Afterschool Matters

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AT THE WELLESLEY CENTERS FOR WOMEN

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Welcome

We are pleased to share with you this first collaboratively produced issue of *Afterschool Matters* from the National Institute on Out-of-School Time (NIOST) and the Robert Bowne Foundation. The transition of the Afterschool Matters Initiative to NIOST has been extremely exciting. It includes both an empowering and meaningful journal for the out-of-school-time field and a national expansion of the Afterschool Matters Practitioner Fellowship. We were thrilled to work with the National Writing Project to launch fellowships at the University of Pennsylvania in Philadelphia and at the University of California in Berkeley in fall 2008. Take a closer look at the transforming experience of the practitioner fellowship by reading "Putting Our Questions at the Center" in this issue.

A sense of urgency pervades our field today. Current economic trends and tumbling school budgets create pressure on program leaders to stretch resources and provide enriching activities to support learning, all while addressing the urgent needs of underserved children and youth. The topics addressed in this issue of *Afterschool Matters*—supporting middle school youth, preparing youth for 21st century skills, connecting Latina girls and technology, and promoting environmental ethics—illustrate the multifaceted roles out-of-school-time programs fulfill in promoting healthy and positive development.

In "Making the Most of the Middle," Holly Morehouse describes how the Vermont Department of Education and Vermont program leaders created a research-based framework for structuring and shaping afterschool programs for middle school. In "Preparing Youth for the 21st Century Knowledge Economy," Cochran and Ferrari argue for incorporating more work-based learning experiences in youth development programs, thereby improving the quality of youth work experiences, skill preparation, and business/community partnerships. In our third article, the creators of "The Girl Game Company" describe early findings from an investigation of an afterschool program that seeks to increase participation of rural middle school Latina girls in information technology coursework and careers by engaging them in computer game design.

Having just returned from the Miami Metro Zoo with my own young children, it's exciting to read the results Douglas and Katz captured in "It's All Happening at the Zoo." This article reminds us of the importance of bringing afterschool program children and youth into the community, tapping its resources and the power of real-life learning to build environmental stewardship.

We hope you will enjoy this issue as much as we have enjoyed preparing it for you!

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Afterschool Matters is a national, peer-reviewed journal dedicated to promoting professionalism, scholarship, and consciousness in the field of afterschool education. Published annually by the Robert Bowne Foundation and the National Institute on Out-of-School Time, the journal serves those involved in developing and running programs for youth during the out-of-school hours, in addition to those engaged in research and shaping policy.

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making the most of the middle

A Strategic Model for Middle School Afterschool Programs

by Holly Morehouse

Early adolescence is a time of transition, change, and growth. At no other time after gestation and early infancy are the human body and mind undergoing such rapid developmental changes. The bodies of young adolescents are physically and sexually maturing. Cognitive changes expand thinking abilities; social and emotional changes move adolescents towards greater independence.

During early adolescence, youths' very existence is about transition; their skills and abilities, like their bodies and minds, are under development. However, what can be seen as an exciting period of growth and change can create frustration for both students and adults unless afterschool programs serving middle school youth are designed with the specific, unique characteristics of young adolescents in mind.

In an effort to improve afterschool programming for middle school youth in Vermont, the Vermont Department of Education partnered with the Nellie Mae Education Foundation to identify best practices for middle school afterschool. The goals of this project were to increase regular attendance in Vermont's middle school afterschool programs and to build stronger student outcomes for participating youth. Drawing from both the literature on adolescent development and the studies of best practices in afterschool programming, the project resulted in the development of a new framework for middle school afterschool programs based on five components, which we call the five Rs of program design: relationships, relevance, reinforcement, real-life projects, and rigor. The five Rs offer a strategic model for after-

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school programs, a model that acknowledges and embraces the stages of transition and growth in early adolescence while building on the common strategies, characteristics, and practices of successful middle school afterschool programs in Vermont. Afterschool leaders can use these five components, each of which plays a role in increasing youth participation rates and supporting positive youth development outcomes, to inform the development and design of their middle school afterschool programs.

Snapshot: Middle School Afterschool in Vermont

The phrase *middle school* was first used by William Alexander, a professor of education, in a speech at Cornell University in the 1960s (as cited in David, 1998). Alexander argued that schools serving young adolescents need to be more than an extension of elementary school or a preparation for high school. Alexander outlined a vision of schools designed to meet the specific needs of young adolescents with an emphasis on project-based learning; differentiated instruction; comprehensive health, physical education, and guidance programs; a team structure for teaching; and small heterogeneous homerooms where teachers know each student well. Alexander's ideas formed the core of the middle school concept and continued to influence education reform for middle-level schools for the next four decades.

Middle schools can start as early as fourth or fifth grade and continue up through eighth or sometimes ninth grade. According to the National Middle School Association (2008), in 2007, 28 states had a specific middle-level license for educators and another 18 states had a middle-level endorsement. These licenses and endorsements encourage educators to be trained specifically in working with young adolescents and in middle-level educational models. In Vermont, the middle-level license covers grades 5–8, so that is the grade range we use when referring to middle school students.

Many different types of organizations run afterschool and summer programs for middle school youth in Vermont. Middle schoolers can belong to programs run by local teen centers, nationally affiliated organizations (such as Boys & Girls Clubs of America, YMCA, 4-H, Boy Scouts, and Girl Scouts), local church youth groups, schools, city or town recreation programs, or some combination of the above. This paper focuses specifically on afterschool programs in Vermont's 21st Century Community Learning Centers (21CCLC) program, funded by the federal No Child Left Behind Act and administered through the Vermont Department of Education. Schools, non-traditional educators, and community-based organizations are eligible to apply for 21CCLC partnership grants to provide high-quality afterschool learning opportunities for students who attend schools where 40 percent or more of the students are from low-income families, as judged by such standards as lunch assistance and Medicaid eligibility. Throughout this article, information on Vermont 21CCLC programs comes from the programs' annual reports to the state education department and from conversations or observations during site monitoring visits.

The Attendance Challenge

Table 1 shows what percentage of the 109 21CCLC afterschool program sites in Vermont serve each level of middle school students, from 82 percent for fifth graders to 51 percent for eighth graders. The table also shows that Vermont exceeds the national average in the percentage of its programs that serve students in grades 5–8. The difference between 82 percent of Vermont programs serving fifth graders as compared to 67 percent of programs nationwide is certainly significant. Even going up to eighth grade, the difference continues, with 51 percent of Vermont programs serving that age as compared to only 39 percent nationally.

However, Vermont's middle school advantage evaporates when we compare its percentage of regular attendees to national averages. According to the standard set by the U.S. Department of Education, a "regular attendee" must attend the 21CCLC program for 30 days or more, or at least 60 hours, during the school year. Although a higher percentage of Vermont programs target students in grades 5–8, Vermont's proportions of regular attendees in these grades are significantly below national averages. As shown in Table 2, Vermont is consistently 20–30 percentage points below the national

Table 1: 21CCLC Programs Targeting Students in Grades 5–8, 2006–2007

	Vermont	All States
Grade 5	82%	67%
Grade 6	75%	54%
Grade 7	52%	40%
Grade 8	51%	39%

Data have been rounded to the nearest full percentage point. Source: Learning Points Associates (2008)

	Vermont		All States	
	# Students	% Regular Attendees	# Students	% Regular Attendees
Grade 5	1,414	35%	143,019	62%
Grade 6	1,440	33%	142,931	52%
Grade 7	1,394	23%	124,730	46%
Grade 8	1,336	20%	113,346	44%

Source: Learning Points Associates (2008)

Table 2: Regular Attendance in 21CCLC Programs, 2006–2007

average in building regular attendance during the middle school years. At the eighth grade level, only 20 percent of the students participating in 21CCLC programs in Vermont attend the program for 30 days or more, while nationally 44 percent of eighth grade participants reach regular attendee status. Even for the younger students, Vermont has only 35 percent of its fifth grade participants attending regularly, while nationally the average is 62 percent.

A number of factors may contribute to this discrepancy in regular attendance rates. Afterschool programs in a small, predominantly rural state like Vermont face more transportation-related challenges, more limits to program size and structure, and less capacity for expansion, all with the support of fewer community partners, than do programs in some other more densely populated states. However, even taking these factors into account, program directors express frustration at the steady drop-off in participation that seems to occur as youth move into the middle grades.

The Age-Range Challenge

One avenue for improving regular attendance in Vermont's middle school afterschool programs is to adapt the approach the National Middle School Association (2003) advocates for in-school education: to design programs that meet the specific needs of young adolescents. Only four of the 109 21CCLC programs in Vermont serve middle school students *only*. These four programs were designed from the outset to attract and serve middle-level students and so have been able to focus their full efforts on meeting the needs of this population. These programs tend to have a stronger focus on student involvement and are generally more successful at recruiting students, especially in the older grades, than programs that serve a broader age range.

However, most 21CCLC programs in Vermont are part of larger projects targeting students in grades K–8, K–12, or sometimes 6–12 or 7–12. In some cases, these programs take place at standalone middle schools, but the project also runs programs at elementary and/or high school sites. For that matter, a number of Vermont schools, because of design, town size, or location, handle a broader-than-usual range of ages in one building. Whether leaders are setting up an afterschool program at a middle school as part of a larger project or are designing program components for middle-level students in a K–8 or K–12 school, the challenge is to create a program that is significantly different from what is offered at the elementary level and yet provides developmentally appropriate structures, opportunities, and choices for young adolescents, as opposed to older teenagers and young adults.

Designing Effective Middle School Afterschool Programs

Westmoreland and Little (2006) describe much of the research on designing effective afterschool programs for middle school youth in their paper "Exploring Quality in After School Programs for Middle School-Age Youth." The authors highlight the importance of well-trained, dedicated staff who are comfortable relating to and interacting with young adolescents. They say that increasing levels of independence lead to a need to foster youth leadership and to create meaningful ways to incorporate youth input. They emphasize the importance of connecting with the school day and with families in order to envelop youth in a common set of values, norms, and expectations. They also advocate for quality standards that are asset-based and that shift the role of afterschool program staff from "management to facilitation of experiences for middle schoolers" (p. 1).

A number of studies also document the ways in which middle school youth benefit from afterschool programs when they participate regularly, over a period of time, in a variety of program options (Vandell, Reisner, & Pierce, 2007; Walker & Arbreton, 2004; Huang, Gribbons, Kim, Lee, & Baker, 2000; Gambone & Arbreton, 1997). These studies show that students who participate in both educational programs and other enrichment activities on a regular basis demonstrate the greatest

gains in positive outcomes, including increases in leadership, non-family support for participants, school effort, and sense of efficacy.

In a complementary project looking at youth engagement after school, the "beeper" study by Deborah Vandell and colleagues (2003) found that students were more engaged in meaningful activities and experienced higher levels of concentration, effort, interest, choice, and positive emotions when attending afterschool programs as opposed to being at home unsupervised or hanging out with friends.[1] In a presentation at the C. S. Mott Foundation's National Afterschool Networks Meeting in 2008, Vandell presented an update on her latest study on student outcomes related to participation in high-quality afterschool programs. In addition to the requirements of high-quality staff and developmentally appropriate structures and activities, Vandell stressed the importance of including "opportunities for mastery" for middle school youth (Vandell, Reisner, & Pierce, 2008).

Taken together, these studies argue that the most effective programs for middle school youth strike a balance between exposing young adolescents to a wide variety of activities and experiences while providing opportunities for youth to develop mastery and focus. This powerful blend of variety and focus supports youth in their search to better understand who they are and who they want to become.

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The Five Rs of Program Design

Supporting middle school youth in their search to find and define their unique selves is an important part of the Vermont project that resulted in the development of the five Rs for program design. The Vermont Department of Education worked closely with afterschool program directors across the state to determine how best to support afterschool staff in designing programs that build on—indeed, draw strength from—the unique characteristics of early adolescence.

Young adolescents are no longer children, and yet they are not quite full-fledged teenagers either. Popular culture often uses the term *tweens* to describe youth in this in-between stage. They are coming out of childhood and moving towards full adolescence. Middle school educators Dave Brown and Trudy Knowles argue in *What Every Middle School Teacher Should Know* (2007) that "the middle school years are marked by an almost constant search for an identity in many areas: gender, ethnicity, culture, sexual, spirituality, and concerns about one's future life (which job will I have, how much money will I make, will I marry and have children?)" (p. 52).

Part of the Vermont project, therefore, was an in-depth review of the literature on adolescent development. Our goal was to identify the main changes in each area of development: physical, cognitive, social, moral, and emotional. Though it was not fully exhaustive, this overview of adolescent development provided a context for working with youth in grades 5–8 and highlighted the information most relevant to afterschool program directors or instructors. This intensive look at adolescent development, as well as the recent research on high-quality afterschool programs,[2] provided the foundation for a new framework for middle school afterschool programs, one that takes advantage of the challenges of this period of exploration, transition, and becoming. Our framework is based on the five Rs of relationships, relevance, reinforcement, real-life projects, and rigor.

Relationships

In the Vermont model, building strong, healthy relationships between staff and students and among the students themselves is crucial to a successful middle school afterschool program. Thus, finding the right people to run the program is also crucial. In fact, the San Francisco Beacons Initiative found that the most significant predictor of sustained participation for middle school youth was the number of supportive adults they reported having (Walker & Arbreton, 2004). Vermont program leaders report that they often look for young, "cool" staff to work with the middle school students. While some middle schoolers will respond to this approach, being young and cool is not an overriding requirement in the Vermont model. What is absolutely

essential is finding individuals who genuinely enjoy being with young adolescents and who are specifically trained to work with this age group.

In the Vermont framework, strong relationships play an important role in supporting youth in all areas of development. The physical changes alone that take place during young adolescence can challenge a student's perception of self on an almost daily basis. Young adolescents can gain as much as four or more inches in height and eight to ten pounds in weight per year, often resulting in physical awkwardness and growing pains (Rice & Dolgin, 2005; Tanner, 1972). Hormones affect brain activity as well as sexual development. Irregular secretions of adrenaline into the body can result in excessive bursts of energy one minute and feelings of laziness and lethargy the next (Van Hoose, Strahan, & L'Esperance, 2001). Young adolescents need increased amounts of food and rest to fuel their bodies during this time of physical growth and sexual maturation. They are frequently hungry and require a lot of sleep (Rice & Dolgin, 2005).

Most afterschool educators, parents, and youth workers are familiar with these physical changes. However, we must also remember that these changes challenge a young adolescent's perception of self. Milgram (1992) reminds adults to be sensitive to the fact that "in the egocentric, comparative world of the young adolescent, these differences [in development] are generally translated into feelings of inadequacy and deficiency" (p. 19). Working with middle school students requires adults who understand why the students are constantly thinking about their physical appearance, who are ready and willing to discuss developmental issues with students, and who can reassure students that all ranges and paces of development are "normal."

Brown and Knowles (2007) argue that "middle school faculty and administrators have a responsibility to respond to students' concerns in many ways—from designing curricula that address their needs to providing, in several formats, information that addresses their questions and provides accurate details about their growth processes" (p. 26). In a similar manner, middle school afterschool programs should have a strong emphasis on health, wellness, and development that carries through all aspects of program design, structure, and offerings. In order to do so, the afterschool program must provide time and space to build adult-youth relationships based on trust and respect and to create opportunities where questions can be asked, information can be debated, and a better understanding of self can be fostered.

By focusing on relationships as a key component of program design, the Vermont model also encourages afterschool programs to play a strong role in helping youth build healthy peer relationships. Socially, young adolescents experience an increased independence from family. Peers start to play a larger role in their lives. They have a strong desire to be taken seriously and at the same time are interested in accepting more responsibility (Mills, 2007). Wood (2007) says that, though 11-year-olds are just starting out on their quests to establish identity and independence, by age 12 or 13 the "confusing struggle for identity" (p. 144) becomes the primary developmental issue. In their quest to understand who they are, young adolescents are increasingly concerned about peer acceptance, have a strong need for approval, and may overreact to embarrassment or rejection (Brown & Knowles, 2007; Rice & Dolgin, 2005; Walsh, 2004). To middle schoolers, how they are seen by their peers is vitally important. However, their ability to regulate their emotions is not fully developed. While they may physically look older or cognitively perform at a mature level, young adolescents can at times exhibit immature behavior and poor social skills (National Middle School Association, 2003). Afterschool programs can play a valuable role in helping young adolescents develop socially by creating situations in which supportive friendships are fostered; interpersonal skills are practiced; and components of an "identity under construction" can be explored in a safe, positive way without judgment by others.

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Relevance

Being relevant allows afterschool programs to take advantage of young adolescents' growing interest in the

world around them and their developing involvement in causes and civic activism. Afterschool programs should allow youth to work on meaningful projects that contribute to the greater good and that move toward solving environmental or community problems the youth view as important. To do so, afterschool programs must be designed to incorporate youth choice and youth voice throughout all aspects. In the Vermont model, youth choice does not mean turning the program completely over to the students, with the adults playing only a marginal or passive role. Instead, adults actively and deliberately teach youth how to take initiative for their learning and to become peer leaders.

The book *What Every Middle School Teacher Should Know* includes an informative chapter on "student-designed curriculum." In this chapter, Brown and Knowles (2007) outline specific strategies and processes that gradually result in students taking the lead in defining driving questions and determining what the class will study. Afterschool programs should adopt a similar approach in designing program structures and selecting program offerings. In the past, many programs in Vermont have relied on paper surveys as the sole means for collecting input from participants. Program directors collect these surveys and, based on their input, run out to recruit the best hip-hop dance instructor or jazz-funk musician they can find, only to have one or two students show up once the class begins. Program directors who have successfully changed this process report that they have done so in part by including students as active participants in making decisions about all aspects of the program.

The program directors and state education department staff who devised the Vermont model also selected relevance as a key component in order to support and encourage youth in their moral development. According to Wood (2007), young adolescents have become relatively adept at abstract thinking and have a strong interest in environmental issues, social causes, politics, and current events. They tend to have a strong desire for justice and are idealistic about making the world a better place. Because of their growing cognitive abilities, middle schoolers are increasingly able to reflect on their actions and to see the world from various perspectives. However, the National Middle School Association (2003) cautions that "owing to their lack of experience [young adolescents] are often impatient with the pace of change, underestimating the difficulties in making desired social changes" (p. 47). Afterschool leaders can help youth develop their moral principles and their understanding of how real change occurs by creating programs based on students' interests and by providing students with relevant and challenging activities in which to explore and develop their beliefs.

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Reinforcement

The leaders of the Vermont project found that, in order to be successful, afterschool programs must be designed to reinforce students' attempts to make good decisions and to develop their skills, interests, and talents. The very existence of young adolescents is about transition; their social, cognitive, and physical skills are under development. In the search for their own identity, middle schoolers often reject management but welcome guidance—a "guide by the side." Middle school students are not going to "get it right" every time. Supportive adults need to know how to help youth work through setbacks, viewing them as a normal and essential part of the development process (Mills, 2007).

At the same time, youth need adults and peers to recognize and respect their growing independence. Because they are making the transition out of childhood, young adolescents often react negatively to things that remind them of who they were just a year or two ago as elementary school students (Mills, 2007). Afterschool programs should thus create separate structures and spaces for middle school youth. In the Vermont project, we found that even in simple program aspects, such as taking attendance or handing out snacks, middle school youth want their own space and need to be treated differently from the children in the younger grades. As Wood (2007) writes, "Twelves and young teens need tangible recognition (from adults as well as peers) that they are changing and growing into responsible members of the adult community" (p. 147). Afterschool programs should be designed to reinforce young adolescents as they practice handling greater levels of responsibility and independence.

Reinforcing structures must also be in place to consistently support youth as they strive to reach that next level of development—emotionally, socially, and morally. One often-discussed aspect of adolescents' emotional development is the increase in mood swings. While hormones play a role in these emotional fluctuations, Brown and Knowles (2007) caution adults not to dismiss the emotional roller coaster of young adolescence: "If we consider the wide social and intellectual changes young adolescents are experiencing, not to mention their continued brain development, their emotional variability seems understandable" (p. 51).

Another aspect of adolescent emotional development is a form of egocentrism in which young people become immersed in their own thoughts and in thinking about their thoughts. Wanting to understand their own feelings and reactions, young adolescents love to talk at length about what they feel or think. They tend to think everyone else is just as interested in their thinking as they are. Responding to and performing for this imaginary audience takes up much of their energy (Buis & Thompson, 1989). Because of this imaginary audience, young adolescents are self-conscious and have a strong need for privacy. On a positive note, egocentrism can also lead to a greater desire for self-control and increased attempts at individuation. Caring adults can help middle school students handle the emotional variation and intensity of early adolescence by respecting their privacy and feelings, never disciplining or challenging them in front of their peers, and being active and interested listeners when young people share their thoughts and feelings. Reinforcement thus plays a strong role not only in supporting students as they take on greater independence and responsibility but also in confirming that their thoughts, feelings, and ideas are valued.

Real-Life Projects

Afterschool programs should be full of hands-on, active learning opportunities and meaningful group projects with real-world implications. The theories of Piaget (1977), one of the first researchers to fully explore how changes in the adolescent brain affect intellectual abilities, show that middle school youth need challenging, real-life projects to help them solidify their cognitive growth and development. Piaget developed a four-stage model of intellectual development that helps us understand the immense cognitive changes taking place during these years. As they enter middle school, most students are in

Piaget's third stage, the concrete operational stage. Some may experience periods of formal operational thought, Piaget's fourth stage, by the time they leave.

Students in the concrete stage can better grasp higher-level principles when ideas are taught with the use of hands-on activities and real materials. These students need direct, personal experience with a problem in order to reason about it. Adolescents moving into Piaget's formal operational stage are developing the capability to solve abstract, hypothetical problems. They consequently have a much greater ability to understand how decisions made today affect the future. Young people in this fourth stage also exhibit the development of metacognition, defined by Caine and Caine as "thinking about the way that we think, feel, and act" (p. 151). Such students have an increased understanding of their individual learning strengths and weaknesses (Caine & Caine, 1994). They can think along multidimensional lines. Idealistic beliefs come into play as young people think of unlimited possibilities, no longer constrained by the limits of their known reality (Brown & Knowles, 2007).

In addition to supporting cognitive development, real-life projects are beneficial to positive social development as well. According to Brown and Knowles (2007), helping students develop their social skills is one of the most important things a school or program can do: "Wise teachers purposely plan lessons that offer social opportunities: collaborative research projects, debates, readers theatre, writing workshop, simulation games, and role-playing activities" (p. 41). Afterschool programs can take this recommendation a step further and provide opportunities where students work in groups to solve real-life problems and produce meaningful outcomes. Some afterschool programs in Vermont have also strengthened this component of their program design by creating a resource library for team-building games and by including group challenges as part of the daily schedule of activities. The team-building activities teach students how to work together collaboratively and help them develop their social skills. Applying these newly reinforced skills to real-life problems empowers youth to see the positive impact they can have on the world around them, creates strong social networks and supports, and helps them form a healthy sense of self-esteem.

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Rigor

The Vermont project team suggests that successful afterschool programs should challenge students, set high standards for behavior and performance, and provide opportunities for exploration and for mastery. In this period of cognitive change, young adolescents need hands-on learning experiences and challenging intellectual projects in order to make the most of the growth occurring in their brains. According to Walsh (2004), the adolescent brain is developing in four main areas:

- The prefrontal cortex, which plays a large role in decision making, organizational skills, and planning for the future, undergoes further development.
- The corpus callosum, which connects the right and left sides of the brain and affects communication abilities and interpersonal skills, develops extensively.
- The dendrites go through an intense period of blossoming, or the making of new connections, and pruning, the shrinking away of unused connections.
- Nerve-signal connections in the brain operate faster and more efficiently as myelination increases, lubricating the neurons.

The brains of young adolescents must be stimulated and challenged appropriately in order to support the full potential for cognitive growth represented by these changes. Afterschool programs provide the perfect opportunity for hands-on, project-based learning activities full of challenging tasks, stimulating debates, and new experiences.

Afterschool programs must also encourage middle school youth to build focus and mastery in areas where they exhibit particular affinity, interest, or skill. Pediatrician Mel Levine, an expert on children and how they learn, argues that "expertise kindles intellectual self-esteem" and that "every student should select (or be helped to select) a topic upon which to become 'the world's leading expert'" (2002, p. 322–323). Middle school youth crave the opportunity to develop new skills and to improve the skills they already have. Many afterschool programs in Vermont have been running sessions for six to ten weeks with new programs being offered each session. This format provides for high levels of variety, but programs must also be intentional in finding ways for stu-

dents to pursue learning and skill development at a deeper level. Some of the ways that Vermont programs have added opportunities for mastery include allowing mentors or other content experts time to foster continued relationships with a small group of students, arranging for internships in the community, providing opportunities for student-led groups to form and design programs, alternating introductory courses with more advanced options, and designing programs that run for longer periods of time and have multiple points of entry.

The adults who seem to connect with students and to push them to achieve are the ones who see the potential, not just the problems, in students during this time of growth and change.

In the Vermont model, rigor includes hiring staff and instructors who have high standards for themselves and for the students. The adults who seem to connect with students and to push them to achieve are the ones who see the potential, not just the problems, in students during this time of growth and change. Staff must be flexible and creative; they should be able to model good decision-making skills by sharing aloud their thought processes. Such strong adult role models also serve to foster youth engagement in learning. Wang, Haertel, and Wahlberg (1994) found that adults can promote educational resiliency by encouraging youth to master new experiences, believe in their own efficacy, and be responsible for their own learning. Afterschool programs should therefore incorporate rigor in order to get students excited about their learning and challenge them in a way that keeps them coming back for more.

Thinking Intentionally about the Middle

While the programs participating in this project are in Vermont, the lessons learned and the resulting model need not be limited to any one locale. Building an afterschool program based on the five Rs has direct implications for how the program is staffed and structured and for the activities and opportunities it offers. Focusing on making the most of the stages of transition of early adolescence, the five Rs not only inform the design of afterschool programs for middle school youth but also challenge directors and staff to meet the youth where they are and to appreciate this crucial and exciting period of growth.

As more programs use the five Rs to inform and improve program structure and design, we will continue to monitor and analyze associated changes in student participation rates and in reported student outcomes. In addition, more work will need to be done to better understand the specific challenges faced by smaller K–8 and K–12 schools in designing programs for middle school youth. In these settings, financial constraints and smaller student numbers prohibit separate staff assignments, program structures, or uses of space. However, these added challenges should not in any way exempt smaller or more rural programs from paying specific attention to the developmental needs of their middle school youth. On the contrary, using a structure like the five Rs encourages staff and directors to think intentionally and creatively about their middle level students regardless of the program size, geographic location, or community setting.

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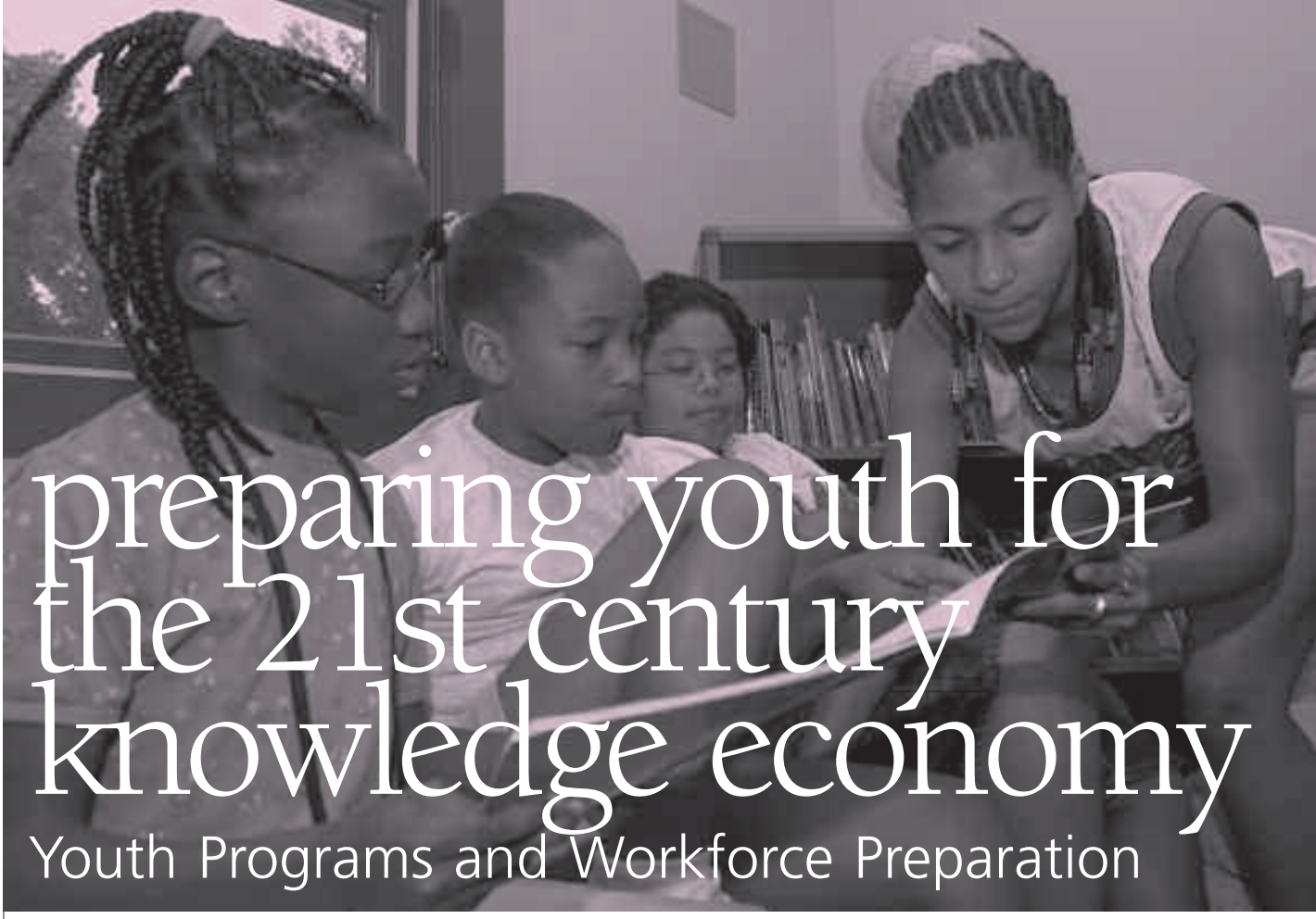
Notes

[1] In the "beeper" study, researchers gave beepers to 191 eighth grade students. The students were beeped at random 35 times during one week in the fall and one week in the spring. Each time they were beeped, the students were asked to record who they were with, where they were, what they were doing, and how they were feeling.

[2] The importance of relationships, rigor, and relevance is also discussed in debates about high school reform and high school afterschool (Yohalem, Wilson-Ahlstrom, & Pittman, 2005).



preparing youth for the 21st century knowledge economy

Youth Programs and Workforce Preparation

by Graham R. Cochran and Theresa M. Ferrari

In the 21st century, the idea of preparing youth for the workforce has taken on new meaning. The shift to a knowledge economy has brought widespread concern that young people are entering the workforce without the skills employers value most, such as communication, critical thinking, leadership, and teamwork skills (Levy & Murnane, 2006; Murnane & Levy, 1996; Partnership for 21st Century Skills, 2003).

Nearly all the attention on remedies for this skills gap has focused on school-based reforms. However, since learning cuts across both the school day and afterschool hours (Hall & Gruber, 2007; Pittman, Irby, Yohalem, & Wilson-Ahlstrom, 2004), youth programs can play an important role in addressing this issue.

Lack of skills is only part of the concern. Another aspect is lack of opportunity (America's Promise, 2007; Joyce & Neumark, 2001). America's Promise (2007) data suggest that young people lack opportunities to practice and master skills outside of school. Though afterschool programs have expanded greatly in the past decade, most target elementary school children. However, interest is growing in programs that address adolescents' unique needs (Hall & Gruber, 2007; Pittman, Yohalem, Wilson-Ahlstrom, & Ferber, 2003; Wynn, 2003). Adolescents are expected to acquire skills that will help them in the transition to

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Both authors are passionate about workforce preparation and the important role youth organizations can play in preparing young people for future success.

college, the workforce, and adulthood (Lippman, Atienza, Rivers, & Keith, 2008) Although youth programs can be a key resource in preparing young people for the world of work, their potential has yet to be realized (Schwarz & Stolow, 2006).

By their very nature, youth programs organized around positive youth development contribute to workforce readiness, whether or not they offer opportunities specifically geared toward workforce preparation. However, from our vantage point as youth development professionals who have led both afterschool and workforce preparation programs, we believe youth programs can make an even greater impact by focusing on the complementary nature of positive youth development and workforce preparation.

Our conception of workforce preparation programs is not limited to preparing young people to get a job or to follow a specific career path. The skills critical for success in the 21st century workforce are the same skills needed to be competent and contributing citizens and family members (Hamilton & Hamilton, 2004; Levin, 1994). Youth development programs can intentionally create work-based learning experiences that help young people develop the skills they need to succeed as students, employees, and community members.

As youth programs evaluate how to enhance their opportunities for adolescents, workforce preparation should be part of the discussion. In this paper, we will make the case for a focus on workforce preparation and examine youth programs as a context for workforce development. Of the many ways to blend youth development and workforce preparation, we will focus specifically on work-based learning. We have synthesized principles that can inform youth workforce development, with program examples to illustrate them. Finally, we consider the benefits and challenges of workforce preparation in youth programs and summarize the roles youth programs can take.

The Need for Workforce Preparation

Youth programs can be ideal places to develop skills needed for the 21st century workforce (Casner-Lotto & Barrington, 2006; Schwarz & Stolow, 2006), yet focus on workforce preparation is not widespread among youth programs. Such a focus could help close both the skills gap and the opportunity gap.

Skills for Success in the Knowledge Economy

Today's knowledge and technology-based economy, having simplified or eliminated routine tasks, requires highly skilled workers (Levy & Murnane, 2006; Partnership for 21st Century Skills, 2003). As workplaces have become more complex, more jobs now require critical thinking and social skills. Workers must continuously update their knowledge and skills. As noted by the American Society for Training and Development (ASTD) Public Policy Council (2003), "the knowledge economy of the 21st century is anchored by two critical commodities: people and knowledge" (p. 6).

The nature of work has changed, and addressing the widening gap between the skills employers need and the capabilities of new workers is vital to the future.

For over 20 years, and especially recently, the gap between the skills desired by employers and the skills of people entering the workforce has been the subject of research publications (Business-Higher Education Forum, 2003; Casner-Lotto & Barrington, 2006; Murnane & Levy, 1996; Partnership for 21st Century Skills, 2003), opinion polls (Partnership for 21st Century Skills, 2007; Peter D. Hart Research Associates, 2005) and the popular press (Wallis & Steptoe, 2006). Employers and business leaders, educators, government task forces, and other key stakeholders have consistently identified a skills gap in graduates of high school and of two-year and four-year colleges. All agree: The nature of work has changed, and addressing the widening gap between the skills employers need and the capabilities of new workers is vital to the future.

Cochran and Lekies (2008) synthesized the current literature to create a framework of skills needed for success in the 21st century. Their six categories are listed in the box on the next page. Though basic skills—reading, writing, and math—and job-specific skills are also necessary, the skills employers most frequently cited as important are these applied "soft" skills (Casner-Lotto & Barrington, 2006).

Understanding Adolescent Employment

Most work for adolescents occurs naturally; working youth are in the workforce, rather than in youth programs. Much has been written about adolescent employment, including its nature and extent—who works, at what kind of jobs, for how long—and its benefits and consequences (see Stone & Mortimer, 1998, and

Skills for Success in the Knowledge Economy

THINKING SKILLS
Critical thinking, problem solving, creativity, and innovation

COMMUNICATION
The ability to communicate effectively using the variety of methods and tools available in today's environment

TEAMWORK AND LEADERSHIP
The interpersonal skills to work effectively in a team and to provide leadership through collaboration, motivation, and leveraging the strengths of others

LIFELONG LEARNING AND SELF-DIRECTION
Continually improving one's capabilities by taking responsibility to set goals, improve skills, and show initiative

TECHNOLOGY ADOPTION AND APPLICATION
A firm foundation of technology skills including concepts and operations, selecting appropriate tools, and solving problems with appropriate technology

PROFESSIONALISM AND ETHICS
Demonstrate personal accountability and effective work habits: punctuality, working productively with others, and time and workload management

Source: Cochran & Lekies (2008)

Zimmer-Gembeck & Mortimer, 2006, for recent reviews). Young people begin to work as early as age 12 in informal jobs such as babysitting or yard work (Huang, Pergamit, & Shkolnik, 2001). The likelihood of employment increases with age: In one survey, over half of adolescents held a job at least part of the time while they were 14; nearly two-thirds were working at age 15 (Rothstein, 2001). Most young people have worked at some point by the time they are seniors in high school (U.S. Department of Labor, 2000).

The literature suggests that adolescent work experiences have both detrimental and beneficial aspects. The primary arguments against adolescent employment are that it competes with and detracts from school performance in a kind of zero-sum model (Post & Pong, 2000; Warren, 2002) and that young people who work experience negative educational, social, and psychological outcomes. Most of this research demonstrates that intense employment (over 20 hours per week) is associated with negative outcomes such as dropping out of school (McNeal, 1997) and substance use (Marsh & Kleitman, 2005). However, the results are mixed; though some researchers have documented these negative outcomes, others have not. Also, the limitations of cross-sectional data mean that researchers cannot sort out the direction of causality: Is working longer hours the cause of negative outcomes for adolescents, or is work intensity a consequence of existing negative conditions? Does working more hours "pull" students out of school, or are poorly performing students "pushed" into working more hours? Other studies provide some clues. For example, when pre-existing differences are controlled, the intensity of adolescent employment may not adversely affect grades (Schoenhals, Tienda, & Schneider, 1998). Regarding the zero-sum model, research has shown that work did not appreciably decrease the time spent on homework but did decrease the time spent watching TV and hanging out (Schoenhals et al., 1998; Warren, 2002).

Other researchers propose that work has the potential to provide adolescents with developmental opportunities. A fundamental benefit is that young people develop an understanding of how the work world operates (Hamilton & Hamilton, 2004; Levine & Hoffner, 2006; Whalen, DeCoursey, & Skyles, 2003). In the workplace, youth are presented with real-world opportunities to develop such qualities as responsibility and independence (Levine & Hoffner, 2006; Stone & Mortimer, 1998). They also develop social capital; that is, they create informal networks and interact with adult role models who encourage good work habits (Entwisle, Alexander, & Olson, 2000; Whalen et al., 2003). Their job experiences enable them to develop valuable skills (Leventhal, Graber, & Brooks-Gunn, 2001; Whalen et al., 2003). Skills learned on the job may have an academic benefit, at least indirectly, by encouraging interest in school (Stern, McMillion, Hopkins, & Stone, 1990). Adolescents' work experiences can lead to self-discovery and goal setting, as well as increased feelings of autonomy and independence (Brown, 2001; Hamilton & Hamilton, 2004; Whalen et al., 2003). These benefits would likely carry over into other aspects of their lives.

A third perspective is that working during adolescence is neither all good nor all bad (Stone & Mortimer, 1998). Jobs are not created equal, and adolescents do not all experience work in the same way. Individual and community differences influence adolescents' experiences: the reasons young people enter the workforce, their working conditions, the kind of work they do, and what they gain from it. The potential for adolescent employment to be a positive experience depends on the quality of the work environment (Entwisle et al., 2000; Mortimer, 2003; Warren, 2002) and the degree of connection between work and other contexts (Hansen & Jarvis, 2000). For example, adolescent employees generally benefit from jobs in which the boss treats employ-

ees respectfully and allows them to arrange their work schedule around their school schedule. Working is more likely to be a negative experience if young people work in unsafe conditions, do not receive adequate training, have negative interactions with co-workers or supervisors, or work in an environment that condones unethical practices. If parents discuss work with their children, they can help to ensure that adolescents are developing positive attitudes and dispositions toward employment (Bryant, Zvonkovis, Raskauskas, & Peters, 2004).

Mortimer's (2003) long-term study of adolescent employment found work to be a positive experience when young people have jobs that meet certain conditions: manageable levels of responsibility, autonomy, and stress; opportunities to learn new things and use their skills; and reasonable pay. However, these conditions do not always characterize youth employment (Bryant et al., 2004). A recent note from one of our colleagues confirms this situation (N. Arnett, personal communication, January 29, 2009). He noted that the world of work can be a "scary place" for teens, especially in poorer communities:

> Teens repeatedly tell us that…[there is] the very real threat of frequent robberies, typically armed, and co-workers who steal and place the blame on others. Teens decide that getting killed over an $8/hour job at the local fast food restaurant does not provide enough benefit for the risk involved. Teens tell us that supervisors in most situations are not interested in their individual development….[Furthermore], many employers who used to hire teens are moving out of these communities….Even self-employed opportunities like lawn mowing, leaf raking, and snow shoveling have significant risks when you are out and accessible and you always have to worry about someone trying to rob you.

For adolescent employment to be a stepping stone to future workplace success, employers should emphasize factors that contribute to a positive work experience and minimize those that create negative conditions. Part of the answer to providing better work experiences is for youth programs to facilitate workforce preparation.

The Case for Workforce Preparation in Youth Programs

A definition of *workforce preparation* that presumes a continuum of developmental experiences provides the basis for our argument that youth programs are ideally suited to serve as contexts for workforce preparation, which can dovetail with a philosophy of positive youth development.

Workforce Preparation as Process

Workforce preparation is not a one-time event. It is a process consisting of a variety of experiences that introduce young people to the world of work (DeCoursey & Skyles, 2007; Ferrari, 2003). Such a range of program offerings can help young people to identify their interests and explore career opportunities; to develop work readiness skills such how to dress and act on the job, complete applications, and interview; to acquire skills needed in the knowledge economy; and to gain actual work experience. As DeCoursey and Skyles (2007) describe it:

> This continuum does not begin with immediate involvement with employers. Rather, youth are encouraged to explore their interests with educators and program providers while learning about the behavioral expectations of the workplace. Only when youth have achieved greater knowledge of and practice in meeting workplace expectations coupled with an understanding of their own interests and identity are they connected to employers. (p. 47)

Workforce preparation should provide not only abstract knowledge about work, but also active learning experiences that put young people in contact with adults in the workplace. These should not be one-shot activities, but part of a continuum of experiences that increase in complexity and challenge in developmentally appropriate ways.

Youth Programs as Positive Developmental Settings

A growing body of research points to the ability of youth programs to serve as positive developmental settings. A variety of studies show that youth obtain developmental benefits from consistent participation in well-run quality youth programs (e.g., Little, Wimer, & Weiss, 2008; Scott-Little, Hamann, & Jurs, 2002; Vandell et al., 2006). Through such programs, youth are able to meet needs for belonging, connection, independence, and mastery (Eccles & Gootman, 2002). They learn valuable skills such as teamwork and problem solving, develop social competence, and connect with adult role models (Hansen & Larson, 2007; Hansen, Larson, & Dworkin, 2003; Jarrett, Sullivan, & Watkins, 2005). Youth development professionals have long referred to these and other similar skills as *life skills*, but they are also the skills employers value.

Youth desire new and challenging activities, as well

as opportunities to take leadership, hold meaningful roles, and carry out real responsibilities (Chaskin & Baker, 2006; Hansen & Larson, 2007; Pearce & Larson, 2006). Researchers concur that these opportunities are critical to the development of both identity (Eccles & Gootman, 2002; Kroger, 2000; Zimmer-Gembeck & Mortimer, 2006) and initiative (Larson, 2000; Larson, Hansen, & Walker, 2005). Although there is no magic formula, research suggests that, to derive the benefits of participating in such programs, youth must participate with sufficient frequency, over a long enough period of time, and in a variety of activities (Metz, Goldsmith, & Arbreton, 2008; Vandell, Shernoff, Pierce, Bolt, Dadisman, & Brown, 2005; Vandell et al., 2006). In contrast to school, youth programs are characterized by voluntary participation, so that youth experience higher levels of motivation and interest (Larson, 2000; Vandell et al., 2005). High levels of motivation and interest ensure that youth become engaged with the program's goals, adopt them as their own (Pearce & Larson, 2006), and stick around long enough to achieve the benefits that participation affords.

A key to accomplishing these goals is an intentional focus (Walker, 2006). Youth programs must deliberately create opportunities for youth to serve as officers, teach their peers and younger members, participate on advisory committees, and design projects. Program cycles of planning and performance allow young people to experiment, receive feedback, and learn from mistakes (Deschenes, McDonald, & McLaughlin, 2004; Halpern, 2006). Ultimately young people discover that they can get good at something through this sort of learning process.

Youth programs are thus in an ideal position to ensure that workforce preparation is aligned with adolescents' developmental needs. They often have the autonomy and flexibility to create a curriculum that is tailored to the community. All of these characteristics make them well suited to playing a role in workforce preparation.

Youth programs are thus in an ideal position to ensure that workforce preparation is aligned with adolescents' developmental needs.

The Positive Youth Development Approach

Programs that produce positive outcomes don't happen by accident, and they share common ground, including a positive youth development approach. In contrast to a deficit perspective, a positive youth development approach is based on the premise that youth are resources to be developed (Hamilton, Hamilton, & Pittman, 2004; Witt & Caldwell, 2005). Current models focus on the concept of thriving, which goes beyond simply eliminating negative behaviors to promoting positive development for all youth (Lerner, Dowling, & Andersen, 2003). Certain key features characterize positive youth development settings. One widely used set of features is that of Eccles and Gootman (2002):

- An environment that ensures physical and psychological safety
- Clear and consistent structure and an appropriate level of adult supervision
- Supportive relationships with adults
- Opportunities to belong
- Positive social norms
- Opportunities to take leadership and make meaningful contributions
- Opportunities for engagement in learning, skill building, and mastery
- Integration of family, school, and community efforts

Of these, two features are particularly relevant for our discussion of workforce preparation: supportive adults and engagement in learning.

Supportive Adults

Quality youth programs are characterized by positive adult-youth interaction (Eccles & Gootman, 2002; Grossman, Campbell, & Raley, 2007). Such relationships are critical in providing a safe and supportive environment in which youth can take on new challenges and develop their skills (Pearce & Larson, 2006; Rhodes, 2004). Adults often walk a fine line between too much and too little involvement (Larson, Hansen, & Walker, 2005). Though youth programs present opportunities for young people to interact with positive adult role models and to have meaningful responsibilities (Ferrari & Turner, 2006; Hansen et al., 2003), the potential exists for negative interactions between youth and adult leaders. Though such negative experiences can eventually lead to positive outcomes, in the meantime they can interfere with youth development goals, particularly if young people drop out of activities (Dworkin & Larson, 2007). Recognizing the centrality of adults' roles, youth programs often put considerable effort into training staff and volunteers.

Engagement in Learning

Quality youth programs emphasize learning that is fun (Hamilton et al., 2004). As young people learn new skills and gain recognition for their accomplishments, the emphasis is on mastery, not on being tested and graded. Program activities allow participants to exercise self-determination, learn how to make decisions, and work cooperatively with others. Activities that are engaging often do not have prescribed outcomes; they require the application of critical thinking and problem solving to achieve goals. Often, youth assume leadership positions and serve as role models for younger participants (Digby & Ferrari, 2007). Such learning experiences enhance identity development as adolescents test out new roles and relationships. The authentic learning experiences provided by youth programs can help reduce boundaries between formal and non-formal education (Partnership for 21st Century Skills, 2003), thereby connecting the various contexts of adolescent life. The outcomes of a positive youth development approach have been referred to as the six Cs: caring, connection, confidence, competence, character, and contribution (Lerner et al., 2005).

Youth programs that emphasize positive youth development already provide support and opportunities for youth as they transition through key phases of their life, including the school-to-work transition. Youth programs can build on this truth by combining a positive youth development philosophy with an intentional focus on workforce preparation, specifically through work-based learning.

Work-based Learning in Out-of-School Youth Programs

Although work-based learning comes in many forms, it can be defined simply as "learning activities that use the workplace as a site for learning" (Keating, 2006, p. 2). Work-based learning can encompass a wide variety of program models, all of which are "occurring intentionally in a location where the primary activity is producing goods or services" (Hamilton & Hamilton, 1997, p. 6) and therefore bring employers and youth into contact. In this model, young people are not just learning *about* work by *observing* it, but they are learning *in* and *through* work by *doing* it (Keating, 2006).

We focus below on three approaches to work-based learning:

- "Value added": enhancing an existing youth program with a work-based learning approach
- "Growing your own" (a term borrowed from Matloff-Nieves, 2007): instituting work-based learning by hiring program participants as staff
- Partnering with employers in the community to create worksite placements for program participants

These three approaches are not mutually exclusive, nor do they need to build one on another in a progression. A youth program could conceivably apply all three approaches. All three are built on the following principles of work-based learning.

Principles of Work-based Learning

We synthesized the following 10 principles of work-based learning from our own experience (Cochran, Arnett, & Ferrari, 2007; Ferrari, Arnett, & Cochran, 2008) and from other sources including community-based and school-based programs (Brown & Thakur, 2006; DeCoursey & Skyles, 2007; Hamilton & Hamilton, 1997; Hamilton et al., 2004; Keating, 2006; Massachusetts Department of Education, 2007; Matloff-Nieves, 2007; New Ways to Work, 2003). How the principles are put into practice will differ depending on community situations and organizational goals.

1. Ground work-based learning programs in a positive youth development philosophy. This recommendation should be self-evident, but we feel it cannot be overstated. The key features of positive youth development must provide the foundation for work-based learning programs in order to meet adolescents' needs in developmentally appropriate ways. When work-based learning programs are based on youth development principles, they are more likely to accomplish their objectives.

2. Establish partnerships for worksite placements. Employers play a key role, from outlining the skills needed to creating opportunities to learn those skills. One of the first steps in developing work-based learning programs is to recruit employers willing to use a developmental approach in working with youth. Youth development professionals can recruit employers by appealing to their mission, civic interest, and community commitment, since businesses with such concerns would likely be predisposed to working with youth to enhance their development (DeCoursey & Skyles, 2007; Whalen et al., 2003). Obviously the strength of employer partnerships affects program quality. Strong partnerships depend on building relationships and maintaining communication.

3. Make good matches between youth and employers. Youth programs must gather enough information to understand the worksites, the work environment, the

job duties, and the individuals involved. They need to ensure a balance between sufficient challenge and sufficient support, considering the type of support the young people need and how frequently they need it.

4. Provide opportunities for skill-building and career awareness. Since many of the skills needed for workforce success develop over time and must be learned through active participation, work-based learning programs are ideal places to teach those skills. Worksite placements will likely combine both general knowledge-economy skills and job-specific skills. These skills may be reinforced in specific skill-building sessions or may be embedded in the work experience, where, for instance, youth learn interpersonal skills, cooperation, and teamwork by actually working as part of a team.

5. Provide authentic experiences with high expectations. Work-based learning programs must provide real experience, not busywork. Also, simply doing the work is not enough. Employers and program staff should hold participants to high expectations and provide honest evaluations. If the goal is improvement, then mistakes are part of the process. Young people who face high expectations are more likely to be well prepared for work and life. The *learning* part of work-based learning comes when youth reflect on what they have learned at work. Whether the means include group discussions, journals, one-on-one meetings, or other strategies, opportunities for such reflection should not be left to chance.

6. Consider opportunities for increasing responsibility and reward. The practice of paying a salary or providing incentives can be an important part of an authentic experience. The financial rewards may motivate teens to stay connected at a time when many lose interest or drop out because outside work conflicts with their participation (Pittman et al., 2003). As skills are mastered, work experiences can become progressively more challenging and complex; the reward of increased responsibility becomes intrinsically motivating. Programs and employers should gradually build levels of responsibility through scaffolded leadership opportunities.

7. Provide orientation and training for adult staff and teens. Training and support for employers, who may not be well prepared for working with young people and the challenges of supporting their development, is vital, par-

ticularly because interactions in the job settings typically available to teens are not always supportive (Bryant et al., 2004). Orientation and training provides clear expectations and builds skills for both youth and adults.

8. Monitor and support participants and employers throughout the process. Teens may require support to be successful on the job, but many employers are not prepared to deal with issues teens bring to the workplace. Youth programs should create a plan for providing such support. Periodic site visits or phone calls can encourage communication between the program and worksites. Regular sessions with youth participants build reflection and problem solving into the work experience. Regular checkpoints allow for mid-course corrections rather than waiting until the program ends.

9. Understand legal issues and comply with state and federal laws. Work-based learning program staff need to be aware of child labor laws, distinctions between employee (paid) and non-employee (unpaid) status, requirements for work permits and insurance, and what minors can and cannot do in the workplace.

10. Evaluate and provide feedback. Evaluation and feedback make the work experience a continuous learning experience. Work-based learning programs should gather data from youth and adults to meet both formative and summative evaluation needs. This information will also help with accountability to funders and other stakeholders.

Value Added

Youth programs have many ways to involve teens in carrying out leadership roles and performing community service. As Hamilton and Hamilton (2004) note, community service shares many characteristics with work. Both, for example, provide opportunities for gaining technical, personal, and social competence. Service learning and volunteering, because they use the community as a context for helping youth develop and apply skills, lead to positive youth development outcomes (Scales, Blyth, Berkas, & Keilsmeier, 2000). Community service can therefore be part of a comprehensive approach to workforce preparation. Programs that already provide high-quality youth development can, by intentionally applying work-based learning principles, also provide high-quality workforce development.

One example of this "value-added" approach comes from the Friends Care Intergenerational Garden, where a 4-H educator added a work-based learning component. Located at a nursing home, Friends Care was designed as a community service project that would also teach gardening skills. Youth participants interacted with senior citizens and adult garden mentors to plant, grow, harvest, and package food to deliver to consumers. As described by Arnett, Lekies, and Bridgeman (2008), Friends Care became a work-based learning opportunity through an intentional focus on workforce preparation, including the addition of performance appraisals, self-assessment, and reflection. Youth kept track of their hours on time cards and received biweekly paychecks adding up to as much as $250 for the summer. These practices encouraged responsibility and made the experience more like a real job. Staff reported that the young people responded positively, taking their responsibilities more seriously and increasing their ownership of the program. Friends Care thus enhanced its youth development goals by adding work-based learning (Arnett et al., 2008).

In our own organization, Ohio State University Extension, we have targeted our 4-H camp counseling program for the value-added approach. Our past research shows that these camp counselors, who are volunteers rather than paid employees, develop valuable workplace skills (Digby & Ferrari, 2007; Ferrari & McNeely, 2007). The 4-H educators who run the camps already use applications and interviews to select counselors. Next year, we plan to start adding skill sessions, performance appraisals, and reflection activities. We want the camp counselors to know that the skills they are gaining will transfer to their future workplaces.

These examples show how organizations that already offer good teen programming can grow by adding work-based learning and can transform work into learning. In either case, the value-added approach allows youth programs both to promote youth development outcomes and to build skills for the 21st century workplace.

Growing Your Own

"Growing your own" describes a natural progression in a youth program from participant to teen leader to teen employee to adult staff member. Matloff-Nieves (2007) describes how older teens at the Queens Community House in New York have a chance to be hired as staff members to work with younger children. The jobs are structured like apprenticeships; younger staff are paired with more experienced staff members who help them develop skills. Youth employees learn through experience, observation, supervisor guidance, and a formal evaluation system that incorporates reflection and planning for growth. In order to maintain employment, youth employees must attend school. If their grades drop, their work schedules may be adjusted.

Growing your own makes sense from a youth development perspective: Youth program jobs offer increasingly challenging responsibilities in a way that facilitates development of workforce skills and dispositions. From a practical standpoint, growing your own addresses current staffing needs and develops future employees who are committed to the organization's mission (Matloff-Nieves, 2007). Of course, youth programs that employ teens should be intentional in implementing the principles of work-based learning to ensure that the work experiences they provide are positive ones.

Benefits of Work-based Learning

YOUTH

- **Learn social norms of the workplace**
- **Make connections between real work expectations and what they learn in school**
- **Pursue education with a greater sense of purpose**
- **Interact with positive adult role models**
- **Develop new skills**
- **Receive feedback on their skill development**
- **Experience enhanced self-concept and self-esteem**
- **Expand their horizons and awareness of future work options**

EMPLOYERS

- **Enhance skills of their employees—for example, learning to supervise others**
- **Realize contributions youth can make to the workplace**
- **Give back to the community**
- **Get a chance to have good teen employees**

YOUTH PROGRAMS

- **Accomplish their mission**
- **Meet youths' developmental needs**
- **Retain teens in their programs**
- **Add authenticity and relevance to the learning experiences they provide**

YOUTH PROGRAMS AS EMPLOYERS

All of the benefits above for employers and youth programs, plus:

- **Groom potential employees**

Sources: Bailey, Hughes, & Moore, 2004; Ferrari, Arnett, & Cochran, 2008; Halpern, 2006; Matloff-Nieves, 2007; New Ways to Work, 2003; Partee, 2003; Whalen, DeCoursey, & Skyles, 2003

Community Employers

When partnering with employers in the community to provide work experience for young people, it's up to the youth program to ensure that learning is not left to chance. An example of such a program is Job Experience and Training (JET), part of a comprehensive 4-H youth development program at Adventure Central in Dayton, Ohio (Cochran, Arnett, & Ferrari, 2007). JET is conducted over a period of six months, culminating in an eight-week summer work experience. After an open house that explains the program, teens participate in a session on application and interviewing skills before actually interviewing. They may be selected as *teen assistants,* volunteers who receive gift cards as incentives, or as *teen apprentices,* employees paid minimum wage.

The worksites are park facilities. Adults at each site agree to serve as supervisors. At the beginning of the summer, a one-day orientation for all teen and adult participants reviews youth-adult partnerships, experiential learning, work expectations, and the performance appraisal process. A series of training opportunities engages teens alone, supervisors alone, and teens and supervisors together in work-based learning. All JET participants complete self-directed learning journals and attend team meetings every two weeks. Adventure Central's focus on science and nature and the connection to the citywide park system expose youth to new career options. Our comparison of final performance appraisals with early assessments showed that the youth improved their workforce skills (Ferrari, Arnett, & Cochran, 2008).

Benefits and Challenges of Work-based Learning

Work-based learning can have a positive impact on the young participants, the businesses or organizations that employ them (DeCoursey & Skyles, 2007; Ferrari et al., 2008), and the youth programs. Halpern (2006) found that teen apprenticeships created a rich learning environment where participants developed skills in areas such as teamwork, professionalism, and communication. Employers are often pleasantly surprised with the contributions that youth make (Ferrari et al., 2008; Whalen et al., 2003). Other positive effects are summarized in the box "Benefits of Work-based Learning." Achieving these benefits is contingent on a positive youth development philosophy including strong adult supervision, mentoring, and skill development (Bryant et al., 2004; Ferrari et al., 2008).

Work-based learning requires commitment from participating youth, employers, and youth programs. The box "Challenges of Work-based Learning" outlines some of the difficulties these parties face. To overcome these challenges, youth development professionals can prepare teens with skill-building and work-readiness sessions. They can assist employers in understanding the needs of youth so that employers are ready when young people arrive on the job. Some employers are willing to hire teen employees if they can be assured that the youth program will provide adequate supervision (S. Matloff-Nieves, personal communication, December 19, 2007).

Challenges of Work-based Learning

YOUTH

- **May have trouble meeting program and workplace expectations for attendance, dress code, and appropriate language**
- **Have little or no prior experience in the work world**
- **Face logistical challenges such as transportation**

EMPLOYERS

- **Must be convinced they will gain from participation**
- **May be hesitant to hire youth, fearing they will not be ready for work**
- **Differ in their capacity to provide a work experience that is also a learning experience**
- **May lack experience in supporting the developmental needs of teens**
- **May have to change policies and practices to provide quality work experiences**

YOUTH PROGRAMS

- **May be hampered by short time frames for producing program results**
- **Face difficulties in investing the time needed to recruit employers, provide training and support, and monitor program implementation**
- **Have to complete considerable paperwork in order to provide financial incentives, which can be vital for the neediest youth**
- **May encounter policies that require paid staff to be 18 years of age**

YOUTH PROGRAMS AS EMPLOYERS

All of the challenges above for employers and youth programs, plus:

- **May encounter challenges from funders who are resistant to proposals that include paying teens**
- **Must screen teens who will be working directly with younger children in out-of-school-time programs**

Sources: Bailey, Hughes, & Moore, 2004; Cochran & Ferrari, 2008; DeCoursey & Skyles, 2007; S. Matloff-Nieves, personal communication, December 19, 2007; New York City Department of Youth and Community Development, 2006

An intentional approach can maximize factors that contribute to a positive work experience and minimize those that create negative conditions.

Roles for Youth Programs

Once convinced of the need for and the benefits of work-based learning, and armed with the principles of positive youth development, youth professionals can provide teens with work-learning experiences that will prepare them for work in the 21st century knowledge economy. DeCoursey and Skyles (2007) suggest that youth programs can both prepare youth with workplace readiness skills and collaborate with employers to ensure that young people's work experiences are successful. Because adolescent employment can have both positive and negative outcomes, youth programs should consider how to connect with employers to ensure quality work experiences. A supportive environment can help overcome potential negative outcomes of adolescent employment while preparing youth for the 21st century workplace.

The time is right for youth programs to consider a more intentional role in supporting adolescents' workforce preparation. Youth development and workforce preparation are really two sides of the same coin.

Youth programs are in an ideal position to bring together different sectors of the community to assist adolescents with successful transitions to the workforce. Youth development professionals can draw on their community connections to convene partners and bring together the right resources (DeCoursey & Skyles, 2007). They can also educate communities about the need for developmentally appropriate policies and promote workforce preparation programs as a funding priority.

Youth programs can also engage parents as part of the support system for young people in the school-to-work transition. Parents are primary figures in the lives of their children; ideally, they provide home environments conducive to learning goal-directed behaviors (Csikszentmihalyi, Rathnude, Whalen, & Wong 1997), communicate values about work (Levine & Hoffner, 2006), and play significant roles in decision making about their children's future. Several authors point to the critical role parents can play in supporting adolescents' workforce preparation (America's Promise, 2006; Casner-Lotto & Barrington, 2006). Although many parents are supportive, in one survey 40 percent of adolescents said they do not have parents who are involved in their education (America's Promise, 2006). While some young people say they lack family involvement during the career choice process (Ferry, 2006), parents express concern that they cannot provide appropriate guidance for their children without assistance (Reagor & Rehm, 1995). However, educational programs that specifically seek to engage parents and address their role in workforce preparation and career development are virtually nonexistent (Ferrari, 1992). Programs with a youth development approach can help fill that gap.

Most youth programs are designed to meet the needs of a local community. That is where the rest of the work remains in order to realize the full potential of workforce preparation programming. Whether transforming existing efforts, starting new work-based learning programs, growing their own, working with employers, or connecting with parents, the time is right for youth programs to consider a more intentional role in supporting adolescents' workforce preparation. Youth development and workforce preparation are really two sides of the same coin. Using a workforce preparation lens will improve both workforce preparation *and* youth development programs. Young people will be better prepared for work, and society will benefit. The importance of preparing youth for success in the knowledge economy of the 21st century must not be underestimated. The future depends on it.

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the girl game company

Engaging Latina Girls in Information Technology

by Jill Denner, Steve Bean, and Jacob Martinez

It is 3:00, and school has just ended at Clarence Middle School.[1] Teresa rushes into the computer lab with three friends, all dragging large backpacks and talking about their day. They each choose a computer and log in while talking to each other in Spanish and English, checking their cell phone messages, and placing their iPod earphones.

Once logged on, Teresa goes directly into Whyville, the online community where students earn virtual money, dress up an avatar, play games, post their own games, and chat with peers. Her friends check email accounts, import images and animations to decorate their online office pages, finish homework, and visit music websites.

After 15 minutes of free time, the teacher calls the group of 20 girls to attention. She has to remind them to turn to face her, turn off their computer monitors, and take out the earphones. The teacher projects the day's agenda onto a screen and does a brief skill instruction. Today she demonstrates how to write clear titles for the "rules" of their game so they can easily tell what each rule is supposed to do. Rules are simplified pieces of code that make characters act in particular ways, such as moving right or left or going through a door into the next level of play.

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After the brief instruction, each girl sits with her partner at a computer. They log in to their online office, where they store their game and game design notes. The class is building rules for an arcade-style game, in which players earn points each time their character shoots an object. Many of the girls have creatively turned what is usually a "shooting game" into something different. In the game Teresa and her partner designed, a farmer throws pitchforks at his animals and turns them into food. Another pair of girls have made a game where spaghetti is thrown at meatballs that fall from the sky; in another game, a ghost shoots pumpkins while the main character shoots the ghost with flowers.

The girls work on their game for an hour. In each pair, one girl controls the mouse and keyboard, while the other makes suggestions, guides her partner on creating rules, and solves problems using teacher-designed handouts in Spanish and English. More experienced pairs are sometimes interrupted by other girls asking for help. The teacher encourages this interaction, often directing students to their peers rather than answering their questions herself.

As the girls put away their project binders and prepare to leave, the teacher hands out flyers about the family event next week, featuring a speaker on online safety and a free dinner. The girls rush out of the room and down the hall, shouting goodbyes to one another.

New information technologies (ITs) are changing the way we and our children live and learn. In the last five years, people have increasingly moved from simply being users of IT to adapting the content and functions of technology, often in the context of interactive, virtual worlds and game-like environments (Lenhart, Madden, Macgill, & Smith, 2007). Fluency with IT is essential for students to achieve success in a digital age. Such fluency includes the ability to sift through information, to think critically about content, and to adapt old strategies to new situations (Garmire & Pearson, 2006; National Research Council, 1999). However, young Latinas in the U.S. have few opportunities to develop IT fluency in the classroom (Margolis, Estrella, Goode, Holme, & Nao, 2008). Afterschool programs are filling a gap in technology education, using innovative strategies to engage youth and to build their capacity to participate in and contribute to the digital age. The Girl Game Company, described above, is one such program. Its goal is to increase the participation of Latinas in the IT workforce of the future. The program not only teaches Latina girls to design and program computer games but also builds a network of support to help them pursue IT courses and careers.

Afterschool programs are filling a gap in technology education, using innovative strategies to engage youth and to build their capacity to participate in and contribute to the digital age.

Falling Short of Full Participation in IT

Despite the infusion of technology into our daily lives, females are still not full participants in the careers that are shaping the future of IT. In fact, the percentage of women in engineering, computer science, and related fields in the U.S. declined from 37 percent in 1985 to 22 percent in 2005 (National Science Foundation, 2007). As a result, women make up only 26 percent of workers in the areas of computer and mathematical operations (U.S. Department of Labor, 2007). While girls are active users of computers (Lenhart, Madden, & Hitlin, 2005), they are greatly underrepresented in computer science classes and in high-paying advanced technology careers. According to the College Board (2008), only 18 percent of students who took the lower-level Advanced Placement computer science test in 2008 were girls—the lowest percentage for any AP test. Latinas are even less well represented. In 2005, only 1.6 percent of all undergraduate computer science degrees were earned by Latinas (National Science Foundation, 2007). Meanwhile, computing occupations are projected to be the fastest growing in the decade 2006–2016 (U.S. Department of Labor, 2008).

Previous research has identified several factors that play a role in whether girls get and stay on paths to IT careers. Individual factors, including low confidence and negative attitudes toward technology and IT workers, limit girls' interest in computer courses and careers (Cooper & Weaver, 2003; Zarrett, Malanchuk, Davis-Kean, & Eccles, 2006). Girls who persist on this path must negotiate an identity that rejects negative stereotypes but maintains a sense of cultural identity (Bettie, 2003). Relational factors, such as gender role expectations held by family members, teachers, and peers, can support or undermine females' motivation to persist when faced with challenges (Margolis & Fisher, 2002; Meszaros, Lee & Laughlin, 2007). For example, some Latinas are motivated to succeed academically in order to define themselves in opposition to siblings (Bettie, 2003). Finally, institutional factors, such as limited access to computers among immigrant Latinos (Fairlie & London, 2006) and

ISTE National Educational Standards (NETS S)

1. **Creativity and innovation:** Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology.
2. **Communication and collaboration:** Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.
3. **Research and information fluency:** Students apply digital tools to gather, evaluate, and use information.
4. **Critical thinking, problem solving, and decision making:** Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.
5. **Digital citizenship:** Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.
6. **Technology operations and concepts:** Students demonstrate a sound understanding of technology concepts, systems, and operations.

Source: International Society for Technology in Education, 2007

to learning opportunities that go beyond typing skills, result in fewer urban African-American and Latino/a students being prepared to pursue computing careers (Margolis et al., 2008). These studies suggest that the middle school years are a key period in which intervention can influence students' critical choices regarding identity and perceived ability—choices that shape their educational and career paths (Brickhouse, Lowery, & Schultz, 2000; Tang & Cook, 2001).

Strategies to Help Latinas toward IT Careers

This article describes a program that aims to increase the number of Latina girls and women in computing fields. The Girl Game Company (GGC) is an afterschool and summer program for middle school girls who have grown up in the digital age but have had limited access to online technology. The goals of the program are to:

- Increase girls' IT fluency through a variety of computer-based activities
- Build peer, family, and other adult support to enhance girls' interest in and capacity to pursue and persist in computer courses and careers

GGC program strategies are based on the emerging truth that IT skills alone are not enough. For example, the Association for Computing Machinery K–12 Task Force (2003) states that students need to "be prepared to be knowledgeable users and critics of computers, as well as designers and builders of computing applications that will affect every aspect of life in the 21st century." (p. 7). GGC activities address the national educational standards (NETS S) that describe what students should know and be able to do with technology (International Society for Technology in Education, 2007). As shown in the box on this page, these standards emphasize the importance of creative thinking and innovation—using technology to learn rather than learning to use technology—as well as communication, critical thinking, and digital citizenship. GGC is playing a key role in developing this "IT fluency" by using innovative strategies to promote new ways of thinking and learning. GGC strategies are based on research in developmental psychology, education, and computer science. These strategies aim to overcome individual, relational, and institutional challenges to girls' participation in IT. This program was developed, implemented, studied, and refined over six years by a team of researchers, program developers, and educators.

The Girl Game Company is funded by the Innovative Technology Experiences for Students and Teachers (ITEST) program of the National Science Foundation. GGC serves girls from seven schools in a single district in a rural part of central California. Classes are offered on school grounds two days a week for one-and-a-half hours after school and during the summer five hours a day for two or three weeks. Students participate for up to 240 hours over one-and-a-half years. Strategies to recruit students into the program include peer invitations, pizza parties, teacher nominations, parent nights, and presentations at other student clubs in the schools. As of September 2008, 150 girls had participated in the program, and 32 had graduated. The graduates completed 60–250 hours in the program, averaging 192 hours over 14 months. The students, 11–13 years old, come from a range of socioeconomic situations. Eighty-four percent are Latina, mostly of Mexican descent; 24 percent are designated by their schools as English language learners.

GGC has a conscious approach to engaging Latina youth in IT activities in order to promote their interest and support them in pursuing higher education and possible careers in IT. Our approach has been guided by research on Latino culture and Latino youth identity, as

well as previous work on engaging and supporting girls and women in IT and on proven practices for engaging youth in informal learning environments—to which we add practices we are innovating. Our multifaceted approach includes three research-based strategies that have proven to engage participants and that appear to promote IT fluency:

- Building cultural connections
- Leveraging existing interests in IT
- Encouraging collaborative learning

Building Cultural Connections

The theory that immigrants students "bridge multiple worlds" (Cooper, Domínguez, & Rosas, 2005) guides our understanding of how Latinas build an IT-related identity on their path to college and career. Research suggests that, for Latinas, pursuit of higher education and careers in which women are underrepresented must not undermine their culture and ethnic identity (Ginorio & Huston, 2001). The Girl Game Company leverages cultural strengths and supports identity exploration by:

- Connecting girls with Latina women who work in IT
- Linking participants with culture brokers
- Supporting English language learners
- Involving families

The parents of most GGC participants work in service or agricultural fields. To connect participants with women who work in IT, the program offers such activities as field trips to technology companies, where participants learn about IT careers and meet role models. Participants also interact online with virtual mentors. These role models and mentors share stories of challenges and how they overcame them without sacrificing family connections, in keeping with the finding of Cooper, Domínguez, and Rosas (2005) that such challenges motivate some Latino/a students to succeed so they can give back to their family and community. One girl described her experience of visiting a tech company: "On the field trip I learned about the lives of some important people in Cisco. What they did to get to Cisco & what there [sic] problems were before they worked at Cisco. I told my family that I would like to work there and to get there I need to work hard." Pre-and post-participation surveys of 24 graduates showed significant increases in the beliefs that people who work with computers make really good money and that one has to work hard to get a computer job.

The social capital GGC creates helps girls to see themselves as the kind of people who can pursue high-tech careers.

Among isolated rural Latinos, a child's success often depends on what researchers have called the level of "social capital" that the family brings from its community and country of origin (Portes & Rumbaut, 2001). Youth programs that have successfully leveraged this capital share at least one common characteristic: adults who act as "culture brokers," affirming cultural traditions while linking students to resources for academic success (Cooper, Denner, & López, 1999). In the Girl Game Company, the culture brokers are teachers. As Rivera and Gallimore (2006) also found, these adults help girls develop an academic identity, challenging the low expectations they may encounter at school while helping them stay connected to their culture. The social capital GGC creates helps girls to see themselves as the kind of people who can pursue high-tech careers. An independent evaluation of the pre- and post-participation survey found statistically significant increases in graduates' intentions to use and learn about computers in school.

GGC also works hard to eliminate language barriers. GGC provides instructional support to help all students succeed, no matter their level of English language proficiency. Key strategies are aligned with the English language learner standards of the California Standards for the Teaching Professional (California Department of Education, 1999). For example, teachers use a variety of instructional approaches and resources to explain complex concepts, including graphics as well as handouts and overheads written in English and Spanish. The object-oriented programming software the girls use to build games includes images that visually describe key words and steps, so that students with a range of English proficiency levels can engage in problem solving. GGC nurtures self esteem and respects diversity by encouraging the girls to use both Spanish and English and by offering incentives for students who are more proficient in English to help their peers.

Preliminary data suggest these approaches have leveled the playing field for English language learners. Our survey of graduates found that language proficiency was not a factor in how students benefited from the program. All students demonstrated statistically significant increases in their perception of their computer skills,

such as how well they could copy and save a picture, create an avatar, or program a series of rules. The survey also showed a significant increase in graduates' confidence with computers, with higher agreement rates for such statements as, "I can make the computer do what I want it to," and "I could probably teach myself most of the things I need to know about computers."

The involvement of families is also critical for the success of Latino-focused programs (Ginorio, Fournier, & Frevert, 2003). GGC hosts monthly family dinner events, has regular phone contact with parents, gives take-home assignments that require parent input, and invites families to come on field trips. These activities help girls build bridges across sometimes divergent home and school cultures (Cooper et al., 1999) and may help families support their daughters in pursuing computing education and careers. There is some evidence to suggest these efforts are working in GGC. The pre- and post-participation survey of 24 graduates found statistically significant increases in the girls' belief that their parents wanted them to attend college and pursue science or IT careers.

Leveraging Existing Interests in IT

Girl Game Company strategies build on theories about how students enter and remain on career and educational paths. Research based in the expectancy-value model developed by Eccles-Parsons (1983) finds that girls are more likely to pursue non-traditional careers when they have high expectations for success and when they value and enjoy the subject (Goode, Estrella, & Margolis, 2006; Zarrett et al., 2006). Many young people enjoy and value digital games, seeing them as a "cool" way to be involved with computing. Thus, computer game design and programming have been used in several settings to engage students who would not otherwise be interested in IT-intensive programs (Denner, 2007; Kafai, 2006; Repenning & Ioannidou, 2008).

GGC uses game creation, in a way that offers much more than fun, to engage youth in IT. Programming a computer game helps students develop ways of thinking that position them to be competitive in an increasingly digital age (Hayes & Games, 2008). Creating games engages students in activities that map clearly onto the ISTE standards of creativity and innovation (see page 28) and promote critical thinking, problem solving, and decision making. In fact, "knowing how to put together a successful game involves system-based thinking, iterative critical problem solving, art and aesthetics, writing and storytelling, interactive design, game logic and rules, and programming skills" (Salen, 2007, p. 305).

Kid-friendly programming software provides early opportunities for success. *Creator* by Stagecast, Inc., is a visual programming language—that is, it uses picture-based rules, in this case in a movie metaphor. Students create and modify characters and then program them to move and interact in game genres as diverse as mazes, trivia games, and action games. Girls in GGC especially like to draw their own characters and to download backgrounds from the Internet. Because students are not required to learn complicated syntax, even those with limited computer experience can quickly learn the basics of making and personalizing games. However, this simple interface incorporates such key programming concepts as conditional execution, subroutines, iteration, and variables.

Denner and Campe (2008) suggest that game design allows students to create stories about issues that are important in their lives. GGC students have made games on a variety of relevant topics, some recognizably linked to their culture:

- In *Farm Craze* (see Figure 1), the game built by Teresa and her partner, the player is a farmer who throws pitchforks at animals. When the animals are hit, the player earns points and the animals change form: Cows turn into hamburgers and pigs into bacon.

Figure 1. The Farm Craze game, created by a Girl Game Company participant

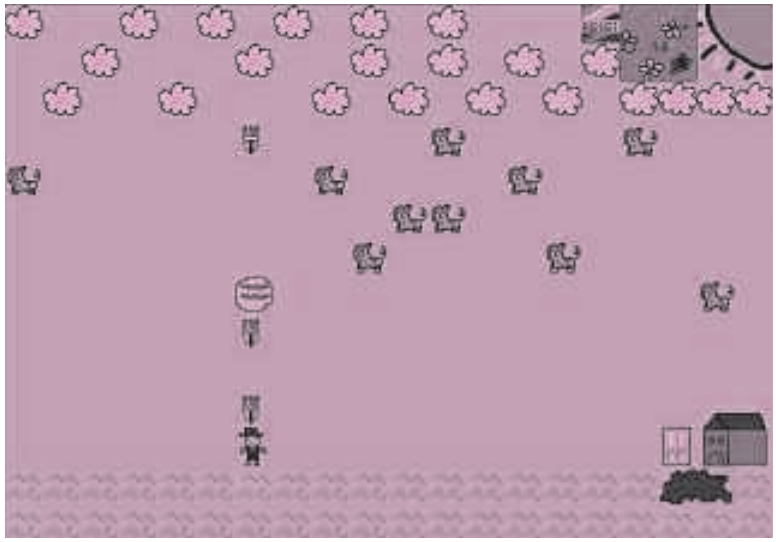

Table 1: NETS S Standards in Game Creation

Girl Game Company participants were asked what they liked most about making a game with Creator software. Their answers were coded to NETS S standards.

NETS S STANDARD	PERCENT OF ANSWERS
Creativity and innovation *e.g., creating characters*	34%
Communication and collaboration *e.g., working with a partner or friend*	12%
Technology operations and concepts *e.g., it was easy, playing games*	10%
Critical thinking, problem solving, and decision making *e.g., making characters move, making a timer*	10%
Research and information fluency *e.g., getting images or backgrounds from the Internet*	3%
Digital citizenship *e.g., making a game others can play, working with teachers*	2%
Don't know	13%
Other *e.g., likes everything*	15%

- In *Shincan*, the player is the grim reaper, who wants to take a girl to the prom. The player must dodge high school bullies to reach the goal.
- In *JNDC*, a doll called Miss Sunshine is searching for her lost dog. Ghosts and flowers shoot pumpkins at the doll to try and stop her.
- In *Flying Burritos*, the player is a girl who is eating burritos and trying to avoid being eaten by monsters.
- In the *Carnival* game, the player is a clown who throws pies. The goal is to hit all people and dogs before the pies run out.

Despite the prevalence of gaming among youth (Lenhart et al., 2008), few girls in GGC had regular access to games outside the program, and none had created a game before joining. Of 43 responses to a question about how they used computers outside the program, only 24 percent of participants said that they played games. Most of the 55 responses to the question, "What kinds of games are YOU hoping to make?" were general—for instance, "fun," "exciting," or "cool"—suggesting little prior knowledge of gaming culture. Respondents who were familiar with game genres expressed interest in making sports, racing, or adventure games.

To understand what students liked about making games, we asked them several times during the year to write responses to the questions, "What did you like about making a game using *Creator* software?" and "What was your favorite part about making a game in *Creator*?" We coded the responses using ISTE (2007) NETS S categories, as shown in Table 1. Of 162 responses, the most common were focused on creativity and innovation. For example, girls wrote, "that we got to design the game the way we wanted it," and "that I got to make my game really special with backgrounds and stuff." The game examples above show that participants' creativity took many forms.

However, making games was not the only reason girls joined GGC. As shown in Table 2, of 288 responses to the question, "What do you like (or like best) about Girl Game Company?" only 16 percent said that making a game was their favorite part. The most common response, "being with friends," is discussed later. Other responses reflect the opportunities GGC offered to explore aspects of IT that leveraged participants' interests in creativity and communication. For example, students used online offices that contained a calendar of events, a blog where they could exchange ideas, a forum for communicating with a virtual mentor, and a journal in which they planned game designs and responded to questions from adults and peers. Students enjoyed personalizing their offices by downloading images of themselves, friends, and famous people from the Internet. They also participated in an online virtual reality for pre-teens called Whyville, where they created avatars, chatted with other avatars, played games to earn virtual money, and taught peers about game design. The GGC clubhouse in Whyville served as a virtual meeting point for the girls. The more than four million members of Whyville could play the girls' games and give feedback.

Preliminary data from GGC are consistent with previous research (Barron, Martin, & Roberts, 2007) suggesting that offering a variety of fluency-building activities is essential to ensure the benefits of self-directed, socially networked learning (Lenhart et al., 2008; Ito et al., 2008). The independent evaluation of pre- and post-participation survey data from 24 GGC graduates found statistically significant increases in the frequency and range of what respondents used the computer for. The greatest increases were in journaling or blogging and in visiting online communities.

Encouraging Collaborative Learning

The ISTE educational technology standards include communication and collaboration using digital media—vital skills for the changing IT workforce. In Girl Game Com-

Table 2: Reasons for Persisting in Girl Game Company

Participants' answers to the question, "What do you like (or like best) about Girl Game Company?"

CATEGORY	PERCENT OF ANSWERS
Being with friends	20%
Making games	16%
Learning and working with computers	10%
Having fun	8%
Having free time on Whyville	6%
Field trips to IT companies and universities	5%
Experiences with teachers and mentors	5%
Everything	5%
Playing games	4%
GGC online office	3%
Free time	3%
Learning new things	2%

pany, students design, produce, and debug their games using pair programming (Williams, Kessler, Cunningham, & Jeffries, 2000). Two students share one computer according to clear roles: One is the driver, working the keyboard and mouse, while the other navigates. Pair programming is a particularly promising means to promote IT fluency because it encourages peer scaffolding, clear roles, and frequent feedback (Barker & Cohoon, 2008; McDowell, Werner, Bullock, & Fernald, 2003). It has been found to benefit the performance and persistence of university students in computer science courses (Werner, Hanks, & McDowell, 2005). Pair programming has also been used with middle school students in an afterschool program (Werner & Denner, in press). GGC activities are designed to help partners both support and challenge each other. Students are paired based on friendships and experience. Even in pairs with unequal experience, students benefit in ways that are similar to interactions off the computer: They describe their reasoning and ask thoughtful questions, identify and explain contrasting answers, and provide ongoing feedback and support (Rogoff, 1998; Schwartz & Bransford, 1998).

The opportunity to work with peers is one of the attractions of GGC. The single most popular response to the question "What do you like (or like best) about the Girl Game Company?" was some version of "being with friends" (see Table 2). One participant wrote, "I think it is very fun because I get to meet new people and talk to my friends! Also it's very interesting to learn about computers." Another wrote, "One thing I like about girl game is that we get to make more friends and it is fun making games." Of 66 students who answered a question about what it was like to work with a partner, 55 percent had positive responses, 21 percent were negative, and 24 percent were neutral. Students said they liked working with a partner because it gave them an opportunity to learn or work with a friend. Reasons they did not like working with a partner had to do with the other girl not sharing or cooperating.

Afterschool Helps Bridge IT Gaps

Recent reports show that girls are using computers in equal numbers to boys, but their representation in the computer science and computer engineering courses that prepare them for IT jobs has declined (Lenhart et al., 2005). School-based efforts to integrate technology into K–12 education have often focused on rote skills, such as typing, rather than on fluency (Goode et al., 2006). As a result, afterschool programs are filling a gap by engaging students who would not otherwise pursue IT-intensive classes, offering activities that combine hands-on, experiential learning with social interaction (Froschl, Sprung, Archer, & Fancsali, 2003). In particular, many afterschool programs aim to engage girls in IT in a way that prepares them to become *producers* rather than just *users* of technology. Programs that incorporate what is known about gender issues in youth development and afterschool programming have the most promise (Denner & Griffin, 2003).

> A focus on fluency, rather than mere computer literacy, is important because learning and working in any discipline now requires people to think critically and creatively with technology.

The research-based strategies the Girl Game Company employs to engage rural Latina girls in IT can support such girls on paths to computing education and careers. Several factors are needed to build an environment that will attract and teach Latina girls who have little prior computing experience. The most promising practices include building on cultural strengths, providing structure with creative freedom, and building a sense of community.

The first strategy involves building connections between program activities and cultural strengths.

Bilingual and bicultural materials and staff send the message that speaking Spanish is something to be proud of, rather than something to hide. GGC also builds on cultural strengths by giving most students their first opportunity to meet and interact with female and Latina IT professionals. From these women, participants learn that one can succeed in IT without leaving family behind. For example, as the keynote speaker at our program graduation, a Latina engineer from Google, addressed the girls and their families, her three-year-old son danced next to her onstage.

According to our surveys, the opportunity for creativity was an important factor in keeping participants engaged in GGC. While making a game was an attraction, it was not the primary reason that girls joined or stayed in the program. The most common responses to questions about what the girls liked best about the program focused on the opportunity to be creative in their games, avatars, and online offices. Since many of the students did not have computers at home and were rarely allowed to use the computers at school for anything other than schoolwork, GGC was, for many, their only opportunity to use a computer to work on their own creative projects.

Another important factor that engaged the girls was a sense of connection with other students. Although middle school students require a great deal of adult guidance to do pair programming effectively, working closely with a partner had direct benefits. Girls cited their friends as a reason for coming to the program. Working with a partner challenged girls to do things on the computer that they would not have tried alone. In addition, having free time to talk with students in the program and with peers in the virtual world of Whyville was a major attraction for many GGC participants. Kafai (2008) has recently identified the importance of the social interactions that occur simultaneously in physical space and in virtual spaces like Whyville.

Afterschool programs like the Girl Game Company can fill an important gap by providing opportunities for underserved youth to build IT fluency. A focus on fluency, rather than mere computer literacy, is important because learning and working in any discipline now requires people to think critically and creatively with technology. However, the skill-focused technology education prevalent in U.S. schools has not engaged students in a sustained way, as shown by declining interest in IT careers. The early findings from the Girl Game Company suggest that computer game design and programming, combined with activities to explore identities and build a network of support that affirms cultural identity while promoting high academic expectations, appears to hold promise for engaging an underserved group of Latina girls and setting some of them on paths to IT-intensive careers.

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Notes

[1] Names of schools and students have been changed.

it's all happening at the zoo

Children's Environmental Learning after School

by Jason A. Douglas and Cindi Katz

Talk of our vexed relationship with nature has become commonplace as the environmental crisis grows. Scholars from disciplines as varied as biology, geography, and psychology have insisted that we must better understand this relationship if we are to avoid further destruction of ecosystems that are vital to animals and humans (e.g., Bjerk, Odegardstuen, & Kaltenborn, 1998; Hart & Chawla, 1981; Shepard, 1998; Wilson, 1984). We hear increasingly of tropical forests and the wildlife they support being threatened by accelerating rates of forest conversion and degradation (Chapman & Lambert, 2000); the transformation of polar habitats is also daily in the news. Habitat destruction has countless implications for many animal species, including our own. However, throughout history humankind has depleted ecologies through such common and often necessary activities as agriculture, animal husbandry, hunting, urbanization, tourism, transportation development, resource extraction, logging, and war.

Sinha (2001), while pointing to the importance of education in influencing the public's view of wildlife, recognizes the difficulty of changing deeply held values, assumptions, and norms. Attitudes formed early in life tend to be persistent. Young people should thus have broad opportunities to engage

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with the environment and to develop their awareness of such tangible things as animals' needs and habits. Then they will be able to better understand their own role in sustaining these tangible needs—or not.

Pairing dynamic out-of-school-time (OST) programs with zoos can encourage young people's relationships with and sense of responsibility for animals and the environment. Our project, Animal Rescuers, gave us the opportunity to examine how such a pairing can work. OST programs enable learning in settings that are generally unavailable during school time (Honig & McDonald, 2005). They provide space for collaboration among students, teachers, and others such as program visitors or outside educators. Taking advantage of the flexibility, location, and educational playfulness of an OST setting, we worked intensively with a small number of 10–12-year-old children to discover how they thought and felt about animals and to develop creative ways for them to share their knowledge and experiences with others. The children participated in zoo visits, environmental education activities, and an online space for expressing their feelings and working through their emerging ideas.

Examining these activities and their effect on the children gives us a better understanding of the educational role of zoos and of the kinds of OST activities that can influence children's understanding of animals, extend their knowledge of conservation issues, and foster an ethic of care for the natural environment. While the primary focus of our project was to understand children's environmental learning through a series of OST activities, we also looked at how zoos encourage their visitors to understand and care for animals at all scales, from the individual through the global. Despite extensive research on human-wildlife interactions, there is very little work that explores the connection of these interactions with questions of environmental and animal justice—and even less concerning their role in children's development (see Hart & Chawla, 1981; Kellert, 2002; Watts, 2000; Wolch, 2002, for some notable exceptions). Our project addressed these questions with particular attention to the ways OST programs might foster children's engagement with and attention to the natural environment.

An Actively Produced Ecology

Our research combines the transactionalism (Dewey & Bently, 1949) of environmental psychology with an activity theory (Vygotsky, 1978) approach to developmental psychology to address children's environmental learning in context. The theoretical perspectives of transactionalism and activity theory dovetail in seeing the relationship between social actors and their environments—always imagined as physical and social—as an actively produced ecology that is constantly changing. People learn, and structure and consolidate their knowledge, by engaging with the environment. Social ecologies of learning and development both constitute and are constituted by broader social, cultural, political, and economic formations such as households, communities, school systems, and others.

Using these frameworks, we worked with children in a number of discrete but interconnected activities to discover and foster their knowledge of animal behavior, ecology, and vulnerability. We also worked toward an understanding of the complicated role of zoos in environmental protection. Our research was guided by the following questions:

- How do young people translate their experiences of animals and zoos into a broader understanding of nature, the human environment, and the relationship between society and nature?
- How can afterschool programs work with zoos and other institutions of environmental education to encourage critical engagement with environmental issues?
- How might information technologies provide means for young people to address issues of animals in captivity and in the wild and to develop a sense of stewardship and *biophilia*, that is, a deep connection with all living nature?

Methodology

We worked with 20 fifth and sixth grade students in an afterschool program in the Bronx. The program served lower-income African-American and Latino children living nearby. Before this group started its zoo visits, we administered a survey of attitudes toward wildlife to them and to 35 other children in the program. We conducted a follow-up survey with participants at the end of the research project to see how their attitudes toward wildlife and zoos changed after our environmental learning activities. Our survey was structured around a typology, developed by Kellert and Westervelt (1983) and by Kellert (1985, 1996), of nine different values toward nature. Table 1 lists these values and their definitions. The survey addressed such issues as hunting, environmental conservation, pets, and animals in captivity.

Other research methods included participant observation during group visits to the Bronx and Central Park

Table 1. Kellert's Typology of Attitudes toward Wildlife

ATTITUDE TYPE	DESCRIPTION
Aesthetic	Interest in the artistic and symbolic characteristics of animals
Dominionistic	Mastery and control of animals
Ecologistic	Concern for the environment as a system
Humanistic	Strong affection for individual animals
Moralistic	Concern for the right and wrong treatment of animals
Naturalistic	Affection for wildlife and the outdoors
Negativistic	Active avoidance of animals
Scientistic	Interest in the biological functioning of animals
Utilitarian	The practical use of animals and the environment

Zoos and during other activities such as a neighborhood walk. We also conducted a virtual focus group using an educational software suite known as the MOODLE (Modular Object Oriented Dynamic Learning Environment, www.moodle.com). This open-source software includes chat rooms, message forums, journals, and tools for building web pages. Finally, we conducted open-ended interviews with 16 participants at the end of the project. These interviews drew out participants' views of animals, zoos, animal protection, animal welfare, endangered ecosystems, and environmental stewardship. We triangulated these methods so we could compare the data and better understand the development of the children's relationship with animals and with nature.

The Animal Rescuers

Our OST program was designed to provide a stimulating and multifaceted environment in which children could both explore their interests in animals and reflect on the role of zoos in protecting animals and their environments. We initially called the program the "Zoo Club," but as the children became immersed in its activities, we invited them to rename it. Deciding that the program should be devoted not only to learning about animals but also to educating others, they chose the name "Animal Rescuers."

The program included both free walking visits and formal education programs in the Bronx and Central Park Zoos. These trips served as the main experiential learning environments in which the students were exposed to what Kellert (2002) refers to as "indirect experiences" of nature, that is, experiences of places that are rich in natural phenomena but extensively controlled by people. The group also took neighborhood walks to discuss the people, plants, animals, and environmental issues the students experienced close to home.

A central point of this project was the use of online technology to support our activities—a space for ongoing communication in and out of the afterschool environment. We referred to this space as a virtual focus group (VFG), which was administered through the open-source software MOODLE. The VFG provided an ideal online environment for critical discussion of the animals, places, and environmental issues encountered in program activities. The MOODLE also offered the tools the Animal Rescuers needed to complete a collective final project: a student-produced website.

The VFG was particularly productive because it enabled multilayered forms of communication for our discussions of ecological issues, while also helping participants to develop their computer skills. We used chat rooms for discussion and brainstorming sessions. This synchronous form of online communication acted like classroom discussion; participants offered their ideas in real time. Message forums engaged participants with specific questions about animals, zoos, and environmental problems. This asynchronous form of communication allowed the students to revisit the topics and continue discussions throughout the project, on their own time. The chat rooms and message forums were the primary spaces for critical engagement, where the group was challenged with questions on issues they learned about at the zoo. The MOODLE also offered a sort of survey process called "choice activities," which allowed participants to debate and select zoo trips and programs. In addition, the group used the MOODLE "wiki," a tool for editing websites, to collaborate on the final project: an informational (albeit elementary) website about four endangered species.

We describe four activities below to provide a picture of the interactions that took place in the program.

Activity 1: Getting to Know You

The first meeting of the afterschool group was a brief getting-to-know-you session in which one of us, Jason, discussed the scope of the project with the students, told them about his own interests and educational background in the science of animal behavior, and inquired about participants' interests. Jason conducted all of the

project's fieldwork and program activities. Under his leadership, the students had a fruitful discussion about what animals were interesting to them and why. The group also planned its first zoo activity: a free walking tour of the Bronx Zoo to seek out a few animals of particular interest, including lions, baboons, and lizards. This initial meeting laid the groundwork for the project by making clear that its dynamic was participatory. We hoped that creating a space for all group members to participate in an open process of program development would encourage the students to develop a sense of ownership of the project—and many did.

Activity 5: People Learning vs. Animal Wellbeing

In the message forum, we challenged the group to "unpack" their feelings about zoos. We asked, "Which of these things is most important in making you feel good or bad about going to the zoo: Humans learning about animals, or the wellbeing of animals?" While the participants seemed to have varying understandings of the question, they tended to lean toward the value of people learning about animals. Seven of the 10 participants who responded to this question felt that zoos are places for learning; the other three said that zoos are there to protect animals from harm and extinction. As Esteban put it, "I feel that the most important thing is to learn about animals. I think this is important because I will learn great new things about animals. Maybe even I could rescue endangered animals. Who knows I may even become a zoologist." We considered responses such as this to fall under Kellert's categories of scientistic and moralistic, because they expressed both desire to acquire knowledge and concern for the wellbeing of animals. But Esteban went beyond simply thinking about what zoos do to look at how they facilitate *his own* development in relation to nature, going so far as to imagine himself helping endangered species. Reflecting this perspective, another student, Janet, said, "I feel very good about the zoos because I know there is a place that animals could be safe instead of all the animals being endangered." Janet's response displays a more immediate concern for animals and a moralistic attitude, even though she doesn't cast herself as part of a solution.

The psychologist Peter Kahn (1999) cautions that learning doesn't necessarily involve replacing incorrect views with correct ones, nor does it involve stacking new knowledge "like building blocks" on prior knowledge. Rather, Kahn argues that knowledge is acquired through transformations. These transformations occur in the course of children's active and original thinking, which arises spontaneously from their dynamic engagement with the environment. In this instance, program participants not only learned more about the animals and places they were interested in, but also began to develop a moral sense of connection with nature by learning about animal needs and by communicating with peers.

Activity 13: Zoo Trip / Research

The Animal Rescuers took three zoo trips. The third, to the Bronx Zoo, was organized for a research activity in which the group collected data on the four animals its members had chosen to portray on the website they were constructing: gorillas, African wild dogs, elephants, and polar bears. The group had already collected data on polar bears during an earlier trip to the Central Park Zoo, and unfortunately participants never got a chance to see the elephants due to time constraints. However, the visit to the Congo Gorilla Forest exhibit at the Bronx Zoo was a special experience. The children toured a naturalistic forest habitat that better created the feel of a holistic ecosystem than did exhibits they had seen in prior zoo trips. Halfway through the journey, the group watched a movie about gorillas and the issues that are threatening their survival in the Congo. Several participants were moved by the movie and were eager to talk about it as soon as it finished. One boy said that he felt the movie was convincing because it showed how gorillas and other animals in the Congo are being "killed." Another student chimed in, saying that "it's not fair" that people are destroying the gorillas' homes. The group continued to move through the exhibit, taking in facts about primate communities in central Africa and getting a feel for the sights and sounds of the animals' habitat.

As we neared the end of the Congo exhibit, we overheard a visitor complaining to a security guard that the gorillas were not on display. The visitor expressed her disappointment that she had spent money to see gorillas, but never saw one. When Jason asked the group what they thought of the scenario, they responded passionately. Almost to a person, the students took a moralistic tone in their responses, saying that the gorillas should not have to be on display if they choose not to be. One girl said, "I think that it's selfish for people to make gorillas come out if they really don't want to.... Why do we come out on cold days? We didn't have to come to the Bronx Zoo. We come because we wanted to, but the gorillas, they don't have a choice." These young people expressed concern about the treatment of goril-

las, displaying sensitivity to the power dynamic between our species and the "rights" of animals to "make choices" about their own activities.

These zoo visits not only helped the children to develop their knowledge of animals, but also fostered a sense of affiliation with the animals they saw and learned about. As we learned on later walks through the neighborhood, this connection extended to animals the children encountered closer to home (cf., Kellert, 2002). In the course of our zoo visits and critical reflections afterward, group members developed ethical and moralistic opinions about animal rights and the treatment of animals in captivity. This process recalls Dewey and Bentley's (1949) theory of transactionalism: Understanding develops in the course of ongoing interaction between the knower and the environment, in which the knower (the children) and the known (the animals and environments we encountered) are linked through active engagement. These transactions took place during the group's explorations of zoos and local parks, which engaged the students' curiosity about nature and their place in it (Heerwaagen & Orians, 2002; Hart & Chawla, 1981).

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Activity 15: Digital Voice

The Animal Rescuers' research culminated in a collaborative, interactive web-based project. In the course of one month, the children produced a website about the four animals they had been studying in the zoo trips and about the environmental issues affecting those animals. The group formed four teams of five students each, and each team picked one of the four animals. The teams gathered information from their zoo notes, informational websites, books, and even peer-reviewed scientific journal articles Jason gave them. In addition to researching animals and writing text about them, the teams collected pictures of their animals from the Internet.

The whole group had to agree on some basic design parameters for the website. Jason worked with the students to sketch out the website design using the MOODLE's wiki feature. Once the teams agreed collectively to the design, they modified the template to fit their team goals and ideas. Together, they learned how to format a webpage, make links between webpages, reformat the colors and structure of webpages, and integrate images. Creating this website was a major accomplishment for the Animal Rescuers. Not only did they acquire real-world skills in website design and construction, but they also developed a sense of unity and pride in what they had accomplished. Once the website was complete, it was posted on a free hosting service. Although participants did not have a chance to assist in this final part of the process because the program had already concluded, they could share the posted site (www.geocities.com/animal_rescuers) with their friends and families.

These and other activities combined real-world experiences with a space for critical discussion and development of technical knowledge. Together they formed a dynamically negotiated system, a space of ongoing interaction and collaboration, in which the students worked together to learn about animals, zoos, and environmental issues. This kind of interaction and engagement can easily be transferred to other activities and areas of knowledge. The key is to be mindful of students' interests, to provide opportunities for them to learn about and experience these things first-hand, and to mediate spaces—online discussion forums and wikis or face-to-face debates—where they can engage in critical discussions about their newfound knowledge and the issues it raises.

Space, Place, and Morality

For the Animal Rescuers, one of these areas of new knowledge concerned the role of zoos in animal care and protection. Contemporary zoos, including the Bronx Zoo, carefully create exhibits to represent natural habitats where the animals have some space to roam, as opposed to old-style zoos where animals were kept in cages or given limited open space. This improvement notwithstanding, the Animal Rescuers saw that the zoo's naturalistic habitats could not replace the open space of the wild, where the animals could express their full behavioral repertoires. This feeling comes through in the following interview:

Jason: Try to imagine being a polar bear. If you were a polar bear living in a zoo, how would you feel?

Gabriel: Not the same. I'll feel lonely, uh, I'll feel weird.

Jason: How so?

Gabriel: [shouting] 'CAUSE IT'S NOT THE SAME! Seeing all those polar bears. Like the zoo, they got two or three in one thing. One place that it's not really the same experience.

Jason: Now try to imagine being this animal in the wild, how do you think this experience would differ?

Gabriel: 'Cause you get to do everything you can't do in the zoo. Like hunt, find, mate with other polar bears, different polar bears.

This interview reveals Gabriel's feelings about what environmental psychologists refer to as the "affordances" of the zoo versus wild environment. The theory of environmental affordances, associated with J. J. Gibson (1979), suggests that an environment contains a series of "action possibilities" that enable particular behaviors based on the actors' capabilities. The affordances of the natural environment are obviously much broader than those of a zoo, even one that provides a naturalistic habitat. The students raised this idea about the animals' environments and actions time and again. At the Central Park Zoo, the group saw a polar bear repetitively swimming in a circle. Our participants and other zoo visitors wondered why. Jason, knowing the zookeeper who worked with this animal, had some knowledge of the situation. He explained that the bear could not express its full behavioral repertory in this limited environment. Essentially, the animal was bored and did not know what to do other than to swim in circles. Gabriel took this information and made it a fundamental part of his critique of keeping animals in captivity. He recognized the importance of space with respect to the animals' behavior. The views he expressed in the interview are a result of the relationship between his out-of-school-time experiences, his newly acquired knowledge about animals in captivity, and his evolving attitudes toward wildlife. This sort of stretching of the children's knowledge was typical.

Several other participants also identified properties of the zoo environment that they recognized "afford" only a limited repertoire of behaviors. For example, the chil-

dren noted that most predators in captivity do not have the opportunity to hunt their prey. However, while the group did criticize zoos for their lack of affordances, most also indicated that zoos offered care and safety for the animals. Alia expressed this view of zoos as safe havens.

Jason: Try to imagine being a tiger. If you were that animal living in the zoo, how would you feel?
Alia: I'd be happy 'cause I would feel safe.
Jason: Yeah?
Alia: There's no one to kill me, people to take care of me when I'm sick. When I'm in the wild I can't do that.

As did the majority of participants, Alia developed an awareness of the environmental issues surrounding animals in the wild. She expressed a combination of humanistic and moralistic attitudes toward animals, expressed through such ideas as the relative safety of captivity compared to the wild.

The development of children's morality and sense of responsibility toward animals became a central theme in the group's zoological adventures. One way the program got at these ideas was to challenge participants to think about environmental issues and how zoos might be part of the equation. When Alia was discussing what she had learned at the zoo, this conversation on global warming followed:

Jason: Do you think global warming affects animals?
Alia: Yes.
Jason: How?
Alia: It's killing them little by little, each animal. It's flooding the earth and … each time one animal disappears, the food chain goes lower and animals getting extinct little by little.
Jason: What are some things people can do about this problem?
Alia: Stop polluting and take care of the earth.
Jason: Can zoos help this problem?
Alia: Yes, they could convince people not to hurt the earth

Alia's response poses a tall order for zoos, but her perspective was provoked at least in part by zoo educators doing precisely what she suggests. A similar view was expressed by several participants who said it was very important for zoos to communicate with visitors

and engage them in doing something about issues of global warming, deforestation, and other pervasive environmental problems affecting animals and the planet.

From Global to Local

The children's response to environmental issues did not stop with a generalized concern for the planet as a whole. One of the most exciting things to emerge from our project was that the group not only expressed concern for the places and animals they learned about at the zoo, but also extrapolated that knowledge onto the local environment. During a walk in a local park, for instance, participants pointed out several sources of pollution and talked about the adverse effects on wild animals and the urban environment. These conversations led to discussions about how the students felt about where they live. One participant suggested that the mayor and the governor did not care about their neighborhood and its people. After learning about global and local environmental issues and thinking critically together about these issues in the MOODLE, group members spontaneously expressed a desire to reclaim their local environment and make it safer for animals and people. Some group members even began to plan a way to get funding to clean the pond in nearby Crotona Park. Though this program extension would have allowed the students to take their action from the web to the ground, it never came to fruition for a variety of pragmatic and programmatic reasons.

This sort of integrated project is particularly well suited to OST programs, which excel at fostering diverse learning practices in active communities of knowledge.

But the desire to do more was certainly sparked in several of the Animal Rescuers. For instance, when asked in his closing interview if there was anything else he would have liked to learn about animals or the places they come from, Noah responded:

> Um yeah, I'd like to learn more about certain animals' habitats. See what I can do as a person, as a kid, see what I can do in certain spots is what I'd like to learn more about, where they live so I can do certain things. Like maybe I could start cleaning up around my neighborhood, like around the park where certain animals live.

Beyond the moralistic and ecologistic attitudes Noah expresses, he has extended what he has learned in a somewhat exotic setting about animals and environmental issues to consider his own urban environment as a system in which people and animals cohabit. He continued this stream of thought in another remark about pigeons and people living together. Noah's responses suggest that he sees the possibility for people and animals to live in harmony, understanding that respect for the environment is necessary to foster this symbiotic relationship and that he has a role to play in achieving this goal.

Social Ecology of Learning

The Animal Rescuers afterschool program fostered a learning environment that enabled and encouraged participants to shift their attitudes toward animals and nature. Participants interacted in the MOODLE to discuss issues concerning animals in captivity and in the wild. In the process they were part of and helped to shape a learning community focused on their environmental concerns, both local and global. The afterschool program, its neighborhood, and city zoos served as complementary spaces for the production of knowledge, the encouragement of biophilia, and a budding practice of stewardship. While all of the participants had visited a zoo before, this afterschool project fostered critical reflection on the experiences of animals in zoos and the wild. By learning about and then engaging one another on issues such as endangered species, environmental degradation, and the lives of animals in captivity, the group reached a level of awareness and thoughtfulness that would not likely be achieved in superficial zoo visits. This collaborative process highlights Lave and Wenger's (1991) notion of *situated learning*, in which knowledge gained through active thinking and participation is not isolated, but rather is situated in the social context of the learning environment, which includes both physical settings and a community of learners in which everyone is learning and sharing knowledge.

Our mutually constructed social ecology of learning developed a group of children who were informed about animal life and environmental issues and were determined to make positive change both locally and globally. Online and offline environments provided complementary spaces in which children could engage with real-world issues and document their engagement in the virtual focus groups and project website. The Animal Rescuers program thus enabled new paths and practices of learning through innovative forms of interwoven communication. This sort of integrated project is particularly well suited to OST programs, which excel at fostering diverse learning practices in active communities

of knowledge. One of the most encouraging outcomes of this project is that the parent afterschool program and a new charter school have plans incorporate its environmental learning program as a regular offering.

Activity to Efficacy

The project's participatory approach and pedagogical activities, paired with its web-based work, supported knowledge acquisition through a unique interplay of physical activity and more traditional forms of learning. Documenting information gathered from the Internet, journal articles, and zoo classes and walking tours in a collaborative learning environment gave the Animal Rescuers the opportunity to revisit what they had learned. The asynchronous communication of the message forum and wiki allowed group members to consider their thoughts and feelings carefully before engaging their peers. This form of engagement kept the issues open for sharing for the duration of the project, in a way that is often not possible during the regular school day. It also provided a space where the participants could let their ideas grow at their own pace. Revisiting important topics allowed participants to develop their ideas, engaging their peers to form a deeper understanding while maintaining a level of autonomy that allowed each participant to form his or her own perspective.

Particularly encouraging was the development of self-efficacy in group members. Environmental issues on the scale of global warming often cause people to feel divorced from the problems' causes and incapable of taking action (Devine-Wright, Devine-Wright, & Fleming, 2004; Katz, 2004). When environmental issues seem too enormous and all-encompassing to have workable solutions, young people—and others—can feel disempowered: further removed from nature and overwhelmed by the pressure to "save" it (King, 1995). The Animal Rescuers developed an understanding of some of the causes and effects of global warming in a more tangible way than is often the case. As they discussed ways they might mediate its effects, not coincidentally, they wanted to change their own behavior and discourage others from environmentally irresponsible practices.

Two factors in the development of self-efficacy were the collaborative nature of the project and its environmental affordances. The VFG served not only as a means for discussing environmental issues, but also as a space where group members developed technical skills, such as web-based research and webpage construction, to support their burgeoning environmental interests. The environmental issues considered in this program revolved around the group's experiences of animals that are affected by environmental degradation. Students understood broad environmental problems such as global climate change through the specifics they learned about "their" animals. In other words, they could discuss global warming easily by referring to what they had learned about polar bears. That learning in turn heightened their sense of urgency in dealing with the issues. Further, participants easily appropriated the web-building tools they learned in order to express their concern. The group demonstrated a sense of self-efficacy by alerting, teaching, and otherwise engaging a broad audience through the Internet.

While this project focused on animal wellbeing, its approach is amenable to a variety of concerns. For example, Yvonne Hung (2004) and Kimberly Libman (2007) looked at similar modes of engagement in gardening, nutrition, and urban agriculture. The Animal Rescuers' evolving responses evoke Wilson's (1984) concept of biophilia, which stresses the importance of building knowledge and understanding of immediate issues in order to act ethically and effectively. "When very little is known about an important subject, the questions people raise are almost invariably ethical. Then as knowledge grows, they become more concerned with information and amoral, in other words more narrowly intellectual. Finally, as understanding becomes sufficiently complete, the questions turn ethical again" (Wilson, 1984, p. 119).

Through an open, participatory process, the Animal Rescuers took a significant step toward such engagement. They went beyond the initial barrage of information and their gut feelings to transform their concerns into a quest for more knowledge, to develop a more holistic understanding, and to translate these newly formed understandings into ideas for further engagement. Working in a collaborative afterschool environment with the MOODLE to document their interactions, the Animal Rescuers consolidated and organized their knowledge into a working understanding not only of the issues, but also of ways to translate their sense of self-efficacy into action. Beside producing an informative website about large-scale environmental problems and their effects on selected animals, the students also discussed ways to clean up and care for their local neighborhood environment. This is the sort of lateral growth and branching engagements that OST activities are uniquely poised to encourage.

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putting our questions at the center

Afterschool Matters Practitioner Fellowships

by Sara L. Hill, Susan Matloff-Nieves, and Lena O. Townsend

"My experience in the Research Fellowship made me feel like a knowledge maker." **—RBF Fellow**

Once a motley mix of afterschool, before-school, summer, and weekend programs, the out-of-school-time (OST) field is fast consolidating. As in other emerging fields, efforts to professionalize are gaining momentum; the field now boasts several professional certificates as well as degree programs[1]. Strong emphasis has been placed on in-service professional development[2], and a wide range of models for both content and service delivery have emerged. Yet these models have not necessarily capitalized on the best of teacher inquiry methods, nor have they reaped the benefit of studies of teacher development and teacher education. In addition, OST staff, who come from a range of backgrounds and have varying expertise, are often viewed from a deficit perspective, being seen as unprofessional and unknowledgeable even when they have advanced degrees in their fields.

Particularly at this critical moment in its development, the OST field must be shaped by a range of actors—not only university researchers, government

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officials, policymakers, and funders, but also practitioners who work directly with children and youth. We should acknowledge the expertise of OST practitioners, recognizing that they are not merely passive receivers of research and policy but also actors who engage in making sense of their experiences. In order to advance in their field, professionals must assume the stance of knowledge *makers*, rather than just *consumers* of knowledge generated by others. Practitioner research or inquiry—an approach with a long history in in-school professional development that is less well known in the OST world—is one way to give the insiders who work in OST programs the opportunity to help shape and define their field. The Afterschool Matters Practitioner Fellowship encourages and supports such practitioner research. Born of a fellowship program based in New York City, the model now being expanded to a national presence has shown early promise in its effects on OST staff members and their programs.

In order to advance in their field, professionals must assume the stance of knowledge makers, rather than just consumers of knowledge generated by others.

Democratizing Research

The Afterschool Matters Practitioner Fellowship is modeled on a successful program developed by the Robert Bowne Foundation in New York City. The fellowship is part of the Afterschool Matters Initiative, a research and dissemination project that includes a national research grant as well as this publication, *Afterschool Matters*. The fellowship aims to democratize research and the research process and to contribute to the OST knowledge base in order to improve practice and inform policy.

The goals of the practitioner fellowship are to:

- **Support a community of practitioners** to study effective practices and to investigate the structures in which effective practice happens—at the level of the program, the activity, the curriculum, and the individual. The end result is the creation of sustainable networks, such as ongoing groups of practitioner-researchers.
- **Disseminate and share** program improvement strategies through such products as briefing papers, events, curricula, and articles for professional journals. Venues for dissemination may include presentations for parents, presentations at professional meetings (including electronic conferences), or articles in newsletters and newspapers.
- **Create opportunities for in-service training and project development** that can then be brought back to OST programs.

The Robert Bowne Foundation's practitioner fellowship program became the Afterschool Matters Practitioner Fellowship under the aegis of the National Institute on Out-of-School Time (NIOST) at Wellesley College. Working in partnership with the National Writing Project (NWP), NIOST has expanded the fellowship to Berkeley, California, and Philadelphia, Pennsylvania, with plans to expand annually to two additional cities in which NWP has a presence.

The fact that NIOST and NWP share the same philosophy about long-term practitioner inquiry was a critical element in matching the two organizations. Both also have long histories of working in professional development, with schoolteachers in the case of NWP and with OST practitioners in the case of NIOST. Both organizations understand the importance of sustaining connections between research and practice. These common elements provide a basis for success for the practitioner fellowship.

Program Context

Because the National Writing Project is locally based at universities—in this case the Bay Area Writing Project (BAWP) and the Philadelphia Writing Project (PhilWP)—it can provide space as well as personnel and other resources. Locating the Afterschool Matters Practitioner Fellowship at universities provides an additional benefit: the option of providing course credit or integrating with a professional certificate program.

Another piece of the overall strategy is to fit the fellowship into existing networks of youth-serving programs and intermediary organizations that provide resources and professional development to the OST field. These organizations serve the critical purpose of recruiting potential fellows, as well as providing venues for fellowship events. For example, in Philadelphia, PhilWP is working with the Out-of-School Time Resource Center, which is helping to create an evaluation of the fellowship as well as providing critical information regarding the state of OST in Philadelphia.

Program Design

The fellowship, a year-long project, works with 10–15 OST practitioners selected through an application process. These fellows come from a variety of nonprofit organizations, including community-based and school-based agencies and weekend, afterschool, and summer programs. The programs provide a range of OST services to children and youth, including community and civic involvement, arts and media, casework and social work, academic support, and sports and recreation.

Participants in the fellowship come from a variety of backgrounds: community organizing, the arts, literacy, social work, and recreation, to name a few. Once they submit an application, potential fellows are interviewed over the telephone by the national fellowship coordinator. This interview provides an opportunity to clarify the major commitment involved in the fellowship and to verify that fellows will be able to fit the work into their busy schedules. Once selected, the fellows meet twice a month, usually in the morning. They receive a small stipend for their attendance.

During the fellowship sessions, participants discuss assigned readings: professional articles and chapters from books on practitioner inquiry. A strong experiential emphasis means that fellows practice inquiry methods, such as observation and interviewing techniques, at their own programs. They generate questions based on their practice, design a research project, and begin to gather data at their programs. Throughout the fellowship year, participants write reflective essays as well as more formal research pieces. During the summer, fellows attend a writing retreat. The culminating event is a research roundtable at which fellows present their work to an audience of youth agency staff, funders, and researchers.

Fellows have initiated a wide range of research projects that were intimately connected to their own practice, addressing the essential and troubling questions that arise in any OST program. Some of these studies and their findings are also applicable to in-school programs. Research topics have included:

- The challenges and benefits of hiring youth as staff at OST programs
- Children's need for play during out-of-school time *versus* an academic agenda
- How the arts can support youth development as well as school achievement and literacy
- Gender-based OST programming

Facilitators

National Writing Project facilitators are highly experienced in creating inquiry opportunities for in-school teachers and in promoting sustainable impact in the quality of teaching and learning. However, in the Afterschool Matters Practitioner Fellowship, they have had a fairly steep learning curve to understand the somewhat different reality of OST practitioners. One approach to mitigate this gap has been to tap the experience of previous Robert Bowne Foundation (RBF) fellows who had fortuitously relocated to the expansion cities. In the Bay Area, a past RBF fellow was hired as a co-facilitator. In PhilWP, an RBF fellow met with PhilWP facilitators to help inform the planning process. This practice of using past fellows fits the NWP model, in which outstanding participants from previous NWP teacher inquiry institutes serve as co-facilitators. Recruiting practitioner fellows from the first cohort in the expansion cities as co-facilitators is thus likely to be a natural part of the hiring practice for future rounds of the fellowship.

Fully 97 percent of past fellows attributed positive change in their professional lives to their participation in the fellowship.

Making a Difference for OST Staff and Programs

The National Institute on Out-of-School Time and the National Writing Project are collaborating to expand the Afterschool Matters Practitioner Fellowship because its approach has proven to make a difference in the practice of participating OST staff. Participants in the New York City fellowship have identified significant areas of growth, and one OST program studied the benefits of having several staff members participate in the fellowship.

Staff Impact

A formative assessment of the New York City fellowship on which the national program is modeled studied the effect of the fellowship on participants' attitudes and practice. Structured telephone interviews with 31 fellows from three cohort-years asked for their views on their professional advancement and career change, any change in their view of themselves as researchers, and their understanding of the role of research in their own practice. Fellows were also asked whether their participation in the fellowship had changed their own practice and whether the fellowship had an effect on their organizations.

Professional advancement. Fully 97 percent of past fellows attributed positive change in their professional lives to their participation in the fellowship. Some

had been accepted into doctoral programs or had an article published in a professional journal; others had gotten a new job or been promoted.

Program improvement. Over half of the fellows indicated that, as a result of their participation, they were able to improve the design of their OST programs. One-third said they were able to change or improve staff development.

Transformation. Over half of the fellows stated that their participation in the fellowship led them to think of themselves as researchers. Others said that they deepened their understanding of research and became more critical consumers of research.

Social networking. The majority of the fellows found that the face-to-face monthly meetings broke down their professional isolation, enabling them to become a network of support for one another. They also said that the group meetings introduced them to new materials and new ideas.

Writing improvement. The writing retreat held at the end of the fellowship year was overwhelmingly viewed as a critical experience, with 71 percent of respondents ranking it as "extremely important." The retreat affirmed that what they were doing was "valued" and "taken seriously." Several fellows said that the retreat helped them overcome challenges they had previously experienced with writing.

Program Impact

One New York City OST program studied the effect of having sent four staff members, including the assistant executive director of its Youth Services department, to the practitioner fellowship that was the precursor to the national program. The Queens Community House (QCH, formerly Forest Hills Community Center) is a multi-service organization serving Queens, New York. Founded in the tradition of settlement houses, the organization works to strengthen local communities as well as to provide services to individuals and families. QCH has a strong youth development approach and a commitment to developing staff, many of whom are neighborhood residents.

Susan Matloff-Nieves, the assistant executive director who participated in the first year of the fellowship, conducted interviews and staff observations to assess the outcomes of staff participation in the fellowship.

Staff transformation. Staff who participated in the fellowship came to see themselves as researchers. The fellowship's emphasis on writing helped them hone their skills. Staff members said that they became more comfortable as consumers of research and more critical of research when they read it; they felt they were better able to evaluate the quality of studies and were more critical of how data is reported and interpreted.

The staff now regularly gather data. Their understanding of what constitutes data has been broadened and refined. They also engage youth in gathering and analyzing data.

Staff advancement. The fellowship affected participating staff members both as professionals and as people. One of the fellows went on to finish her long-incomplete master's thesis. Another enrolled in and completed a second master's program and then won an award to further her research. Two staff members had papers accepted for publication in peer-reviewed professional journals.

Job satisfaction. The fact that QCH encouraged staff to apply for the fellowship made the staff members feel valued. They felt nurtured by the opportunity even though the week-to-week experience was often stressful and demanding. They also enjoyed the opportunity to connect with other OST professionals and well-known national researchers in the research roundtable.

The research also revealed outcomes for the Youth Services department as a whole. The staff now regularly gather data. Their understanding of what constitutes data has been broadened and refined. They also engage youth in gathering and analyzing data. In another example of increased staff capacity, a fellow designed a survey to measure the quality of her program and analyzes the data for use in continuous program improvement. At least one staff member has used the data collection methods learned in the fellowship to strengthen testimony to city officials, confidently using multiple sources of data, both quantitative and qualitative. Another staff member who prepares reports for a federal demonstration project quickly assembles and analyzes multiple sources of data to create comprehensive and informative reports.

Another influence of the fellowship is on staff development. The fellowship's seminar format has served as a model for small-group staff development sessions. As in the fellowship, Youth Services staff now read professional articles as launching points for discussions on key issues in the field.

Taking the Next Step

Expanding the practitioner fellowship into a national program—sponsored by two seasoned professional development organizations, the National Institute on Out-of-School Time at Wellesley College and the National Writing Project—will strengthen the OST field and support individuals who carry out the complex work of youth development. The predecessor fellowship has had a positive impact on the majority of participants, helping them advance both professionally and academically.

The Afterschool Matters Practitioner Fellowship is particularly advantageous to mid-career professionals with a lot of training who need to advance to the next level by becoming practitioner-researchers who write about and disseminate their work. The fellowship incorporates the elements needed to enable seasoned practitioners to grow and move into new roles:

- A trusted network of like-minded professionals
- Intensive, long-term professional development
- A focus on the necessary concrete skills of writing and data collection
- The challenge of adding the role of researcher to practitioners' identities

For more information about the Afterschool Matters Practitioner Fellowship, contact Sara Hill, sara@sarahill.net.

Notes

[1] See, for example, the work of the City University of New York Youth Studies Certificate program (currently the Department of Youth and Community Development [DYCD] Scholars), Center for Afterschool Excellence, the National Institute on Out-of-School Time at Wellesley College, and the Center for Summer Learning at Johns Hopkins University.

[2] See, for example, the large in-service offerings of The After School Corporation (TASC) in New York City.

Afterschool Matters

Call for Papers

Spring 2010 Issue

Afterschool Matters, a national, peer-reviewed journal dedicated to promoting professionalism, scholarship, and consciousness in the field of afterschool education, is seeking material for the Spring 2010 issue. Published by the National Institute on Out-of-School Time with support from the Robert Bowne Foundation, the journal serves those involved in developing and running programs for youth during the out-of-school time hours, in addition to those engaged in research and in shaping youth development policy.

Afterschool Matters seeks scholarly work, from a variety of disciplines, which can be applied to or is based on the afterschool arena. The journal also welcomes submissions that explore practical ideas for working with young people during the out-of-school hours. Articles should connect to current theory and practice in the field by relating to previously published research; a range of academic perspectives will be considered. We also welcome personal or inspirational narratives and essays, review essays, artwork, and photographs.

Any topic related to the theory and practice of out-of-school-time programming will be considered for the Spring 2010 issue. We invite you to discuss possible topics in advance with us. Suggested topics include:

- Descriptions and analyses of community-based youth organizations as institutions that support youth development through civic engagement, social and emotional development, arts development, academic achievement, or other means.
- Descriptions and analyses of programs that collaborate with a range of community institutions, such as faith-based organizations or businesses.
- Exploration of employment-related topics, including, for example, youth organizations as spaces for training and employment, youth as workers, community economic development, and youth programs.

Submission Guidelines

- Deadline is July 17, 2009, for the Spring 2010 issue of *Afterschool Matters*.
- Submissions should be double-spaced in 12-point font, including quotations and references, and submitted electronically or on a disk in Microsoft Word or Rich Text format.
- Submissions should not exceed 5,000 words.
- Include a cover sheet with the manuscript title, authors' names, addresses, phone numbers, and e-mail addresses.
- The names of the authors should not appear on the text, as submissions are reviewed anonymously by peers.
- Follow the Publication Manual of the American Psychological Association, 5th Edition, for reference style guidelines. Present important information in the text and do not use extensive footnotes.

Inquiries about possible articles or topics are welcome. To inquire or to submit articles, contact:

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