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The Educational Community and the Economy: How 4-H Contributes to Youth Transitions into the Global Workforce

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In describing the outlook for youth making the transition into the world of work, we choose to paraphrase Charles Dickens: It is the best of
times, it is the worst of times.

California offers examples, on a daily basis—in almost any newspaper or sound bite—how the lack of marketable skills can lead to unemployment with little hope of re-employment. Ironically, being a worker with in-demand skills and an entrepreneurial bent can lead to supposedly untold riches. Robert Reich, former Secretary of Labor in the first Clinton administration, attributes the widening "wage gap" between workers with good jobs and those with poor ones on two great changes that started in the late 1970's: the emergence of new technologies like computers and the knitting together of all the world's economies (Reich, 1997). California students are not scoring well in The dual goals of having today's American youth enter the workforce as better trained areas related to science and technology, ranking 36th of the 40 states tested. These trends have been boons to well-educated professionals whose problem-solving abilities are sought, but these trends have created disastrous situations for poorly-educated factory workers, who can now easily be replaced. Over the past twenty-five years, futurists, academics, and social scientists have projected many of the changes in the workplace. Most elements of these changes can be found in the works of Reich (1983, 1991, 1997) and Toffler (1971, 1981, 1990). Essential features related to the workforce presented in these writings include predictions that in most fields there will be more rapid changes, more competition, and more opportunities than ever before...but that the new opportunities will be different from those found in the field today.

workers, while concurrently strengthening their educational achievement, is common

ground among our nation's policy makers. How to achieve these goals, is not (Halperin, 1997). Neither the traditional college preparatory track nor the traditional vocational education track provides sufficient preparation for the kind of economy we are evolving into (Stern, 1997).

As a result, the number of research and policy centers related to workforce preparedness continues to grow, beyond the U.S. Department of Labor in Washington, DC. Two of the most substantial centers studying workforce preparedness are the Institute on Education and the Economy at Columbia University, and the National Center for Research in Vocational Education at the University of California, Berkeley. In addition, the National 4-H Program has weighed in on the issue with a national initiative focusing on workforce preparedness. The California 4-H Center for Youth Development is also well underway in mobilizing California 4-H resources to address the issue, so closely tied to our children's vision and hope for the future. How can we, as an educational community, best prepare today's youth for the "good" jobs in the 21st Century, when many of those jobs don't exist yet?

Three Elements of a Solution

Stern, Rahn, and Chung (1994) have delimited and proposed three key elements for effective transitions into the world of work. These elements can be integrated into the educational programs offered by school-based and community-based organizations. A feature that makes these solutions particularly viable is their integration of achievement and accomplishment.

1. *Integration of school-based, community-based, and work-based learning*

Apprenticeships are the essence of this solution. However, formal apprenticeships in the United States generally take people in their 20's and 30's, not high school students. The closest school-based model is cooperative education, available through Regional Occupational Centers and Programs. Community-based programs offer a variety of possibilities for both formal and informal apprenticeships. Within the 4-H Youth Development Program is a well-articulated program for the development of leadership and organizational skills. By working with younger youth, high school teens learn to work together in cooperative teams, to develop and deliver educational experiences in a cross-age manner. The results of their work are readily available to them for feedback. Since teens work under the supervision of adult volunteers, they are provided with thoughtful and outcome-based mentoring. In 4-H animal science projects, guide dog projects for people who are visually impaired, and community service projects, the outcomes of applied learning are authentic and based in the real world.

2. *Combining academic and vocational curriculum experiences*

Whether to integrate or separate high school academic and vocational courses has been hotly disputed during most of this century (Lazerson & Grubb, 1974). Schools have approached the issue of making academic coursework more relevant to the world of work in many ways. However, not much evaluation has yet been done (Stasz, Kaganoff, & Eden, 1993). University-sponsored, community-based programs offer a variety of possibilities for both formal and informal apprenticeships ranging from the plethora of teen-leadership programs available through 4-H, to internships for assisting field-based academics with their

in-the-field research through Cooperative Extension.

3. *Linking secondary and post secondary education*

Perhaps one of the strongest of the traditional pathways to a good job and career has been attendance at a four year college. The number of high school graduating seniors interested in attending a four year college is currently at an all time high (Stern, Rahn, & Chung, 1994). The additional earnings anticipated from a bachelor's degree are much greater than those from a two-year associate degree. An innovative approach to community-based programs targeted to improving academic achievement is the University of California's MESA (Mathematics Engineering Science Achievement) program. MESA is a model for how work-based professionals can effectively coach and tutor college and high school students in science, mathematics, and engineering. The program has proven successful in raising academic achievement by students typically underrepresented in mathematics and the sciences (Somerton, Smith, Finnell, & Fuller, 1994).

The School-Based Learning Environment

Stronger linkages between learning and service, and dissatisfaction with traditional education practices have contributed to the current wave of reform in classroom instruction. These shifts have fostered new interest in "constructivist" approaches to teaching _ learning, cooperative (collaborative) learning, and an interest in authentic tasks and authentic assessment. However, major research efforts involving schools and schooling practices document the inability of traditional school structures to provide students with even minimal opportunities for learning from hands-on, community-based experiences (Goodlad, 1984, 1997a). In part, this lack of opportunities for experiential learning is based on the way schools are organized and the forms of student learning that are assessed. There is widespread speculation that we know how children learn. The body of how we—children especially—learn is vast and seemingly definitive, but there is a lack of connection between educational research and practice (Berliner, 1997; Goodlad, 1997b). Lagemann (1989), speaking of educational research traditions, claims that "one cannot understand the history of education in the United States during the twentieth century unless one realizes that Edward L. Thorndike won, and John Dewey lost." Finding the money, time, or space in the regular school curriculum for increasing instruction, apprenticeships, or experiences related to workforce preparedness and/or careers is, in general, to be found in only a few model programs.

Structuring school-based, school-to-work programs

In pursuit of academic relevance to the world of work, three general permutations of school-to-work organizational models have evolved. In California, a statewide school-to-work framework for K-12 public schools is being designed, as this article goes to press, and is scheduled to be released in the Fall of 1998. Model programs that exist currently can generally be divided into three groups: academies, magnet schools, and career clusters or majors (Posnick-Goodwin, 1997).

Academies: Sometimes known as a school-within-a-school, this model has a core group of teachers who work with a cohort of students during a two to four year portion of the high school experience, with the program emphasizing the connection

between the academic subjects and a career. In a health academy, for example, students might do statistical analysis of data for disease control in their math class, and study systems of the human body in their science class.

This type of program may simulate a "work group" that may take place in the working world for a specific project or task. However, in most instances, there is no instruction on how to work together—it is just supposed to occur. This approach does not connect closely enough with vocational preparation where a project-oriented team identifies a "problem" for which customized products might be applicable (Reich, 1991).

Magnet Schools: In magnet schools, an entire school adopts a single theme. Entire high schools are devoted to such fields as performing arts, science, agricultural science, and other academic foci. This approach more closely ties curriculum to vocational possibilities. In addition, magnet schools also provide a bridge from secondary education to post secondary education via the focused curriculum. However, one of the drawbacks is the narrow focus, which may prove limiting in preparing flexible and needed skills for the future.

Career Clusters or Majors: In these schools, core subjects such as math or English might be under the purview of regular departments, with students taking electives in career subjects. This model includes a variety of features such as giving school credit for after-school jobs or internships/mentorships. This approach comes closer to meeting the solutions proposed by Stern et al. (1994) by linking curriculum with vocational opportunities. Yet, these types of programs are currently limited in availability and widely variable in their implementation.

The Community-Based Learning Environment

The institutional responses to applying school-to-work programs cited above are beginning steps in the right direction. However, they are slow to respond to changing educational needs, are labor intensive, frequently impractical for the specific school site, and often are reliant on an inadequately trained teacher. Institutional approaches are simply interventions aimed at addressing a problem once it has been recognized, which is already too late. Instead, a community-based approach is preventative by providing opportunities for quick, "real life" experiences which are easily applicable to the world of work.

Recent research findings by Howard Gardner (1983, 1991), Siegel and Shaughnessy (1994), and others speak to the issue of students' lack of understanding—their inability to take knowledge, skills, and other apparent academic attainments and apply them successfully in new situations. The literature on multiple intelligences suggests multiple paths toward a goal, including involvement in projects—either projects assigned to them or

projects they have helped design—and multiple outcomes as expressions of student understanding, including the use of student portfolios. An educational mosaic metaphor suggests we invent a design for education that takes a look at all the educational resources available—within and beyond the classroom walls—that provide a better conduit to work preparation. In the remainder of this piece, we will examine the contributions of community-based education programs to the educational mosaic by providing relevant, applicable, experiences in preparing today's youth for developing effective problem-solving, higher order thinking skills, and leadership.

Robert Reich (1983, 1991, 1997a) argues that America is no longer dominated by a production-line economy but is rapidly moving toward a dynamic, entrepreneurial, global economy, and that our schools should provide experiences for learners that are dynamic and entrepreneurial by design. This suggests that schooling should include more activities that allow students to work cooperatively on the heuristics of problem finding, problem framing, and problem solving.

Additional impetus for entrepreneurial applications of learning to real-world problem solving can be found in the rekindled interest in service learning, which is defined as the blending of both service and learning in such a way that each is enriched by the other. The support of the federal government for this trend toward the blending of learning and service can be seen in the Congressional reauthorization of the National and Community Service Trust Act of 1993, designed to place up to twenty-five thousand participants in national service assignments that include service learning components. Hoping to produce better-trained workers while strengthening academics, Congress is once again mulling a bill to reauthorize the Carl D. Perkins Vocational-Technical Education Act. However, it is unclear whether or not reauthorization will elude lawmakers for the second year in a row (Sack, 1997).

Community-based programs have advantages in serving as a bridge between the academic and the practical. Overseeing the quality of the academic content of the 4-H Youth Development Program is the responsibility of the land grant university in each state, while the actual activities and projects offered youth through 4-H are conducted in local communities. With a firm academic foundation and a local community-based context, 4-H is positioned to connect achievement and accomplishment. 4-H has, by its very nature, more flexibility and fewer constraints (i.e. graduation requirements) than most school-to-work programs. However, community-based programs also have some problems that are frequently inherent in loosely organized systems.

Instructional flexibility: Community-based programs provide a way of engaging in literacy development in a broader context than those available in traditional schooling, by bridging the gap between school and popular culture. Community-based education programs, by necessity, have some things in common: they are fun, they have to be interesting, and they are usually easily accessible and cheap. Perhaps, the most powerful aspect of most community-based education programs is their flexibility.

Flexible time: Although most programs are offered at regularly scheduled times, the opportunity to meet at the convenience of the participants is almost always there. Most community-based programs are sensitive to the time demands of their targeted clientele.

Flexible topics: Most community-based educational programs are justified, and sustained by participants enrolled in the program. This is usually a function of the participants' interest in the topic. Such a user-driven system requires the designer to take into account the interests and ability levels of the intended audience.

Variable cognitive demands: Many community-based programs are designed around experiential activities targeted to various age levels of the participants. That is, even within a specific content area such as "Insects and Spiders" in the 4-H Science Experiences and Resources for Informal Education Settings (SERIES) Project, there will be a group of hands-on activities targeted to young children that is quite different in its cognitive and social demands from activities prepared for older children or teen-age youth. The various hands-on activities allow participants to increase their confidence and competence in using the skills being learned, and expand their repertoire of hands-on experiences that lead to more robust learning.

Activities are designed so that participants engage in cooperative learning. Learning tasks and community service projects are also structured in ways that require the group to work together.

Cross-age Instruction: Most community-based education programs are made up of participants of different ages and abilities. Current research emphasizes the value of social interaction for improving learning. Community-based programs build in opportunities for youngsters to learn from each other; older teens interact with younger learners to solve problems, record data, make inferences, and so on. The modeling that older youngsters provide can often be more effective than the modeling provided by an adult teacher because the age differences are smaller, and the time for personal, individualized contact is increased. With less age and status difference, a truly two-way interaction starts faster and generates more enthusiasm.

Variable outcomes: If one follows a constructivist educational model that views direct experience as being antecedent to learning, it follows that participants would then work on authentic tasks using their newly acquired skills in new ways.

Community-based programs also allow participants to apply their learning to a wide variety of home, neighborhood, and community situations in settings such as helping to design and implement recycling programs, raising vegetables in community gardens for senior citizens centers, or helping design family disaster-emergency response plans. These projects encourage youth to solve problems grounded in real-world contexts requiring many kinds of complex problem solving skills suggested by advocates of "outcome-based" education (Spady, 1994).

Authentic assessment: A self-managed portfolio that represents the participant's work can provide insight into the learning experiences. Portfolios often include goal statements, data, and artifacts from the community service projects. The portfolio might also include letters from parents, newspaper clippings, etc. If there is to be a comparison of portfolios, one might want to standardize some features such as a table of contents or a set of required components. Portfolios are assessment tools that bridge the gap between community-based programs and schools, as they become increasingly popular in models such as "outcome based education" and are also more widely used

for student assessment by schools. Portfolios support a constructivist approach to learning by providing the students with a tangible sense of accomplishment, and allow them to reflect on their actions and outcomes.

Although the diversity of projects and outcomes poses a major challenge to evaluation, it helps to keep participants engaged in service learning applications of their knowledge. Project outcomes also help forge a connection between "school smarts" and "street smarts" by tying learning to community issues and applications significant to the learners. Putting together the pieces of the educational mosaic involves design considerations. What are the most appropriate roles of each of the components? What can the schools do best? The museums? The community-based organizations such as 4-H clubs, Scouts, Boys and Girls Clubs, Girls Inc., and Campfire? How do we design a mosaic that includes a variety of educational resources and stakeholders? There is a significant body of literature available to assist us from the works of John Dewey to Jean Piaget and the more recent cognitive scientists and brain researchers. Many instructional models are also available from Socrates to current research on effective instruction and recent work on problem solving by Howard Gardner and David Perkins.

Designing an educational mosaic for education includes complementary pieces that represent a common goal or vision. It might be described as many paths to the goal of literacy. Most effective educational programs have some common features, regardless of whether they are based in museums, theme parks or schools. Although the venue may vary, each program can reinforce the development of literacy through application of principles of learning, scientific investigation, and participant involvement.

An Operational Model for Community-based Educational Programs

One model 4-H program that incorporates science and technology content while providing hands-on community-based applications is the 4-H SERIES Project. Funded by the National Science Foundation, 4-H SERIES has used a hands-on inquiry-based curriculum for several years with a wide range of youth groups, including groups that are consistently underrepresented in the sciences. During 1995, SERIES is estimated to have more than seventy thousand youngsters participating in its program in 43 states, Guam, and Puerto Rico.

The instructional activities in the SERIES curricula emphasize use of the scientific thinking processes included in virtually all school science texts used in the United States—observing, communicating, comparing, organizing, relating, inferring, and applying. Teen leaders thus have early experiences in using scientific thinking processes in the inquiry-based activities and in teaching the processes. Each of the curricula is built on a model of instructional design known as the learning cycle that has shown consistent learning gains in a variety of educational settings (Guzzetti, Snyder, & Glass, 1992).

The learning cycle suggests three distinct segments for an activity within a lesson. Beginning with an exploration segment, participants manipulate the materials, encounter some interesting phenomenon, and attempt to understand it. In the second segment, the participants and leader engage in a discussion of the events which occurred during the exploration segment. Concepts relevant to the phenomenon are introduced

and related to the participants' experience and prior knowledge. Once key concepts are developed and articulated through discussion, the third segment involves having participants apply the concepts in some personally meaningful context. This general structure, exploration followed by concept introduction followed by concept development, is the primary template for the SERIES curricula. In SERIES project curriculum materials, the first two components of the learning cycle are embedded in the teen-led learning activities, and the third component is developed in the community service activities.

The inclusion of community service projects as an integral part of the SERIES curricula is a crucial component of the program. There are at least three reasons for underscoring the importance of the community service component. First, as mentioned above, community service projects constitute the mechanism for completing the third segment (concept development) of the learning cycle. A substantially larger proportion of participants are likely to successfully appropriate learning in the context of a community service project than would be the case if no such supporting structure were offered.

Second, the community service project represents a learning activity that is expressly initiated by the learners to address a perceived need. The projects afford an opportunity for elementary and high school students to make an authentic contribution to their communities. Community service projects provide one context within which the participant voice is given more expression than is usually the case.

Third, community service projects illustrate how scientific knowledge and processes can be used for social purposes. In the course of inventing and carrying out projects in their communities, students negotiate, make agreements, and depend on one another and members of the community at large. This action orientation encourages the development of leadership and civic responsibility. While the rationales for community service projects are appealing, it is difficult to describe the impact of participating in them in simple terms. Examples of projects undertaken by teens with younger participants include the distribution of earthquake preparedness information, the strapping of water heaters in earthquake-prone communities, and production of clothing for homeless people. 4-H projects and activities provide a venue for professionals to coach teens who are themselves coaching younger children in models of community action, service projects, and scientific investigation.

SERIES, by design, incorporates known elements of scientific inquiry in a way which directly addresses the needs of the ever-changing work world. Both the teens and the younger children are learning how to interact with others. Teens are learning leadership and communication skills by participating in the instruction and community service projects. The community service projects allow the participants to address a local concern and organize themselves around the concern, utilizing local resources of change and social action. By doing so, the participants learn how to collaborate and work together as a group and how to address the task at hand. Their community projects often bring them into contact with government and other community-based organizations—further expanding their real-world interactions and learning. There is no doubt that with the globalization of the economy these skills will be in demand and necessary for a successful work life.

In summary, as an ancient African proverb (and one of Hillary Clinton's favorites) reminds us, "It takes an entire village to raise a child." The point is that there are multiple contributions to be made by the inclusion of a variety of community resources available to educate our children for their adult role. If we view the goal of improving education as an educational mosaic made up of multiple pieces, each with its unique contribution, then each of our community-based programs can be viewed as an integral part of the bigger picture for youth development, as well as the timely issue of preparation for participation in the global workforce. Schools, museums, child-care centers, and community-based programs all have a unique venue and opportunity to reach children and to improve the quantity and quality of their educational experiences available to youth. This educational mosaic celebrates the diversity of participants, programmatic content, delivery systems, and outcomes.

The 4-H Youth Development mission is to help youth develop into responsible, self-directed, productive citizens of the world, and to improve the well-being of youth and society through the use of research-based learn-by-doing educational experiences. The mission of the program clearly defines the skills youth can develop through 4-H, but it also provides the parameters of instruction—learn-by-doing. In our increasingly complex world, we see, hear, and read daily evidence of the alienation of youth and the lack of relevance of educational tasks for the individual youth. Youth today have more difficulty relating book knowledge and facts to the world and especially to the world of work. 4-H is uniquely positioned to ameliorate that lack of connection. Learning-by-doing in the community creates the forum for effective problem-solving, learning and development of leadership. By developing programs which enhance these skills, 4-H will be riding the crest of the wave of the future.

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