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ABSTRACT

Career pathways align vocational and academic education within career clusters and provide students new options from grades 9-14. They must have the following elements: industry breadth and depth; opportunities for many populations; career options at entry, technical, and professional levels; and alternative delivery options and academic and vocational integration. Career pathways are important because all students need the following: rigorous academics and technical skills to be prepared for both postsecondary education and for careers; broad-based, transferable skills for workplace success; ability to learn better and retain more when they learn in context; and ability to adapt and change jobs within a career cluster. Within career pathways, gender equity is important for two reasons: all students must have the opportunity to become economically self-sufficient within a pathway and all students need to explore nontraditional and traditional career options within career clusters. Curriculum for career pathways must meet these criteria: well articulated, integrated, supportive, contextualized, and permitting program flexibility. Three types of competencies best incorporate these criteria: core, cluster, and specialization. Delivery options for career pathways include career academies, career magnet high schools, foundation experiences, and senior projects. As schools plan and implement career pathway initiatives, administrators and educators need to tap into available equity monies and programs. (YLB)

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Ohio Vocational Sex Equity

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Career Pathways and Gender Equity: Providing Opportunities for All Students

Schools in Ohio and across the nation are examining how they help students prepare for the world of work. Students want to enter careers that will provide a living wage. Most parents expect that their children will graduate from high school, go to college, and become employed in a successful career. Employers want workers who have both technical and academic skills. Educators, students, parents, and employers are realizing that the nation's youth must be prepared for both postsecondary education and for careers; high school students can no longer fit neatly into college prep, general, and vocational education tracks.

As a result, schools are now moving from systems that divide students into college prep or vocational tracks to curricula and programs that integrate high level academic and vocational/technical skills. This contextualized learning environment provides all students with the opportunity to prepare for both higher education and for the workforce. In Ohio, these initiatives have taken the form of Tech-Prep programs, school-to-work activities, applied academics, career academies, and career magnet schools.

Many of these efforts to prepare students for both careers and postsecondary education have not adequately addressed gender equity issues. Within the career exploration process, students face expectations related to gender and sex-role stereotyping. These gender equity issues can present barriers at the personal, classroom, and district levels. For example, newly developed career academies or Tech-Prep programs may not make specific efforts to recruit nontraditional students. Newly hired technical instructors may not be provided inservices or resources on equitable instruction. Marketing materials may target only one demographic group and inadvertently leave out other key audiences. Subsequently, these programs may be faced with recruitment, retention, and achievement challenges.

Ohio's vocational system has recently developed career pathways. Career pathways are a series of academic, technological, occupational coursework and other educational experiences leading to a career specialty. Based on academic and technical skill building within a career cluster, career pathways will lead to new courses and new structures within districts. Career pathways will build on, but not duplicate or replace, existing Tech-Prep consortia, vocational programs, and school-to-work efforts.

The primary purpose of this paper is to create an understanding of career pathways within the framework of gender equity. A secondary purpose is to recommend strategies to consider when planning and implementing career pathways that will infuse equity upfront. By initially integrating gender equity into career pathways, all students will have equitable opportunities to receive the best education that prepares them for both postsecondary education and the workforce.

What are Career Pathways?

Ohio's Future at Work: Beyond 2000 (ODE, 1996), the strategic plan for Ohio's vocational education system, supports the development of a continuum of career-focused programs and courses that provide multiple pathways to postsecondary education and employment. Career pathways align vocational and academic education within career clusters and provide students new options from grades 9 through 14. Students can choose a variety of options within career clusters or between clusters. For example, within the health services cluster, a student who wishes to become a pediatrician could choose to take a health cluster foundation course at the 9th or 10th grade, have an internship experience during

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the summer of her sophomore year, and complete high-level academic coursework in every discipline with a focus on health careers. On the other hand, a student who wants to own his own restaurant could choose courses both in hospitality as well as in business management. Students would not be limited in their course selections based on vocational program constraints or college prep status. Career pathways expand options for all learners.

Career pathways will help students make better informed career decisions, align curriculum and instruction with a career focus, and enable students to choose courses and experiences that will help them achieve their academic and career goals.

Career pathways must have:

Industry breadth and depth. The cluster must encompass an entire industry or cluster area. For example, environmental and agricultural systems is an entire industry, whereas horticulture is one possible area of specialization within this cluster.

Opportunities for many populations. The pathway must be able to serve many populations and not exclude specific groups based on gender, special needs, academic tracks, or other groupings. For example, a pathway within the industrial and engineering systems must be able to accommodate both the students who wish to become engineers as well as those who wish to work in production jobs within a manufacturing environment.

Career options at entry, technical and professional levels. Pathways must prepare students for multiple levels of career occupations and not just prepare students for a specific job within a pathway. For example, a pathway in hospitality should be able to serve students who wish to become professionals within the field as well as those who wish to become entry-level or technical-level workers in the field.

Alternative delivery options and academic and vocational integration. Pathways must go beyond the traditional college prep vs. vocational track. Alternatives include career academies, magnet schools, career clusters, foundation and capstone courses, and curriculum integration.

Career pathways will create seamless connections between existing vocational programs including Tech-Prep and postsecondary options. The development of career pathways requires collaboration between comprehensive schools, career centers, postsecondary institutions, school-to-work, career development, and career-based intervention programs.

Why Career Pathways?

Career pathways respond to the need to prepare students for both the changing workplace and postsecondary education. Career pathways are important for several reasons:

All students need rigorous academics and technical skills to be prepared for both postsecondary education and for careers. Postsecondary institutions have more students in remedial classes than ever before. "It is not unusual to have 80% or more of entering freshmen taking one or more remedial courses" (Gray, 1995, p. 68). English and math are the most common remedial courses. Employers indicate that their workforce lacks the academic and technical skills necessary for their jobs. SCANS (1991) estimates that less than half of all young adults have achieved reading and writing minimums; even fewer can handle the mathematics; and schools today only indirectly address listening and speaking skills--all essential skills for the workplace. In addition, technical skills are critical for today's workforce. By the year 2000, 95% of all workers will use some type of technology on their jobs (Twigg and Oblinger, 1996). Gray (1995) discusses the importance of skill, not degrees, in the hiring decisions made by firms. In a national survey of employers in the 13 largest industrial sectors, "10 of 13 industry groups ranked the need for vocational training higher than the need for a college degree" (Sterns, 1992, in Gray, 1995, p. 99). Career pathways provide students an integrated academic and technical foundation so students are prepared for further education or for the workplace.

All students must have broad-based, transferable skills for workplace success. Individuals need to continuously update their technical knowledge and skill base to remain competitive in the workforce. In addition, students need generic skills such as reading, mathematics, and reasoning to solve problems in every career. Work-related skills and attitudes such as cooperative skills, individual responsibility, self-management, self-esteem, interpersonal relationships, communications, conflict management, problem solving, critical thinking, adaption to change, and teamwork are also necessary (Stasz, Ramsey, & Eden, 1995; SCANS, 1991). Career pathways provide students a broad base of transferable skills to respond to the cross-functioning, high-performance workplace.

All students learn better and retain more when they learn in context, rather than in the abstract. Developments in the field of cognitive science have revealed

Will Nicole Become an Architect?

Nicole is a 9th grader at Local High School. After attending a High-Tech Summer Camp this past summer, Nicole has decided she would like to become an architect. The Vocational Education Planning District implemented an Industrial and Engineering Systems Magnet School this past year. Nicole has the recruitment brochures and other information about the magnet school. At first she was interested in attending the magnet school, but now has decided not to attend that school. When pressed for a reason, Nicole says it's a magnet school for boys since all the pictures, pronouns, quotes, and other verbiage in the printed materials is male-oriented. Upon visiting the program, she met one female student who talked about how hard the classes are. She did not see any other female students.

Equity-related Issues: Equitable representation in printed materials, especially for recruitment purposes, is critical. The materials create immediate perceptions about what a program is like and whether specific people groups are deemed acceptable. Educators need to examine pictures and text for subtle biases and stereotyping. They also need to make a concerted effort to recruit more than one female or male in nontraditional programs. Establishing same-gender mentoring for support and encouragement is helpful.

Potential Educational Experiences Offered through Career Pathways: Nicole has many options through career pathways. If she can get past the barriers of entering the Industrial and Engineering Systems Magnet School, Nicole could enter that magnet school. If she chooses not to go to the magnet school, she could take a Computer-Aided Drafting (CAD) semester course at Local High School or a summer course at the career center. She could also enter a career cluster in Industrial and Engineering Systems at her high school, taking Algebra I, II, and Physics in Construction. She might take Algebra I and II within the Tech-Prep program as well as Applied Physics within the Industrial and Engineering Systems cluster. Another option is that she could establish a mentor relationship and/or field experience with a female architect as part of a senior project.

much about how people learn. Meaningful learning takes place when instruction provides a real-life context.

> Placing learning objectives within real environments is better than insisting that students first learn in the abstract what they will then be expected to apply. . . Reading and mathematics become less abstract and more concrete when they are embedded in one or more of the competencies; that is, when the learning is "situated" in a system of a technological problem (SCANS, 1991, p. 19).

Career pathways provide students an important workplace context for academic and technical courses, enriching the learning process.

All students must be prepared to adapt and change jobs within a career cluster. Most high school students do not have a single occupation in mind. They may be weighing at least three or four different career choices (Hardy, 1997). Studies also tell us the average worker will have six to seven different careers in their lifetime (Forman, 1995). Though many people change jobs, they often stay within a certain career cluster. When participating in specific occupational training, students are prepared for specific jobs but they also learn skills that are transferable to other jobs in that same career cluster. Career pathways promote careers according to career clusters and allow students to understand the ebb and flow between various jobs and careers within a career cluster, typical of an employee's worklife over time.

Why Is Gender Equity Important in Career Pathways?

Through career pathways, all students have the opportunity to participate in career-focused education. Within career pathways, gender equity is important for two reasons. First, all students must have the opportunity to become economically self-sufficient within a pathway. Traditionally, female vocational students have enrolled in programs that prepared them for careers offering low wages, such as child care and clerical programs. Career pathways take students' interests and aptitudes in working in historically low-wage careers and expand their thinking into high-wage opportunities within that career cluster. Students can prepare for careers within career clusters from low-wage to high-wage jobs through the entry, technical, and professional levels. For example, a student in the teaching and training career pathway who is interested in child care can enroll in an early childhood education program, intern in a day care center, and/or go on to earn a degree in early childhood education to become an elementary school teacher, a social worker, or the owner of a child care center. Similarly, a student interested in secretarial sciences could enter the business and management pathway,

Table 1. Occupational Groups Ranked by Earnings, Net Openings, Percentage Female, Required Training				
Occupations	**Earnings**	**Net Openings**	**% Female**	**Required Training**
Managerial/Professional	1	6	47%	1
Craft, Precision Metal, Specialized Repair	2	3	9%	2
Technical Support	3	1	64%	3
Service	4	4	25%	5
Operative, Laborer	5	2	60%	4
Farming, Fishing	6	5	16%	6

Sources as cited in Gray & Herr, 1995, p. 105: Data compiled from "Job-Related Education and Training: Their Impact on Earnings," by A. Eck, 1993, *Monthly Labor Review*, Washington, DC: U.S. Department of Labor; and *Statistical Abstract of the United States: 1994*, by U.S. Bureau of the Census, 1994, Washington, DC: Author.

become trained in information processing and accounting, and go on to earn a business degree or go into management. Career pathways, with its emphasis on entry, technical, and professional level careers, give students the opportunity to explore a range of opportunities within entire career clusters and therefore eliminates the issue of low-wage vs. high wage vocational programs.

Secondly, all students need to explore nontraditional and traditional career options within career clusters. This encourages students to make informed career choices without regard to gender stereotypes. When students explore careers along industry lines, gender stereotypes are not as prominent. For example, the environmental and agricultural systems pathway includes a fairly equal number of males and females, although females typically enroll in floriculture and males typically enroll in agriculture production. However, by having both males and females in the pathway, students can explore traditional and nontraditional options within the pathway and experience heterogeneous work groups rather than same-sex classes.

Within the industrial and engineering systems pathway, females in particular have tremendous nontraditional career opportunities. This field offers high wages at the entry, technical and professional levels, and yet females only comprise 9 percent of the workers employed in this field (see Table 1). On average, the yearly income of individuals employed in the craft/precision/metal/repair areas is higher than that for all college graduates except those who find work in professional ranks. However, according to the National Educational Longitudinal Study--1992 Second Follow-Up (NELS study), only .4% of females surveyed expected to be working in this field and only 3.7% expected to be working as technicians in this field.

Within the human resources, health services, and arts and communications pathways, males have many nontraditional career opportunities. Males in nontraditional careers generally earn more than their traditional female counterparts. This is evident in nursing, teaching, clerical, and other careers (see Table 2). Research shows that parental expectations, sex role stereotypes, and peer pressure can prevent males from exploring these options. However, entering career pathways in health services vs. nursing or human resources vs. early childhood education can help reduce the stigma attached to males entering nontraditional careers.

What Considerations Regarding Equity Should be Addressed Through the Career Pathways Curricula?

Given the challenges of the present and future workforce and the skills needed for success in the workplace, curriculum for career pathways must meet several criteria:

Table 2. Male and Female Earnings for Selected Nontraditional Occupations of Males		
Nontraditional Occupations for Males	**Male Mean Earnings**	**Female Mean Earnings**
Registered Nurses	$37,922	$36,140
Elementary Teachers	$37,398	$33,696
Investigators and Adjusters, excluding Insurance	$33,733	$23,816
Administrative Support	$26,742	$23,400

Source: U.S. Department of Labor, Bureau of Labor Statistics, Women's Bureau, February 1997.

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- Well-articulated to provide a continuum of career-focused education
- Integrated to include the academic, technical, and employability skills needed for work place success
- Supportive of student achievement and a high level of academic success
- Contextualized to enhance meaningful learning
- Designed to allow program flexibility while ensuring students develop skills needed to compete in a global marketplace.

Three different types of competencies best incorporate these criteria:

Core competencies represent what all students should know and be able to do in the world of work, including the ability to make career decisions. These competencies support graduation from high school as well as success in higher education. They include employability skills, communication, math, work ethics, problem-solving, etc. Equity is a critical component of core competencies. Examples include being able to work with people of both genders, showing respect for diversity, and eliminating harassment on the job.

Cluster competencies are those skills that are common to occupations within career clusters. For example, being able to read blueprints would be a cluster competency within the engineering and industrial systems pathway because all of the occupations within that pathway require this skill. The attainment of these competencies could lead to entry-level positions and

Strategies for Infusing Equity into Curriculum Integration and Teaching Methodology

- Hold high expectations for all students, especially for female and minority students. Research shows that positive expectations increase student achievement. It also shows that female and minority students often receive less encouragement. A teacher's encouragement and expectations are critical to every student's success.
- Make sure that males and females receive instruction in the same competencies and have the same expectations for performance. For instance, asking males to create a computer program and females to run a computer program reflects similar but very different competencies. Mastery of identical skills is important, especially in specialization competencies.
- Ask males and females higher order questions that demand critical thinking. Teachers often ask females factual questions and ask males problem-solving questions. This gives the perception that females are not capable of independent thought. In addition, wait equally long for males and females to answer a question before going on to another student. Teachers often perceive a male's silence after a question as the effort to formulate an answer, whereas they attribute a female's silence to "shyness" or lack of a suitable response.
- Use gender-neutral language. When referring to students or employees in an industry area, use inclusive, not exclusive, language. For instance, do not use "the gals in nursing" or "the guys in engineering," but refer to people as students or employees.
- Assign roles to ensure that male and female students have opportunities to be both leaders and listeners when working in small groups. Implement cooperative learning techniques in heterogeneous groupings.
- If a lab has better and worse equipment in the same room, make sure girls and boys have equal access to the better ones. In addition, make sure girls and boys get equal time on computers.
- Encourage mutually-respectful, nonviolent behavior from boys and girls.
- Use instructional materials that are inclusive, not exclusive. If texts, posters, or handouts show only one demographic group, such as white females in nursing, then they should not be purchased. If certain genders or ethnic groups are underrepresented in already purchased materials, address these issues with your students and have them identify ways to make the materials more inclusive.
- Use the Gender Equity Modules (GEMS) developed by The Ohio State University. These modules help educators incorporate equity into core competencies across disciplines. Modules include: Ability to Learn; Attitudes about Women and Men; Decision Making; Educational Achievement; Freely Associating with Both Females and Males; Non-stereotypical Roles; Personal Responsibility and Good Work Habits; Problem Solving; Balancing Paid and Family Work Responsibilities; Selection of Careers/Jobs: Gender Roles, Stereotypes, and Biases; and Self Concept

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form the foundation for further occupational education at the secondary or higher education level. An equity implication of the cluster competencies is that students will learn competencies required across an industry, thus increasing their opportunities to enter not only traditional and nontraditional careers within the pathway, but also to progress from entry-level to technical and professional level careers within the pathway.

Specialization competencies identify those competencies needed in specific occupations as verified by business and industry. The attainment of these competencies could lead to entry-level positions, exit credentialing, and/or continued education. For instance, the specialization competency of administering intravenous fluids is appropriate for registered nurses but would not be appropriate for respiratory therapists or pharmacists. When specialization competencies are tied to industry-verified skill standards, there is greater opportunity for students to be hired based on their actual skills as opposed to perceived skills based on gender stereotypes. For example, if a female student earns a Level I Metalworking credential within her industrial and engineering pathway, she will be more likely to be hired based on her abilities rather than be overlooked by an employer because she is female.

Integrated, contextualized curriculum has even greater value when teaching methodology reflects equity. It is in the day-to-day teaching and interaction with students that equitable teaching behavior makes the most difference. As students become comfortable learning and working in heterogeneous groupings, they will also be more prepared to enter the workforce. When nontraditional students feel respected and comfortable in their learning environments, both traditional and nontraditional students will more likely be more comfortable and effective in their future work environments.

How Might a School Deliver Career Pathways?

The very nature of career pathways requires alternate delivery options for students. Examples of delivery options for career pathways include career academies, career magnet high schools, foundation experiences, and senior projects. Each of these options has the dual

Strategies for Infusing Equity into Delivery Options

- Develop recruitment materials free of sex bias and stereotyping. When using pictures in recruitment materials, include males, females, and people of color. Examine text for subtle biases. Use phrases such as "opportunities for all students" or "both males and females." Make a concerted effort to include pictures and text that are inclusive versus exclusive.
- Make sure that males and females explore a broad range of occupations within an industry, including traditional and nontraditional occupations for each gender. Inform students of the advantages and disadvantages of nontraditional employment.
- Give students accurate earnings data so students can make informed, realistic choices about their potential earnings for any given occupation and its effect upon their standard of living. Highlight the occupations that use math, science, and technology skills and compare earnings to occupations that do not use these skills. Encourage male and female students to choose careers that will provide a living wage.
- Acquaint parents with the types of training and jobs that their children, especially their daughters, can pursue. Address parents' fears and concerns about their children pursuing nontraditional and/or technical careers. Emphasize career futures in technical fields and the higher wage potential that their children can earn.
- Assure that both males and females have convenient access to restrooms, locker rooms, changing areas, etc.
- Place nontraditional students with employers who are sensitive to equity issues. Create safe work/learning environments free of harassment and violence. Support employers that have eliminated sex bias, harassment, and hostile environments in the workplace. Develop effective partnerships with businesses and industries who use equitable hiring practices and are sensitive to equity issues.
- Use nontraditional industry volunteers to teach classroom material by bringing in demonstrations and basing their lessons on their work experiences.
- Recruit nontraditional employers to be involved at all levels of career pathways.

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mission of preparing students for college and for specific occupational fields. These delivery options do not track students by ability, gender, or other characteristics. Instead, they offer opportunities for all students to prepare themselves for a career or postsecondary education following their high school graduation.

Career academies and *career magnet schools* align all coursework around specific clusters. Teachers and students are grouped by cluster and work together over a period of two to four years. Academies operate as schools within schools whereas magnet schools are in their own separate school buildings. Both are designed to ensure that the program graduates are academically and technically proficient, have marketable job skills, and are academically prepared to enroll in postsecondary education. They employ industry-knowledgeable faculty who develop intensive business/industry ties for curricular and outreach activities. Academies and magnets require extensive collaboration between vocational and academic instructors so that all learning is relevant to the occupational area studied. Entrance requirements are strict, classes are smaller, and students have a sense of 'family' and purpose. For example, students in an arts and communication magnet school will prepare for careers in performing arts, television/ radio, and/or graphic communications through courses and experiences incorporating core, cluster, and specialization competencies.

Foundation courses are semester or year-long courses (or supervised experiences for which the student can earn credit) within a career cluster. They provide students with core and cluster competencies and also information on professional, technical, and entry level career pathway possibilities within the cluster. Foundation courses are generally offered at the 9th or 10th grade level and can be a solid starting point for intensive specialized vocational and academic coursework at the 11th and 12th grades. For example, a foundation course in the business and management cluster could include core and cluster competencies in business and marketing fundamentals, economics, and information processing.

Senior projects or capstone experiences/courses integrate academic and vocational education without much change in school structure. A senior student selects a topic of personal interest that integrates several academic and technical skills. Most projects require a research paper, a physical product or demonstration, and an oral presentation. Sometimes a work experience, such as an internship, is required. Teachers of the various academic and vocational subjects are brought together to help the student in completing the project. For instance, a female student interested in law enforcement might complete a senior project exploring current trends in law enforcement. She might research the history of law enforcement, interview local police officers, job shadow a parole officer, analyze the economics of law enforcement, and present the information to a group of peers and teachers. Senior projects culminate the participating student's educational and work-related experiences into one project.

What Happens Next?

Through career pathways high school students have many options that allow them to achieve in a career or continue in an area of study. Academic and technical skills are integrated throughout the students' education so that school becomes more of a comprehensive, real-life training ground for the world of work. Core, cluster, and specialization competencies prepare students for jobs and education based on necessary skills, not gender issues.

As schools plan and implement various career pathway initiatives, administrators and educators need to tap into available equity monies and programs. Many current equity grants and goals seek to increase the number of nontraditional students by gender and to reduce sex-role stereotyping for males and females in the career decision-making process—both underlying goals of career pathways. Administrators and educators can adapt and replicate equity initiatives that are currently in place and use equity monies for recruitment and enrollment to also meet the goals of career pathways. Grants that are available include "Building an Equitable School-to-Work System" and the "Tech Prep/Equity Leadership Grant." Information regarding the grants can be found by contacting the Ohio Department of Education, Division of Vocational and Adult Education or through the Internet at the following address: *http://www.ode.ohio.gov/www/ve/equityhome.html*. The Sex Equity Resource Library and Gender Equity Modules (GEMS) are helpful with teaching methodology. By infusing equity in delivery options, teaching methodology, and as underlying premises of career pathways upfront, administrators and educators will create stronger, more successful educational experiences and courses for students.

To order the *Secondary Teaching Modules: Developing Gender Equity Competences*, contact:
Vocational Instructional Materials Laboratory
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