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## A Study of Career Preparation Activities Used in Michigan's Public High Schools

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A STUDY OF CAREER PREPARATION ACTIVITIES  
USED IN MICHIGAN'S PUBLIC HIGH SCHOOLS

by

Brian L. Pyles

A Dissertation  
Submitted to the  
Faculty of The Graduate College  
in partial fulfillment of the  
requirements for the  
Degree of Doctor of Philosophy  
Department of Educational Leadership, Research and Technology  
Dr. Richard Zinser, Advisor

Western Michigan University  
Kalamazoo, Michigan  
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Brian L. Pyles

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## CHAPTER I

### INTRODUCTION

Michigan's primary source of K-12 career education funding, the Career Preparation System Act of 1997, had been used to support career education in Michigan. This funding provided students with the opportunity to explore a variety of careers throughout their K-12 education (Michigan Department of Education, 1999b). Elementary and middle school students focus on career awareness, which expands their understanding of the world of work. Through Michigan's Career Preparation System activities, high school students select a Career Pathway and create a 4-year course of study, referred to as an Educational Development Plan (EDP), in conjunction with their counselors. Career Pathways are broad clusters of careers that are clustered together based on common work-place competencies such as the Health Careers Career Pathway (Michigan Department of Education, 1999a). Job title examples in this pathway include nurse, doctor, surgeon, or dentist to mention a few. After undergoing one or more career assessment(s) to identify specific interests and abilities, students select one of six Career Pathways to plan a 4-year course of study. By taking the academic and Career Pathway classes specified in their EDPs, students explore various careers in-depth by investigating the job responsibilities, tasks, duties, and level of training required of certain careers. Students also conduct research and participate in work-based learning experiences such as job shadowing, internships, and cooperative education.

Unfortunately, the Career Preparation System Grant was eliminated in 2003 by the state legislature, in concert with the Governor, to balance the education budget in Michigan (Michigan Legislature, 2004). The Career Preparation System Grant, which had provided funding for designated Michigan Career Pathway high schools, was eliminated during the 6th year of the program's originally scheduled 7-year plan. To become one of Michigan's Career Pathway high schools, and subsequently receive specific funding, high schools were required to organize their course offerings under Michigan's six Career Pathways. These high schools were also required to implement EDPs, as a means of helping high school students transition into postsecondary education and/or employment after graduation. Nearly all (596 out of 597) of Michigan's traditional public high schools agreed to become Career Pathway high schools when that special categorical funding was first provided via the Michigan Career Preparation System Act of 1997.

The elimination of state funding to support programs like Career Pathways raises several questions. Are Michigan's public high schools sustaining the originally required state-defined Career Preparation System activities, although no longer required by the state? Also, are these public high schools incorporating other Career Pathway activities recommended by Career Pathway high school experts? These are important questions, given the considerable research that links the implementation of such activities with increased student achievement, a key focus of all educators today (Bailey, Hughes, & Moore, 2001; Kazis & Pennington, 1999).

Specific funding for career-based educational initiatives like Career Pathways was first provided via the federal School-to-Work Opportunities Act (STWOA) of 1994,

which had established a national framework for infusing career education into all of the nation's schools. This Act provided federal funds and specific guidelines to implement School-to-Work initiatives, which focused on whole school reform, bringing together academic and vocational education, a process in Michigan's Career Preparation System referred to as career and contextual learning.

To enhance the career and contextual learning taking place in the classroom, students were provided with the opportunity to gain concrete experience by applying what they had learned in school at an internship or in some other cooperative education setting (MPR Associates, 2001). Michigan received a 6-year School-to-Work grant in the amount of \$48 million for the 1992–1998 school years (National School-to-Work Opportunities Office, 1998). States that accepted these federal funds were required to develop a state plan to secure the financial resources to sustain such career education activities after the federal STWOA sunset date of 2001.

To continue state efforts beyond the federally mandated sunset date, the State of Michigan passed the Career Preparation System Act in 1997. This State Act provided the resources for students to explore careers through a variety of activities during their K-12 experience (Michigan Department of Education, 1999a). Similar to the federal School-to-Work Opportunity Act, the State Career Preparation System Act of 1997 was designed to add relevance to traditional academic courses by making connections between “real world” examples and academic curriculum.

The grants awarded through these acts encouraged teachers of traditional academic courses to link objectives in the curriculum to specific occupational skills. For example, a math teacher might demonstrate how an automotive engineer would apply the

algebraic formula being taught in class to design an electronic ignition system. This type of curriculum development helps teachers answer the age-old student question, “Why do I have to learn this?”

Although Michigan’s Career Preparation System Grants were designed to provide “seed” money for the permanent establishment of Career Pathway high schools, the earlier than expected elimination of funding raised questions about the sustainability of the Career Pathway high school activities of Michigan’s Career Preparation System.

In addition to the elimination of Career Preparation funding, local school districts received flat line per pupil state aid for the 2003–2004 and 2004–2005 school years (Michigan Legislature, 2005), which may have had an impact on being able to support special programs, such as their Career Pathway high schools. By gathering information on the status of Michigan’s Career Pathway high schools, this study sought to determine if the Career Pathway high schools components of Michigan’s Career Preparation System Act were being sustained.

This study is significant not only from the perspective of evaluating the success of a particular program that received special funding, but also within a broader context that measures the impact and sustainability of these particular components of Michigan’s Career Preparation System. Despite the decision to eliminate the Career Preparation System grants, state officials continue to recognize the value of Career Pathway high schools. For example, after the executive order cut in 2003, Michigan’s Director of Labor and Economic Growth unveiled four economic initiatives for the state of Michigan, including EDPs in the state’s public high schools (P. Cantu, personal communication, November 14, 2003). Even more recently, Governor Granholm

established the Lieutenant Governor's Commission on Higher Education and Growth, which developed a series of recommendations, three of which clearly align with the goals of Michigan's Career Pathway high schools. Those recommendations included the following: (a) redesign the high school environment by creating smaller high schools based upon Career Pathways and other themed and contextualized learning environments, (b) develop high school competencies that prepare students for postsecondary success and work readiness, and (c) increase the percentage of students who are earning college credit in high school (*Final Report of the Lt. Governor's Commission on Higher Education & Economic Growth*, 2004).

Despite cuts in funding, state officials clearly value career preparation programming, as evidenced by the aforementioned state-based initiatives introduced in the early 2000s. As noted in 2003, Michigan's Director of Labor and Economic Growth called for the use of EDPs in the state's public high schools. Little more than a year later, the Lieutenant Governor's Commission on Higher Education and Growth recommended redesigned high schools with contextualized learning environments, preparing students for postsecondary success and work readiness, and increasing the percentage of students who are earning college credit in high school (*Final Report of the Lt. Governor's Commission on Higher Education & Economic Growth*, 2004). And perhaps most significant is the state's mandated Education YES! school accreditation model, which measures several of the outcomes Career Pathway high schools are designed to produce, including the use of EDPs.

### Significant Studies

Previous studies of Career Pathway high school state and national initiatives reveal positive student outcomes such as improved grade point averages (GPA), increased academic coursework, and increased student attendance, as well as decreased student dropout rate (Bailey et al., 2001; Kazis & Pennington, 1999; Rudy & Rudy, 2001). These results demonstrate the merit of initiatives like Michigan's Career Pathway high schools. Brief summaries of key studies follow.

Several studies used GPA to compare students within a grade level and to compare students across grade levels. Foothill Associates (1997) compared student grades before and after enrollment in California's Partnership Academies and reported an increase in student GPAs. Bishop, Mane, and Ruiz-Quintilla (2000) reported, in a New York State study, no difference in GPAs between school-to-work students and students who were not enrolled in school-to-work programs. However, they reported that students enrolled in school-to-work programs took more challenging academic courses. At Williamston High School in Michigan, GPAs increased the first year the Career Pathway program was implemented (Williamston Community Schools Proves Career Preparation System Works, 2002). Both national and Michigan-based research indicated a range from no change in student GPA to an increase in the average student GPA since the implementation of the Career Pathway high school or similar models, such as career academies or school-to-work programs.

Students enrolled in Michigan's Career Pathway high schools typically declare their Career Pathway in eighth grade, in preparation for high school course selection.

Each Career Pathway identifies the necessary academic and career education courses to prepare the students for postsecondary training or employment. For example, a student who selects the engineering/manufacturing and industrial technology pathway may be required to take Algebra I as a freshman and progress to trigonometry as a senior. As a result, many students within Career Pathway high schools take an increased academic course load. In New York State, for example, students in school-to-work programs, a suggested component of Career Pathway high schools, took a more rigorous menu of courses, including advanced science and math courses, compared to those who did not participate (Bailey et al., 2001). Bishop et al. (2000) reported, in a national study, that students who participated in school-to-work programs took more lab-based courses than those who did not participate. The students also took more challenging academic courses than students not enrolled in school-to-work courses. Rudy and Rudy (2001) documented a significant increase in the number of Career Pathway high school students in Berrien County, Michigan, taking a third year of science and math. These research studies indicate that students enrolled in career-based (pathway) programs may select a more demanding high school course schedule because they have a clearly defined career goal.

Improving student attendance is an underlying goal of Michigan's Career Pathway high schools. National and state research regarding Career Pathway high schools indicates an improvement in student attendance. For example, Kemple (2000) reported that students enrolled in Career Pathway High School academies had better attendance compared to students in randomly assigned control groups. A New York State survey reported better attendance for students enrolled in school-to-work

programs (Westchester Institute for Human Services Research, 1998). Orr (1996) reported that students in a Wisconsin-based apprenticeship program had better attendance than the control group during the same time frame. Daily student attendance at Williamston High School in Michigan “increased from 89 percent during the 1999–2000 school year, when the curriculum was based on traditional classes, to 96 percent during the 2001–2002 year, when contextual learning classes were implemented” (*Williamston Community Schools Proves Career Preparation System Works*, 2002, p. 2).

Research has also indicated a reduced dropout rate within Michigan’s Career Pathway high schools. For example, Michigan-based Williamston High School reported a one percentage point reduction in the dropout rate of students who entered the first year of their Career Pathway high school and graduated 4 years later (*Williamston Community Schools Proves Career Preparation System Works*, 2002).

Finally, the Michigan Department of Labor and Economic Growth required the Career Preparation System grant recipients from across the state to collect data, conduct evaluations and meet accountability standards. However, the data were never fully analyzed or widely disseminated. As part of this, Berrien County Michigan Schools hired researchers to collect and analyze the data from their county schools. Rudy and Rudy (2001) stated that “Berrien County schools have achieved measurable success implementing comprehensive system-wide Career Pathways curricula. They have embarked on an important education endeavor that prepares students for career and colleges” (p. 9). The study of Berrien County schools, after the implementation of

Career Pathway high schools, indicated increases in GPA, college credit earned in high school, state standardized test scores, and attendance (Rudy & Rudy, 2001).

Although limited, research exists demonstrating the merits of Career Pathway high school programming related to improved grade point averages (GPA), higher level academic coursework, and increased student attendance, as well as decreased student dropout rate (Bailey et al., 2001; Kazis & Pennington, 1999; Rudy & Rudy, 2001). This research demonstrates that Career Pathway high schools meet the broader goals of federal legislation. School leaders must consider the school district's federal legislative mandates and reporting requirements when reviewing school curriculum. For example, the federal No Child Left Behind (NCLB) legislation and federal Carl D. Perkins Vocational and Applied Technology Act of 1998, commonly referred to as Perkins III, have academic achievement goals, as well as more general objectives, that must be achieved by schools.

NCLB mandates require that all students attain proficiency or better in mathematics and reading by the 2013–2014 school year, all limited English students will become proficient in English, all teachers will be highly qualified by 2005–2006, all students be educated in a safe and drug-free environment, and all students graduate from high school by 2013–2014 school year (No Child Left Behind: A Desktop Reference, 2002). The aforementioned Career Pathway programming outcomes, such as improved GPAs, increased levels of academic rigor, and decreased dropout rates, all align with these NCLB mandates.

The Perkins III legislation focuses on academic improvement, as well as vocational and technical skills. The legislation includes a performance accountability

component to evaluate its effectiveness; these accountabilities include increased high school graduation rate, increased GPA, and increased standardized test scores (*State of Michigan Carl D. Perkins Consolidated Annual Report*, 2005). As with the NCLB mandates, the goals of the Federal Perkins Act seem to be in alignment with the research outcomes of Career Pathway high schools.

### Statement of the Problem

Michigan's school districts initiated Career Pathway high schools in 2001 on the premise that the state would continue to fund the Career Preparation System Act grant through the 2004–2005 school year. The 2003–2004 state budget crisis in Michigan forced the legislature to reduce this specific funding to public schools. As a result, the state legislature eliminated the Career Preparation System Act categorical funding for the 2003–2004 and future school years. This categorical funding had also provided resources to conduct status studies on the grant initiatives. Therefore, the Office of Career and Technical Preparation (OCTP) within the Michigan Department of Labor and Economic Growth lacked the staff and financial resources to conduct a statewide study about the status and sustainability of the Career Pathway high school effort. The OCTP state director noted concern that the elimination of Career Preparation funding would reduce or eliminate the Career Pathways initiative in Michigan's public high schools (P. Cantu, personal communication, November 14, 2003). In addition to the elimination of Career Preparation categorical funding, local school districts also received flat line per pupil state aid for the 2003–2004 and 2004–2005 school years (Michigan Legislature, 2005). It is important to determine if the Career Preparation activities were sustained

after funding was eliminated given the strain on local school district budgets. Yet there had been no systematic collection of data to see whether the initial seed money provided to implement Career Pathway high schools continued to bear any fruit.

### Purpose of the Study

The purpose of this study, therefore, was to assess the status of Michigan's Career Pathway high schools in reference to the use of Career Pathway curriculum guides, EDPs, student Career Pathway designation, student career assessment, work-based learning, alternative scheduling, college credit earned in high school, instructional strategies, teacher professional development, and Career Pathway high school planning committees. This study also sought to determine if the Career Pathway high school initiative was institutionalized beyond its initial implementation, using the seed money provided by the state. Overall, this study assessed whether or not the seed money provided by the state of Michigan resulted in the sustainability of the Career Preparation System Act activities. It also ascertained the perceived helpfulness of having students declare a Career Pathway and use EDPs as a guide in the selection of their high school courses. Additionally, it identified barriers to continued participation as a Career Pathway high school.

Although limited previous studies have been conducted in Michigan (e.g., Rudy & Rudy 2001), this was the first statewide study solely focusing on Michigan's Career Pathway high schools. As such, the study provided the first research-based study of Michigan's Career Pathway high schools based upon five research questions profiled in the next section.

### Research Questions

The following five research questions were used to organize the study according to the State's Career Preparation System structure and Career Pathway expert recommended activities.

1. What is the status of activities originally required by the state within Michigan's Career Pathway high schools, including (a) Career Pathway curriculum guides, and (b) Educational Development Plans (EDPs)?
2. What is the status of expert recommended activities within Michigan's Career Pathway high schools, including (a) student Career Pathway designation, (b) student career assessment, (c) work-based learning, (d) alternative scheduling, (e) college credit earned in high school, (f) instructional strategies, (g) teacher professional development, and (h) Career Pathway planning committee?
3. Is there a relationship between the total number of the weighted Career Pathway activities, the total number of the weighted Educational Development Plan (EDP) activities, the total number of the weighted Career Pathway instructional activities, and the combined total of the aforementioned categories to (a) the number of Career Pathway related teacher professional development days, (b) the number of stakeholders who were involved in the initial planning of the Career Pathway high school, (c) the number of instructional staff, (d) the number of guidance counselors, and (e) the size of the student population?

4. Is there a relationship between the respondents' opinion on (a) how helpful the selection of a Career Pathway is in helping students select courses and the total number of weighted Career Pathway activities in place, and (b) how helpful the use of an Educational Development Plan (EDP) is in helping students select courses and the total number of Educational Development Plan (EDP) activities in place?
5. What factors, if any, prevented Michigan's public high schools from (a) implementing a student course selection guide around Michigan's six Career Pathways, and (b) having students complete Educational Development Plans (EDPs)?

#### Significance of the Study

This study focusing on the sustainability of Michigan's Career Pathway high schools following the elimination of state funding for that initiative, as well as on the barriers that hinder participation, contributes to the literature review on career education in America's high schools. To date, only two studies have been published on Career Pathways in Michigan. A regional study conducted in Berrien County, Michigan, suggests that students in Career Pathway high schools have improved grade point averages (GPA), increased academic coursework, increased student attendance, and decreased student dropout rates; in addition, more students in Berrien County Career Pathway high schools are earning statewide standardized testing endorsements (Rudy & Rudy, 2001). However, this Berrien County study did not research the status of the state-required Career Pathway high school activities and student EDPs.

In 2002, the Michigan Department of Career Development contracted the Michigan State University Program in Public Policy and Administration to conduct a research study that analyzed 39 grant applications of districts that received Career Pathways state funding; surveyed 380 public schools, not including metropolitan Detroit, of which 98 (26%) districts responded; and compiled a case study of three school districts in the state: Williamston Community Schools, Berrien County Intermediate School District, and Glen Lake Community Schools.

Key findings of the study included the school districts identifying Career Pathways as a curricular approach through career development activities, but not as a direct curriculum change. Of the reporting districts, 86 indicated they were implementing Career Pathways, compared to data from the Department of Career Development indicating 17 districts were implementing Career Pathways one year earlier (Stern, 2002b). The case study indicated an improvement in GPA and student attendance, as well as an increased academic course load, in the Williamston and Berrien districts (Stern, 2002b). The study also recommended that the state should maintain special categorical funding for Career Pathways for 2 to 3 more years to achieve full implementation of Career Pathways.

Due to the limited body of research on Michigan's Career Pathway high schools, a variety of stakeholders are interested in this study, including the Michigan Office of Career and Technical Preparation (OCTP), Michigan Department of Labor and Economic Growth (DLEG), and local school district personnel. Local school district stakeholders include parents, business people, community college faculty and administrators, local school district teachers and administrators, and intermediate school

district employees. Eventually, these stakeholders may use the findings about Career Pathway high schools to make future decisions to modify, improve, or possibly eliminate Career Pathway high schools.

For example, according to an OCTP analyst responsible for data collection, a study of the status of Michigan's Career Pathway high schools, as well as barriers to implementation, will contribute to the limited number of studies conducted on Michigan's Career Pathway high schools (J. Kroll, personal communication, September 22, 2004). The OCTP state director was also interested in this study's data to champion the potential reinstatement of Career Preparation System funding, as well as to support one of Michigan's second economic initiatives, which addresses Career Pathway high schools and student EDPs as a strategy of economic development (P. Cantu, personal communication, November 14, 2003).

The study provides recommendations to OCTP, regarding the status, barriers to participation, and potential future needs of Michigan's Career Pathway high schools. These possible recommendations include, but are not limited to, Career Pathway high school models, Career Pathway selection, Educational Development Plans (EDPs), Career Pathway implementation models, future Career Pathway leaders, and barriers to participation.

#### Limitations of the Study

This study was limited to the public school districts in Michigan that accepted Career Preparation funding to establish designated Career Pathway high schools. It did not include special schools that are publicly funded, such as alternative high schools, area

technical centers, and charter public schools. These special schools were excluded in order to focus on the impact Career Pathways activities had on the traditional public high school delivery system. Thus, this study is not generalizable to all of Michigan's publicly funded secondary institutions.

This study is also not generalizable to other states, as it was specific to Michigan's Career Pathway public high schools, which operate within Michigan's Career Preparation System. Furthermore, although Michigan's Career Preparation System has 17 activity categories, this study included only the 2 originally required state activities and 8 expert recommended activities, rather than all of the activities included in Michigan's Career Preparation System.

### Chapter I Summary

This study examines the status of Michigan's Career Pathway high schools, as well as the relationships between the Career Pathway high school activities and factors such as the number of teacher professional development days dedicated to Career Pathways; the number of stakeholders involved in planning the Career Pathways; and the number of instructional staff, counselors, and administrators. Determining the relationships that exist in Career Pathway high schools may benefit Career Pathway high school leaders and leaders of future career related educational initiatives. Finally, because the research on Career Pathway high schools is somewhat limited, data on the Career Pathway high schools that were able to institutionalize and sustain the activities two years after funding are presented. Such as, the percentage of Michigan Career Pathway high schools that sustained the state mandated Career Pathway curriculum guides and

EDPs are reported. The opportunities students have to earn college credit and connect their learning through a work-based learning experience are also reported. Specific strategies are provided to the State of Michigan on how to structure future funding based on the barriers to implementation that were identified.

## CHAPTER II

### LITERATURE REVIEW

The literature review is organized into five sections: (a) Michigan's Career Preparation System Overview, (b) Michigan's Career Pathways, (c) Michigan's Education YES! Accreditation Model, (d) Required and Expert Recommended Career Pathway Activities, and (e) Staff Development and Population Considerations.

#### Michigan's Career Preparation System Overview

Unlike traditional career focused legislation targeted to individuals enrolled in secondary vocational training in the 11<sup>th</sup> and 12<sup>th</sup> grades in high school and technical education in community colleges, Michigan's Career Preparation System is designed to serve all K-12 students. Amendments to the School Public Aid Act in 1997–1998 initially created the Michigan Career Preparation System framework (Rudy & Rudy, 2001). The system includes seven Career Preparation System components including (a) academic preparation, (b) career development, (c) workplace readiness, (d) professional and technical education, (e) work-based learning, (f) accountability, and (g) school improvement (Career Preparation System Mission and Goals, 2002). The seven Career Preparation System components are further subdivided into 17 activity categories. Michigan's Career Preparation System Components and Activity Categories are identified in Table 1.

Table 1

*Michigan's Career Preparation Components and Activity Categories*

Components	Activity Categories
I. Academic Preparation	1. Career and Contextual Learning
II. Career Development	2. Career Pathways
	3. Comprehensive Guidance and Counseling
	4. Career Awareness and Exploration
	5. Career Assessment
	6. Educational Development Plans
III. Workplace Readiness	7. Career and Employability Skills
	8. Technology Education
IV. Professional and Technical Education	9. Career and Technical Education
	10. Tech Prep
	11. Community College
	12. College/University
	13. Military
	14. Technical/Trade/Proprietary Schools
V. Work-Based Learning	15. Work-Based Learning Techniques
VI. Accountability	16. Data/Evaluation/Accountability
VII. School Improvement	17. School Improvement Planning

*Note.* Career Preparation System Mission and Goals (2002). Retrieved November 18, 2002, from [http://www.michigan.gov/mdcd/0,1607,7-122-1680\\_2629\\_2722-28105--,00.html](http://www.michigan.gov/mdcd/0,1607,7-122-1680_2629_2722-28105--,00.html)

This system was designed to ensure that each high school graduate receives a quality education culminating in either immediate employment and/or postsecondary education in universities, community colleges, apprenticeships, trade schools, or the military. The system was initially administered through the Office of Career and Technical Preparation (OCTP), originally part of the Michigan Department of Career Development (MDCD). Shortly after the elimination of Career Preparation funding, the MDCD was also eliminated by executive order. The OCTP office was reorganized under a new Department of Labor and Economic Growth (DLEG) (New Michigan Department of Labor & Economic Growth Officially Opens for Business Today, 2003).

OCTP developed the guidelines for schools that accepted the special grant funds. These school districts were required to spend their funds implementing at least two of the five activities under the career development component: Career Pathways and Educational Development Plans (EDPs).

Prior to receiving Career Preparation System funding, each school district had to complete a gap analysis to develop baseline data for evaluation. Ninety-five percent of Michigan's public school districts (which includes traditional public high schools, alternative high schools, area technical centers, and charter public schools) agreed to implement specific activities and accepted the funding (Stern, 2002a). An even higher percentage of Michigan's traditional public high schools, 99%, accepted Career Preparation funding and participated in the Career Preparation System. The activities within the system were designed to assist students in finding purpose behind the academic subjects in high school and in planning for their future.

Designed to assist students and school staff in planning for the student's future, comprehensive guidance and counseling is an integral activity category of Michigan's Career Pathway high schools. Michigan's Career Preparation System model of guidance and counseling is based on Michigan's Comprehensive Guidance and Counseling Program (Career Preparation System, n.d.). Michigan's model is in alignment with national guidance and counseling initiatives, such as the National Career Development Guidelines (NCDG), a program encouraging the expansion of state-level career development. NCDG believes that comprehensive competency-based career guidance programs need to be in local schools and program settings (Miller, 1992). One of NCDG's standards is career planning. Another set of national standards, the National Standards for School Counseling Programs, is recognized by the American School Counselor Association (ASCA), which includes a career development component (Maddy-Berstein, 2000). Both Michigan's Comprehensive Guidance and Counseling Program and Michigan's Career Preparation System model are in alignment with such national efforts.

#### Michigan's Six Career Pathways

"Career Pathways are broad groupings of careers that share similar characteristics and whose employment requirements call for many common interests, strengths, and competencies" (Michigan Department of Education, 1999a, p. 8). Michigan has grouped possible careers into six Career Pathways, based on similar occupations, characteristics, and competencies. Michigan's six Career Pathways with definitions are presented in Table 2.

Table 2

*Michigan's Six Career Pathways With Definitions*

Michigan Career Pathway	Definition
Arts and Communications	Careers related to the humanities, the performing, visual, literary and media arts
Business, Management, Marketing and Technology	Careers related to all aspects of business including accounting, business administration, finance, information processing and marketing
Engineering/Manufacturing and Industrial Technology	Careers related to technologies necessary to design, develop, install or maintain physical systems
Health Sciences	Careers related to the promotion of health as well as the treatment of injuries, conditions and disease
Human Services	Careers related to childcare, civil service, education, hospitality and the social services
Natural Resources and Agriscience	Careers related to natural resources, agriculture and the environment

*Note.* Career Pathways (2002). Retrieved November 18, 2002, from [http://www.michigan.gov/mdcd/0,1607,7-1221680\\_2629\\_2722-28148--,00.html](http://www.michigan.gov/mdcd/0,1607,7-1221680_2629_2722-28148--,00.html)

To fully implement the Career Pathway activities, school districts that accepted the special funding were required to organize their high school student course selection guides around the six pathways. Each pathway is designed to provide students with a schedule of course work to prepare them for further studies and eventual employment in the career of their choice. Along with exposing students to the most appropriate

academic content available in their schools, the pathways also allow students to discover if their abilities and interests truly match a particular course of study.

The complexity of course offerings under each pathway in the high school's student course selection guide varies by school depending upon the school's size and ability to offer courses. For example, public high schools with a population of 1,000 or more students may be able to offer advanced placement (AP) chemistry, as opposed to a high school with a population of 600 students, which may not be able to offer AP courses. However, regardless of the variety of classes being taught in a high school, teachers are required to cover all careers in a pathway, regardless of the level of education required for a particular job within the career pathway (Career Pathways, 2002). Aligning curriculum by pathways not only organizes the curriculum, but it also influences all of the other components of the Career Preparation System (Michigan Department of Education, 1999a).

In March of 2003, Michigan's Office of Career and Technical Preparation (OCTP) adopted the National Career Clusters as standards for Career and Technical Education Programs and Career Pathway high schools in Michigan. Although the U.S. Department of Education has 16 Career Cluster areas, the state of Michigan had started organizing high school curricula around the six Career Pathways in 1997. Thus, OCTP decided not to switch the state system of six pathways to the 16 National Career Clusters. Instead, the OCTP grouped all of the 16 National Career Clusters within Michigan's established six Career Pathways. Michigan's Six Career Pathways Crosswalk with National Career Clusters is presented in Table 3.

Table 3

*Michigan's Six Career Pathways Crosswalked With National Career Clusters*

Michigan's Career Pathway	National Career Cluster
Arts and Communications	Arts, A/V Technology & Communications
Business, Management, Marketing and Technology	Business, Management & Administration
	Finance
	Hospitality & Tourism
	Information Technology
	Marketing, Sales & Service
Engineering/Manufacturing	Architecture & Construction
Industrial Technology	Manufacturing
	Science, Technology, Engineering & Mathematics
	Transportation, Distribution & Logistics
Health Sciences	Health Sciences
Human Services	Education & Training
	Human Services
	Law, Public Safety & Security
	Government & Public Service
Natural Resources and Agrisciences	Agriculture, Food & Natural Resources

*Note.* Career Pathways (2002). Retrieved November 18, 2002, from [http://www.michigan.gov/mdcd/0,1607,7-1221680\\_2629\\_2722-28148--,00.html](http://www.michigan.gov/mdcd/0,1607,7-1221680_2629_2722-28148--,00.html)

Michigan's six Career Pathways are designed to encompass a variety of careers with related skills, characteristics and educational requirements. Each Michigan Career Pathway high school was required to organize its curriculum under the six pathways. Organizing the student course selection guide by the pathways is one way to accomplish this requirement.

### Michigan's Education YES! Accreditation Model

Michigan's mandated Education YES! accreditation model is another example of the importance that state education officials place on career preparation. The accreditation model measures the school performance of Michigan's elementary, middle, and high schools. Each year, all school buildings in Michigan are scored using state developed rubrics and standards. One of the three standards for the accreditation model specifically mentions individual educational planning for all Michigan high school students. The accreditation model is organized into four major categories and 14 subcategories, 8 of which align directly with Michigan's Career Pathway high schools (Education YES! — A Yardstick for Excellent Schools, 2002). Clearly, it would be remiss not to articulate how Michigan's Career Preparation high school activities assist in meeting the criteria outlined in the state's mandated accreditation model. The Education YES! indicators are presented in Table 4, with those aligned with Michigan's Career Preparation System identified by an asterisk.

Table 4

*Education YES!*

Major Categories	Subcategories
Indicators of Engagement	1. Continuous Improvement * 2. Curriculum Alignment * 3. Performance Management System
Indicators of Instructional Quality	4. Advanced Coursework * 5. Arts and Humanities * 6. Extended Learning Opportunities * 7. Teacher Quality and Professional Development
Learning Opportunities	8. Family Involvement * 9. Four Year Education and Employment Plan (EDP) * 10. School Facilities 11. Student Attendance and Dropout Rate *
Student Achievement	12. Achievement Status 13. Achievement Change 14. Achievement Goals
* Indicates direct alignment with Michigan's Career Pathway high schools.	

*Note. Education YES! – A Yardstick for Excellent Schools (2002)*

### *Indicators of Engagement*

Two of the Education YES! indicators of engagement—continuous improvement and curriculum alignment—are directly supported through the Career Pathway high school focus. The continuous improvement indicator requires the school to involve stakeholders in the decision-making process. Career Pathway experts agree with the inclusion of a site-based decision-making committee in defining and redefining Michigan's Career Pathway high schools (P. Bergan & B. Meier, personal communication, December 18, 2003). Education YES! also requires data collection and analysis, which focuses on student academic achievement. Career Pathway high schools support these measures through individual student EDPs, which evaluate each student's academic achievement and high school program on an annual basis.

The second Education YES! indicator of engagement, curriculum alignment, requires districts to align core curriculum with several content areas, including the career and employability content standards, which are supported through the curriculum development process outlined in Michigan's Career Preparation System Overview.

### *Indicators of Instructional Quality*

Three of the indicators of instructional quality—advanced coursework, arts and humanities, and extended learning opportunities—are also directly supported through the Career Pathway high school focus. The advanced coursework indicator requires local school districts to use a variety of techniques in identifying students with unique learning needs and talents. Career Pathway high schools support this indicator through student

EDPs, which documents the student's standardized test scores and career assessment scores, including both the interests and abilities of student. Through the student EDP process, the student, counselor, and parent write down the courses the student will be taking in high school, including any advanced course work that may need to be taken at a community college or university. Career Pathway high schools encourage advanced coursework opportunities by offering students connections to postsecondary education through articulated college credit and dual enrollment credit agreements. Through these formal agreements, high school students can earn college credit from specific postsecondary institutions for course work completed in high school. The advanced coursework indicator also requires local school districts to provide diverse learning opportunities that include a variety of curricular, instructional, and assessment approaches, as well as instructional modifications. Career Pathway high schools support this indicator through identifying courses in each student's EDP and teachers utilize the inclusion of career and contextual learning activities in their daily instruction, such as "real world examples" and using a variety of career contexts from which to teach about all six Career Pathways.

The second indicator of instructional quality, arts and humanities, assesses if the local school district has a planned program that develops student achievement in the arts. Career Pathway high schools support identification of students' needs and interests through needs assessments and experiential activities that focus on various careers, including those based in the arts, all of which are documented on the EDPs. Specifically, one of Michigan's six Career Pathways is arts and communications. This indicator is also supported by partnerships with the local arts community, as Career Pathway high school

work-based learning experiences provide opportunities for students to structure an internship in an arts and humanities setting while receiving high school credit.

The third indicator of instructional quality, extended learning opportunities, assesses if the local school district identifies students who are at risk and matches them to appropriate extended learning activities. Education YES! specifically denotes the use of student EDPs, a state mandated activity in Career Pathway high schools, as a measure. Furthermore, opportunities for students to engage in educational activities before school, after school, on weekends, or during the summer is the Education YES! criteria for this indicator, which can be achieved through a Career Pathway high school work-based learning experience. Work-based learning activities can occur during or outside of the regular school day or outside the traditional public school calendar year.

### *Learning Opportunities*

Three of the indicators of learning opportunities—family involvement, 4-year education and employment plan, and student attendance and dropout rate—are also directly supported through the Career Pathway high school focus on comprehensive career development via EDPs. The family involvement criterion requires two-way communication with families. Career Pathway high schools support this indicator through the development and annual review of the student EDP, which requires annual parent endorsement. Another method of engaging parents in communication with Career Pathway high school personnel is inviting them to review their child's career assessment results.

The second indicator of learning opportunities requires school districts to develop 4-year education plans, or EDPs, for each student. As mentioned previously, EDPs are a state mandated activity in Career Pathway high schools. Along with personal information, EDPs include the student's Career Pathway goal, education/training goals, career assessment results, and a plan of action, including family consultation and endorsement. Through the EDP process, each student's individualized needs are considered in selecting the appropriate coursework and planning for the student's transition to postsecondary training and/or employment.

The third indicator of learning opportunities requires the school to have school climate initiatives, such as student involvement in decision-making or school-to-work programs that create a learning environment and a curricular structure that meets the needs of as many students as possible. Michigan's Career Pathway high schools meet this climate initiative by organizing the school curriculum under Michigan's six Career Pathways and assisting students in identifying their interests and aptitudes in an effort to position themselves in the Career Pathway likely to foster the most success.

#### Required and Expert Recommended Career Pathway Activities

This section focuses on overall student career development and related research, including Career Pathway curriculum guides, student career pathway designation, Educational Development Plans (EDPs), student career assessments, work-based learning, alternative scheduling, and college credit earned in high school.

### *Career Pathway Curriculum Guides*

Michigan's Career Preparation System required school districts to align their high school courses under Michigan's six Career Pathways and provide documents, such as course selection guides and handbooks, to students. The state standard allows for flexibility in how the Career Pathway information is presented to students. However, Career Pathway experts recommend organizing the student course selection guide under Michigan's six Career Pathways (P. Bergan & B. Meier, personal communication, December 18, 2003).

Research on the effectiveness of student course selection guides could not be found; however, a plethora of models used by local education agencies is available (Wonacott, 2000, 2002). Some of the models include organizing courses by Michigan's six Career Pathways. Larger school districts have majors under the Career Pathways, such as an accounting pathway and a marketing pathway under the larger Business, Marketing and Management Career Pathway. Some districts include a sample of courses, under each Career Pathway that students may expect to take once they graduate and enter postsecondary training.

### *Student Career Pathway Designation*

Michigan's Career Preparation System requires students to declare their Career Pathway on their EDP in the eighth grade in preparation for high school (Career Preparation System, n.d.). The system does not force the student into the selected Career Pathway, but it does require students to review the Career Pathway designation annually.

Requiring students to declare a Career Pathway is designed to assist them with future career planning, whether or not they complete the initial Career Pathway.

School districts vary in when students are permitted to change their Career Pathway. Some districts allow students to change their pathway through the 12<sup>th</sup> grade, whereas other districts allow the students to change only up to their 11<sup>th</sup> grade year. According to Career Pathway experts, students should be allowed the opportunity to change their Career Pathway through the 12<sup>th</sup> grade, because the goal of the program is to allow students to explore various careers without being restricted if their interests change (P. Bergan & B. Meier, personal communication, December 18, 2003). Similar research indicated students must be able to change their Career Pathway if they change their minds (Olson, 1997). Although related research on this topic is limited, existing studies support making all six Michigan Career Pathways available to students throughout their high school years.

#### *Educational Development Plans (EDPs)*

EDPs, as defined by the Michigan Office of Career and Technical Preparation, should be developed in the eighth grade for ninth grade course selection. Both students and parents should review EDPs annually. EDP benchmarks require each district to develop a 4-year educational plan for students before they enter high school (EDP Fundamentals, 2002). Each EDP must include (a) personal information, (b) Career Pathway goal, (c) educational/training goals, (d) career assessment results, (e) plan of action, and (f) parent/family consultation and endorsement (if the student is under age 18).

According to Olson (1997), research suggested all students should have individual and career education plans. An individual career plan provides course selection guidance. Research indicated students with such a plan are more likely to take courses that will prepare them to succeed in college and careers. In addition to course selection, the plan should also include the student's abilities, interests, and future goals. The purpose of the EDP is to provide parents and students with information to make sound decisions about the future.

Michigan's Office of Career and Technical Preparation conducted a statewide report focused on students' perceptions of their high school experience and assessed the students' perceived usefulness of the EDP (Michigan Department of Education, 1999a). The statewide report ( $N = 58,143$ ) indicated 51.1% ( $n = 29,704$ ) of students "agreed" or "tended to agree" that the EDP helped in high school course selection.

A second statewide survey conducted by the Michigan State University Program in Public Policy and Administration in 2002 analyzed 39 grant applications of districts that received Career Pathways state funding and surveyed 380 school districts, not including metropolitan Detroit. Ninety-eight (26%) districts responded and indicated the use of student EDPs increased from 34 (35%) to 72 (80%) since the implementation of Career Pathways (Stern, 2002b).

### *Student Career Assessments*

The Office of Career and Technical Preparation in Michigan defines career assessment as "formal and informal measures and inventories that assist learners in understanding their career interests, aptitudes, and abilities" (Career Assessment, 2002,

p. 1). When declaring a Career Pathway, students use the results of their completed career assessment(s) to assist in determining aptitude and interest. Several career assessments are available to local school districts, including American College Testing (ACT) Explore, Armed Services Vocational Aptitude Battery (ASVAB), Career Cruising, Differential Aptitude Test (DAT), and Michigan Occupational Information Systems (MOIS). Along with each student's Career Pathway choice, the results of the career assessment instruments are recorded on the EDP. Career assessment information is essential in developing a student's EDP (Michigan Department of Education, 1999a).

Career assessments assist students in better understanding themselves, and this new information is useful in career planning (Kapes & Martinez, 1998). When students better understand themselves, they are more likely to make realistic and informed decisions. The research thus far has indicated that career assessments assist students in learning more about themselves, which enhances the career planning process.

### *Work-Based Learning*

Work-based learning experiences, coordinated with the student's educational program, provide a real-world connection for the student (Michigan Department of Education, 1999a). Career Pathway experts believe each student in a school district should have a structured work experience related to the student's Career Pathway in either the 11<sup>th</sup> or 12<sup>th</sup> grade (P. Bergan & B. Meier, personal communication, December 18, 2003). "Work-based learning is a combination of school-based preparation and supervised worksite experience designed in collaboration with business/industry to

enable students to acquire attitude, knowledge, and skills for career and other life roles in real work settings” (Michigan Department of Education, 1999a, p. 17). Work-based learning techniques include apprenticeship, cooperative education, internships, job shadowing, service learning, and unpaid work experience. The type of work-experience is recorded on the students’ EDP.

Preparing students for the workplace includes fostering technology skills, critical thinking skills, teamwork skills, and the ability to deal with change. “Career and employability skills are the career planning and general workplace knowledge, behaviors and skills that will help learners move successfully into the world of work and/or continuing education in order to pursue their career goals” (Career and Employability Skills, 2002, p. 1). Students need to develop workplace readiness skills before they leave high school. Employers are interested in future employees who come to work on time, can work in teams, and have a desire to participate in continuing education. Wonacott (2001) stated that workers need to be able to solve problems, communicate effectively, adapt to change, and use technology.

Job shadowing is a work-based learning method that provides students with the opportunity to observe an employee or employees to learn about a specific occupation or industry. The National School-to-Work Office conducted a 1996–1997 school year study of the work-based learning participation rates of 40 states and two territories comprising more than 50,000 schools in 976 partnerships (MPR Associates, 2001). The study indicated 71% of the schools provided job shadowing experiences as reported by the local partnerships ( $N = 918$ ). Schools providing paid and unpaid internships were

also surveyed; 45% of the schools in the local partnerships ( $N = 890$ ) provided internships.

Another work-based learning method is an internship, which provides a student an opportunity to work for an employer and complete a task or series of tasks from a single occupation (MPR Associates, 2001). A study conducted in Maine indicated positive outcomes related to student internships. Maine's Technical College System includes an internship that begins in high school. Of the eight students who graduated from the program in 1995, two chose to pursue their Associate's Degree, and seven continued to work, five for their original employer. By 1996, six of the interns completed or were near completion of an Associate's Degree, and three of them had been accepted into a 4-year institution (Olson, 1997). One of the students reported that the internship process significantly impacted his high school course taking strategies. Once in the internship, he switched from general English to advanced English, from general math to pre-calculus, and from general science to physics (Olson, 1997).

Michigan's Office of Career and Technical Preparation conducted a statewide report focused on students' perceptions of their high school experience and assessed the students' perceived usefulness of the work-based learning experiences in determining education and career plans after high school (Michigan Department of Career Development, 2003). The statewide report ( $N = 63,876$ ) indicated 49.2% ( $n = 31,447$ ) of the students agreed or tended to agree that work-based learning experiences were helpful in determining education and career plans after high school.

After the implementation of Career Pathways, the number of students participating in work-based learning experiences in Berrien County, Michigan's schools

increased over 700% from 1995–2000 (Rudy & Rudy, 2001). In Michigan and across the nation, significant numbers of students have engaged in work-based learning experiences. Research studies on work-based learning experiences indicate a positive relationship in the students' ability to apply academic knowledge into the needs of the workplace (Olson, 1997).

The related research indicates students involved in work-based learning enroll and graduate from college and take more rigorous academic courses while in high school. National and state studies indicate the merit of work-based learning.

### *Alternative Scheduling*

Although Michigan's Career Preparation System does not address alternative school scheduling, Career Pathway experts and a review of the literature revealed its merits. Canady and Rettig (2000) commented, "a school schedule can have an enormous impact on a school's instructional climate" (p. 375). Conversely, the research on the impact of alternative scheduling indicates mixed results. York (1997) indicated both positive and negative changes in student achievement. Queen (2000) indicated a negligible effect on student achievement and Hackman and Walters (1998) indicated an increase in student achievement.

Perhaps as little as 60% of actual in-school time is spent on real-time instruction; one mechanism used to help increase educational efficiency and effectiveness is alternative scheduling (Payne & Jordan, 1996). Alternative scheduling research reveals that engaging students for a longer instruction period increases learning (Bertrando, Conti-D'Antonio, & Eisenberger, 1998). By increasing the middle time frame of

instruction, students are better able to apply theoretical knowledge to new situations. Alternative scheduling provides an opportunity for teachers to incorporate more cooperative learning strategies, as well as time for student work in peer groups, in-class demonstrations, and applied learning activities. During cooperative learning, effective teachers do not sit; instead, they observe students to evaluate their mastery of the concepts. It is a time when teachers can tutor, as well as identify students who would benefit from remedial activities or enrichment and provide those experiences (Bertrando, et al., 1998; Canady & Rettig, 1995).

Another gain in instructional time with alternative scheduling is the reduction in routine tasks completed at the beginning of each class period. On average, 16% of the school day is spent completing noninstructional functions such as attendance, record keeping, and student conduct in a traditional six- or seven-period schedule (Deuel, 1999).

Hess, Robinson, and Wronkovich (1999) conducted a research study on alternative schedules at Coventry High School in Akron, Ohio. The pretest/posttest study documented significant increases in student retention for English and biology courses with alternative scheduling.

Schools utilizing alternative scheduling have fewer passing periods; consequently, students are in the hallway less often. According to Irmsher (1996), most discipline problems occur during passing time. Hackman and Walters (1998) reported that schools with innovative schedules frequently experience a significant decrease in disciplinary referrals, as well as improved attendance, mastery of content, and improved grades. Additionally, the schools reported better teacher-student interactions and a dramatically

improved building climate. Teachers and administrators routinely voiced overwhelming approval of larger instructional time blocks. Canady and Rettig's (1995) research also indicated a decrease in discipline referrals. Additional research conducted by Rettig (1998) indicated schools that have used alternative scheduling for 2 or more years report a reduction in discipline referrals from 86% to 25%. Wasson High School in Colorado reported a dramatic and positive change in the school's tone and climate as a result of their alternating block schedule (Schoenstein, 1994). Similarly, a study conducted at a New Jersey school documented a reduction in student dropout rates (Rufino, 2000). Statewide and local studies of alternative schedules have been conducted in Michigan.

A statewide survey conducted by the Michigan State University Program in Public Policy and Administration in 2002 analyzed 39 grant applications of districts that received Career Pathways state funding. The survey included 380 public schools, not including metropolitan Detroit, of which 98 (26%) districts responded with 44% of those districts responding to the alternative scheduling question. Of the 40 (44%) school districts utilizing a block or alternative schedule, Career Pathways was the catalyst for almost one third of the districts using an alternative schedule, which included changed schedules, lengthened course sessions, school days or school years (Stern, 2002b).

Many of the Berrien County local school districts adopted an alternative school schedule as a means to fully implement the Career Pathway high school concept (Rudy & Rudy, 2001). Alternative school schedules support Career Pathway high schools by providing students the opportunity to take more classes during high school according to nationally recognized Career Pathway experts (P. Bergan & B. Meier, personal communication, December 18, 2003). According to the experts, students need more

opportunities to take classes and longer time frames for instruction, both of which are facilitated through adopting an alternative school schedule. The review of the literature regarding alternative scheduling indicated an increase in real-time instruction, cooperative learning strategies, and student retention, as well as a decrease in discipline.

Despite the widespread support of alternative scheduling reported in the literature, some caveats also emerge. "Schools considering alternative schedules should be aware that the schedule is not an end itself but should instead be developed as part of an overall plan to address a school's identified goals" (Hackman & Walters, 1998, p. 1). For example, Niles High School, in Niles, Michigan, implemented the alternating block schedule from a six-period day, and students were required to take two additional courses each school year. These additional opportunities were structured by organizing the curriculum into Career Pathways.

In Berrien County, Michigan, the number of credits students have an opportunity to earn during their high school experience has increased. To structure the additional opportunities, schools increased the number of credits students take in math, English, and science to expand academic preparation. Students were also required to take a specific number of Career Pathway courses. These increased opportunities have provided students with the option of exploring more courses. Since the increase in graduation requirements, 212 new course offerings have been developed and implemented countywide (Rudy & Rudy 2001). With the variety of alternative schedules that exist, a local school can use an existing model or create a new model to meet the needs of the culture.

The two most common types of alternative schedules are the A/B alternating block and the 4 × 4 semester block (Deuel, 1999; Slate & Jones, 2000). In the A/B alternating block, students enroll in seven or eight courses that meet every other day for the entire school year. The length of the class period ranges from 75 to 95 minutes. In the 4 × 4 semester block, students enroll in four courses per semester. Students complete four courses each semester for a total of 8 courses in a school year. Many schools implement a seminar or tutoring period as part of their alternative schedule. During seminar, students are assigned to a specific classroom teacher and are permitted to visit other classrooms for academic assistance. Seminar periods may also reduce the number of interruptions in the normal school day, as class or club meetings may be held during that time.

Overall, research indicates mixed outcomes regarding academic achievement of students in schools with alternative schedules. The research does indicate an increase in real-time instruction, cooperative learning strategies, and student retention, as well as a decrease in discipline. The research seems to indicate schools should adopt an alternative schedule only if it addresses the overall educational goals of the school, such as the implementation of a Career Pathways curriculum.

### *College Credit Earned in High School*

Michigan's Career Preparation System was designed to expose students to the requirements for various careers and to increase the number of students earning college credit while in high school. One of the goals of the professional and technical education activities was to give students the opportunity to earn college credit while in high school

and learn about the variety of postsecondary education options including (a) Career and Technical Education (high school), (b) Tech Prep (community college credit earned in high school), (c) community college, (d) college/university, (e) military, and (f) technical/trade/proprietary schools. The ultimate goal for the professional and technical education component was to provide a seamless transition from high school into postsecondary training options (Michigan Department of Education, 1999a).

For example, during their high school years, students would complete Career and Technical Education courses that would articulate to college credit in community colleges through Tech Prep agreements. Those students interested in careers that require a 4-year degree would be prepared to enter the university upon high school graduation. Some students ease the transition to postsecondary training by completing college credit in high school.

The National Center for Education Statistics conducted a 2002–2003 research project on dual credit and exam-based (Advance Placement) courses in U.S. public high schools. The study, which revealed that 87% of respondent schools offered some type of college credit, defined three types of college credit high school students could earn: dual credit, Advance Placement (AP) credit, and International Baccalaureate (IB) credit (Lewis, Setzer & Waits, 2005).

Dual credit courses allowed students to earn college and high school credit while taking the course in high school. AP courses followed the AP guidelines, whereby students take the AP exam and receive a qualifying score to earn advanced college placement or college credit in the curricular area. Completing a 2-year liberal arts program in high school and passing IB examinations in each subject area to receive an IB

Diploma earned International Baccalaureate credit. Some, not all, postsecondary institutions provide advance placement for students who receive IB credit, while others grant college credit upon admission.

Of the 87% of schools offering college credit in high school, 70% offered dual credit, 67% offered AP courses, and 2% offered IB courses. Only 36% of the reporting schools offered only one type of college credit, 50% offered two types of college credit, and 2% offered three types of college credit. Although the report indicated there has not been any research conducted, a countywide study was conducted in Michigan on this topic.

This study, in Berrien County, Michigan, indicated a positive relationship between Career Pathway high schools and the number of students earning postsecondary credit. In 1997, 62 Berrien County High School students were enrolled in college-level courses while still in high school. By 2001, a total of 299 students had earned college credit while still in high school. According to Rudy and Rudy (2001), this 270% increase in enrollment reflects a renewed connection between postsecondary institutions and the Berrien County schools, as some of the Career and Technical Education (CTE) programs have articulation agreements with local community colleges and grant the students college credit for high school courses.

#### Staff Development and Building Considerations

This section focuses on related research that addresses teacher professional development, instructional strategies, Career Pathway planning committees, guidance counselor ratios, and size of the student population.

*Teacher Professional Development*

According to Danielson (2002), exemplary teacher professional development is designed by teachers, focused on improved student learning, and tailored to the school's goals. The high schools that accepted funding for Career Pathway high schools were required to develop a Career Pathways curriculum guide and implement student EDPs. To implement the curriculum guide and EDPs, high schools needed to conduct related teacher professional development.

Teacher professional development, sometimes referred to as staff development, "is the means by which educators acquire or enhance the knowledge, skills, attitudes, and beliefs necessary to create high levels of learning for all students" (National Staff Development Council, 2001, p. 2). Research indicates that teacher professional development needs to be specific and reinforced through a series of professional development activities. Garet (2001) studied the effects of staff development included on 1,027 mathematics and science teachers. Based on ordinary least squares regression, the research indicated the duration of the staff development as one of the features that affect teacher learning (Garet, 2001). Along with an increase in staff development time, staff development curriculum must be designed in such a manner that the content of staff development days builds upon previous professional development experiences. Hiebert's (1999) research echoed Garet's (2001) finding regarding the overall consistency and continuity of staff development as an important feature of its success. According to Hiebert's research, teachers need ongoing collaboration to learn new teaching methods.

Overall, successful staff development is contingent upon two factors: it must be both consistent and continuing.

According to previous studies, teacher professional development must be more than a one-day training or single training opportunity. To be effective, teacher professional development must be long-term, designed with teacher input, and allow opportunity for follow up and reflection (Cook & Fine, 1996). Cook further explained the need for systemic change in teacher professional development.

Systemic change is at the core of Michigan's Career Preparation System. In Michigan's Berrien County Intermediate School District, the Career and Technical Education (CTE) Director and the School Improvement Director have partnered on school improvement planning (P. Bergan, personal communication, December 18, 2003). The school district developed a systemic approach to incorporating the core curriculum areas (math, English, science, and social studies) with CTE programs. District administrators consulted with local school districts to bring together CTE and general education curriculum under the umbrella of Career Pathways.

School improvement efforts to organize the curriculum of Michigan's Williamston High School under Career Pathways created a staff professional development need. Many of the teachers were found to have limited occupational experiences outside of education to make connections between academic knowledge and occupational awareness. Teachers needed individualized externships with local business and industry to learn more about what noneducators do in their jobs. In 1998, a large percentage of teachers across the district had no work experience outside of education. By 2004, however, 70% of the district's teachers had experienced a summer externship

in business/industry, which enabled them to bring personal experience working in different careers into their classrooms (Williamston Community Schools Proves Career Preparation System Works, 2002).

### *Instructional Strategies*

Specific instructional strategies designed to link objectives in the curriculum to specific occupational skills are contained within the academic preparation activities in Michigan's Career Preparation System. Designed in alignment with the existing curriculum standards in Michigan, the academic preparation activities are built upon the Michigan Curriculum Frameworks, which serve as the curriculum standards for the state of Michigan (Michigan Department of Education, 1999a). The Career Preparation System focuses on instructional strategies that integrate curriculum between the core academics and noncore classes.

Two integration strategies include teachers incorporating "real world" examples and interdisciplinary teaching. Ideally, interdisciplinary teaching, in which both academic and CTE instructors team teach, combines the content from academic and CTE programs into one or more classes. Incorporating "real world" examples is the process of connecting academic subjects such as math, English, science, and social studies to specific workplace practices. Two models include educators in academic courses incorporating career-related content and applications and educators in CTE courses incorporating academic content and applications.

Teaching "real-world" examples and interdisciplinary teaching are referred to as career and contextual learning under the academic preparation component of Michigan's

Career Preparation System. Dr. Stinnett of Williamston Community Schools described career and contextual learning as igniting students' interest in careers by helping students make connections beyond the classroom (Williamston Community Schools Proves Career Preparation System Works, 2002). Wonacott (2001) more specifically defined career and contextual learning as applying essential academic skills in a work-related context, bringing more relevance to the academic subjects. The concept of career and contextual learning extends to all of the students and courses in the school. Wonacott (2001) also stated that the connections need to be made to a general industry, not a specific career. For example, science concepts should be applied to the entire health industry, rather than to a specific occupation such as nursing.

The National School-to-Work Office conducted a 1996–1997 school year study of the participation rates of 40 states and two territories comprising more than 50,000 schools in 976 partnerships regarding work-based learning participation. Of the reporting local partnerships ( $N = 896$ ), 69% of the students received instruction that integrated academic and career education (MPR Associates, 2001).

A study commissioned by the United States Department of Education, Office of Vocational and Adult Education, demonstrated the importance of career and contextual learning (Reese, 2002) by documenting students making a connection between the application of “real world” examples and the academic curriculum, resulting in better retention of the academic concept. Hutchinson (1996) stated that as students apply new learning to real world situations, they gain the opportunity to judge their potential success in the workplace.

Various research studies indicate better retention of academic concepts when career and contextual instructional strategies are utilized. Additionally, the research indicates that students have the opportunity to evaluate their own future success in the workplace.

### *Career Pathway Planning Committee*

Michigan's Career Preparation System was designed to "ensure that Career Preparation is an integral part of our education system" (Michigan Department of Education, 1999a, p. 21). Linkages with the school improvement process at the local levels must be integrated to create the systemic change outlined in the career preparation system. Two ways of accomplishing this goal are the aforementioned professional development for teachers and site-based decision making, referred to as a Career Pathway planning committee in this study.

Many educational reforms have shifted the responsibility for decision making to a site-based committee at the school building level (Chubb & Moe, 1990). Individuals closest to the students, such as administrators, teachers, and parents, can better meet the students' needs via an organized process (Holman, 1995). Site-based teams provide the opportunity for input from a variety of stakeholders.

A critical component of the school improvement process is site-based decision making. Based upon a growing body of site-based decision-making research in the private sector, school districts started implementing similar systems. School leaders embracing site-based decision making believe teachers can make a difference as they are

closest to the action. Site-based models often focus on three levels of decision making: budget, personnel, and curriculum development (Cook & Fine, 1996).

According to the National Center for Education Statistics (Daugherty & Rossi, 1996), 56% of the schools in the United States, compared to 53% of Michigan schools, have site-based committees. Nationally, the majority of site-based committees includes a principal or vice (assistant) principal (96%), teacher or department head (95%), and a parent (79%) (National Center Educational Statistics, 1996). A smaller percentage of committees include other community representatives (37%), students (28%), and a superintendent or other district representative (24%). The study indicated that 83% of site-based decision-making teams used parent and community input in curriculum and student discipline decisions. Site-based team members provided input into the principal's budget and spending decisions 66% of the time. Only 34% of the teams reported providing input on school personnel issues.

According to the research, decision-making power varies by district. In Chicago, site-based teams are comprised of two teachers, four parents, two community representatives, and a principal. The team has decision-making control over budgeting, principal selection, and curriculum and program selection (North Central Regional Educational Laboratory, 1993). In Detroit, the site-based team is comprised of students, parents, administrators, and staff. The team has decision-making control over budgeting, instructional improvements, student services, and providers of student services. Regardless of the model, it is important for teachers to become key partners in the process.

The site-based decision making process was key in Berrien County's local school districts. During an interview with the school improvement and CTE directors at the Berrien County Intermediate School District in Michigan, both articulated the need for site-based decision making (P. Bergan & B. Meier, personal communication, December 18, 2003). Both directors have witnessed the benefits of site-based decision-making models in the local school districts within their county. Although models varied, the teams consisted of central office administrators, building administrators, general education teachers, CTE teachers, and an association (union) representative. Prior to implementing Career Preparation initiatives in Berrien County, the directors provided professional development on how a site-based decision-making team functions. Staff from interested districts brought in potential team members for training. According to the directors, one of the school districts that implemented a site-based decision-making team philosophy is still using it 8 years later. The directors attributed one component of the success of Career Pathway high schools in Berrien County, Michigan, to the site-based decision-making process (P. Bergan & B. Meier, personal communication, December 18, 2003).

#### *Guidance Counselor Ratios*

According to the American Counseling Association, the national counselor to student ratio is 478:1, the Michigan counselor to student ratio is 649:1, and the maximum recommended ratio is 250:1 (ACA, 2005). The Michigan School Counselor Association (1997) recommends counselors distribute their time as 15%–25% on guidance curriculum, 25%–35% on individual planning, 30%–40% on responsive

services and 15%–20% on systems support. The high school guidance curriculum includes study skills, career awareness, conflict resolution, substance abuse programming, career exploration, course selection planning, job preparation, personal responsibility skills, peer pressure resistance skills, and personal safety. Career awareness, career exploration, and planning course selections (Career Pathways and EDPs) are components of Michigan's Career Pathway high schools.

A study conducted by Standish (2004) on the Impact of Michigan's Career Preparation Initiative on High School Counselors indicated 56.1% ( $N = 101$ ) of the respondents' local school district Boards of Education adopted the standards and agreed that 15%–25% of the high school counselor's time should be on guidance curriculum, including Career Pathway high school activities. In her study of school employees, Standish found that 62.7% of the counselors had the highest level of involvement with the Career Preparation System, followed by 15.2% of principals and 2.7% of teachers.

#### *Size of Student Population*

According to Cotton (1996), there has been a 69% decline in the number of schools between 1940 and 1990 in the face of a 70% increase in the U.S. population. As a result, the average school enrollment increased from 127 to 653 students. Urban and suburban high schools have enrollments of 2,000 to 3,000 students. In concert with the increasing size of schools, the number of school districts decreased by 87% during that same time period.

Cotton (1996) analyzed 69 documents, 27 of which identify the number of students in a large school compared to a small school. The range for a small school was

from 200 to 1,000 students, whereas the range for a large school was from 300 to 5,000 students. Larger schools tend to provide a larger variety of course offerings for students. Pittman and Haughwout (1987) found that a 100% increase in the size of the student population resulted in a 27% increase in course offerings. Research indicated the increase in course offerings is typically limited to more introductory and noncore classes (McGuire, 1989; Monk, 1992).

According to Cotton (1996) a reliable relationship between curriculum quality and school size does not exist. A national study, which included the effects of school size and participation in school-to-work movement revealed a positive relationship between larger schools and the number of school-to-work activities in place (Sanders, Stull, & Stull, 2000). The study was based on a national sample of 1,144 comprehensive public high schools as part of the U.S. Department of Education's National Education Longitudinal Survey of 1988. The study indicated less than a 2% increase in school-to-work activities from the schools, which ranked in the 25<sup>th</sup> percentile (720 students) to the 50<sup>th</sup> percentile (1,125).

## Chapter II Summary

Clearly, extensive research exists in the areas of work-based learning, alternative school scheduling, and instructional strategies. However, limited research exists on Career Pathway designation, student course selection guides, and EDPs. While national research exists on work-based learning, postsecondary credit, interdisciplinary teaching, and the incorporation of real-world examples, no studies specific to Michigan have been conducted. Several studies demonstrate the efficacy of the Career Pathway high schools

in achieving school-based goals, such as increased GPA, increased graduation rates, increased academic course load, and decreased student dropout rates. This study provides additional research on the status of the Michigan's Career Pathway activities. It also determined the characteristics of public high schools that have sustained these activities over time, as well as the barriers faced by schools unable to achieve sustainability.

## CHAPTER III

### RESEARCH METHODOLOGY

The purpose of this research study was to investigate the status of Michigan's Career Pathway high schools 2 years after state funding was eliminated; the status of Career Pathway curriculum guides and student Educational Development Plans (EDPs); the status of expert recommended activities; the relationship between the total number of Career Pathway activities, the total number of EDP activities, and the combined total of the aforementioned categories to a variety of variables; the relationship between the Career Pathway activities in place and the respondents' opinion on the how helpful the selection of a Career Pathway is in helping students select courses and the use of an EDP is in helping students select courses; and factors that may have prevented Michigan's high schools from implementing Career Pathways and EDPs.

#### Research Design

To design the survey, the characteristics of successful Career Pathway high schools, along with the Career Pathway high school state requirements, were identified. To begin the research design, Michigan's Career Preparation materials, specific to Career Pathway high schools, were reviewed. The reference material was used in the initial design of the research survey to ensure alignment with state mandates. Secondly, a panel of experts knowledgeable about Career Pathways was organized to assist with this study (see Appendix A). This panel of experts identified additional areas warranting inclusion

in this study, such as the last grade in which a student can change their declared Career Pathway, Career Pathway high school planning team, and alternative school schedule. Additionally, the experts revised and added significant input to the selection of responses under specific research questions.

A survey research design method was used to collect data for this study. There are several advantages to using mailed surveys. Survey questionnaires are an economical method of collecting data when the purpose is to generalize data from a sample population (Creswell, 2003). According to Walonick (1998), survey questionnaires are easy to analyze, are familiar to most people, reduce bias, and are less intrusive than telephone or face-to-face surveys. Consequently, this mail survey was ideal for this large statewide sampling.

An analyst from Michigan's Office of Career and Technical Preparation (OCTP) reviewed the draft survey. Lengthy discussion regarding the survey design and statistical analysis of the data to be collected took place during an interview with the analyst (J. Kroll, personal communication, October 11, 2004). Changes were made to the responses listed under various survey questions based on the input of the analyst.

Once the initial survey and cover letter were designed, a focus group of school administrators, counselors, teachers, and a Career and Technical Education coordinator was assembled. The purpose of the focus group was to determine the length of time the survey would take to complete and comment on any information in the cover letter or survey that was not clear. Each participant in the focus group was given a copy of the cover letter and a survey and was instructed to read the cover letter and complete the survey. Participants were asked to note any difficulty they had understanding the

instructions, survey questions, or responses. The total response time to read the letter and complete the survey ranged from 5 to 8 minutes. Once each participant had an opportunity to complete the survey, a discussion was held regarding the materials. Revisions, such as bolding the sentence on the cover letter to whom the building principal was to forward the survey and adding more work-based learning activities to the survey, were made based on their input. Ultimately a 27-question, two-section research survey was designed. Section one included demographic questions and section two included Career Preparation questions.

After input from the Career Pathway expert panel, a state department analyst, and pilot group testing the survey, the materials were submitted to the Western Michigan University's Human Subjects Institutional Review Board (HSIRB) for approval. The HSIRB approved the procedures and methodology used in this study. The cover letter, which includes the purpose of the study and general instructions, is located in Appendix B. The research survey used to collect the data is located in Appendix C. The submitted HSIRB approval letter is located in Appendix D. A reminder card mailed during the second mailing is located in Appendix E.

### Participants

All of Michigan's traditional public high schools that originally received Career Preparation System funding and were designated as Career Pathway high schools were invited to participate in the study. A total of 596 public high schools in Michigan comprised the population for the study, with a total of 418 surveys completed and returned.

The survey was mailed to the high school principal with instructions to “please direct this survey to the staff person most responsible for the implementation and supervision of Career Pathways activities in your building.” The first question on the survey was regarding the respondents’ “primary job position” defined by the position as 50% or more of their responsibilities.

### Data Collection

The data collection process was segmented into three steps. During step one, the U.S. Postal Service, via first-class mail, delivered the surveys to the 596 Michigan high school principals who received Career Preparation System funding. Each high school principal received one cover letter, survey, and self-addressed, stamped return envelope. The cover letter was reproduced on Western Michigan University letterhead. The high school principals were asked to direct this survey to the staff person most responsible for the implementation and supervision of the Career Pathway activities in their building. This individual was asked to respond to the survey, which would take less than 10 minutes to complete, and return the completed survey directly to the researcher. To increase the response rate, the instrument was sent in a beige-colored envelope (Walonick, 1998).

Each of the surveys was coded to assist in identifying nonrespondents. Surveys were coded in the right hand corner on the first page, approximately one inch from the top and one inch from the right hand margin. Each survey was assigned a number beginning with 1 and ending with 596. A master list of the precoded survey instruments was used to maintain the code for each particular subject throughout the study. The

database included only survey addresses and codes. As the subjects returned the instruments, the codes and addresses were removed from the database and the survey.

Step two involved following up with identified subjects who had not returned the survey. Two weeks into the study, a reminder card, second cover letter, survey, and stamped, self-addressed envelope were mailed to nonrespondents. Once the second mailing was completed, the master database list linking codes to the addresses was destroyed prior to data entry.

The third step included entering each survey into an Excel spreadsheet, creating a database of raw data. To become familiar with the data, the researcher manually entered it into the Excel spreadsheet (Walonick, 1998). The total administration time took 7 weeks.

### Data Analysis

Data analysis for each research question is summarized in a table format within this section. Each table includes the research question, related survey questions, independent variable, dependent variable, and analysis method. Both research questions 1 and 2 included the collection of demographic data, which provided the opportunity to display a clear picture of the characteristics of Career Pathway high schools that sustained the activities over time. The data analysis used for research question 1 is shown in Table 5.

The data analysis used for research question 2 is shown in Table 6.

To complete the analysis for question 3, the Pearson  $\chi^2$  test of independence and the Pearson's  $R$  interval-by-interval symmetric measure of association were utilized. The

Table 5

*Data Analysis for Research Question 1*

1) What is the status of activities originally required by the state within Michigan's Career Pathway high schools, including				
Research Question	Survey Question	Independent Variable	Dependent Variable	Data Analysis
a) Career Pathway Curriculum Guide	9-11-12-13	Curriculum guide	--	Descriptive Statistics
b) Educational Development Plans (EDPs)	15-16-17-18-19-21	EDPs completed and reviewed	--	Descriptive Statistics

$\chi^2$  test of independence is a nonparametric test that analyzes the relationship between two sets of categorical data that are hypothesized to be independent of one another. The two independent sets of data are categorized in rows and columns in a contingency table. When the Pearson  $\chi^2$  analysis is applied, a value less than  $\alpha = .05$  or 95% confidence indicates statistical significance. The Pearson's  $R$  interval-by-interval symmetric measure will display a value between 0 and 1 with 0 indicating no association and 1 indicating a strong association.

In preparation to conduct the analysis for research question 3, a statewide referent group composed of individuals knowledgeable about Career Pathway high schools refereed to as Career Pathway weighting group experts (see Appendix F) developed a weighting system for the dependent variables. The Career Pathway experts were asked to apply a 1 to 4 weighting scale, with 1 being least important and 4 being most important to a Career Pathway high school, for specific survey questions and

Table 6

*Data Analysis for Research Question 2*

2) What is the status of expert recommended activities within Michigan's Career Pathway high schools, including:				
Research Question	Survey Question	Independent Variable	Dependent Variable	Data Analysis
a) student career pathway designation	11	Student selection	--	Descriptive Statistics
b) student career assessment	20	Student career assessments	--	Descriptive Statistics
c) work-based learning	23	Opportunities offered	--	Descriptive Statistics
d) alternative scheduling	5	School schedule	--	Descriptive Statistics
e) college credit earned in high school	24	Type of credit offered	--	Descriptive Statistics
f) instructional strategies	25-26	Strategies being used	--	Descriptive Statistics
g) teacher professional development	27	Strategies being used	--	Descriptive Statistics
h) career pathway planning committee	10	Composition of team	--	Descriptive Statistics

responses. Three categories of questions were combined under the following sections: weighted Career Pathway activities, weighted Educational Development Plan (EDP) activities and weighted Career Pathway instructional activities (see Appendix F). The data analysis used for research question 3 is shown in Table 7.

Table 7

*Data Analysis for Research Question 3*

3) Is there a relationship between the total number of the weighted Career Pathway activities, the total number of the weighted Educational Development Plan (EDP) activities, the total number of the weighted Career Pathway instructional activities, and the combined total of the aforementioned categories to				
Research Question	Survey Question	Independent Variable	Dependent Variable	Data Analysis
a) the number of Career Pathway related teacher professional development days	27	Number of professional development days	Total number of activities in place	Descriptive statistics Chi-square test of independence
b) the number of stakeholders who were involved in the initial planning of the Career Pathway high school	10	Number of stakeholders	Total number of activities in place	Descriptive statistics Chi-square test of independence
c) the number of instructional staff	8	Number of instructional staff	Total number of activities in place	Descriptive statistics Chi-square test of independence
d) the number of guidance counselors	7	Number of counselors	Total number of activities in place	Descriptive statistics Chi-square test of independence
e) the size of the student population	4	Number of students	Total number of activities in place	Descriptive statistics Chi-square test of independence

To complete the analysis for question 4, the Pearson  $\chi^2$  test of independence and the Pearson's  $R$  interval-by-interval symmetric measure of association were utilized. The  $\chi^2$  test of independence is a nonparametric test that analyzes the relationship between two sets of categorical data that are hypothesized to be independent of one another. The two independent sets of data are categorized in rows and columns in a contingency table. When the Pearson  $\chi^2$  analysis is applied, a value less than  $\alpha = .05$  or 95% confidence indicates statistical significance. The Pearson's  $R$  interval-by-interval symmetric measure will display a value between 0 and 1 with 0 indicating no association and 1 indicating a strong association. The data analysis used for research question 4 is shown in Table 8.

To complete the analysis for question 5, a statistical confidence interval analysis was utilized. This is similar to using a pair-wise Scheffe post-hoc comparison procedure when performing an analysis of variance (ANOVA). The Scheffe process is typically utilized subsequent to having rejected the null hypothesis of no difference between the means. In the ANOVA situation, the Scheffe post-hoc comparison process is used to identify which pairs of means are significantly different from each other so the specific pair or pairs of means that caused the ANOVA null hypothesis to be rejected can be identified. This approach is analogous. The confidence intervals utilized compare the means of each barrier against the means of the remaining barriers. If the confidence intervals for a pair of barriers overlap, there is no statistically significant difference between that pair of means. Conversely, if a pair of barriers does NOT overlap, that pair is considered statistically significantly different. Doing the analysis in this manner provides the opportunity to cluster the barriers with similar impact in a graph, so the

Table 8

*Data Analysis for Research Question 4*

4) Is there a relationship between the respondents' opinion on				
Research Question	Survey Question	Independent Variable	Dependent Variable	Data Analysis
a) how helpful the selection of a Career Pathway is in helping students select courses and the total number of weighted Career Pathway activities in place?	13	Respondents' opinion	Total number of activities in place	Chi-square test of independence
b) how helpful the use of an Educational Development Plan (EDP) is in helping students select courses and the total number of Educational Development Plan (EDP) activities in place?	21	Respondents' opinion	Total number of activities in place	Chi-square test of independence

relative impact of the barriers can be seen visually. The data analysis used for research question 5 is shown in Table 9.

### Chapter III Summary

This study used the research survey method to examine (a) the status of Michigan's Career Pathway high schools, (b) the relationship between the Career Pathway activities and independent variables, (c) the relationship between Educational

Development Plan (EDP) activities and independent variables, (d) the relationship between Career Pathway instructional activities and independent variables, and (e) barriers to implementing Career Pathway activities. Descriptive statistics, chi-square test of independence, and statistical confidence intervals were used to analyze the data, with such results described in Chapter IV.

Table 9

*Data Analysis for Research Question 5*

4) What factors, if any, prevented Michigan's public high schools from				
Research Question	Survey Question	Independent Variable	Dependent Variables	Data Analysis
a) implementing a student course selection guide around Michigan's six Career Pathways?	14	High school student course selection guide	Funding Building administration School schedule Staff reduction instructional emphasis	Statistical confidence interval
b) having students complete Educational Development Plans (EDPs)?	22	Student Educational Development Plans	Funding Building administration School schedule Staff reduction instructional emphasis	Statistical confidence interval

## CHAPTER IV

### DATA ANALYSIS

This chapter presents the analysis of the survey data collected from Michigan's public high schools that accepted Michigan's Career Preparation System Act funds. An overall response rate of 70% (418 out of 596 surveys returned) was received. The analysis begins with the status of Michigan's Career Pathway high schools through a display of descriptive statistics including, but not limited to, demographics, Career Pathway curriculum guides, Educational Development Plans (EDPs), when do students select a Career Pathway designation, are students taking career assessments, and do students have the opportunity to earn college credit in high school. The relationship between the Career Pathway activities, EDPs, Career Pathway instructional activities and independent variables were analyzed utilizing the chi-square test of independence. This study also analyzed respondents' opinions on the effectiveness of students using Career Pathways and EDPs in assisting with course selection. Lastly, the barriers to maintaining the originally required activities, including Career Pathway curriculum guides and EDPs, were analyzed.

#### Demographic Data

The survey instrument developed for this study was mailed to 596 Michigan high school principals. A total of 418 surveys were completed and returned, a 70% response rate, which gives results from the study a 95% confidence level. Demographic data

provided the opportunity to display a clear picture of the characteristics of Career Pathway high schools. The cover letter instructions directed the principal to give the survey to the person most responsible for the Career Pathway activities in their building. Survey respondents were given nine fixed responses and the option to write in the position. Principals forwarded the survey to 157 (37.7%) counselors, while high school principals completed 151 (36.3%) of the surveys. A complete listing of the primary position of the respondents is presented in Table 10.

Table 10

*Primary Position of Individuals Completing the Survey*

Position	N	Percentage
Counselor	157	37.7
Principal	151	36.3
Career Preparation Coordinator	32	7.7
Instructor	19	4.6
School-to-Work Coordinator	17	4.1
Assistant Principal	15	3.6
CTE Director	13	3.1
Other	6	1.4
Department Chair Person	4	1.0
District Curriculum Director	2	.5
Did not respond	2	---
Total	418	100.0

Survey respondents were given five fixed responses for the number of years they were employed in education and the number of years they were employed in their current position. The majority of survey respondents, 223 (53.6%), had been employed in education for 20 years or more. However, 289 (69.3%) of the respondents had been in their current position for under 10 years. A detailed summary of years of experience and years in current position is presented in Table 11.

Table 11

*Years Employed for Individuals Completing the Survey*

Years	Total Years Employed		Current Position	
	<i>N</i>	Percentage	<i>N</i>	Percentage
1 – 4	19	4.6	139	33.3
5 – 9	42	10.1	150	36.0
10 – 14	67	16.1	65	15.6
15 – 19	65	15.6	30	7.2
20 or more	223	53.6	33	7.9
Did not respond	2	---	1	---
Total	418	100.0	418	100.0

Survey respondents were given four fixed responses regarding the size of their high school. Michigan categorizes school districts by the word “class,” followed by one of four letters, A, B, C, or D. The majority, 246 (59.1%), of the respondent schools

were class B or larger with a minimum student population of 489 students. A detailed summary of respondent school size is presented in Table 12.

Table 12

*Size of Responding High School*

Number of Students	<i>N</i>	Percentage
1,036 or more (class A)	129	31.0
489 – 1,035 (class B)	117	28.1
234 – 488 (class C)	109	26.2
233 or less (class D)	61	14.7
Did not respond	2	---
Total	418	100.0

The majority, 326 (78.0%), of respondent schools had grades 9–12 in their building. Only 3 (0.7%), of the respondent schools had grades 8–12 in their building. A detailed summary of school configurations is presented in Table 13.

Survey respondents were given four fixed responses regarding the number of administrators in the building. A majority of schools, 229 (55.2%), had two to three administrators in the building. Only 14 (3.4%) of the schools had six or more administrators in the building. A detailed summary of the number of high school administrators is presented in Table 14.

Survey respondents were given five fixed responses regarding the number of counselors in the building. A majority of respondent schools, 165 (39.6%), had one

Table 13

*School Configuration of Responding Schools*

Grades	<i>N</i>	Percentage
K – 12	18	4.3
6 – 12	12	2.9
7 – 12	44	10.5
8 – 12	3	.7
9 – 12	326	78.0
10 – 12	15	3.6
Total	418	100.0

Table 14

*Number of High School Administrators*

Number of Administrators	<i>N</i>	Percentage
1	101	24.3
2 – 3	229	55.2
4 – 5	71	17.1
6 or more	14	3.4
Did not respond	3	---
Total	418	100.0

guidance counselor in the building. Only 98 (23.5%) of the schools had four or more guidance counselors in the building. A detailed summary of the number of counselors is presented in Table 15.

Table 15

*Number of Counselors*

Number of Counselors	<i>N</i>	Percentage
1	165	39.6
2	89	21.3
3	65	15.6
4	53	12.7
5 or more	45	10.8
Did not respond	1	---
Total	418	100.0

Survey respondents were given five fixed responses regarding the number of instructional staff in the building. A majority, 270 (64.9%), of respondent schools had 50 or less instructional staff. Only 24 (5.8%) of schools had 101 or more instructional staff. A detailed summary of number of instructional staff is presented in Table 16.

Table 16

*Number of Instructional Staff*

Number of Instructors	<i>N</i>	Percentage
0 – 25	126	30.3
26 – 50	144	34.6
51 – 75	70	16.8
76 – 100	52	12.5
101 or more	24	5.8
Did not respond	2	---
Total	418	100.0

## Results of Research Question 1: Status of State Required Activities

Research question 1 examined the status of activities originally required by the state within Michigan's Career Pathway high schools, including (a) Career Pathway curriculum guides, and (b) Educational Development Plans (EDPs).

Data to address this research question were collected to determine the number of responding Michigan high schools that have their student course selection guide organized around Michigan's six Career Pathways. All of the Michigan high schools that responded to the study ( $N = 418$ ) had previously agreed during 1999–2000 school year to organize their courses under Michigan's six Career Pathways in documents such as course selection guides or student handbooks (Michigan Department of Career Development, 2003).

Of the high schools that responded to the survey, 320 (77.1%), organized their high school course selection guide around Michigan's six Career Pathways. Table 17 displays the number of schools organized Around Michigan's six Career Pathways.

Table 17

*High School Course Selection Guide Organized Around Michigan's Six Career Pathways*

Variable	<i>N</i>	Percentage
Organized around pathways	320	77.1
Not organized around pathways	95	22.9
Did not respond	3	---
Total	418	100.0

Educational Development Plans (EDPs), as defined by the Michigan Office of Career and Technical Preparation, should begin in middle school and be reviewed annually by the student and parent (EDP Fundamentals, 2002). Research questions were used to determine (a) the number of schools using EDPs; (b) whether the format was written, electronic, or both; (c) at what grade level the EDP is first completed; (d) at what grade level(s) the EDP is reviewed; (e) at what grade level(s) a parent signature is required; (f) which career assessments are utilized; and (g) the respondents' opinion on how helpful an EDP is in helping students select courses.

All of the Michigan high schools that responded to the study ( $N = 418$ ) had previously agreed during 1999–2000 school year to implement EDPs. The data indicated

that 404 (96.7 %) of schools still use EDPs. Only 14 (3.3%) of responding high schools indicated they do not use student EDPs. The response rate for the EDP-related subquestions is 404, since the 14 respondents who indicated EDPs are not in use were instructed to skip a series of questions.

The EDP may be written on paper, or a software package can be used to develop the plan. Responses varied from paper to electronic to both formats being utilized in their high school. Table 18 displays the Educational Development Plan (EDP) formats used.

Table 18

*Educational Development Plan (EDP) Format*

EDP Format	<i>N</i>	Percentage
Electronic	176	43.7
Paper	107	26.5
Both	120	29.8
Did not respond	1	---
Did not use EDP	14	---
Total	418	100.0

Michigan requires the initial development of EDPs in the eighth grade (EDP Fundamentals, 2002). The survey revealed that a majority of high schools, 320 (76.6%), first complete EDPs in the eighth grade while 75 (18.8%) of the high schools complete EDPs in ninth grade.

The Michigan Career Preparation System recommends the EDP be reviewed by the student and parent annually. A majority of Michigan's high schools, 313 (78.4%), review their EDPs at least annually. Table 19 presents the total number of times EDPs are reviewed during high school.

Table 19

*Total Number of Grades (Times) Educational Development Plans Reviewed*

Number of Grade Levels	<i>N</i>	Percentage
0 (Not reviewed)	14	3.5
1	29	7.3
2	20	5.0
3	23	5.8
4	313	78.4
Did not respond	5	---
Did not use EDP	14	---
Total	418	100.0

The Michigan Career Preparation System requires parent consultation/endorsement of the EDP. This research study examined parent signature as the method of endorsement. Less than 50% of the Michigan Career Pathway high schools that responded to the survey require a parent endorsed EDP all 4 years. Table 20 displays the total number of times a parent signature is required on the EDP.

Table 20

*Parent Endorsement of EDP by Number of Grades*

Number of Grade Levels	<i>N</i>	Percentage
Not required	105	26.9
1	91	23.3
2	12	3.0
3	8	2.0
4	175	44.8
Did not respond	13	---
Did not use EDP	14	---
Total	418	100.0

A majority of survey respondents, 226 (56.7%), felt that the EDP was “somewhat helpful” to “very helpful” in assisting students select courses. Only 18 (14.5%) of respondents felt the EDP was “not helpful” in assisting students select courses. Table 21 shows how helpful respondents found an EDP is in assisting students to select courses.

#### Results of Research Question 2: Status of Expert Recommended Activities

Research question 2 examined the status of expert recommended activities within Michigan’s Career Pathway high schools, including (a) student Career Pathway designation, (b) student career assessment, (c) work-based learning, (d) alternative

Table 21

*How Helpful an EDP Is in Helping Students Select Courses*

Variable	N	Percentage
Not helpful at all	18	4.5
Somewhat helpful	123	30.8
Helpful	130	32.6
Very helpful	96	24.1
Extremely helpful	32	8.0
Did not respond	5	---
Did not use EDP	14	---
Total	418	100.0

scheduling, (e) college credit earned in high school, (f) instructional strategies, (g) teacher professional development, and (h) Career Pathway planning committee.

In reference to subsection (a) Career Pathway designation, the total response number for that subquestion was 323, since the 95 respondents who indicated Career Pathways are not in use were instructed to skip a series of questions. Students in Career Pathway high schools should declare a Career Pathway either before entering high school or in the early grades of high school. Table 22 shows when students actually first declare a Career Pathway within these responding high schools.

Table 23 shows responses varied as to when students can last change their Career Pathway. A majority of schools, 225 (75.8%), allow students to change their Career

Table 22

*Career Pathway Designation: When Students First Declare Their Career Pathway*

Grade	N	Percentage
8 <sup>th</sup>	219	68.5
9 <sup>th</sup>	75	23.4
10 <sup>th</sup>	10	3.1
11 <sup>th</sup>	1	.3
Do not select pathway	15	4.7
Did not respond	3	---
Total	323	100.0

Pathway through 12th grade. Only one (0.3%) school did not allow students to change their Career Pathway once declared.

Table 24 shows the respondents' perception of how helpful they believe the selection of a Career Pathway is in helping students to select courses. Only 4 (1.3%) of the respondents felt that selecting a Career Pathway was not helpful in student course selection. A majority of respondents, 99 (31.2%), felt that selecting a Career Pathway was very helpful or extremely helpful in the course selection process.

In reference to subquestion (b), student career assessment, the total response number for that subquestion is 404, since the 14 respondents who indicated EDPs are not in use were instructed to skip a series of questions. Table 25 displays the student career assessments Michigan Career Pathway high schools reported using with students.

Table 23

*Career Pathway Designation: When Students Can Last Change Their Pathway*

Grade	N	Percentage
8 <sup>th</sup>	1	.3
9 <sup>th</sup>	2	.7
10 <sup>th</sup>	8	2.7
11 <sup>th</sup>	60	20.2
12 <sup>th</sup>	225	75.8
Cannot change pathway	1	.3
Did not respond	26	---
Total	323	100.0

Table 24

*Career Pathway Designation: Career Pathway Influence on Course Selection*

Variable	N	Percentage
Not helpful at all	4	1.3
Somewhat helpful	105	33.1
Helpful	109	34.4
Very helpful	74	23.3
Extremely helpful	25	7.9
Did not respond	6	---
Total	323	100.0

Table 25

*Student Career Assessments Totals Used for Students*

Career Assessment	<i>N</i>	Percentage
Career Cruising	200	47.8
ACT Plan	195	46.7
MOIS	191	45.7
ASVAB	183	43.8
ACT Explore	136	32.5
Other Assessments	37	17.1
Differential Aptitude Test	62	14.8
COPES/CAPS/COPS	41	9.8
Career Scope	23	5.5
Bridges	17	4.1
My Dream Explorer	14	3.3
Kuder Skills Assessment	11	2.6
Kuder Career Search	10	2.4
ACT Plus	8	1.9
Do Not Take	6	1.4
Did not respond	6	---

*Note.* This table does not add up to 100% since the respondents could choose more than one student career assessment.

Career Cruising, ACT Plan, Michigan Occupational Information System (MOIS) and Armed Services Vocational Aptitude Battery (ASVAB) were the most frequently used student career assessments. Only 6 (1.4%) did not offer any type of student career assessments. Many of the schools offered multiple career assessments to students. Table 26 shows that a majority of schools, 348 (84.2%), offer two or more student career assessments.

Table 26

*Total Student Career Assessments Offered*

Number of Different Assessments	<i>N</i>	Percentage
1	75	18.9
2	81	20.5
3	107	27.0
4	76	19.2
5	42	10.6
6	7	1.8
7	2	0.5
None offered	6	1.5
Did not respond	8	---
Total	404	100.0

Displayed in Table 27, a majority of the schools, 402 (97.3%), offer work-based learning (WBL) opportunities for students. Job shadowing, cooperative education and

work experience were the most frequently offered WBL opportunities. Only 11 (2.6%) did not offer any type of WBL opportunities. Many of the schools offered multiple WBL opportunities. Table 28 shows that a majority of schools, 348 (84.2%), offer two or more WBL opportunities for their students.

Table 29 shows that 307 (73.4%) of high schools still use a traditional six-, seven-, or eight-period day. Of the schools that use an alternative schedule, most used a 4 × 4 block schedule.

Table 27

*Work-Based Learning Opportunities Available for Students*

Work-Based Learning	<i>N</i>	Percentage
Job shadowing	306	73.2
Work experience	294	70.3
Cooperative education	243	58.1
Internship	165	39.5
Service learning	123	29.4
Apprenticeship	84	20.1
Other	30	6.5
Career Center / CTE Classes	14	3.3
None are offered	11	2.6
Did not respond	5	---

*Note.* This table does not add up to 100% since the respondents could choose more than one type of work-based learning.

Table 28

*Total Work-Based Learning Opportunities Available for Students*

Number of Opportunities	N	Percentage
None are offered	11	2.7
1	54	13.1
2	84	20.3
3	109	26.4
4	87	21.1
5	46	11.1
6	22	5.3
Did not respond	5	---
Total	418	100.0

A majority of schools offer postsecondary credit opportunities for students. Only 2 (0.5%) did not offer any type of postsecondary credit opportunity. Advance placement credit and dual enrollment credit were the two types most often offered. Table 30 shows the postsecondary credits offered within these responding high schools.

Table 31 shows the number of postsecondary credit opportunities for students. A majority of the schools, 319 (76.7%), offered two to three types of postsecondary credit opportunities.

Table 32 shows two instructional strategies used by Career Pathway high schools: interdisciplinary teaching and real world examples. A majority of the high

Table 29

*School Schedule (Alternative Scheduling)*

School Schedule	<i>N</i>	Percentage
6-period day	200	47.8
7-period day	92	22.0
4 x 4 block scheduling	60	14.4
Alternating AB (8 period)	32	7.7
8-period day	15	3.6
5-period day	10	2.4
Other	9	2.1
Total	418	100.0

Table 30

*Postsecondary Credit Offered in High Schools*

Type of Credit	<i>N</i>	Percentage
Dual enrollment credit	405	96.9
Advance placement credit	311	74.4
Articulated credit	196	46.9
Direct credit	35	8.4
Other	6	1.3
None offered	2	.5

*Note.* This table does not add up to 100% since the respondents could choose more than one type of postsecondary credit.

Table 31

*Total Postsecondary Credit Opportunities Available*

Number of Opportunities	<i>N</i>	Percentage
None offered	2	.5
1	70	16.8
2	173	41.6
3	146	35.1
4	25	6.0
Did not respond	2	---
Total	418	100.0

Table 32

*Instructional Strategies*

Variable	Interdisciplinary Teaching		Real-World Examples	
	<i>N</i>	Percentage	<i>N</i>	Percentage
Less than 25%	319	79.2	64	15.9
26% – 50%	72	17.9	150	37.2
51% – 75%	8	1.9	122	30.3
Over 75%	4	1.0	67	16.6
Did not respond	15	---	15	---
Total	418	100.0	418	100.0

schools, 319 (79.2%), reported that less than 25% of high school teachers engage in interdisciplinary teaching. In contrast, 189 (46.9%), indicated that 51% or more of their teachers create real-world instructional activities.

Table 33 shows 315 (77.2%) of schools dedicate one or fewer professional days per year to Career Preparation initiatives.

Table 33

*Teacher Professional Development*

Number of Days	<i>N</i>	Percentage
0 – 1	315	77.0
2	49	12.0
3	23	5.7
4	3	.8
5 or more	10	2.5
Other	5	2.0
Did not respond	13	---
Total	418	100.0

Respondents were asked to identify who was involved in the initial planning of the Career Pathway high school. As Table 34 indicates, counselors, building administrators, and teachers were most frequently on the Career Pathway planning committee. Career Preparation directors/coordinators were least likely to serve on the committee.

Table 34

*Career Pathway Planning Committee*

Position	<i>N</i>	Percentage
Counselor(s)	278	66.5
Building administrator(s)	221	52.9
Teacher(s)	206	49.3
Central office administrator(s)	120	28.7
Parent(s)/community member(s)	78	18.7
School board member(s)	75	17.9
Student(s)	56	13.4
Association (union) representative	37	8.9
Other	18	4.2
ISD Staff	12	2.9
Career preparation director/coordinator	9	2.2

*Note.* This table does not add up to 100% since the respondents could choose more than one type of Career Pathway planning committee member.

### Results of Research Question 3: Impact of Independent Variables

Research question 3 examined whether there is a relationship between the total number of the weighted Career Pathway activities, the total number of the weighted Educational Development Plan (EDP) activities, the total number of the weighted Career Pathway instructional activities, and the combined total of the aforementioned categories to five variables including (a) the number of Career Pathway related teacher professional

development days, (b) the stakeholders who were involved in the initial planning of the Career Pathway high school, (c) the number of instructional staff, (d) the number of guidance counselors, and (e) the size of the student population.

The Pearson  $\chi^2$  test of independence and the Pearson's  $R$  interval-by-interval symmetric measure of association were run to see if such a relationship existed for each set of variables. The  $\chi^2$  test of independence is a nonparametric test that analyzes the relationship between two sets of categorical data that are hypothesized to be independent of one another. When the Pearson  $\chi^2$  analysis is applied, a value less than  $\alpha = .05$  or 95% confidence indicates statistical significance. The Pearson's  $R$  interval-by-interval symmetric measure displays a value between 0 and 1 with 0 indicating no association and 1 indicating a strong association.

*Component One: Total Number of Weighted Career Pathway Activities*

The first component of question 3 compared the relationship between the total number of weighted Career Pathway activities, and each of the following: (a) the number of Career Pathway related teacher professional development days, (b) the stakeholders who were involved in the initial planning of the Career Pathway high school, (c) the number of instructional staff, (d) the number of guidance counselors, and (e) the size of the student population.

The first subquestion of component one examined if there is a relationship between the total number of the weighted Career Pathway activities and the number of Career Pathway teacher-related professional development days. A  $\chi^2$  test of

independence indicated a significance level of .795. Since the level of significance is greater than  $\alpha = .05$  or 95% confidence, the relationship between the variables is not considered statistically significant. The equivalent Pearson's  $R$  measure of association computed value is .070 at a statistical significance level of .214. Since the significance level is greater than  $\alpha = .05$  or 95% confidence, this again indicates the relationship between the variables is not considered statistically significant. Table 35 shows that there is not a relationship between the total number Career Pathway teacher-related professional development days and the number of weighted Career Pathway activities.

Table 35

*Career Pathway Activity Weighting Compared to Professional Development Days*

Number of Professional Development Days	Career Pathway Activity Weighting			<i>N</i>
	0–8	9–12	13–16	
2 or less	14	34	193	241
3 or 4	2	8	52	62
5 or 6	0	1	10	11
Total	16	43	255	314

$\chi^2$  significance level:  $p = .795$ ; Pearson's  $R$  significance level:  $p = .070$ .

The second subquestion examined if there is a relationship between the total number of weighted Career Pathway activities and the total number of stakeholders who were involved in the initial planning of the Career Pathway high school. A  $\chi^2$  test of independence indicated a significance level of .000. Since the level of significance is less

than  $\alpha = .05$  or 95% confidence, the relationship between the variables is considered statistically significant. The equivalent Pearson's  $R$  measure of association computed value is .185 at a statistical significance level of .001. Since the significance level is less than  $\alpha = .05$  or 95% confidence, this again indicates the relationship between the variables is statistically significant. Table 36 shows that there is a relationship between the total number of stakeholders who were involved in the initial planning of the Career Pathway high school and weighted Career Pathway activities.

Table 36

*Career Pathway Activity Weighting Compared to Career Pathway Planning Team*

Number of Stakeholders	Career Pathway Activity Weighting			<i>N</i>
	0–8	9–12	13–16	
0 – 3	10	41	131	182
4 – 6	5	6	105	116
7 – 9	1	0	22	23
Total	16	47	258	321

$\chi^2$  significance level:  $p = .000$ ; Pearson's  $R$  significance level:  $p = .001$ .

The third subquestion examined if there is a relationship between the total number of the weighted Career Pathway activities and the number of instructional staff. A  $\chi^2$  test of independence indicated a significance level of .466. Since the level of significance is greater than  $\alpha = .05$  or 95% confidence, the relationship between the variables is not considered statistically significant. The equivalent Pearson's  $R$  measure

of association computed value is .100 at a statistical significance level of .073. Since the significance level is greater than  $\alpha = .05$  or 95% confidence, this again indicates the relationship between the variables is not statistically significant. Table 37 shows that there is not a relationship between the number of instructional staff and the number of weighted Career Pathway activities.

Table 37

*Career Pathway Activity Weighting Compared to Number of Instructional Staff*

Number of Instructional Staff	Career Pathway Activity Weighting			N
	0-8	9-12	13-16	
0 – 25	8	11	64	83
26 – 50	6	19	97	122
51 – 75	2	7	47	56
76 – 100	0	7	31	38
100 or more	0	3	17	20
Total	16	47	256	319

$\chi^2$  significance level:  $p = .466$ ; Pearson's  $R$  significance level:  $p = .073$ .

The fourth subquestion examined if there is a relationship between the total number of the weighted Career Pathway activities and the number of guidance counselors. A  $\chi^2$  test of independence indicated a significance level of .124. Since the level of significance is greater than  $\alpha = .05$  or 95% confidence, the relationship between the variables is not considered statistically significant. The equivalent Pearson's  $R$

measure of association computed value is .060 at a statistical significance level of .287.

Since the significance level is greater than  $\alpha = .05$  or 95% confidence, this again indicates the relationship between the variables is not considered statistically significant. Table 38 shows that there is not a relationship between the number of guidance counselors and the number of weighted Career Pathway activities.

Table 38

*Career Pathway Activity Weighting Compared to Number of Guidance Counselors*

Number of Guidance Counselors	Career Pathway Activity Weighting			N
	0–8	9–12	13–16	
1	10	15	95	120
2	2	13	62	77
3	4	4	44	52
4	0	9	30	39
5	0	6	27	33
Total	16	47	258	321

$\chi^2$  significance level:  $p = .124$ ; Pearson's  $R$  significance level:  $p = .060$ .

The fifth subquestion examined if there is a relationship between the total number of the weighted Career Pathway activities and the size of the student population. A  $\chi^2$  test of independence indicated a significance level of .114. Since the level of significance is greater than  $\alpha = .05$  or 95% confidence, the relationship between the variables is not considered statistically significant. The equivalent Pearson's  $R$  measure of association

computed value is  $-.085$  at a statistical significance level of  $.128$ . Since the significance level is greater than  $\alpha = .05$  or 95% confidence, this again indicates the relationship between the variables is not considered statistically significant. Table 39 shows that there is not a relationship between the size of the student population and the number of weighted Career Pathway activities.

Table 39

*Career Pathway Activity Weighting Compared to Size of Student Population*

Number of Students	Career Pathway Activity Weighting			N
	0–8	9–12	13–16	
1,036 or more (class A)	2	18	79	99
489 – 1,035 (class B)	4	12	78	94
234 – 488 (class C)	5	10	75	90
233 or less (class D)	5	6	25	36
Total	16	46	257	319

$\chi^2$  significance level:  $p = .114$ ; Pearson's  $R$  significance level:  $p = .128$ .

*Component Two: Total Number of Educational Development Plan (EDP) Activities*

The second component of question 3 compared the relationship between the total number of weighted Educational Development Plan (EDP) activities to the five variables including (a) the number of Career Pathway related teacher professional development days, (b) the number of stakeholders who were involved in the initial planning of the

Career Pathway high school, (c) the number of instructional staff, (d) the number of guidance counselors, and (e) the size of the student population.

The first subquestion of component two compared the relationship between the total number of weighted EDP activities and the number of Career Pathway teacher-related professional development days. A  $\chi^2$  test of independence indicated a significance level of .277. Since the level of significance is greater than  $\alpha = .05$  or 95% confidence, the relationship between the variables is not considered statistically significant. The equivalent Pearson's  $R$  measure of association computed value is .099 at a statistical significance level of .050. Since the significance level is equal to  $\alpha = .05$  or 95% confidence, this again indicates the relationship between the variables is not considered statistically significant. Table 40 shows that there is not a relationship between the total number of Career Pathway teacher-related professional development days and the total number of weighted EDP activities.

The second subquestion compared the relationship between the total number of the weighted EDP activities and the total number of stakeholders who were involved in the initial planning of the Career Pathway high school. A  $\chi^2$  test of independence indicated a significance level of .534. Since the level of significance is greater than  $\alpha = .05$  or 95% confidence, the relationship between the variables is not considered statistically significant. The equivalent Pearson's  $R$  measure of association computed value is .070 at a statistical significance level of .215. Since the significance level is greater than  $\alpha = .05$  or 95% confidence, this again indicates the relationship between the variables is not considered statistically significant. Table 41 shows that there is not a

Table 40

*Educational Development Plan Activity Weighting Compared to Professional Development Days*

Number of Professional Development Days	EDP Activity Weighting			N
	1-9	10-14	15-20	
2 or less	11	91	208	310
3 or 4	0	16	56	72
5 or 6	0	3	9	12
Total	11	110	273	394

$\chi^2$  significance level:  $p = .277$ ; Pearson's  $R$  significance level:  $p = .050$ .

Table 41

*Educational Development Plan Activity Weighting Compared to Career Pathway Planning Team*

Number of Stakeholders	EDP Activity Weighting			N
	1-9	10-14	15-20	
0 - 3	5	46	130	181
4 - 6	1	23	90	114
7 - 9	0	6	17	23
Total	6	75	237	318

$\chi^2$  significance level:  $p = .534$ ; Pearson's  $R$  significance level:  $p = .215$ .

relationship between the total number of stakeholders who were involved in the initial planning of the Career Pathway high school and the total number of weighted EDP activities.

The third subquestion compared the relationship between the total number of weighted EDP activities and the number of instructional staff. A  $\chi^2$  test of independence indicated a significance level of .117. Since the level of significance is greater than  $\alpha = .05$  or 95% confidence, the relationship between the variables is not considered statistically significant. The equivalent Pearson's  $R$  measure of association computed value is  $-.036$  at a statistical significance level of .469. Since the significance level is greater than  $\alpha = .05$  or 95% confidence, this again indicates the relationship between the variables is not considered statistically significant. Table 42 shows that there is not a relationship between the total number of instructional staff and the total number of weighted EDP activities.

The fourth subquestion compared the relationship between the total number of weighted EDP activities and the number of guidance counselors. A  $\chi^2$  test of independence indicated a significance level of .344. Since the level of significance is greater than  $\alpha = .05$  or 95% confidence, the relationship between the variables is not considered statistically significant. The equivalent Pearson's  $R$  measure of association computed value is  $-.034$  at a statistical significance level of .491. Since the significance level is greater than  $\alpha = .05$  or 95% confidence, this again indicates the relationship between the variables is not considered statistically significant. Table 43 shows that there

Table 42

*Educational Development Plan Activity Weighting Compared to Number of Instructional Staff*

Number of Instructional Staff	EDP Activity Weighting			N
	1-9	10-14	15-20	
0 – 25	5	35	78	118
26 – 50	1	37	104	142
51 – 75	3	15	50	68
76 – 100	2	15	34	51
100 or more	0	12	11	23
Total	11	114	277	402

$\chi^2$  significance level:  $p = .117$ ; Pearson's  $R$  significance level:  $p = .469$ .

is not a relationship between the number of guidance counselors and the total number of weighted EDP activities.

The fifth subquestion compared the relationship between the total number of the weighted EDP activities and the size of the student population. A  $\chi^2$  test of independence indicated a significance level of .089. Since the level of significance is greater than  $\alpha = .05$  or 95% confidence, the relationship between the variables is not considered statistically significant. The equivalent Pearson's  $R$  measure of association computed value is  $-.008$  at a statistical significance level of .872. Since the significance level is greater than  $\alpha = .05$  or 95% confidence, this again indicates the relationship between the

Table 43

*Educational Development Plan Activity Weighting Compared to Number of Guidance Counselors*

Number of Guidance Counselors	EDP Activity Weighting			N
	1–9	10–14	15–20	
1	6	44	106	156
2	1	18	69	88
3	2	20	41	63
4	1	13	38	52
5	1	18	25	44
Total	11	113	279	403

$\chi^2$  significance level:  $p = .344$ ; Pearson's  $R$  significance level:  $p = .491$ .

variables is not considered statistically significant. Table 44 shows that there is not a relationship between the size of the student population and the total number of weighted EDP activities.

*Component Three: Total Number of Weighted Career Pathway Instructional Activities*

The third component of question 3 compared the relationship between the total number of weighted Career Pathway instructional activities to the five variables: (a) the number of Career Pathway related teacher professional development days, (b) the number of stakeholders who were involved in the initial planning of the Career Pathway

Table 44

*Educational Development Plan Activity Weighting Compared to Size of Student Population*

Number of Students	EDP Activity Weighting			N
	1–9	10–14	15–20	
1,036 or more (class A)	4	40	82	126
489 – 1,035 (class B)	1	32	83	116
234 – 488 (class C)	3	20	81	104
233 or less (class D)	3	21	32	56
Total	11	113	278	402

$\chi^2$  significance level:  $p = .089$ ; Pearson's  $R$  significance level:  $p = .872$ .

high school, (c) the number of instructional staff, (d) the number of guidance counselors, and (e) the size of the student population.

Subquestion 1 of component three examined if there is a relationship between the total number of the weighted Career Pathway instructional activities and the number of Career Pathway teacher-related professional development days. A  $\chi^2$  test of independence indicated a significance level of .430. Since the level of significance is greater than  $\alpha = .05$  or 95% confidence, the relationship between the variables is not considered statistically significant. The equivalent Pearson's  $R$  measure of association computed value is .088 at a statistical significance level of .074. Since the significance level is greater than  $\alpha = .05$  or 95% confidence, this again indicates the relationship between the variables is not considered statistically significant. Table 45 shows that there

is not a relationship between the number of Career Pathway teacher-related professional development days and the total number of weighted Career Pathway instructional activities.

Table 45

*Career Pathway Instructional Activity Weighting Compared to Professional Development Days*

Number of Professional Development Days	Career Pathway Instructional Activity Weighting			N
	2–6	7–10	11–15	
2 or less	51	212	60	323
3 or 4	7	46	19	72
5 or 6	1	9	3	13
Total	59	267	82	408

$\chi^2$  significance level:  $p = .430$ ; Pearson's  $R$  significance level:  $p = .074$ .

The second subquestion examined if there is a relationship between the total number of the weighted Career Pathway instructional activities and the total number of stakeholders who were involved in the initial planning of the Career Pathway high school. A  $\chi^2$  test of independence indicated a significance level of .003. Since the level of significance is less than  $\alpha = .05$  or 95% confidence, the relationship between the variables is considered statistically significant. The equivalent Pearson's  $R$  measure of association computed value is .179 at a statistical significance level of .001. Since the significance level is less than  $\alpha = .05$  or 95% confidence, this again indicates the

relationship is between the variables is statistically significant. Table 46 shows that there is a relationship between the total number of stakeholders who were involved in the initial planning of the Career Pathway high school and the total number of weighted Career Pathway instructional activities.

Table 46

*Career Pathway Instructional Activity Weighting Compared to Career Pathway Planning Team*

Number of Stakeholders	Career Pathway Instructional Activity Weighting			N
	2-6	7-10	11-15	
0-3	25	128	29	182
4-6	4	79	33	116
7-9	3	12	8	23
Total	32	219	70	321

$\chi^2$  significance level:  $p = .003$ ; Pearson's  $R$  significance level:  $p = .001$ .

The third subquestion examined if there is a relationship between the total number of the weighted Career Pathway instructional activities and the number of instructional staff. A  $\chi^2$  test of independence indicated a significance level of .002. Since the level of significance is less than  $\alpha = .05$  or 95% confidence, the relationship between the variables is considered statistically significant. The equivalent Pearson's  $R$  measure of association computed value is .227 at a statistical significance level of .000. Since the significance level is less than  $\alpha = .05$  or 95% confidence, this again indicates the

relationship between the variables is statistically significant. Table 47 shows that there is a relationship between the number of instructional staff and the total number of Career Pathway instructional activities.

Table 47

*Career Pathway Instructional Activity Weighting Compared to Number of Instructional Staff*

Number of Instructional Staff	Career Pathway Instructional Activity Weighting			N
	2-6	7-10	11-15	
0 – 25	27	81	18	126
26 – 50	26	97	21	144
51 – 75	6	47	17	70
76 – 100	3	31	18	52
100 or more	0	17	7	24
Total	62	273	81	416

$\chi^2$  significance level:  $p = .002$ ; Pearson's  $R$  significance level:  $p = .000$ .

The fourth subquestion examined if there is a relationship between the total number of the weighted Career Pathway instructional activities and the number of guidance counselors. A  $\chi^2$  test of independence indicated a significance level of .003. Since the level of significance is less than  $\alpha = .05$  or 95% confidence, the relationship between the variables is considered statistically significant. The equivalent Pearson's  $R$  measure of association computed value is .217 at a statistical significance level of .000.

Since the significance level is less than  $\alpha = .05$  or 95% confidence, this again indicates the relationship between the aforementioned variables is statistically significant. Table 48 shows that there is a relationship between the number of guidance counselors and the total number of weighted Career Pathway instructional activities.

Table 48

*Career Pathway Instructional Activity Weighting Compared to Number of Guidance Counselors*

Number of Guidance Counselors	Career Pathway Instructional Activity Weighting			N
	2-6	7-10	11-15	
1	35	110	20	165
2	13	61	15	89
3	5	44	16	65
4	6	29	18	53
5	3	29	13	45
Total	62	273	82	417

$\chi^2$  significance level:  $p = .003$ ; Pearson's  $R$  significance level:  $p = .000$ .

The fifth subquestion examined if there is a relationship between the total number of weighted Career Pathway instructional activities and the size of the student population. A  $\chi^2$  test of independence indicated a significance level of .006. Since the level of significance is less than  $\alpha = .05$  or 95% confidence, the relationship between the variables is considered statistically significant. The equivalent Pearson's  $R$  measure of

association computed value is  $-.177$  at a statistical significance level of  $.000$ . Since the significance level is less than  $\alpha = .05$  or 95% confidence, this again indicates the relationship between the variables is statistically significant. Table 49 shows that there is a relationship between the size of the student population and the total number of weighted Career Pathway instructional activities.

Table 49

*Career Pathway Instructional Activity Weighting Compared to Size of Student Population*

Number of Students	Career Pathway Instructional Activity Weighting			N
	2–6	7–10	11–15	
1,036 or more (class A)	9	82	38	129
489 – 1,035 (class B)	22	74	21	117
234 – 488 (class C)	19	74	16	109
233 or less (class D)	11	43	7	61
Total	61	273	82	416

$\chi^2$  significance level:  $p = .006$ ; Pearson's  $R$  significance level:  $p = .000$ .

*Three Weighted Components Combined*

Lastly, research question 3 compared the relationship between the combined total number of the weighted Career Pathway, weighted EDP, and weighted Career Pathway instructional activities to the five variables including (a) the number of Career Pathway related teacher professional development days, (b) the number of stakeholders who were

involved in the initial planning of the Career Pathway high school, (c) the number of instructional staff, (d) the number of guidance counselors, and (e) the size of the student population.

The first subquestion in this section examined if there is a relationship between the total number of weighted Career Pathway, weighted EDP, weighted Career Pathway instructional activities, and the number of Career Pathway teacher-related professional development days. A  $\chi^2$  test of independence indicated a significance level of .002. Since the level of significance is less than  $\alpha = .05$  or 95% confidence, the relationship between the variables is considered statistically significant. The equivalent Pearson's *R* measure of association computed value is .167 at a statistical significance level of .001. Since the significance level is less than  $\alpha = .05$  or 95% confidence, this again indicates the relationship between the variables is statistically significant. Table 50 shows that there is a relationship between the number of Career Pathway teacher-related professional development days and the combined total number of weighted Career Pathway, weighted EDP and weighted Career Pathway instructional activities.

The second subquestion examined if there is a relationship between the total number of the weighted Career Pathway, weighted EDP, weighted Career Pathway instructional activities, and the total number of stakeholders who were involved in the initial planning of the Career Pathway high school. A  $\chi^2$  test of independence indicated a significance level of .003. Since the level of significance is less than  $\alpha = .05$  or 95% confidence, the relationship between the variables is considered statistically significant. The equivalent Pearson's *R* measure of association computed value is .192 at a statistical

Table 50

*Total Career Pathway, Educational Development Plan (EDP), and Career Pathway Instructional Activities Compared to Professional Development Days*

Number of Professional Development Days	Total Number of Weighted Activities			N
	4 – 20	21 – 35	36 – 49	
2 or less	31	102	190	323
3 or 4	2	10	60	72
5 or 6	1	2	10	13
Total	34	114	260	408

$\chi^2$  significance level:  $p = .002$ ; Pearson's  $R$  significance level:  $p = .001$ .

significance level of .001. Since the significance level is less than  $\alpha = .05$  or 95% confidence, this again indicates the relationship between the variables is statistically significant. Table 51 shows that there is a relationship between the total number of stakeholders who were involved in the initial planning of the Career Pathway high school and the combined total number of weighted Career Pathway, weighted EDP, and weighted Career Pathway instructional activities.

The third subquestion examined if there is a relationship between the total number of weighted Career Pathway, weighted EDP, weighted Career Pathway instructional activities, and the number of instructional staff. A  $\chi^2$  test of independence indicated a significance level of .002. Since the level of significance is less than  $\alpha = .05$  or 95% confidence, the relationship between the variables is considered statistically significant. The equivalent Pearson's  $R$  measure of association computed value is .159 at

Table 51

*Total Career Pathway, Educational Development Plan (EDP), and Career Pathway Instructional Activities Compared to Career Pathway Planning Team*

Number of Stakeholders	Total Number of Weighted Activities			N
	4 – 20	21 – 35	36 – 49	
0 – 3	0	0	0	0
4 – 6	43	14	0	57
7 – 9	139	102	23	264
Total	182	116	23	321

$\chi^2$  significance level:  $p = .003$ ; Pearson's  $R$  significance level:  $p = .001$ .

a statistical significance level of .001. Since the significance level is less than  $\alpha = .05$  or 95% confidence, this again indicates the relationship between the variables is statistically significant. Table 52 shows that there is a relationship between the number of instructional staff and the combined total number of weighted Career Pathway, weighted EDP, and weighted Career Pathway instructional activities.

The fourth subquestion examined if there is a relationship between the total number of weighted Career Pathway, weighted EDP, weighted Career Pathway instructional activities and the number of guidance counselors. A  $\chi^2$  test of independence indicated a significance level of .023. Since the level of significance is less than  $\alpha = .05$  or 95% confidence, the relationship between variables is considered statistically significant. The equivalent Pearson's  $R$  measure of association computed value is .085 at a statistical significance level of .084. Since the significance level is greater than  $\alpha = .05$

Table 52

*Total Career Pathway, Educational Development Plan (EDP), and Career Pathway Instructional Activities Compared to Number of Instructional Staff*

Number of Instructional Staff	Total Number of Weighted Activities			N
	4 – 20	21 – 35	36 – 49	
0 – 25	22	40	64	126
26 – 50	8	35	101	144
51 – 75	2	25	43	70
76 – 100	3	13	36	52
100 or more	1	5	18	24
Total	36	118	262	416

$\chi^2$  significance level:  $p = .002$ ; Pearson's  $R$  significance level:  $p = .001$ .

or 95% confidence, this indicates the relationship between the variables is not statistically significant and not in agreement with the  $\chi^2$  test of independence. Table 53 shows that there is a relationship between the number of guidance counselors and the combined total number of weighted Career Pathway, weighted EDP, and weighted Career Pathway instructional activities.

The fifth subquestion examined if there is a relationship between the total number of weighted Career Pathway, weighted EDP, weighted Career Pathway instructional activities, and the size of the student population. A  $\chi^2$  test of independence indicated a significance level of .000. Since the level of significance is less than  $\alpha = .05$  or 95% confidence, the relationship between the variables is considered statistically

Table 53

*Total Career Pathway, Educational Development Plan (EDP), and Career Pathway Instructional Activities Compared to Number of Guidance Counselors*

Number of Guidance Counselors	Total Number of Weighted Activities			<i>N</i>
	4 – 20	21 – 35	36 – 49	
1	22	50	93	165
2	3	20	66	89
3	2	25	38	65
4	4	12	37	53
5	4	11	30	45
Total	35	118	264	417

$\chi^2$  significance level:  $p = .023$ ; Pearson's  $R$  significance level:  $p = .084$ .

significant. The equivalent Pearson's  $R$  measure of association computed value is  $-.155$  at a statistical significance level of  $.001$ . Since the significance level is less than  $\alpha = .05$  or 95% confidence, this again indicates the relationship between the variables is statistically significant. Table 54 shows that there is a relationship between the size of the student population and the combined total number of weighted Career Pathway, weighted EDP, and weighted Career Pathway instructional activities.

Table 54

*Total Career Pathway, Educational Development Plan (EDP), and Career Pathway Instructional Activities Compared to Size of Student Population*

Number of Students	Total Number of Weighted Activities			N
	4 – 20	21 – 35	36 – 49	
1,036 or more (class A)	8	33	88	129
489 – 1,035 (class B)	5	38	74	117
234 – 488 (class C)	10	23	76	109
233 or less (class D)	13	22	26	61
Total	36	116	264	416

$\chi^2$  significance level:  $p = .000$ ; Pearson's  $R$  significance level:  $p = .001$ .

#### Results of Research Question 4: Respondents' Opinion

Research question 4 examined whether there is a relationship between the respondents' opinion on (a) how helpful the selection of a Career Pathway is in helping students select courses and the total number of weighted Career Pathway activities in place, and (b) how helpful the use of an Educational Development Plan (EDP) is in helping students select courses and the total number of EDP activities in place. Identical to research question 3, the Pearson  $\chi^2$  test of independence and the Pearson's  $R$  interval-by-interval symmetric measure of association were run to see if such a relationship existed for each set of variables.

Subquestion 1 examined whether there is a relationship between the respondents' opinion on how helpful the selection of a Career Pathway is in helping students select courses and the total number of weighted Career Pathway activities in place. A  $\chi^2$  test of independence indicated a significance level of .364. Since the level of significance is greater than  $\alpha = .05$  or 95% confidence, the relationship between the variables is not considered statistically significant. The equivalent Pearson's  $R$  measure of association computed value is .104 at a statistical significance level of .066. Since the significance level is greater than  $\alpha = .05$  or 95% confidence, this again indicates the relationship between the variables is not considered statistically significant. Table 55 shows that there is not a relationship between the total number of weighted Career Pathway activities and the respondents' opinion on how helpful the selection of a Career Pathway is in helping students select courses.

Subquestion 2 examined whether there is a relationship between the respondents' opinion on how helpful the use of the EDP is in helping students select courses and the total number of weighted EDP activities in place. A  $\chi^2$  test of independence indicated a significance level of .051. Since the level of significance is greater than  $\alpha = .05$  or 95% confidence, the relationship between the variables is not considered statistically significant. The equivalent Pearson's  $R$  measure of association computed value is .154 at a statistical significance level of .002. Since the significance level is less than  $\alpha = .05$  or 95% confidence, this indicates the relationship between the variables is considered statistically significant. Table 56 shows that there is not a relationship the total number of

weighted EDP activities and the respondents' opinion on how helpful the selection of a Career Pathway is in helping students select courses.

Table 55

*Career Pathway Activity Weighting Compared to Respondents' Opinion How Helpful the Selection of a Career Pathway Is in Helping Students Select Courses*

Respondents' Opinion	Career Pathway Activity Weighting			N
	1-9	10-14	15-20	
1	0	10	8	18
2	6	37	79	122
3	2	36	92	130
4	2	23	71	96
5	0	5	27	32
Total	10	111	277	398

$\chi^2$  significance level:  $p = .364$ ; Pearson's  $R$  significance level:  $p = .066$ .

#### Results of Research Question 5

Research question 5 examined which factors influenced the respondents' school not to implement a student course selection guide around Michigan's six Career Pathways and not using Educational Development Plans (EDPs), as well as to what degree these factors were influential. Factors included (a) change in building administration, (b) change in instructional emphasis, (c) change in school schedule, (d) elimination of Career Preparation grant funding, (e) elimination of a staff member

Table 56

*Educational Development Plan (EDP) Weighting Compared to Respondents' Opinion  
How Helpful the Use of an EDP Is in Helping Students Select Courses*

Respondents' Opinion	EDP Activity Weighting			N
	1-9	10-14	15-20	
1	0	10	8	18
2	6	37	79	122
3	2	36	92	130
4	2	23	71	96
5	0	5	27	32
Total	10	111	277	398

$\chi^2$  significance level:  $p = .051$ ; Pearson's  $R$  significance level:  $p = .002$ .

who coordinated the Career Pathway effort, (f) reduction of staff time to coordinate the Career Pathway effort, and (g) reduction in regular per pupil state aid funding.

The data were analyzed to determine the means and standard errors for the factors related to not organizing the high school student course selection guide around Michigan's six Career Pathways and not using EDPs. Further analysis involved creating confidence intervals for each of the subparts. If the lines on the graph within Figure 1 overlap, no significant difference can be shown between them at  $\alpha = .05$  or 95% confidence.

Subquestion 1 examined which factors influenced the respondents' school not to implement a student course selection guide around Michigan's six Career Pathways, as

well as to what degree these factors were influential. As shown in Figure 1, the results indicated that changes in building administration, changes in instructional emphasis, and changes in school schedule are clearly similar in that they had the least impact on not organizing the high school student course selection guide around Michigan's six Career Pathways. Indicators that had the most significant impact on not organizing the high school student course selection guide around Michigan's six Career Pathways were the elimination of Career Preparation grant funding, elimination of a staff member who coordinated the Career Pathway effort, reduction of staff time to coordinate the Career Pathway effort, and reduction in regular per pupil state aid funding.

The elimination of Career Preparation grant funding and reduction of staff time to coordinate the Career Pathway effort were about equal and significantly higher than the elimination of a staff member who coordinated the Career Pathway effort.

It is also clear from the graph that elimination of Career Preparation grant funding and reduction of staff time to coordinate the Career Pathway effort were about equal and significantly higher than the elimination of a staff member who coordinated the Career Pathway effort. Since the reduction in regular per pupil state aid funding overlapped the elimination of Career Preparation grant funding, the elimination of a staff member who coordinated the Career Pathway effort, and reduction of staff time to coordinate the Career Pathway effort, are not significantly different.

In summary, the elimination of Career Preparation grant funding and reduction of staff time to coordinate the Career Pathway effort were the most significant factors; reduction in regular per pupil state aid funding was the third most significant factor. See Table 57 and Figure 1.

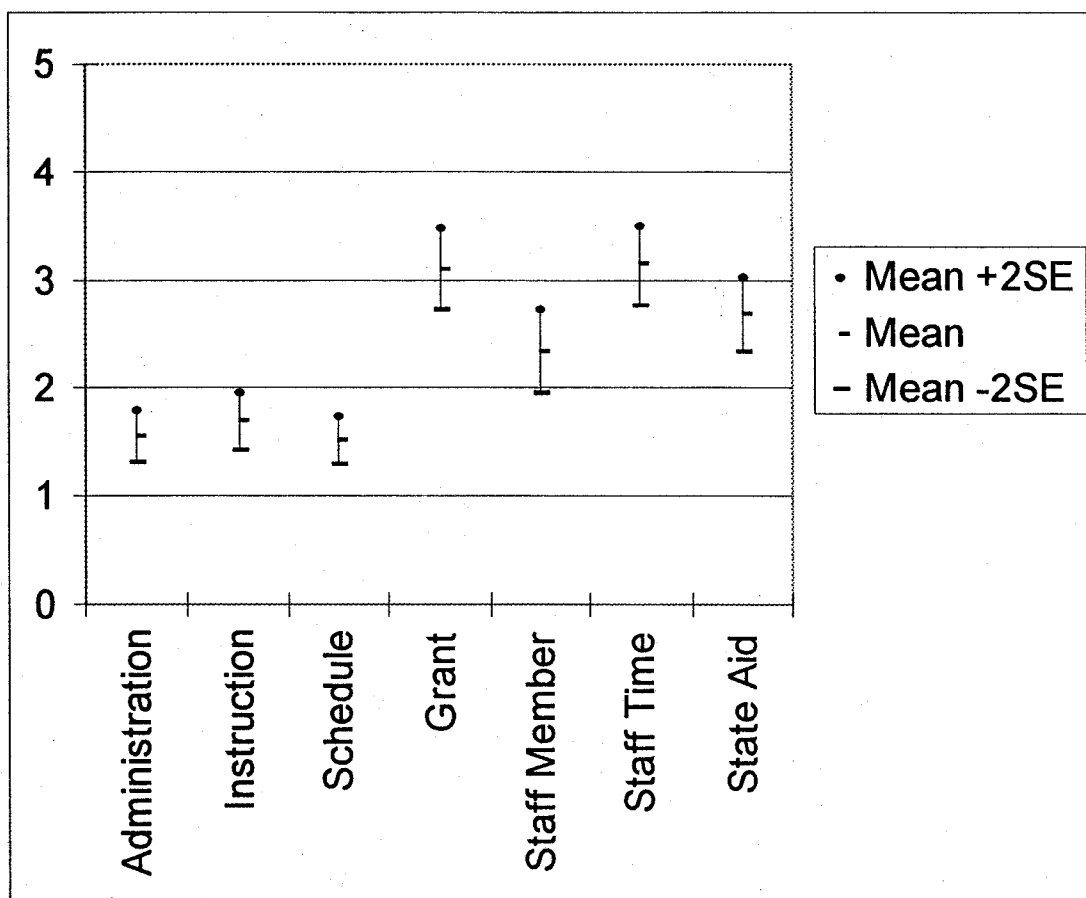
Table 57

*Factors Preventing the Implementation of Student Course Selection Guides*

Grade	N	Mean	Interval Mean $\pm$ 2SE
Change in building administration	75	1.55	(1.78, 1.31)
Change in instructional emphasis	74	1.69	(1.95, 1.43)
Change in school schedule	71	1.52	(1.74, 1.30)
Elimination of Career Preparation grant funding	77	3.09	(3.47, 2.71)
Elimination of a staff member who coordinated the Career Pathway effort	74	2.34	(2.72, 1.96)
Reduction of staff time to coordinate the Career Pathway effort	79	3.13	(3.49, 2.76)
Reduction in regular per pupil state aid funding	78	2.68	(3.02, 2.34)

Subquestion 2 examined which factors influenced the respondents' school not to implement EDPs, as well as to what degree these factors were influential. Factors included (a) change in building administration, (b) change in instructional emphasis, (c) change in school schedule, (d) elimination of Career Preparation grant funding, (e) elimination of a staff member who coordinated the student EDPs, (f) reduction of staff time to coordinate the student EDPs, and (g) reduction in regular per pupil state aid funding.

The data were analyzed to determine the means and standard errors for the factors related to not implementing EDPs. Further analysis involved creating confidence intervals for each of the subparts. If the lines on the graph within Figure 2 overlap, no



<i>Legend</i>	
<b>Administration:</b>	Change in building administration
<b>Instruction:</b>	Change in instructional emphasis
<b>Schedule:</b>	Change in school schedule
<b>Grant:</b>	Elimination of Career Preparation grant funding
<b>Staff Member:</b>	Elimination of a staff member who coordinated the Career Pathway effort
<b>State Aid:</b>	Reduction in regular per pupil state aid funding

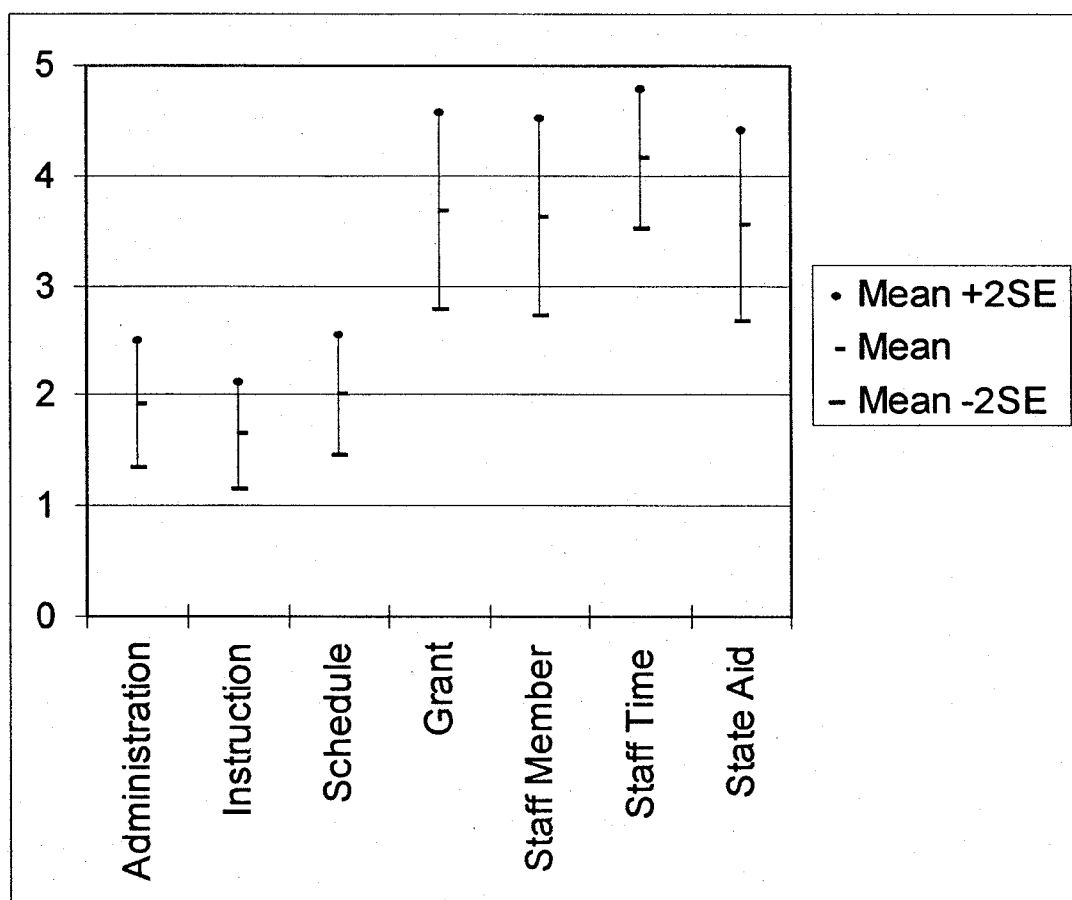
Figure 1. Factors Preventing the Implementation of Student Course Selection Guides  
Interval of Means  $\pm$  2 Standard Errors.

significant difference can be shown between them at  $\alpha = .05$  or 95% confidence. As shown in Figure 2, the results indicate the elimination of Career Preparation grant funding, elimination of a staff member who coordinated the student EDPs, reduction of staff time to coordinate the student EDPs, and reduction in regular per pupil state aid funding had a significant impact,  $\alpha < .05$ , on the sustainability of EDPs. Changes in building administration, changes in instructional emphasis, and changes in school schedule did not have a significant impact. See Table 58 and Figure 2.

Table 58

*Factors Preventing the Implementation of Educational Development Plans (EDPs)*

Grade	N	Mean	Interval Mean $\pm$ 2SE
Change in building administration	12	1.92	(2.49, 1.34)
Change in instructional emphasis	11	1.64	(2.12, 1.15)
Change in school schedule	11	2.00	(2.54, 1.46)
Elimination of Career Preparation grant funding	12	3.67	(4.57, 2.77)
Elimination of a staff member who coordinated the Career Pathway effort	13	3.62	(4.51, 2.72)
Reduction of staff time to coordinate the Career Pathway effort	13	4.15	(4.79, 3.52)
Reduction in regular per pupil state aid funding	13	3.54	(4.40, 2.67)



### *Legend*

**Administration:** Change in building administration

**Instruction:** Change in instructional emphasis

**Schedule:** Change in school schedule

**Grant:** Elimination of Career Preparation grant funding

**Staff Member:** Elimination of a staff member who coordinated the Career Pathway effort

**State Aid:** Reduction in regular per pupil state aid funding

Figure 2. Factors Preventing the Implementation of Educational Development Plans (EDPs) Interval of Means  $\pm$  2 Standard Errors.

### Chapter IV Summary

A total of 418 completed surveys were returned out of 596, giving this study a 70% response rate, which gives the results of this study a 95% confidence level. When Career Pathway activities, EDPs, and Career Pathway instructional activities as dependent variables were analyzed to determine if there was a relationship with the five independent variables, the analysis showed 5 statistically significant relationships out of a potential of 15. However, when all three of the dependent variables were combined and analyzed to determine if there was a relationship between the dependent and independent variables, four out of the five analyses showed a statistically significant relationship.

## CHAPTER V

### KEY FINDINGS, IMPLICATIONS, AND RECOMMENDATIONS

The federal government had funded the School-to-Work ACT (STWOA) of 1994 providing a national framework for infusing career education of the nation's schools. With the pending sunset STWOA date of 2001, the Michigan legislature provided state funding via Career Preparation System Act of 1997, which was to provide additional funding until 2005. Although Michigan's funding was eliminated 2 years earlier than initially planned due to budget concerns, the federal and state governments had provided specific funding for K-12 career education in Michigan during a 9-year period of time (from 1994 through 2003). Upon accepting such funding, 596 of 597 Michigan's high schools had agreed to implement a number of career education activities, namely a comprehensive system of Career Pathway preparation and Educational Development Plans (EDPs) for students. The purpose of this study was to assess the status of Michigan's Career Pathway high schools 2 years after the aforementioned funding was eliminated.

#### Key Findings

Descriptive findings were based upon responses from 418 respondents that completed and returned a 27-question mail survey. With 418 out of 596 surveys returned, this study realized a 70% return rate, which provides a 95% confidence level

that any of the results found to be significant were due to the relationships between the various variables, not simply by chance.

Within 37.7% of the schools the high school counselors were identified as the staff person most responsible for the implementation and supervision of Career Pathway activities in their buildings. For an additional 36.3% of high schools, the high school principal was identified as being the staff person most responsible for these activities. It should be noted that these findings are a stark contrast to a study conducted by Standish (2004) that indicated counselors (62.7%) had the highest involvement with Michigan's Career Preparation System, followed by high school principals (15.2%).

Michigan's Career Preparation System Grant required high schools to implement two career development components: Career Pathway Activities and EDPs. The system included a total of seven components that are further divided into 17 activity categories. A complete listing of Michigan's Career Preparation System Components and Activity Categories are identified in Table 1 (located in Chapter II). Key findings of note for the three major areas are summarized in the following sections, including Career Pathway Activities, EDPs, and work-based learning. In addition, key relationships between a number of independent variables (e.g., number of instructional staff) and dependant variables (e.g., the number EDPs in place) are discussed, as are the key barriers.

### *Career Pathway Activities*

An impressive 77.1% of Michigan Career Pathway high schools indicated that even 2 years after the special funding was eliminated, they still organized and sustained their student course selection guide under Michigan's six Career Pathways. Schools that

had accepted Michigan's Career Preparation System funding were initially required to meet this requirement and provide documents, such as course selection guides and handbooks to students. According to Wonacott (2000, 2001, 2002), nationally the design of these course selection guides varied. Students utilize these guides after they select their Career Pathway. Student Career Pathway selection preparation will be discussed in the Educational Development Plan (EDP) section.

The State of Michigan recommends that students select their Career Pathway in eighth grade in preparation for ninth grade EDP development and course selection. This study indicated that 68.4% of Michigan's Career Pathway high school students declare a Career Pathway in eighth grade, and an additional 23.4% do so during ninth grade resulting in 91.8% of the students in Michigan's Career Pathways in alignment with the state recommendation. Unfortunately, this still leaves 4.7% of the self-identified Career Pathway high schools that responded to this study not having their students declare a Career Pathway at all, yet identify their institution as a Career Pathway high school.

Having students initially select a Career Pathway is important; equally important, however, is permitting students to change their Career Pathway should they choose to do so. Research conducted by Olson (1997) indicated that students must be able to change their Career Pathway at anytime; however, it may require the student to complete additional coursework. Career Pathway experts in Michigan recommend that students should have the opportunity to change Career Pathway until 12<sup>th</sup> grade (P. Bergan & B. Meier, personal communication, December 18, 2003). In alignment with Olson and the Michigan Career Pathway expert panel convened for this study, 75.8% of Michigan's Career Pathway high schools allow students to change their declared Career Pathway

through the 12<sup>th</sup> grade. Another 20.2% of Michigan's Career Pathway high schools allow the students to change their pathway through 11<sup>th</sup> grade, bringing the total percentage of students allowed to change pathways through the 11<sup>th</sup> grade to 96%. Only less than 1% of the schools do not allow students to change their Career Pathway once selected.

With 77.1% of the respondent high schools maintaining Career Pathway curriculum guides and 91.8% of the students selecting a Career Pathway by the end of ninth grade, survey respondents also noted the effectiveness of such activities. Just over 65% indicated that the selection of a Career Pathway was *helpful*, *very helpful*, or *extremely helpful* in helping students select classes. A statistical analysis was conducted between the total number of Career Pathway activities in place and how useful the selection of a Career Pathway is in helping students select courses.

Given the large percentage of schools implementing the recommended Career Pathway activities, the statistical analysis was surprising. The analysis indicated there is no statistically significant relationship between the respondents' opinions on how helpful the selection of a Career Pathway is in helping students select courses,  $p = .364$ , and the total number of Career Pathway activities in place. This appears to be in contrast with the strong support for student Career Pathway activities previously indicated.

### *Educational Development Plans (EDPs)*

According to Olson (1997), research suggests all students should have individual EDPs. An individual career plan provides students with course selection guidance, and research indicates students with such a plan are more likely to take courses that will prepare them to succeed in college and careers. The use of such EDPs in Michigan's

Career Pathway high schools increased 45% between 1999 and 2002, according to research conducted by the Michigan State University Program in Public Policy and Administration in 2002. That research analyzed 39 grant applications of districts that received Career Pathways state funding, and surveyed 380 school districts, not including metropolitan Detroit. Twenty-six percent of responding districts indicated an increase in the use of student EDPs, from 35 percentage points to 80 percentage points, since the implementation of Career Pathways (Stern, 2002b). A later study conducted by Standish (2004) on the "Impact of Michigan's Career Preparation Initiative on High School Counselors" indicated 90.7% of Michigan's Career Pathway high schools had EDPs in place. Thus, the use of EDPs when compared to the aforementioned 2002 research has increased 55.7 percentage points since the inception of Career Pathway high schools.

While previous research demonstrated the growth of EDPs over time, this study analyzed the sustainability of EDPs after the elimination of special funding for such activities within Michigan Career Pathway high schools. A notable 96.7% of Michigan's Career Pathway high schools have sustained individualized EDPs 2 years after the special funding was eliminated. EDPs, as defined by the Michigan Office of Career and Technical Preparation, should be developed in the eighth grade for ninth grade course selection.

In addition, a remarkable 76.6% of Michigan's Career Pathway high school students complete the EDP in eighth grade. During the ninth grade year, the percentage of students with EDPs increases to 95.4%. And as recommended by the panel of Career Pathway experts and required by the Career Preparation System, 78.4% of Michigan's Career Pathway high schools review and endorse the EDP each school year until the

student graduates. Only 44.8% of Michigan's Career Pathway high schools require a parent signature when the EDP is created, as well as each year upon review. The Michigan Career Preparation System requires parent endorsement/consultation, but uses passive language and does not require a specific parent endorsement/consultation. Career Pathway experts recommend a parent signature as the parent endorsement.

Prior to developing an EDP, students must complete one or more career assessments. Career assessments are formal and informal measurement tools that help students better understand their career interests, aptitudes, and abilities (Career Assessment, 2002). These assessments also assist students in better understanding themselves, which proves useful for career planning (Kapes & Martinez, 1998). When students better understand themselves, they are more likely to make realistic and informed decisions.

This study found that a total of four career assessments are dominant in Michigan's Career Pathway high schools: Career Cruising (47.8%), American College Testing (ACT) Plan (46.7%), Michigan Occupational Information System (MOIS) (45.7%), and Armed Services Vocational Aptitude Battery (ASVAB) (43.8%). An impressive 59.1% of Michigan's Career Pathway high schools offer three or more types of career assessments, with 39.4% of the high schools providing one to two assessments to students. In total, 98.5% of Michigan Career Pathway high schools provide the minimum of one career assessment, an integral component of EDP completion.

Looking at the totality of various EDP-related activities, a statistical analysis was conducted between the total number of EDP activities in place and the respondents' opinion of how helpful the use of an EDP is in helping students select courses. This

study found no statistically significant relationship between the respondents' opinions on how helpful the use of an EDP is in helping students select courses,  $p = .051$ , and the total number of EDP activities. Indeed, although 96.7% of Michigan's Career Pathway high schools require students to complete an EDP, only 64.7 % of respondents rate using an EDP to help students select courses as *helpful*, *very helpful*, or *extremely helpful*.

Similar findings emerged when Michigan's Office of Career and Technical Preparation conducted a statewide report focused on students' perceptions of their high school experience and assessed the students' perceived usefulness of the EDP (Michigan Department of Education, 1999a). Statewide, only 51.1% of students *agreed* or *tended to agree* that the EDP helped in high school course selection.

Overall, since 1999, the use of EDPs has grown to include 96.7% of Michigan's Career Pathway high schools. The first step towards EDP completion is career assessment, which allows students to explore their interests and aptitudes and effectively select a Career Pathway. An impressive 98.5% of students in Michigan Career Pathway high schools have the opportunity to complete one or more career assessments. All of these tasks—completing various assessments and other Career Pathway selection activities, declaring a Career Pathway, and compiling an EDP— allow students to better understand what combination of courses and activities will prepare them for employment or postsecondary training. Yet, despite these impressive usage numbers, there is not a statistically significant relationship between the number of EDP activities in place and respondents' opinion on the effectiveness of EDPs. One explanation for the lack of a statistically significant relationship could be the person who received the survey.

The survey used for this study was directed to the principal with instructions to forward the survey to the individual most responsible for the implementation and supervision of the Career Pathway activities in the building. With 36.3% of principals completing the survey, they may not have the opportunity to see the impact the use of an EDP has on the students' decision to select courses. It is likely that the principals do not administer the student career assessments and they are not present when the results are interpreted with the student and entered into the individual student EDPs. Another potential reason is the number of counselors that completed the survey. Within 37.7% of the reporting schools, the counselor was the staff person identified as most responsible for the implementation and supervision of Career Pathway activities in the building. Although not as likely, the counselor may not be present during the EDP development and career assessment testing. Some high schools use teachers with small cohort groups of students to develop the EDPs. For example, a teacher is given a group of incoming freshman and the teacher assists the students with the career assessment and interpretation. The teacher and students would develop the EDP by entering in the personal information, standardized test results, career assessment results, and creating the students' 4-year plan. Then the counselor would meet with the student to register the student for the courses defined in their 4-year course selection plan. There is the potential that some of the responding counselors do not see the first-hand impact EDP development has on individual students.

*Work-Based Learning (WBL)*

Specific WBL activities are available in the majority of Career Pathway high schools. Career Pathway instructional activities include WBL opportunities and postsecondary credit offered in high school. WBL opportunities for students are important as employers are interested in future employees who come to work on time, can work in teams, and have a desire to participate in continuing education. Wonacott (2001) stated that workers need to be able to solve problems, communicate effectively, adapt to change, and use technology. Students can observe these behaviors in the workplace through a job shadowing experience.

Job shadowing is one work-based learning method that provides students with the opportunity to observe an employee or employees to learn about a specific occupation or industry. This study revealed 73.2% of Michigan Career Pathway high schools provide job shadowing experiences for their students. These results are in alignment with a National School-to-Work Office study that indicated 71% of the schools provided job shadowing experiences for their students (MPR Associates, 2001).

Internships are another WBL method, but a much more intensive experience that often results in positive outcomes. For example, a study of Maine's Technical College System, which includes an internship that begins in high school, revealed that of the eight students who graduated from the program in 1995, two chose to pursue their Associate's Degree, and seven continued to work, five for their original employer. By 1996, six of the interns completed or were near completion of an Associate's Degree, and three of them had been accepted into a 4-year institution (Olson, 1997). Research

conducted for this study indicates that 39.5% of Michigan's Career Pathway high schools provide students with the opportunity to complete an internship. This figure is slightly less than those cited in the aforementioned National School-to-Work Office study, which indicated 45% of the schools provided internship opportunities (MPR Associates, 2001).

Students in Michigan Career Pathway high schools also have the opportunity to earn college credit while in high school. College credit can be earned through dual enrollment credit, advanced placement credit, articulated credit, or direct credit. An impressive 99.5% of Michigan's Career Pathway high schools offer one or more types of college credit. This is in alignment with recommendations by Michigan's Lieutenant Governor that high schools increase the percentage of students who are earning college credit in high school (*Final Report of the Lt. Governor's Commission on Higher Education & Economic Growth*, 2004).

Students enrolled in Michigan Career Pathway high schools have a greater opportunity to earn college credit while in high school than students from other states. This study revealed that 99.5% of respondent schools offer some type of college credit. When compared to data published by the National Center for Education Statistics in 2002–2003, college credit opportunities at Michigan Career Pathway high schools appear to be 12 percentage points greater than other states. One difference between these two studies, however, is the type of credit offered. The Center's research project focused on dual credit and exam-based (Advance Placement) courses in U.S. public high schools, while this study defined three types of college credit high school students could earn: dual credit, Advance Placement (AP) credit, and International Baccalaureate (IB)

credit (Lewis, Stezer, & Waits, 2005). Worth noting is the fact that IB credit accounted for only 2% of the 87% of respondent schools reporting college credit offerings.

### *Career Pathway High School Variable Analysis*

This study also examined the relationship between a series of independent variables and Career Pathway high school dependent variables. Independent variables included Career Pathway-related professional development days, the number of stakeholders who were involved in the initial planning of the Career Pathway high school, number of instructional staff, number of guidance counselors, and size of the student population. The dependent variables included Career Pathway activities, EDP activities, Career Pathway instructional activities, and the combined total of the aforementioned dependent variables.

To complete this analysis, the Pearson  $\chi^2$  test of independence, a nonparametric test that analyzes the relationship between two sets of categorical data that are hypothesized to be independent of one another, was used. For example, this analysis determines if there is a relationship between the number of instructional staff in the school and the number of Career Pathway high school activities in place. When the Pearson  $\chi^2$  analysis is applied, a value less than  $\alpha = .05$ , or 95% confidence, indicates statistical significance. The second statistical measure was the Pearson's  $R$  interval-by-interval symmetric measure with 0 indicating no association and 1 indicating a strong association. Michigan's Career Preparation System, as titled, was intended to be a system. Although the state mandated the implementation of only Career Pathway curriculum guides and EDPs, all 17 of the Career Preparation System activities were to

be implemented over time. It was not designed to allow instructors and/or guidance counselors to pick and choose particular components or activities under the components, but to be implemented as a system. Tables 59–62 visually demonstrate the need to implement the program as a system.

In examining if a relationship exists between the number of student Career Pathway activities and the independent variables, only one statistically significant relationship emerged: There is a relationship between the number stakeholders who were involved in the initial planning of the Career Pathway high school and the number of Career Pathway activities,  $p = .000$ . By design, this study collected descriptive data to determine if there was a relationship between these variables, not to determine the nature of the relationship. Additional studies based on these findings will be recommended later in the chapter, as appropriate. The analysis between the variables is displayed in Table 59.

In examining if a relationship exists between the number of EDP activities and independent variables, no statistically significant relationships emerged. The analysis between the variables is displayed in Table 60.

In examining if a relationship exists between the number of Career Pathway instructional activities and the independent variables, four statistically significant relationships emerged: (a) there is a relationship between the number of stakeholders who were involved in the initial planning of the Career Pathway high school and the number of Career Pathway instructional activities,  $p = .003$ ; (b) there is a relationship between the number of instructional staff and the number of Career Pathway instructional activities,  $p = .002$ ; (c) there is a relationship between the number guidance

Table 59

*Relationship Between the Number of Career Pathway Activities and Independent Variables*

Independent Variable	$\chi^2$ test of independence	Statistical Relationship	Pearson's <i>R</i> Value	Statistical Relationship
Number of Career Pathway teacher professional development days	.795	No	.214	No
Number of stakeholders who were involved in the initial planning of the Career Pathway high school	.000	Yes	.001	Yes
Number of instructional staff	.466	No	.073	No
Number of guidance counselors	.124	No	.287	No
Size of the student population	.114	No	.128	No

counselors and the number of Career Pathway instructional activities,  $p = .003$ ; and

(d) there is a relationship between the size of the student population and the number of Career Pathway instructional activities,  $p = .006$ . By design, this study collected descriptive data to determine if a relationship existed between these variables, not to determine the nature of the relationship. Additional studies based on these findings will be recommended later in the chapter, as appropriate. The analysis between the variables is displayed in Table 61.

In examining if a relationship exists between the total number of the Career Pathway activities, EDP activities, and Career Pathway instructional activities and the

Table 60

*Relationship Between the Number of Educational Development Plan (EDP) Activities and Independent Variables*

Independent Variable	$\chi^2$ test of independence	Statistical Relationship	Pearson's <i>R</i> Value	Statistical Relationship
Number of Career Pathway teacher professional development days	.277	No	.050	No
Number of stakeholders who were involved in the initial planning of the Career Pathway high school	.534	No	.215	No
Number of instructional staff	.117	No	.469	No
Number of guidance counselors	.344	No	.491	No
Size of the student population	.089	No	.872	No

independent variables, four statistically significant relationships emerged between: (a) the number of teacher professional development days,  $p = .002$ ; (b) the number of stakeholders who were involved in the initial planning of the Career Pathway high school,  $p = .003$ ; (c) the number of instructional staff,  $p = .002$ ; and (d) the size of the student population,  $p = .000$ , and the total of the Career Pathway activities, EDP activities, and Career Pathway instructional activities. By design, this study collected descriptive data to determine if a relationship existed between these variables, not to determine the nature of the relationship. Additional studies based on these findings will

be recommended later in the chapter, as appropriate. The analysis between the variables is displayed in Table 62.

Table 61

*Relationship Between the Number of Career Pathway Instructional Activities and Independent Variables*

Independent Variable	$\chi^2$ test of independence	Statistical Relationship	Pearson's <i>R</i> Value	Statistical Relationship
Number of Career Pathway teacher professional development days	.430	No	.074	No
Number of stakeholders who were involved in the initial planning of the Career Pathway high school	.003	Yes	.001	Yes
Number of instructional staff	.002	Yes	.000	Yes
Number of guidance counselors	.003	Yes	.000	Yes
Size of the student population	.006	Yes	.000	Yes

It was important to determine if the independent variables had a statistically significant relationship on the number of Career Pathway, EDP, Career Pathway instructional activities, and the total of the aforementioned activities. Although by design this study did not determine the type or degree of the relationship, it was determined that there are relationships that exist. Additional studies could be conducted to determine the nature of the relationship. For example, this study revealed there is a statistically

Table 62

*Relationship Between the Combined Total Number of Career Pathway Activities, Educational Development Plan (EDP) Activities, and Career Pathway Instructional Activities and Independent Variables*

Independent Variable	$\chi^2$ test of independence	Statistical Relationship	Pearson's <i>R</i> Value	Statistical Relationship
Number of Career Pathway teacher professional development days	.002	Yes	.001	Yes
Number of stakeholders who were involved in the initial planning of the Career Pathway high school	.003	Yes	.001	Yes
Number of instructional staff	.002	Yes	.001	Yes
Number of guidance counselors	.023	Yes	.084	No
Size of the student population	.000	Yes	.001	Yes

significant relationship between the number of Career Pathway Activities and the number of stakeholders who were involved in the initial planning of the Career Pathway high school,  $p = .000$ . This means the number of stakeholders on the original planning team influenced the number of Career Pathway activities in place. An additional study would need to be conducted to determine the nature of the relationship. In determining the nature of the relationship, Career Pathway leaders could recommend a particular number of and the type of stakeholders that yield the most Career Pathway activities in place for future initiatives. Or, if the relationship was negative, the number of and type of

stakeholders that yielded the least amount of Career Pathway activities in place could be avoided in future initiatives.

### *Barriers to Implementation*

Although 77.1% of Michigan Career Pathway high schools sustained Career Pathway course selection guides, it is important to ascertain why 22.9% of the schools did not. To this end, the results of the study revealed a statistically significant relationship between high schools that do not have a Career Pathway course selection guide and four perceived barriers: the elimination of Career Preparation grant funding, the reduction of staff time to coordinate the Career Pathway effort, the elimination of a staff member who coordinated the Career Pathway effort, and the reduction in regular per pupil state aid funding. As perceived by the respondents, all were directly connected to the loss of state funding including specific grant funding, which had been used to hire staff to specifically work on these activities and per pupil state aid funding.

Although 96.7% of Michigan Career Pathway high schools sustained EDPs, it is important to ascertain why 3.3% of the schools did not. Although the percentage may appear low, the substantial majority of Michigan Career Pathway high schools were able to sustain EDPs, and all students should be afforded a systematic opportunity to plan for their future. The Michigan Legislature and Governor believe in EDPs for every student as evidenced by the mandate to provide an EDP for every high school student starting in seventh grade. To this end, the results of the study revealed a statistically significant relationship between high schools that do not have EDPs and four perceived barriers: the elimination of Career Preparation grant funding, the reduction of staff time to coordinate

EDPs, the elimination of a staff member who coordinated the Career Pathway effort, and the reduction in regular per pupil state aid funding. Once again, as perceived by the respondents, all of the barriers were a direct result of the loss of state funding.

### Implications

As evidenced by the responses of 481 Career Pathway high school leaders in the state of Michigan, it is clear the initial seed money provided by the state was considered a worthwhile investment. Michigan Career Pathway high schools have sustained Career Pathway curriculum guides and EDPs at impressive levels, 77.1% and 96.7%, respectively.

#### *Career Pathway Curriculum Guides and Educational Development Plans (EDPs)*

Given the aforementioned data, key decision makers in Michigan's Office of Career and Technical Preparation (OCTP) should be pleased with the sustainability of the curriculum guides and EDPs, especially taking into consideration the premature elimination of the Career Preparation System funding by the Governor in concert with the legislature. When proposing new initiatives to the state legislature, Michigan's OCTP may consider using these data to demonstrate the effectiveness of its ability to implement new statewide initiatives. As the grant was intended only as seed money, it is evident OCTP had an effective process in place to lead high schools into sustaining new initiative or assisting the current Career Pathway high schools in fully implementing a Career Pathway curriculum guide or EDPs.

OCTP could cite the early termination of funding as the barrier that prevented the Career Pathway high schools from implementing or sustaining the initial effort. Utilizing the Career Pathway curriculum guides and EDP data, OCTP may develop a 1-year initiative to assist the 22.9% of Career Pathway high schools that do not have a Career Pathway curriculum guide in developing one. Concurrently, OCTP could develop a 1-year initiative to assist the 3.3% of Career Pathway high schools that do not have EDPs to begin implementing them. Partnering with successful Michigan Career Pathway high schools, OCTP could build local mentorship between the Career Pathway high schools that have the activities in place with those that do not. OCTP could also solicit examples of best practices as to how the sustaining districts were able to continue funding the effort. This would benefit one of the most important resources in our country, our students. At the same time, a similar model could be proposed to assist non-Career Pathway high schools.

Local school district leadership, Intermediate School District (ISD) leadership, and school boards could use the Career Pathway curriculum guides and EDP data to support implementing or maintaining the activities in their high school. Nationally, other states could follow the model of mandating specific activities within their existing or new career education initiatives.

### *Demographics*

Principals and counselors accounted for 74% of the respondents to this study as the professionals most responsible for the implementation and supervision of the Career Pathway activities in the building. The 70% response rate to this survey demonstrates

both groups are indicated in the improvement of career education initiatives in Michigan. Future Career Preparation initiatives conducted by Michigan's Office of Career and Technical Preparation (OCTP) need to be directed to both building principals and counselors. This would provide for seamless communication between OCTP and grant recipients. Future lists could easily be obtained by OCTP through Michigan's registry of educational personnel, which updates staff changes, if the initiative was new or if a significant amount of time had lapsed between communications, initiatives or the dissemination of one-time material. Nationally, career preparation leaders could also use this strategy when conducting career education-related research or disseminating opportunities to high schools.

Conversely, principals and counselors may not be the target audience given their rating of effectiveness of Career Pathway curriculum guides and EDPs. Just over 65% of respondents felt the selection of a Career Pathway was *helpful*, *very helpful*, or *extremely helpful* in helping students select courses. Almost 65% of respondents rated using EDPs as *helpful*, *very helpful*, or *extremely helpful* in helping students select courses. It is likely that the principal does not administer the student career assessments and he or she is not present when the results are interpreted with the student and entered into the individual student EDPs. Although not as likely, the counselor may not be present during the EDP development and career assessment testing. Some high schools use teachers with small cohort groups of students to develop the EDPs. When comparing the respondents' perceived effectiveness of the activities compared to the impressive level of sustainability, counselors and principals may not be the target audience.

*Barriers to Implementation*

With 22.9% of Michigan Career Pathway high schools not having Career Pathway curriculum guides and 3.3% not making use of EDPs, four common barriers to implementation of both curriculum guides and EDPs were identified. The barriers include the elimination of Career Preparation grant funding, reduction in regular per pupil state aid funding, the reduction of staff time to coordinate the Career Pathway effort, and the elimination of a staff member who coordinated the Career Pathway effort. The elimination of grant funding and the reduction in per pupil state aid funding was expected. The elimination of a staff member and/or staff time to coordinate the effort was not expected. If the elimination of a person or time are barriers, it appears that the work was not systematized within other staff duties, which may have created sustainability.

In the future, OCTP should consider limiting the amount of the grant awards that can be spent on paying for staff or offsetting the cost of staff. In a multi-year grant, such as the Career Preparation System Act, OCTP may want to make the limitations more restrictive in subsequent grant years. This recommendation would further support the concept that the Career Preparation System Act was seed money. Nationally, in other states and in initiatives outside career education, limiting the amount of grant dollars that can be spent on staff may be a useful strategy, particularly if the money is intended to be seed money and the initiative is expected to become self-sustaining to the extent it can pay for staff on its own.

### Recommendations for Future Studies

Again, based on the responses of 418 Career Pathway high schools leaders from across the state of Michigan, a collective professional interest in evaluating and improving career education in Michigan exists. This study offers three recommendations for the Career Preparation activities used in Michigan's public high schools.

By design, this study analyzed a series of independent and dependent variables. Although a majority of the analysis did not indicate statistically significant relationships between the dependent and independent variables, the relationships that were identified may account for why specific Career Pathway high schools were able to sustain activities over time. Given the response rate to this study, additional studies could also utilize the survey method of data collection. The survey design would collect interval or ratio data for parametric analysis. This would provide the researcher with the data needed to develop a profile of how the independent variables impacted the dependent variables.

*Recommendation 1:* The dependent variables would be the total of all of the Career Pathway activities, EDP activities, and Career Pathway instructional activities or a variety of career-related variables, if the study were conducted in a special school or another state. The independent variables would be (a) the number of building-wide teacher professional development days dedicated to career education, (b) the number of stakeholders who were involved in the initial planning of the Career Pathway high school, (c) the number of instructional staff, and (d) the size of the student population. Combining a series of variables would allow the researcher to study the system, and the

individual pairs variables could also be run individually for descriptive data or subsystem analyses.

*Recommendation 2:* Examine the relationship between the Career Pathway instructional activities and (a) the number of stakeholders who were involved in the initial planning or the current stakeholders providing direction for the Career Pathway high school, (b) the number of instructional staff, (c) the number of guidance counselors, and (d) the size of the student population or a variety of career-related variables, if the study were conducted in a special school or another state. The Career Pathway instructional activities are comprised of work-based learning, earning college credit in high school, instructors working on interdisciplinary teaching projects, percentage of instructors incorporating “real world” teaching examples, and the average number of professional development days per year dedicated to career preparation. Combining a series of variables would allow the researcher to study the system, and the individual pairs variables could also be run individually for descriptive data or subsystem analysis. This recommended study would benefit career education on a state and national level with the majority of the impact focused on teaching and learning.

A modification of this recommendation includes utilizing random sampling so student standardized test scores could be incorporated. This would give the researcher the opportunity to examine the relationship between a student’s standardized test scores and one of the dependent variables. For example, the researcher could analyze if a student who is in a class that earns college credit scores better on the standardized examinations. This analysis would require the use of a data warehouse, which contains specific information such as assessment scores, attendance, course grades, and extra-

curricular activities on individual students. The unit of analysis would be individual students rather than a series of school buildings.

*Recommendation 3:* Survey Michigan's high schools, not just Career Pathway high schools, to determine the type of college credit the high school is offering, how many students are eligible for the credit, and how many students enroll in the institutions that grant the credit. With an impressive 99.5% of Michigan's Career Pathway high schools offering one or more types of college credit, this would be a noteworthy study to school personnel, students, and parents. Given the recommendation by Michigan's Lieutenant Governor's Commission on Higher Education and Growth for high schools to increase the percentage of students who are earning college credit in high school, state government may also be interested in the study (*Final Report of the Lt. Governor's Commission on Higher Education & Economic Growth*, 2004).

The survey method of data collection would be most efficient. The survey design will collect interval or ratio data so parametric analysis could be conducted on the data. This would provide the researcher with the data to develop a profile of how the independent variables impacted the dependent variables.

*Recommendation 4:* This study revealed impressive numbers of Michigan Career Pathway high schools sustaining Career Pathway curriculum guides and EDPs. Previous studies of Career Pathway high school state and national initiatives reveal positive student outcomes such as improved grade point average (GPA), increased academic coursework, and increased student attendance, as well as decreased student dropout rate. A Michigan-based study could compare the performance of students in designated Career Pathway high schools to non-Career Pathway high schools on outcomes such as

graduation rates, attendance, GPA, standardized test scores, and increased academic coursework to determine if there is a difference between the type of high schools.

Comparisons between the six different Career Pathways could be conducted, as well.

Positive student outcomes for Career Pathway high schools may change the principals' perception of the effectiveness of Career Pathway designation and EDPs in helping students select courses.

### Closing Thoughts

With 418 out of 596 surveys returned, this study realized a 70% return rate, which clearly indicates local school district leaders are interested in taking their valuable time to assist with improving career education in Michigan. The career education initiative examined in this study, Michigan's Career Preparation System, was designed to improve student achievement by connecting what is taught in school to the workplace and thus increasing success in postsecondary training and career. In particular, this study focused on two state-mandated high school requirements, Career Pathway curriculum guides and EDPs, along with other expert recommended activities.

Clearly, most Michigan Career Pathway high schools have indicated support for the mandated activities, with a notable 77.1% of Michigan Career Pathway high schools sustaining the mandate that their course selection guides are organized under Michigan's six Career Pathways. Schools have embraced the use of such course selection guides by systematizing the Career Pathway process; in fact, 91.8% of respondents reported that students declare a Career Pathways by the end of ninth grade. And as the second required activity, the study also revealed that once a student selects the Career Pathway,

this choice becomes part of that student's EDP. Two years after the special funding for Career Preparation was eliminated, a notable 96.7% of Michigan's Career Pathway high schools had sustained student EDPs.

On the other hand, this study found that nearly 33% of the responding high schools were not organizing their courses around the six Career Pathway, nearly 3% did not use EDPs, and about 5% did not meet the required student Career Pathway selection. Since such activities must now be supported by regular per pupil funding received by the state, the possibility exists that budgetary issues might underlie the reason those schools no longer require students to select a Career Pathway. And if this is the case, how might the current budget crisis in Michigan further impact sustainability of Career Pathway activities?

Indeed, Career Pathway high schools cited the two most significant barriers to implementing such activities were the elimination of staff and/or staff time to coordinate the activities. Schools can cut back on extra curricular activities, supplies, support staff, and building maintenance. However, real budget savings are realized when professional staff positions are eliminated. If Michigan's schools continue to receive per pupil funding reductions, what programs and staff will local district leaders be forced to sacrifice: the staff responsible for the Career Preparation activities outlined in this study? In other words, will the core academic staff become the lone survivors within Michigan's high schools?

Also of note is that along with the aforementioned Career Pathway course selection guides and EDPs, this study revealed that 99.5% of Michigan's Career Pathway high schools have provided substantive opportunities for students to earn college credit

in high school. In 2004, Governor Granholm established the Lieutenant Governor's Commission on Higher Education and Growth, which developed a series of recommendations, one of which is to increase the opportunity for students to earn college credit while enrolled in high school. Recently, Michigan's high school reform legislation mandates the use of EDPs starting in seventh grade for all Michigan high school students. These are two examples of how Michigan's Career Pathway high schools support the goals of Michigan's top leader.

Career Pathway high schools also seem to support Michigan's new state assessment program, which appears to require a balance between increased academic rigor and relevant connections to the workplace. The state has mandated implementation of the new Michigan Merit Exam, which includes the ACT, ACT WorkKeys Reading for Information, and ACT WorkKeys Applied Mathematics. This creates a need for students to understand both the academic application of knowledge and how such knowledge is applied in the workplace. The development of these new exams, the recommendation by the Governor to increase the opportunity for students to earn college credit while enrolled in high school, and the commitment to Career Pathway activities demonstrated by teachers and administrators at Career Pathway high schools across the state depicts not only academic support, but also political and administrative acknowledgement, that the activities examined in this study must be maintained. Given Michigan's current budget crisis, which may already be impacting the sustainability of Career Pathway activities, it is time for the state legislature, in concert with the Governor, to create a sustainable funding stream to support Michigan's public schools, with special funding to further develop initiatives such as Michigan Career Pathway high schools.

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**Appendix A**  
**Panel of Career Pathway Experts**

### **Panel of Career Pathway Experts**

- **Paul Bergan**, Career and Technical Education Director, Berrien County Intermediate School District
- **Becky Meier**, School Improvement Director, Berrien County Intermediate School District
- **Patty Cantu**, State Career and Technical Preparation Director, Office of Career and Technical Preparation, Michigan Department of Labor and Economic Growth
- **Jill Kroll**, Ph.D., Analyst, Office of Career and Technical Preparation, Michigan Department of Labor and Economic Growth

**Appendix B**  
**Survey Cover Letter**

## Survey Cover Letter

February 7, 2005

Dear High School Principal:

You are invited to participate in a research project entitled, "A Study of Career Preparation Activities Used in Michigan's Public High Schools." Dr. Linda L. Dannison, Professor and Chairperson in the Department of Family and Consumer Sciences at Western Michigan University, and Brian Pyles, a doctoral student in Educational Leadership with a concentration in Career and Technical Education, are conducting the study. Brian will be using this information as the basis for his dissertation.

**Please direct this survey to the staff person most responsible for the implementation and supervision of the Career Pathways activities in your building.** This survey consists of 27 questions that pertain to career preparation strategies used in public high schools. The survey should take approximately 10 minutes to complete. You may choose not to answer any question by simply leaving it blank. If you choose not to participate, you may either return the blank survey or you may discard it. Although the surveys are coded, your responses will be completely anonymous and confidential. The purpose of the coding is to send reminders and the coding will be removed once the survey is received. The results will only be reported in aggregate form, which ensures that it will not be possible to identify any individual participant from reading the report. By returning the survey, you are also agreeing that your responses can be used in statistical calculations for the research being conducted.

This consent document has been approved for use for one year by the Human Subjects Institutional Review Board (HSIRB), as indicated by the stamped date and signature of the board chair in the upper right corner. Do not participate in this study if the stamped date is more than one year old.

If you have any questions regarding the survey, please contact either Dr. Linda Dannison at 269.387.3713 or Brian Pyles at 989.743.3471. You may also contact the Chair, Human Subjects Institutional Review Board at (269.387.8293) or the Vice President for Research (269.387.8298) if questions or problems arise during the course of the study.

Thank you for responding to this survey. Once completed, please return by MARCH 7, 2005 in the stamped, self-addressed envelope enclosed.

Sincerely,

Linda L. Dannison, Ph.D.  
Professor and Chairperson  
Western Michigan University

Brian Pyles  
Doctoral Student  
Western Michigan University

## Appendix C

### Survey

## A Study of Career Preparation Activities Used in Michigan's Public High Schools

Directions: Please check the single "best" response for each of the following questions.

### Section I: Demographic Information

1. Primary job position (50% or more of your responsibilities)?
 

<input type="checkbox"/> Assistant Principal	<input type="checkbox"/> District Curriculum Director
<input type="checkbox"/> Career Preparation Coordinator	<input type="checkbox"/> Instructor
<input type="checkbox"/> Counselor	<input type="checkbox"/> Principal
<input type="checkbox"/> CTE Director	<input type="checkbox"/> School-to-Work Coordinator
<input type="checkbox"/> Department Chairperson	<input type="checkbox"/> Other (please specify) _____
  
2. Total years employed in education?
 

<input type="checkbox"/> 1 – 4	<input type="checkbox"/> 15 – 19
<input type="checkbox"/> 5 – 9	<input type="checkbox"/> 20 or more
<input type="checkbox"/> 10 – 14	
  
3. Total years employed in current position?
 

<input type="checkbox"/> 1 – 4	<input type="checkbox"/> 15 – 19
<input type="checkbox"/> 5 – 9	<input type="checkbox"/> 20 or more
<input type="checkbox"/> 10 – 14	
  
4. Size of your high school?
 

<input type="checkbox"/> Class A (1,036 or more students)	<input type="checkbox"/> Class C (234 – 488 students)
<input type="checkbox"/> Class B (489 – 1,035)	<input type="checkbox"/> Class D (233 or less students)
  
5. School schedule?
 

<input type="checkbox"/> 8 period day	<input type="checkbox"/> Alternating AB (8 period) schedule
<input type="checkbox"/> 7 period day	<input type="checkbox"/> Other (please specify) _____
<input type="checkbox"/> 6 period day	_____
<input type="checkbox"/> 5 period day	_____
<input type="checkbox"/> 4 × 4 block schedule	
  
6. Total number of high school administrators in your building?
 

<input type="checkbox"/> 1 administrator	<input type="checkbox"/> 4 – 5 administrators
<input type="checkbox"/> 2 – 3 administrators	<input type="checkbox"/> 6 or more administrators
  
7. Total number of counselor(s) in your building?
 

<input type="checkbox"/> 1	<input type="checkbox"/> 4
<input type="checkbox"/> 2	<input type="checkbox"/> 5 or more
<input type="checkbox"/> 3	
  
8. Total number of instructional staff in your building?
 

<input type="checkbox"/> 0 – 25 instructional staff	<input type="checkbox"/> 76 – 100 instructional staff
<input type="checkbox"/> 26 – 50 instructional staff	<input type="checkbox"/> 101 or more instructional staff
<input type="checkbox"/> 51 – 75 instructional staff	

## Part II: Career Preparation Activities

9. Is your high school student course selection guide organized around Michigan's six Career Pathways?

☐ Yes  
☐ No, skip to question 14

10. Who was involved in the initial planning of your Career Pathway high school? (check all that apply)

☐ Association / Union Representative(s)      ☐ Student(s)  
☐ Building Administrator(s)      ☐ Teacher(s)  
☐ Central Office Administrator(s)      ☐ Other (please specify) \_\_\_\_\_  
☐ Counselor(s) \_\_\_\_\_  
☐ Parent(s) / Community Member(s) \_\_\_\_\_  
☐ School Board Member(s)

11. When do your students first declare their Career Pathway (career major)?

☐ 8<sup>th</sup> grade      ☐ 11<sup>th</sup> grade  
☐ 9<sup>th</sup> grade      ☐ 12<sup>th</sup> grade  
☐ 10<sup>th</sup> grade      ☐ Students do not declare a Career Pathway, skip to question 13

12. What is the last grade your students can change their declared Career Pathway (career major)?

☐ 8<sup>th</sup> grade      ☐ 11<sup>th</sup> grade  
☐ 9<sup>th</sup> grade      ☐ 12<sup>th</sup> grade  
☐ 10<sup>th</sup> grade      ☐ Students cannot change their Career Pathway

13. In your opinion, how helpful is the selection of a Career Pathway (career major) in helping students select courses?

☐ Not helpful at all  
☐ Somewhat helpful  
☐ Helpful  
☐ Very helpful  
☐ Extremely helpful

After answering skip to  
question 15

14. In your opinion, what influence did the following factors have on NOT organizing your high school student course selection guide around Michigan's six Career Pathways?

	Did Not Occur No Influence	Minimal Influence	Moderate Influence	Great Influence	The Primary Influence
a) Change in building administration					
b) Change in instructional emphasis					
c) Change in school schedule					
d) Elimination of Career Preparation grant funding					
e) Elimination of a staff member who coordinated the Career Pathway effort					
f) Reduction of staff time to coordinate the Career Pathway effort					
g) Reduction in regular per pupil state aid funding					

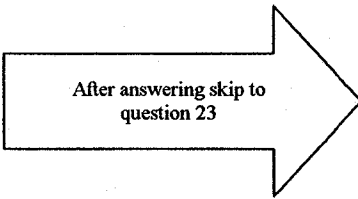
15. Do your students complete an Educational Development Plan (EDP)?  
☐ Yes  
☐ No, skip to question 22
16. What format is used for the EDP?  
☐ Electronic  
☐ Paper  
☐ Both
17. At what grade level do your students first complete their EDP?  
☐ 8<sup>th</sup> grade  
☐ 9<sup>th</sup> grade  
☐ 10<sup>th</sup> grade  
☐ 11<sup>th</sup> grade  
☐ 12<sup>th</sup> grade
18. At what grade level(s) are the student's EDPs reviewed (check all that apply)?  
☐ Every year  
☐ 9<sup>th</sup> grade  
☐ 10<sup>th</sup> grade  
☐ 11<sup>th</sup> grade  
☐ 12<sup>th</sup> grade  
☐ Do not review EDPs
19. At what grade level(s) is a parent signature required on the students EDP (check all that apply)?  
☐ Every year  
☐ 9<sup>th</sup> grade  
☐ 10<sup>th</sup> grade  
☐ 11<sup>th</sup> grade  
☐ 12<sup>th</sup> grade  
☐ Do not require a parent signature
20. Which of the following career assessments are used for declaring Career Pathways (career majors) (Check all that apply)?  
☐ ACT Explore (8<sup>th</sup> grade)  
☐ ACT Plus (9<sup>th</sup> grade)  
☐ ACT Plan (10<sup>th</sup> grade)  
☐ ASVAB  
☐ Career Cruising  
☐ COPES / COPS / CAPS  
☐ Differential Aptitude Test  
☐ Kuder Career Search  
☐ Kuder Skills Assessment  
☐ MOIS  
☐ Students do not take career assessments  
☐ Other (please specify)  


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21. In your opinion, how helpful is the use of an EDP in helping students select courses?  
☐ Not helpful at all  
☐ Somewhat helpful  
☐ Helpful  
☐ Very helpful  
☐ Extremely Helpful

After answering skip to  
question 23



22. In your opinion, what influence did the following factors have on NOT using student EDPs?

	Did Not Occur No Influence	Minimal Influence	Moderate Influence	Great Influence	The Primary Influence
a) Change in building administration					
b) Change in instructional emphasis					
c) Change in school schedule					
d) Elimination of Career Preparation grant funding					
e) Elimination of a staff member who coordinated the Career Pathway effort					
f) Reduction of staff time to coordinate the Career Pathway effort					
g) Reduction in regular per pupil state aid funding					

23. What work-based learning activities are offered to your students (check all that apply)?

- |  |   |
|--|---|
| <input type="checkbox"/> Apprenticeship              | <input type="checkbox"/> Work Experience (paid or unpaid) |
| <input type="checkbox"/> Cooperative Education       | <input type="checkbox"/> None are offered                 |
| <input type="checkbox"/> Internship (paid or unpaid) | <input type="checkbox"/> Other (please specify)           |
| <input type="checkbox"/> Job Shadowing               | _____   |
| <input type="checkbox"/> Service Learning            | _____   |

24. What post-secondary credit opportunities are available to your students (check all that apply)?

- |   |  |
|---|--|
| <input type="checkbox"/> Articulated Credit             | <input type="checkbox"/> No college credit opportunities are available |
| <input type="checkbox"/> Advanced Placement (AP) Credit | <input type="checkbox"/> Other (please specify)                        |
| <input type="checkbox"/> Direct Credit                  | _____  |
| <input type="checkbox"/> Dual Enrollment Credit         | _____  |

25. In your opinion, what percentage of your high school instructors are working on interdisciplinary teaching projects? (For example, two or more disciplines working together for class projects).

- |  |                                    |
|--|------------------------------------|
| <input type="checkbox"/> Less than 25% | <input type="checkbox"/> 51% - 75% |
| <input type="checkbox"/> 26% - 50%     | <input type="checkbox"/> over 75%  |

26. In your opinion, what percentage of your high school instructors are incorporating "real world" examples in their teaching?

- |  |                                    |
|--|------------------------------------|
| <input type="checkbox"/> Less than 25% | <input type="checkbox"/> 51% - 75% |
| <input type="checkbox"/> 26% - 50%     | <input type="checkbox"/> over 75%  |

27. On average, how many teacher professional development days during an academic year are devoted to Career Preparation initiatives within your building?

- |  |   |
|--|---|
| <input type="checkbox"/> None          | <input type="checkbox"/> 5 or more days         |
| <input type="checkbox"/> 1 day or less | <input type="checkbox"/> Other (please specify) |
| <input type="checkbox"/> 2 days        | _____   |
| <input type="checkbox"/> 3 days        | _____   |
| <input type="checkbox"/> 4 days        |   |

**Thank you for taking the time to complete this survey.**

## **Appendix D**

### **Human Subjects Institutional Review Board Letter of Approval**

## WESTERN MICHIGAN UNIVERSITY



Human Subjects Institutional Review Board

Date: February 24, 2005

To: Linda Dannison, Principal Investigator  
Brian Pyles, Student Investigator for dissertation

From: Mary Lagerwey, Ph.D., Chair

A handwritten signature in cursive script that reads "Mary Lagerwey".

Re: HSIRB Project Number: 05-01-12

This letter will serve as confirmation that the changes to your research project "A Study of Career Preparation Activities Used in Michigan's Public High Schools" requested in your memo dated 2/22/2005 and clarified in your memo dated 2/23/2005 (school configuration codes added as subjects return surveys; reminder card added) have been approved by the Human Subjects Institutional Review Board.

The conditions and the duration of this approval are specified in the Policies of Western Michigan University.

Please note that you may **only** conduct this research exactly in the form it was approved. You must seek specific board approval for any changes in this project. You must also seek reapproval if the project extends beyond the termination date noted below. In addition if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: January 28, 2006

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**Appendix E**  
**Mailing Reminder Card**

**Mailing Reminder Card**

On February 7, 2005, you were mailed a research study entitled, "A Study of Career Preparation Activities Used in Michigan's Public High Schools." As of February 27, 2005, your survey has not been received. If you choose not to participate, you may either return the blank survey or you may discard it. For your convenience, the original cover letter, survey, and stamped, self-addressed envelope are enclosed.

**Appendix F**  
**Career Pathway Weighting Group Experts**

### **Career Pathway Weighting Group Experts**

- **Halyna Bialczyk, Ed.D.**, Regional Career and Technical Education Administrator,  
Wayne Regional Education Service Agency
- **Paul Bergan**, Career and Technical Education Director, Berrien County  
Intermediate School District
- **Brenda Clark, Ed.D.**, School-to-Work Coordinator, Jenison Public Schools
- **Carol Clark**, Education Coordinator, Michigan Office of Career and Technical  
Preparation, Michigan Department of Labor and Economic Growth
- **Patti Gabos**, CTE Consultant, Charlevoix-Emmet Intermediate School District
- **David Gaunt, Ph.D.**, Student Services Administrator, Wexford-Missaukee Area  
Career Tech Center
- **Lori Keebaugh**, Supervisor, Career, Technical and Continuing Education,  
Waterford School District
- **Joanne Mahoney, Ph.D.**, Supervisor of Education & Employer Partnerships,  
Michigan Office of Career and Technical Preparation, Michigan Department of  
Labor and Economic Growth
- **Becky Meier**, School Improvement Director, Berrien County Intermediate School  
District

**Appendix G**  
**Research Question 3 Weighting System**

### Research Question 3 Weighting System

Survey Question Number	Survey Question	Survey Response(s)	Response Weighting	Points Assigned
9	Is your high school student course selection guide organized around Michigan's six Career Pathways?	Yes	Yes	4
		No	No	0
10	Who was involved in the initial planning of your Career Pathway high school (check all that apply)?	Association/union representative	7 or more members	4
		Building administrator	5 to 6 members	3
		Central office administrator	3 to 4 members	2
		Counselor	1 to 2 members	1
		Parent/community member		
		School board member		
		Student		
		Teacher		
		Other (please specify)		
11	When do your students first declare their Career Pathway (career major)?	8 <sup>th</sup> Grade	8 <sup>th</sup> Grade	4
		9 <sup>th</sup> Grade	9 <sup>th</sup> Grade	4
		10 <sup>th</sup> Grade	10 <sup>th</sup> Grade	3
		11 <sup>th</sup> Grade	11 <sup>th</sup> Grade	2
		12 <sup>th</sup> Grade	12 <sup>th</sup> Grade	1
		Students do not declare	Students do not declare	0

Survey Question Number	Survey Question	Survey Response(s)	Response Weighting	Points Assigned
12	What is the last grade your students can change their declared Career Pathway (career major)?	8 <sup>th</sup> Grade	12 <sup>th</sup> Grade	4
		9 <sup>th</sup> Grade	11 <sup>th</sup> Grade	3
		10 <sup>th</sup> Grade	10 <sup>th</sup> Grade	2
		11 <sup>th</sup> Grade	9 <sup>th</sup> Grade	1
		12 <sup>th</sup> Grade	8 <sup>th</sup> Grade	0
		Students cannot change their declared Career Pathway	or students cannot change their declared Career Pathway	
15	Do Your students complete an Educational Development Plan (EDP)?	Yes	Yes	4
		No	No	0
17	At what grade level do your students first complete their EDP?	8 <sup>th</sup> Grade	8 <sup>th</sup> Grade	4
		9 <sup>th</sup> Grade	9 <sup>th</sup> Grade	3
		10 <sup>th</sup> Grade	10 <sup>th</sup> Grade	2
		11 <sup>th</sup> Grade	11 <sup>th</sup> Grade	1
		12 <sup>th</sup> Grade	12 <sup>th</sup> Grade	1
18	At what grade level(s) are the student's EDPs reviewed (check all that apply)?	Every year	Every year or 4 grades	4
		9 <sup>th</sup> Grade	3 grades	3
		10 <sup>th</sup> Grade	2 grades	2
		11 <sup>th</sup> Grade	1 grade	1
		12 <sup>th</sup> Grade	Do not review EDPs	0
		Do not review EDPs		

Survey Question Number	Survey Question	Survey Response(s)	Response Weighting	Points Assigned
19	At what grade level(s) is a parent signature required on the student's EDP (check all that apply)?	Every year	Every year or 4 grades	4
		9 <sup>th</sup> Grade	3 grades	3
		10 <sup>th</sup> Grade	2 grades	2
		11 <sup>th</sup> Grade	1 grade	1
		12 <sup>th</sup> Grade	Do not require a parent signature	0
		Do not require parent signature		
20	Which of the following career assessments are used for declaring Career Pathways (career majors) (check all that apply)?	ACT Explore	4 or more assessments	4
		ACT Plus	3 assessments	3
		ACT Plan	2 assessments	2
		ASVAB	1 assessment	1
		Career Cruising	Students do not take career assessments	0
		COPES/COPS/CAPS		
		Differential Aptitude Test		
		Kuder Career Search		
		Kuder Skills Assessment		
		MOIS		
		Students do not take career assessments		
		Other (please specify)		

Survey Question Number	Survey Question	Survey Response(s)	Response Weighting	Points Assigned
23	What work-based learning activities are offered to your students (check all that apply)?	Apprenticeship	4 or more opportunities	4
		Cooperative Education	3 opportunities	3
		Internship	2 opportunities	2
		Job Shadowing	1 opportunity	2
		Service Learning	None are offered	0
		Work Experience		
		None are offered		
24	What post-secondary credit opportunities are available to your students (check all that apply)?	Other (please specify)		
		Articulated Credit	4 or more opportunities	4
		Advanced Placement (AP) Credit	3 opportunities	3
		Direct Credit	2 opportunities	2
		Dual Enrollment Credit	1 opportunity	2
		No college credit opportunities are available	None college credit opportunities are available	0
25	In your opinion, what percentage of your high school instructors are working on interdisciplinary teaching projects (For example, two or more disciplines working together for a class project)?	Other (please specify)		
		Less than 25%	76%-100%	4
		26%-50%	51%-75%	3
		51%-75%	26%-50%	2
		76%-100%	Less than 25%	1

Survey Question Number	Survey Question	Survey Response(s)	Response Weighting	Points Assigned
26	In your opinion, what percentage of your high school instructors are incorporating "real world" examples in their teaching?	Less than 25%	76%-100%	4
		26%-50%	51%-75%	3
		51%-75%	26%-50%	2
		76%-100%	Less than 25%	1
27	On average, how many teacher professional development days during an academic year are devoted to Career Preparation initiatives in your building?	Less than 25%	76%-100%	4
		26%-50%	51%-75%	3
		51%-75%	26%-50%	2
		76%-100%	Less than 25%	1