assets to balance the limited resources.

While this project focused on an appropriate way to bridge a relationship between the elementary school and Vineyard, through participant observation it was recognized that many goals encompass the various initiatives set forth by GRUB and must be taken into consideration. The Vineyard is most useful to the needs of the elementary school when the agricultural initiatives are met first. Careful consideration of the Vineyard's need for volunteers and ultimately youth supervisors are essential for a successful educational program.

4.3 Appropriate Science Education Programs in a Community Based Organization

As shown in the literature review and research context, an urban neighborhood school greatly benefits from a partnership with a community-based organization and vice versa. The benefits to be gained in this case would be vital to not only the success and expansion of the community group but to also the science experience for the students. Ultimately, environmental science (particularly agricultural science) and civic education programs were found to be useful for both the elementary school and to the Sector 10 community. This section will address why community members value agricultural and civic education, neighborhood youth, interactions with local schools, and RIT student projects. This section will also address the concerns with an elementary science program and its transfer to a community based organization and the concerns for the context in which RIT students are transferring knowledge and other project goals. The analysis of

interviews and journals for this section was critical in understanding the mindset and context of what individuals involved with GRUB and School 45 thought about the potential programs at the Vineyard.

4.3.1 Science Education Programs within GRUB

While creating a partnership between GRUB and School 45 is a relatively new endeavor, the idea to incorporate education programs at the Vineyard is not. One priority, which demanded a focus of labor during the 2006 season, was the construction of the agriculture education building located on site. The building construction was managed by Mr. Vickers, who would ask the help of Vineyard laborers when the need arose. Therefore, some of the tasks performed during the participant observation period included laying cement, transporting timbers, constructing timber frames, directing backhoes, and other construction tasks. Mr. Vickers, as the project manager, was responsible for supervising local Edison Technical High School students, who were learning trade skills while working on the education center. These students were recruited as volunteers to work on agricultural tasks when there was a lull in construction tasks. These students received instruction for agricultural tasks from both Brewster Johnson and the RIT students. The Edison Tech students in return instructed the RIT students during construction tasks.

The Agriculture Education Center (AEC) is an example of the type of asset based community development to which NENA is committed. The AEC was completed in the summer of 2006 and was designed to host classes for community members on gardening, lawn care, home repair, and cooking, canning, and preserving food. The AEC also serves

as a classroom where future youth workers will learn a variety of subjects from gardening skills, biology, urban ecology, food systems, and community history. The structure will include a full-scale commercial kitchen, house a full-time farm manager, and host community gatherings. The purpose of this facility is not only to further develop the Vineyard as a community asset but also to invest in the community members themselves as an asset. Providing a place where neighbors can come together to learn and celebrate, in addition to ensuring that future generations do not lose touch with the culturally significant traditions with which this community upholds will do this.

During the summer of 2005, an RIT graduate student in the environmental science program created a preliminary curriculum for the use of the Agriculture Education Center. The pilot curriculum focused on basic plant biology, urban agriculture, and food systems. Intertwined with the curriculum was a focus on community empowerment, economic revitalization, community food security, and urban ecology. The purpose of the curriculum was to increase awareness and appreciation for urban agricultural activities with respect to their benefits to local communities, economics, food supply and the environment.

The community leaders heavily invested in the AEC wanted to be sure that the youth would also leave the summer work program with a better sense of pride in their community. In order to achieve this goal it was important for the youth involved in the pilot program to foster a reconnection between urban residents and the sources of their foods and to preserve historic traditions and skills that have faded in the past few generations.

Based on the requirements for the curriculum tested during the summer of 2005, it became apparent to the researcher that upholding the desire to incorporate history, tradition, and civic responsibility would also support the goals and success of these goals set by the community and its residents. It became clear to the researcher that in order for the best possible partnership to exist between GRUB and School 45 the curriculum must be multi- and interdisciplinary.

4.3.2 Why Emphasize Environmental Science?

As students are prepared for their mandated state exams it is often the case that textbooks and curricula are not in tune with current, real world problems. Politics, agricultural, and natural resources sectors are changing so rapidly that even those already in the field are challenged to keep up with changes. Environmental science encompasses all of these sectors and more, so the answer to “Why environmental science?” was easy. As stated in chapter 2, educators in general are very concerned with the No Child Left Behind Act, as is further explained in section 4.3.3 *Science Education at School 45*. This federal mandate left teachers desperate to have their students pass in the areas of math and reading and writing, so therefore it was extremely important to incorporate as many interdisciplinary curricula as possible when planning lessons for the elementary students.

“The No Child Left Behind Act has left many teachers with no choice but to emphasize math and reading. The first thing to go [out of the curriculum] was science. Social Studies was second.” (Interview, 2006)

An environmental science curriculum is, by definition, encouraged to incorporate not only all of the natural and physical sciences but the social sciences as well - including economics, policy, and history. This alone allows environmental science to be

multidisciplinary in terms of elementary education. As seen in Appendix B, the curriculum developed by the researcher incorporated appropriate biology lessons as defined by the standards set by New York State for elementary students. However, the lessons also integrated math and reading and writing. The students were encouraged to journal their experiences at The Vineyard and also when investigating certain experiments (See Appendix B). This type of curricula allowed science to still be in the classroom without minimizing the emphasis on math and literacy education.

Through participant observations and review of GRUB literature it is quite evident that community empowerment and ownership of community assets is the cornerstone of GRUB operations. A focus on environmental science in the context of a community setting invests in developing youth as stewards and engaged citizens, while also cultivating a strong educational value to ensure life long learning and civic participation. Participation in local environmental action, which occurs at the integration of ecological, economic, social, and political systems, provides opportunities for integrating science and civic education. Environmental science emphasizes knowledge and skills in both science and citizenship. By grappling with environmental issues, students may develop understandings of environmental science and political processes, and skills in scientific inquiry and civic engagement, all of which are crucial in the successes of GRUB's goal to revitalize Sector 10. By encouraging civic participation at the elementary level, the hope is that this knowledge will enable the community to have better control over the decisions that are made within the City of Rochester. Community

members, RIT students, and other individuals in participant interactions and interviews echoed the benefits of engaging youth in civic participation.

The benefits of emphasizing the teachings of environmental science allows multidisciplinary learning in the classroom that also promote one of the many missions of GRUB and NENA and that is for their citizens to build self-reliance from the individual level up to the neighborhood level.

4.3.3 Science Education at School 45

When the NENA-RIT partnership was first approached by School 45 to incorporate the Vineyard in the elementary science program it was assumed by the researcher that a substantial curriculum already existed. This assumption was based on the enthusiasm from the teacher who approached the partnership initially. This particular teacher was highly interested in giving her students an “authentic learning experience” by teaching in a different type of learning venue, that venue being the Vineyard. The goal was to provide her students with real world experiences within the sciences. However, during the course of the initial exposure to the school and its resources, the teacher who had originally shown the highest amount of interest could no longer participate due to a mid-year medical leave. Although the school’s greatest advocate for the program could no longer participate, the school as a whole had already been exposed to the potential partnership and administrators and some faculty were showing increasing interest in the possibilities. It was at this point that the researcher was assigned a different teacher and classroom to shadow. During an early interview with the new classroom teacher, who

taught second grade, it became very apparent that the science done in the classroom was minimal, if at all.

“We don’t really do real science. Our focus must be on math and reading skills. As you can probably already see, these students do not even read at their grade level. Some of the students cannot read at all. Throwing science in the mix would be very difficult. The vocabulary alone is too advanced.” (Interview, 2006)

During a typical school week the classroom teacher spent about 14 hours doing math, about 14-20 hours practicing reading and writing skills, approximately 4 hours focusing on social studies, but only about 2 hours total for science. The format for most of the curriculum was in the form of worksheets and textbook assignments. Although the Rochester City School District has a well-defined science curriculum in place for elementary students the classroom teacher explained that she found it difficult to teach any of it.

“The second grade science curriculum has been rewritten so many times by upper administration in order to help the classroom teacher teach what the students need to know for the science exam [administered by New York State] they take in fourth grade. But honestly, no one really knows how to teach science. I know I’m not qualified. My lessons come straight from the textbook... I don’t know how to enhance science lessons and you will find that many of the teachers [at school 45] cannot either.” (Interview, 2006)

While much of the researcher’s time during the summer 2006 focused on learning the “ins and outs” of the community organizations, part of the 2006-2007 school year (from September to April) was focused on how to link the current science and social studies curriculum to the Vineyard. However, once it was established that there was very minimal “current” curriculum to work with, the researcher spent much of the school year

helping the second grade team at School 45 bring science and social studies back into their classrooms while also keeping math and reading and writing lessons a priority.

Interviews about the current science curriculum were conducted with classroom teachers as well as with school and district administrators. It became very clear, especially when interviewing district administrators, that secondary science had the priority over elementary science curriculum. As noted in chapter 2, it is not uncommon for science to be left out of elementary curriculum, so therefore it was no surprise that this school district would be any different. During one interview the researcher was told that classroom teachers had the opportunity to use prepared science kits purchased by the district as a supplement to their science units. However, there were few kits and because of the constant shipping back and forth between all of the many elementary schools in the district teachers often found that pieces were missing from the kits making them virtually useless. Other issues that arose were that some of the teachers did not have the proper professional development to learn how to use the kits or the teachers did not know the kits existed within the district at all. The lack of uniformity and development for a substantial second grade science curriculum was quite evident.

Despite the lack of science curriculum, the researcher was able to design activities for the second grade students that focused on environmental science and community awareness. The curriculum designed can be found in Appendix B. And even though the school year falls during the coldest months of the year, the researcher was able to bring students to the Vineyard four times. The activities done at the Vineyard enhanced much of the lessons that had been designed for the classroom. The classroom teacher noted that

the students seemed to really enjoy the fact that a farm could be found in their own neighborhood.

“The students were in awe today. [The students] could not believe that vegetables and fruits could be grown in their own backyard. [The students] all wanted to know how they could grow beans at their house... The fact that they were allowed to touch and explore all on their own was fascinating to them.” (Interview, 2006)

Eventually, much of the curriculum was designed so that the students would not have to be taken off of school property, as leaving the premises became a legal issue with upper administration. This issue is further explained in the next section.

4.3.4 The Hurdles of a Science Program

During the course of research and based on participant observation, interviews, and surveys, it was determined by personnel from School 45 and GRUB that the best probable partnership that could exist between these organizations would be an after school agriculture-based club held at the Vineyard. However, there were many obstacles identified that would not allow for a partnership or program currently. One of the issues identified was labor shortage. During a period of greater funding for the community organization, they were able to hire staff members who could dedicate their time to supporting education projects throughout the Vineyard. However, with a reduction in funding and staff, the hours that it takes to plan lessons and supervise an after school program would become very overwhelming for Vineyard volunteers that must focus first on the harvesting and maintenance of the farm. With a reduction in funding, staff members and volunteers were asked to take on numerous roles within the organization and therefore did not have time to take on yet another project.

In order for the after school program to be an enhancement of the classroom curriculum, two things must be in place. First, science must actually be occurring in the classroom. The purpose of the after school program is not to replace the science activities and lessons that the students are obligated to learn. In actuality, the program would be designed to enhance what the students might be reading about in their texts or discussing in the class. The second essential component is that there must be a teacher at School 45 willing to take on the supervisory role for the after school program. There is currently not a teacher willing or able to support (by lesson planning) or supervise an after school program. There was great fear among the teachers interviewed that such a program would take up a lot of time and energy - all of which is unnecessary when there is so much that must be done in their classrooms first.

“[Classroom teachers] are already pressed for time as it is. In September [teachers] all feel energized and optimistic, but by February [teachers] are behind and stressed. The state curriculum has to come first; the lessons for [the teacher’s] classroom come first then possibly, if there is time, extra projects.”
(Interview 2007)

Another reason why it is so important for a teacher to be willing to supervise an after school program is for strictly legal reasons. The legal hurdles within a school district are limitless and some were even brought up on the surveys explained in section 4.1.4. First, an after school program must be supervised by a state certified teacher. Because of this, it would not be possible to run a program through the school unless there was full participation by at least one faculty member. Many of the teachers also noted that transportation (to the Vineyard and also home) would have to be provided for the students who participated in the after school program. Transportation requires busses

that the school district must pay for. Throughout the course of the research, the transportation issue came up frequently. It was noted by several teachers, as well as upper administration, that many of the parents rely heavily on the bus transportation to and from school and because of this the students must be guaranteed a way home even if they do participate in some sort of after school activity.

5. Future Research

Although this project helped provide information to answer the original research questions, more research could be considered to broaden the understanding of appropriate partnerships between GRUB and School 45. To help focus any future research in this area, considerations for future investigations were developed. These considerations include further research into environmental science education, additional interviews with community members and GRUB personnel, and evaluating the second grade science curriculum that this project produced. Due to time constraints, some of the identified areas of secondary interest (i.e. allowing classroom teachers to conduct field trips to the Vineyard) were not thoroughly investigated. These areas could provide additional information to further address the research questions, or provoke entirely new research questions. Also, because school district policy and community groups will continue to evolve, this project could be continuous as long as the NENA-RIT partnership exists.

6. Conclusions

This research helps support a larger understanding of the fundamental ideology of environmental problem solving, the status of science education in an elementary school, and community empowerment. While the original goal of this research was to explore a

possible linkage between community assets and the local elementary school, the hurdles that the researcher discovered along the way encouraged a more in-depth look at education policy and the need for continuous support from all involved - whether from the community or the school.

As already noted, community ownership of information regarding community assets also was shown in this research to significantly influence the appropriateness and sustainability of environmental change. When the community had information about its organizational structure, resources and goals, the community members were better able to determine what actions would create the most appropriate and sustainable environmental and communal change. The community organizations have the most intimate knowledge of the community member's needs, resources and goals. Knowing this information allowed the researcher to approach the needs of the school and the community in a way that would ultimately benefit both. However, due to a lack of science curriculum in the classroom and low enthusiasm from some essential schoolteachers and administrators it was virtually impossible to create a viable program that would allow for a cohesive and successful partnership between GRUB and School 45. Also, the community is willing but perhaps not ready to support an after school outdoor education program all on their own. Support from the school is not only necessary but also essential in terms of legalities and protocols made by the district.

Environmental problem solving begins with educating the masses. Without the proper understanding of the world around them, people do not have the ability to make informed decisions about environmental issues so therefore; environmental education

should start early on in the academic process. However, environmental problem solving does not just mean understanding biological process but societal and political processes as well. Environmental science education intertwines both the hard and soft sciences and based on the literature review has proven to be an effective way to teach elementary-aged students.

Bibliography

- Arcury, T.A. and Christenson, E.H. (1993). Rural-urban differences in environmental knowledge and actions. *Journal of Environmental Education*, 25 (1), 19-25.
- Bartel, A.S., Krasny, M., Harrison, E.Z. (2003). Beyond the Binary: Approaches to Integrating University Outreach with Research and Teaching. *Journal of Higher Education Outreach and Engagement*, 8(2), 83.
- Dilworth, R.L. (1998). Action Learning in a Nutshell. *Performance Improvement Quarterly*, 11, 28-43.
- Dunlap, R.E. (1980). Paradigmatic change in social science: From human exceptionalism to ecological paradigm. *American Behavioral Scientist*, 24, 5-14.
- Freedman, D. (1998). Science Education: How Curriculum and Instruction are Evolving. *Science Education* 82: 197-215
- Fusco, D. and Barton, A. (2001). Creating relevant science through urban planning and gardening. *Journal of Research in Science Teaching* 38, 8:860-877
- Kim, K. (2003). An inventory for assessing environmental education curricula. *Journal of Environmental Education*, 34(2), 12-18.
- Marx, R.W. and Harris, C.J. (2006). No Child Left Behind and science education: opportunities, challenges, and risks. *The Elementary School Journal* 106(5), 467-477.
- National Academy of Sciences (1997). *Science for all children: A guide to improving elementary science education in your school district*. Washington, DC: National Sciences Resource Center, Smithsonian Institute.
- Reason, P. and Bradbury H. (2001). *Handbook for Action Research: Participative and Inquiry Practice* London: Sage.
- Roth, W.M. and Lee, S. (2004). Science education as/for participation in the community. *Science Education* 88: 263-291.
- Shepardson, D.P. (2005). Student ideas: What is an environment? *Journal of Environmental Education* 36(4), 49-58.

Appendix A: School 45 Teacher Survey

1. How familiar are you with the term “school-community partnership”?

_____ Very familiar

_____ Somewhat familiar

_____ Not familiar with the term
2. If you are familiar with this term, please briefly explain your understanding of the term.
3. In the context of the after school program proposal, this school-community partnership should (check all that apply):
 - a. _____ give back to the community
 - b. _____ develop accessible learning environments that connect students to their community
 - c. _____ enhance the implementation of the elementary school curriculum
 - d. _____ improve the educational setting through new learning opportunities
 - e. _____ facilitate learning and skills development
4. Of the above items you checked, which one do you think is the most important (Indicate the letter from the list above) _____
5. What kinds of barriers do you foresee, if any, with the development of the after school program?
6. From the barriers you identified, do you have any suggestions as to how they might be overcome?

7. If you think there is potential for this program, what kinds of activities would you like to see planned?

8. If an after school agricultural club could be developed, what outcomes for students would you like to see?

Appendix B: Developed Curriculum

The following is the curriculum the researcher developed in an attempt to incorporate environmental science into New York State mandated curriculum. The lessons were taught over twenty weeks. Time at the Vineyard was limited, but the researcher developed activities that could potentially be done in a garden setting. When a garden setting was not available, appropriate materials were used to create particular environments. The researcher created the lessons based on the New York State Core Curriculum for Elementary Science K-4. This document can be found at <http://www.emsc.nysed.gov/ciai/cores.htm>

1. Living versus non-living
 - a. Lesson: living things grow, take in nutrients, breathe (gas exchange), reproduce, eliminate wastes, die.
 - b. Activity: Scavenger hunt Living v. Non-Living (in the classroom)
2. Structure of plants
 - a. Lesson: Identifying parts of plants: roots, leaves, stems, flowers, seeds
 - b. Activity: Growing geraniums/pea plants to investigate structures
3. What do plants need to survive?
 - a. Lesson: How does a plant grow?
 - b. Investigation: What happens if we do not give our plants sunlight, water, etc. (Journal – students will write in journals as they investigate what happens to their plants; students will also measure and record plant growth each week)
4. Pollution
 - a. Lesson: How do humans pollute the environment? Does pollution harm plants?
 - b. Activity/Investigation: Growing plants in polluted areas. Students will expose their plants to various “pollutants” (soap, cooking oil, etc) (Journaling will continue)
 - c. Civic involvement: What should your community do to stop pollution from occurring? (This is in conjunction with the social studies lesson on making decisions within a community)
5. Trip to Vineyard – the four activities investigated in the classroom will be investigated at the Vineyard.

- a. Living versus non-living (at the Vineyard) Students will compare and contrast the lists that they come up with to the list they created from the same activity in the classroom.
- b. Parts of the plant: Parts of the plant we eat!
- c. Sources of pollution at the Vineyard. What could we do to ensure the plants are not polluted?
- d. Back at school – Journal experience at the Vineyard. What was your favorite? What was your least favorite?

6. Water Cycle

- a. Lesson: How does the water we drink get to us?
- b. Activity: Building a Terrarium – the class will build mini terrariums to show how water cycles in the biosphere. Students will journal what they see each morning and afternoon in their terrariums.
- c. Extension: Erosion - why is erosion bad? Who is affected by erosion? How can erosion be stopped?

7. Weather

- a. Lesson: How does weather change from day to day and through the seasons?
- b. Activity: What does Rochester look like during each of the seasons?
- c. Extension: What happens to the water cycle during each of the seasons? What happens to plants and trees?

8. Food chains/food webs

- a. Lesson: what kinds of food do we eat? Are humans the only ones that eat these animals or plants?
- b. Activity: Students will create a food web to show how animals are reliant on one another and plants and the sun in order to survive.
- c. Extension: What happens if a whole species dies off? Who is affected?
 - i. Endangered species

9. From the supermarket to the table?

- a. Lesson: Where does our food come from?

- b. Activity: What is your favorite food? How did it get to your kitchen table to be eaten?
- c. Environmental connection: How far away does our food travel before we get to eat it? Apples in Washington versus apples in New York.
- d. Rochester Public Market will be discussed. Why is it better that we buy our foods from RPM than Wegmans?

10. Where does our garbage go?

- a. Lesson: What happens to our garbage after we throw it away?
- b. Activity: (Trip to Vineyard) Bottle Biology: Decomposition
http://www.bottlebiology.org/investigations/decomp_main.html
- c. Journal: Students will journal what is happening in their bottles each day.

11. Recycling

- a. Lesson: Why should we recycle?
- b. Activity: Create posters for school to show the importance of recycling at school and at home.
- c. Worm World – online investigation about the importance of worms
<http://yucky.discovery.com/flash/worm/>
- d. Extension: Pick up trash around schoolyard and look for worms!
- e. Civic connection: Does Rochester have a recycling program? Should they? Where have you ever seen recycling bins?

12. Nutrition

- a. Lesson: Humans needs a variety of healthy foods, exercise, and rest to grow and maintain good health
- b. Activity: Students perception of healthy versus junk foods
- c. Extension: Growing healthy foods in your own home.