DISSERTATION

METRO WEST MIDDLE COLLEGE PILOT PROGRAM:

AN EMBEDDED CASE STUDY

Submitted by

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WE HEREBY RECOMMEND THAT THE DISSERTATION PREPARED UNDER OUR SUPERVISION BY ARLIE C. HUFFMAN III ENTITLED *METRO WEST MIDDLE COLLEGE PILOT PROGRAM: AN EMBEDDED CASE STUDY* BE ACCEPTED AS FULFILLING IN PART REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY.

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ABSTRACT OF DISSERTATION

METRO WEST MIDDLE COLLEGE PILOT PROGRAM:
AN EMBEDDED CASE STUDY

In the early 1970's, a cooperative educational concept known as middle college was started to help underachieving and disenfranchised New York City public school students understand that college is an attainable goal. In 2004, the Career and Technical Education high school in Harris County Public School district, Harris Tech, and Metro West Community College (MWCC), all pseudonyms, joined to create their own middle college focusing on Career and Technical Education students. This pilot project, known as Metro West Middle College (MWMC), operated with the goals of helping students transition between secondary and postsecondary institutions, and increasing the level of collaboration between the two agencies. This research used an embedded case study qualitative methodology to investigate the levels of success of these goals.

Three cases were embedded in the overall case study of MWMC. The first case consisted of state and district level administrators who were interviewed regarding statutes and policies that affected the operation of middle colleges. Administrators and faculty members from both Harris Tech and MWCC were surveyed in the second embedded case to provide the institutional context to the project. The third case was comprised of students who enrolled in MWMC during the first year of operation and parents of students who enrolled during the first two years.

Data were compared to a set of six design principles developed by the Middle College National Consortium in 2005. The MWCC project planners addressed all of the design principles in general, but the data collected in this study showed that several key elements were missing. As a result, my research concluded that state-level middle college funding mechanisms were missing or contradictory, the program mission and goals were not clearly formulated and thus were not well communicated, collaborative program governance strategies were not used, the student selection process was not explicitly defined, and a formalized, ongoing student support structure was not provided. While these missing pieces had a deleterious effect on the overall success of the program, levels of student success were generally high, and most stakeholders reported a strong desire to continue developing this type of program.

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CHAPTER 1: INTRODUCTION

Background

Since its inception, Career and Technical Education (CTE) has been viewed as a place for high school students who are not continuing on to college. When the Smith-Hughes Act created the vocational educational pathway in 1917, this view was appropriate, since many careers did not require anything more than a high school diploma (Gray, 1996). As the economy of the United States has transitioned from the industrial age into the information age, the required educational level for entry-level jobs has increased dramatically. With respect to CTE, this has had effects on nearly all aspects of every program. Community business leaders who advise CTE programs have stressed that the curricula need to integrate college preparatory skills into daily lessons. These historically academic skills have become necessities in the majority of the jobs that CTE students are being prepared to take.

CTE students are less likely to enroll in academic courses focused on college entrance than students in college preparatory pathways are, and thus they are not prepared for many jobs in today's economy (Levesque, Lauen, Teitelbaum, Alt, & Librera, 2000). Fewer CTE students enter college within two years of high school graduation, with just over 54% of CTE concentrators making this transition, compared to over 93% of college preparatory students and 73% of all high school graduates (Silverberg, Warner, Fong, & Goodwin, 2004). These lower numbers lead to lower expectations for CTE students, making it extremely difficult for low or even middle achieving students to receive the

support and training that colleges require for initial enrollment (Bragg, 2001). As a result, upon graduation from high school, CTE students often find they are unprepared to enter college, and may even be left without any information about what college programs would be beneficial. In response to this need, cooperative programs between high schools and community colleges were established, such as Tech Prep and middle college.

The Middle College Concept

With the leadership of Janet Lieberman in 1973, Middle College High School (MCHS) was formed through an agreement between LaGuardia Community College and the New York City Public School system. Wechsler (2001) quoted the original plan for the school as "identify[ying] the target population as 'disaffected high risk students who have already been identified as potential dropouts'" (p. 36). The goals for these students were to get them involved in college level work as soon as possible to show they were capable of operating at this educational level, to give them support during the critical first two years of postsecondary coursework, and to keep them in school to receive their high school diploma. Lieberman (1998) reported that "at that time, at least 40 percent of the pupils in New York failed to complete high school; of those who did graduate high school, about one out of four went to college" (p. 13). These particular students were open to nearly any change, as noted by Wechsler (2001), "95% of surveyed high school students ... favored the new school, since 'any program is better than the present one'" (p. 56). The success of MCHS has been largely based on providing personalized support to high school students as they enrolled in college courses. Most of these students rarely experienced success in academically demanding classes, and had not considered college

as a viable option prior to enrolling in the school (Houston, Byers, & Danner, 1992; Wechsler, 2001).

CTE Students in Middle College

MCHS student experiences are similar to those many CTE students have in their high school academic courses. In general, students who are attracted to CTE programs have two distinguishing characteristics compared to students who keep primarily to the college preparatory classes. First, they have not experienced success or support in their academic courses; and second, they need to understand that the work they are doing in school will have direct applicability to their careers (Bishop & Mane, 2004; Maxwell, 2001). Providing opportunities for CTE students to experience success in both of these points was the primary reason behind the creation of middle colleges with a CTE focus.

Harris Occupational Technical Center (Harris Tech) is the CTE high school in the Harris County Public School District (HCSD). The school is located in metropolitan Denver, Colorado on the Lifelong Learning Campus, which also includes Metro West Community College (MWCC), as well as two comprehensive alternative high schools. All institutional and individual names are pseudonyms. Juniors and seniors from twenty-two different high schools come to Harris Tech for half of every school day. Becoming one of these CTE concentrators requires a great deal of commitment from the students, since they must travel to and from their home high school to spend fifteen hours per week in one specific program at Harris Tech. The mindset of most of these students always interested me, since, in my experience, most high school students enjoy the environment within the walls of one high school. Some factor or, more likely, a combination of

factors convinced the students that leaving the standard high school surroundings would benefit them.

Students taking CTE classes at Harris Tech often said they were not considered college bound by the faculty at their high schools. This stemmed in part from the feelings many of the students had about the classes they needed to take to meet graduation requirements. My conversations with these students showed me they did understand taking college preparatory classes would help them be accepted to postsecondary institutions, but they had a difficult time accepting the "learn it now, it will help you later" argument. One critical piece that appeared to be lacking was convincing these students they must work hard in high school to achieve their educational and career goals in the near future. Bailey and Karp (2003) provided one example of a strategy used to convey this message:

> By actually participating in college classes, students develop a clear idea about whether or not they are prepared. Moreover, many transition programs require students to pass a college assessment test before entering the program. Even if students fail these tests and cannot enroll, they have received a warning about their lack of preparation for college. Underachieving students may not realize how important academic achievement in high school is for their future success in college. By exposing them to college earlier, these students may understand why they need to apply themselves to their high school work. (p. 3)

Based on these ideas, the challenge for secondary CTE schools was to find ways to create programs encouraging students to consider attending college by introducing them to the atmosphere, demands, and benefits of the college environment.

Purpose of Study

One of the critical questions about middle college that had not been addressed by research studies with respect to CTE asked why students chose to enroll in this type of transitional program. Part of the philosophy behind the creation of Harris Tech was

many students would benefit more from an education focused on the development of academic and personal skills related to the workplace as opposed to progressing through a standard college preparatory path. Historically, Harris Tech students focused on moving from high school into their careers, which often did not involve a significant amount of postsecondary education. Recently, however, many students began planning to continue their education at postsecondary institutions immediately following high school, and these students often reported that CTE classes prepared them well for the expectations of the college environment (R. Pittman, personal communication, April 19, 2005). This similarity in educational environments between secondary and postsecondary institutions provided Harris Tech students with a smoother transition between the two levels, which can lead to higher student success rates in college (Banning, 1989). Being successful in a program at Harris Tech also required a student to develop the ability to be self-motivated and self-sufficient which matched well with those attributes necessary to succeed in college.

At the time of this study, the challenge most Harris Tech instructors were facing was how to demonstrate the value of postsecondary education to many of their students. This concern was addressed in an uncommon way. Because of the physical proximity and strong educational ties between Harris Tech and MWCC, the two institutions began a pilot of the middle college concept during the 2004 – 2005 academic year, named the Metro West Middle College pilot project (MWMC). This project allowed Harris Tech students to receive college credit for both their CTE and core academic courses at MWCC. Not every student at Harris Tech fit into the middle college structure, either because of educational needs or because of other restrictions. However, many of the

students could take advantage of some part of what MWMC offers, and 35 participated in the program over the first two years of operation.

The research reported in this dissertation examined the effectiveness of the middle college concept applied to students concentrating in CTE programs. I completed this research using case study methodology, including data from students who graduated from high school having completed at least one semester in the program, from the parents of these students, and from MWMC faculty and other district and state level administrators. I interviewed participants to investigate student perceptions of the middle college experience and to understand the educational benefits each student received from MWMC. Student achievement data such as student grade point average, college placement test scores, and course grades routinely collected by Harris Tech and MWCC staff involved with MWMC supported information from the interviews. Analysis of these quantitative data helped explain the educational history and performance of each MWMC student. Near the end of the 2004 – 2005 school year, I surveyed Harris Tech and MWCC faculty involved in the middle college regarding their thoughts about the beginning of the project's implementation process. These faculty members were asked to complete a second survey including questions about the continuing operation of MWMC. I also interviewed a small group of administrators from HCSD, the Colorado Department of Education (CDE), and the Colorado Community College System (CCCS) regarding their views about how middle colleges address secondary school reform issues.

Analysis of data collected in this study will help three main stakeholder groups determine the effectiveness of the program, and adds to the limited empirical base in this programmatic area. Across the state and the country, middle college faculty and

administrators will be able to use the results of this study to help design or improve their schools. Bailey and Karp (2003) called for evaluations of these types of programs to determine how they affect student success in transitioning from high school to postsecondary studies. As school districts investigate strategies to address needs identified in the secondary school reform movement (Cohen, 2001; National Governors Association, 2003), understanding how MWMC influenced student achievement will provide some guidance to designing and implementing other middle colleges.

On the local level, Harris Tech administrators needed to know how the experiences of the students helped with the transition from high school to college. Additionally, HCSD administrators had questions about the appropriateness of using employee time and district money for this program. Since middle college students are effectively MWCC students, the college administrators and instructors also wanted to know how successful the students were in college classes, and what affect the college experience had on the students.

Finally, I assessed the design and implementation of MWMC via comparison with a set of design principles that the Middle College National Consortium developed in 2005 (Middle College National Consortium, 2005). This review included investigating specific practices ranging from logistics to student support mechanisms and staff professional development. Using this set of principles helped identify areas where MWMC succeeded and where it faced challenges. This information should be valuable to both MWMC stakeholders and administrators of other middle colleges as they work to improve ways they serve the enrolled students.

Statement of Research Problem

Since the empirical base for middle college programs was limited at the time of this study, this research determined the effectiveness of MWMC in preparing CTE students for the transition to postsecondary coursework. This was evaluated via the perspectives of students who enrolled in the program during the 2004 – 2005 and 2005 – 2006 school years, and contextualized by information from faculty and administrators at HCSD, Harris Tech, MWCC, CDE, and CCCS. With respect to MWMC, this research helped identify how the program reinforced the importance of postsecondary education to CTE students and to the participating institutions MWCC and Harris Tech. This required an understanding of how and why MWMC was created and implemented, and what the student perspectives were before enrolling in the program. HCSD administrators, CDE officials, and CCCS directors were only cautiously supportive of middle college programs, partly because of the lack of data about the effects on student achievement (M. Bloom, personal communication, February 16, 2006). Since this research project was the first to address this issue for a middle college in Colorado, current and future middle colleges may be able to use the results of this study to help guide the design and operation of their programs.

Research Questions

Based on stakeholder input (M. Bloom, personal communication, February 16, 2006) and the need for evaluations of transitional programs such as middle college (e.g., Bailey & Karp, 2003), the research questions in this study were separated to address three groups of stakeholders. To help describe the context of the program, two questions first provided information about the planning and operation of MWMC. The opening

question required input from district and state level administrators, and addressed how the middle college concept integrated into high school reform priorities. The second question addressed procedural issues related to the development of the program, and concentrated on Harris Tech, MWCC, and HCSD staff. Once the background information was collected through the first two questions, it became appropriate to investigate the third question, which focused on information specific to each MWMC student and directly addressed the effectiveness of the pilot project.

Question 1. Applied to HCSD administrators, CDE and CCCS administrators: How does the middle college concept fit into high school reform programs?

1. How well do the goals of middle colleges match the goals of secondary school reform?
2. What have been the challenges in implementing and operating middle colleges with respect to high school reform issues?
3. What support is available for middle college programs?
4. What have been the successes in implementing and operating middle colleges with respect to secondary school reform issues?

Question 2. Applied to MWCC and Harris Tech faculty) How can the MWMC planning and implementation process be described?

1. How were Harris Tech students selected to enroll in MWMC?
2. How were Harris Tech and MWCC faculty prepared to work with the middle college students?
3. What methods were used to facilitate communication between Harris Tech and MWCC staff?

4. How did the program alter the relationship between Harris Tech and MWCC instructors involved with MWMC?
5. What process was used to align HCSD and MWCC curricula?
6. How did the curriculum alignment process help students transition between high school and college?
7. What challenges arose during and because of the curriculum alignment process?
8. What changes could have been made to the planning process that would have improved the implementation of the program?

Question 3. Applied to MWMC students and their parents: Did MWMC have an effect on preparing students for college?

1. Why did the Harris Tech students enroll in the pilot project of MWMC?
2. What were the overall high school grade point averages of MWMC students before, during, and after involvement in the program?
3. How many college credits did the MWMC students earn?
4. What were the college placement exam scores of entering MWMC students?
5. What were the differences between community college classes and high school classes from the MWMC student perspective?
6. Are there differences between the college course pass rates of MWMC students and other MWCC students?
7. Are there differences between the college course grades earned by MWMC students and other MWCC students?
8. How did MWMC meet the educational needs of Harris Tech students during enrollment in MWMC?

9. How did MWMC meet the social needs of Harris Tech students during enrollment in MWMC?
10. What effect did MWMC have on the educational goals of each student?
11. What successes did students experience during time spent in MWMC?
12. What difficulties did students experience during time spent in MWMC?
13. How did experiences during enrollment in MWMC affect student success during the first year of postsecondary studies?
14. What were the stakeholder recommendations for improving this program?

Definition of terms

Accuplacer is an exam developed by College Board that helps identify the most appropriate English and mathematics course level placement for entering community college students (College Board, n.d.).

Articulation agreement refers to a formal, written contract between a single high school CTE program and a single community college program. Students enrolled in the high school program can receive credit for equivalent courses at the community college, or the college may let students use the high school program to satisfy prerequisite courses for higher-level college courses.

Dual credit courses are similar to those included in articulation agreements, and take the agreement an additional step. Students have the opportunity to receive transcripted credit for coursework completed in high school. Because the credit is transcripted, the grade received in the coursework is recorded at the college. Students may have the option of refusing the credit at the end of the course.

Dual enrollment is the same as dual credit, usually with one exception. Students enroll in a section of the college course during the high school semester, and must follow college-specified rules about withdrawing from the course.

Study Delimitations and Limitations

Delimitations

The scope of this study focused only on the implementation of the middle college concept within one specific high school and community college partnership program. Four other middle colleges and similar programs were operating in Colorado at the time of this study, each with different student populations and program goals. One other middle college in a nearby school district was the only program similar to MWMC because it combined high school CTE programs with academic courses offered at the partner community college. However, the other middle college was a diploma granting school, meaning students could attend the school full-time as opposed to the half-time requirement at Harris Tech. Students who enrolled in MWMC and subsequently graduated from high school during the 2004 – 2005 and the 2005 – 2006 school years were included in the study along with involved teachers and administrators from both institutions. The students were not necessarily representative of all middle college students, as they were all from a suburban school district in Colorado, and were CTE concentrators during the senior year of high school.

The type of involvement in the program defined other MWMC stakeholder groups. Parents of MWMC students had significant interest in MWMC student success, primarily due to the financial considerations of postsecondary studies. All Harris Tech administrators were involved in the implementation and operation of the project, along

with various MWCC administrators. MWCC instructors who had middle college students in their courses were not directly involved in running MWMC. Including their data in this study helped explain the institutional impact of MWMC with respect to student success in the classroom, overall knowledge and understanding of the program, and solutions to other concerns that developed.

Limitations

As a member of MWMC planning, steering, and student selection committees, I had a unique perspective to carry out this research project. I was involved in formal and informal conversations about the middle college pilot project beginning in 2002. This enabled me to complete this evaluation from a point of view only available to someone working within the program. Conversely, this perspective also created a challenge precisely because of the amount of time and effort I previously invested in MWMC.

Having this close connection to the middle college gave me the opportunity to have deeper dialogs with the Harris Tech and MWCC stakeholders. Since I already had a working relationship with several of these individuals, they may have provided more detailed information to me than they would have to an unfamiliar researcher (Yin, 2003). Additionally, most of the former students were acquainted with me, and may have been more willing to speak freely during the interviews.

This level of familiarity with the project and the stakeholders challenged my ability to separate my own experiences and expectations from those presented in the data. While I did include my own perceptions in this study, they needed to be filtered through the related experiences of other stakeholders. For example, my thoughts about the planning and implementation processes were included in meeting minutes and interview

and survey data. This buffered the effects of my opinions, since the data I provided were presented only as part of another discrete source.

Another ongoing challenge related to my level of involvement with MWMC will be readers questioning the validity of this study because of my biases. Readers may expect my research to address only briefly any critical information that arises because they might assume I will be advocating for the program. Strictly following case study guidelines (e.g., Merriam, 1998; Stake, 1995; Yin, 2003) and being completely transparent with my data collection and analysis procedures worked to dispel the appearance of a biased study and report.

I completed this study soon after the second group of students finished their work in the middle college, which limited the potential data collection to students enrolled during the first two school years of the program. Because MWMC was in a pilot phase of implementation, 15 students enrolled during the first year of operation, and 18 enrolled during the second operational school year. This restricted the number of possible participants in this study, so multiple strategies were used to involve all students who completed the program. Results were limited in their generalizability by students who were unwilling to participate in the study.

Two additional time-related issues involved the logistics of my travel to various locations to conduct student interviews and the amount of time required to analyze each interview. Finding adequate space within the class and work schedules of every student for one-hour interviews required a great deal of planning. The project plan called for one interview per student during the spring of 2007, as described in the methodology section, Chapter 3. However, because of these limitations, I only interviewed six students from

the first MWMC class, and none from the second class. Once the interview, preliminary analysis, and narrator review process were completed, the final analysis and report writing commenced.

A final consideration was the small sample size of students that could participate in this study. Answering the research questions required interviews with first- or second-year college students who just completed a CTE program and the middle college program. Because of the community-specific design of every middle college, only students from MWMC went through experiences relevant to this study.

Need for Study

This study addressed the need to investigate the effects middle college had on CTE student transition to postsecondary institutions. These data are valuable to current middle college administrators and educators, as well as to groups in the planning stages of middle college implementation (American Institutes for Research and SRI International, 2005; Wagonlander, 1997).

Bailey and Karp (2003) noted the need for research into dual credit programs. This study was framed around several perspectives to address the main middle college concept goal of introducing students to college expectations and culture before they leave high school. First, information from CCCS and CDE administrators provided an understanding about the state level educational priorities related to transitional programs, and how this influenced the design of MWMC. Second, MWMC and Harris Tech staff who were deeply involved in the planning and implementation of the program explained experiences dealing with administrative pressures about which students are unaware.

Finally, stories each student related elucidated the reasons behind changes in levels of student engagement in school and levels of college preparedness.

Researcher Perspective

Before becoming a teacher, I worked in positions in academia, a private consulting company, and government agencies. All of these jobs were in the position of scientist, and required me to interact constantly with people who were extremely highly educated, and had been motivated to succeed at nearly every stage of life. In retrospect, one of the most important lessons I learned during these experiences was that in general, a high school education was not sufficient to gain even an entry-level job in these types of agencies.

When I began my teaching career at Harris Tech, I was completely surprised by the attitude displayed by most of the students in my classes. The traditional school model had turned off the majority of these students, and as a result, none was performing anywhere near the level of which each was capable. In comparison, my K-12 educational experience was very different in that I never questioned the system, and knew from a very young age that I was headed to a four-year college immediately after graduating from high school. Because of this personal history, I planned to implement my course curriculum in a more traditional manner, with all students working on assignments concurrently. My students did not receive this positively.

My Harris Tech students chose to attend a CTE focus school, and were craving an opportunity to excel in school, albeit in ways that required more teacher flexibility. Specifically, they wanted to work on individual or small group projects concurrently with their required assignments. I discovered many of these projects were at a higher level

than the curriculum I had planned. It became apparent to me that these students had been feeling oppressed in school, and most were searching for a reason to become re-engaged.

Harris Tech was structured in a way that provided 540 hours of contact each year between every student and the program instructor. During this time in my Computer Technology classroom, I was able to interact with all of my students on a deep level. I made a point of learning about each student's plan for future education. Many had been told that college was not an option, and believed that obtaining a job immediately after graduation was the only viable path. However, many of those same students were unknowingly showing me they had the ability and motivation to succeed in college. Because of this, I began looking for non-threatening ways to introduce my students to the idea of moving on to college, which directly led me to become involved with MWMC.

CHAPTER 2: LITERATURE REVIEW

Introduction

The purpose of this chapter is to examine what has been written in the peer-reviewed literature regarding the importance of preparing students for the transition from high school to postsecondary studies. This requires attention to four major issues, which constitutes the main structure of this literature review. In the first section, I discuss effects of tracking and low student motivation in relation to secondary school reform and dual enrollment programs. Secondary school reform efforts often focus on ways to engage students in coursework (Cohen, 2001). This is in response to student demands for curricula relevant to "real world" issues and workplace skills, as well as providing sufficient preparation for college.

Many high school students enroll in CTE programs because these classes provide the levels of rigor and relevance students are craving. Historically, CTE programs focused almost exclusively on career preparation. While this is still an integral part of every CTE course, CTE students now receive a great deal of information about college, and are encouraged to consider attending college. All of this information combines into a career pathway that helps the student visualize the educational and workplace requirements to reach long-term goals. In the second section of this report, I relate the creation of these student pathways to the secondary school reform movement.

Having conversations with CTE students about enrolling in college is helpful because it raises the level of awareness about the requirements and benefits of a college

degree. The challenge lies in successfully preparing these students for such a major transition. Beginning this transitional process requires a level of support that currently exists, but is not implemented commonly. Partly because of this lack of support, the amount of remedial coursework entering college students must take is increasing (Crist, Jacquart, & Shupe, 2002). Dual enrollment and dual credit programs that provide student opportunities to complete college coursework while still in high school are in effect around the country, and have been successful increasing college enrollment and decreasing remedial coursework (Bailey & Karp, 2003). I address these programs in the third section of this chapter.

The final section of this review is a description of the middle college model. This program is a dual enrollment system in which high school students take courses on a college campus. Initially created to encourage at-risk students to continue in school, the concept has evolved into a program that is attractive to CTE students. When a middle college student is taking a college course, he is exposed to college level expectations while still receiving individualized attention from high school faculty. With the extensive support system inherent to a middle college, enrolled students receive a successful first college experience, which helps smooth the transition to becoming a full-time college student.

Secondary School Educational Programs

By the time high school students reach their senior year, they have developed their own feelings and expectations about high school and college. Two major considerations are influential in the creation of these college expectations, both of which are constantly operating in the K-12 school system. First, the socioeconomic status

(SES) of a student has a direct effect on whether or not a student feels college is a viable option following high school (Cabrera & La Nasa, 2000a). Second, and in some ways related to SES, the amount of information about college that a student receives in high school is important. Since the number and percentage of high school students transitioning directly to college has increased in the last twenty-five years, these two considerations are operating to some extent in the high school setting (Baker & Velez, 1996; Gladieux & Swail, 2000).

Levels of Preparedness for College

Low SES families may not have experience with the social, financial, and educational steps required to attend college. The most obvious limitation these families encounter is the cost of tuition. This may be directly addressed through the financial aid process that exists at the federal, state, and institutional levels. However, much of the information and the applications for this type of aid is now only in electronic form, which requires access to an Internet-enabled computer. Simply put, this type of resource may not be available in the home of a low SES student (Cabrera & La Nasa, 2001). Overcoming this single barrier would only require giving all students access to financial aid information at school, but additional support is necessary. Cabrera and La Nasa (2000b, 2001) also discussed the correlation between the educational level of parents and the amount of college information a student receives during high school. If neither parent has attended college, they cannot easily provide the support to their children that will lead to college attendance because they are unaware of the process and deadlines involved.

The lack of parental support with regard to college begins affecting the student before the senior year, however. Middle to high SES families believe the best way to

achieve success in life is to proceed directly to college following high school (Cabrera & La Nasa, 2000a). Current research confirms this, and shows students who earn postsecondary degrees earn from $6,000 to $20,000 more per year on average than those who only have a high school diploma (Barth, 2003). Cabrera and La Nasa (2001) point out that this information must become familiar to students at the beginning of high school so every student has an opportunity to become at least minimally qualified to attend college.

Tracking

A factor that hinders the opportunity for every student to aim for college readiness is the tracking of students in secondary schools. Not every student is deemed "college material," and those that do not meet this contrived threshold are often tracked into courses with lower academic rigor (Gladieux & Swail, 2000). Gladieux and Swail also reported the unfortunate fact that a lower percentage of low SES students are included in the college track, which immediately puts them at a disadvantage for the remainder of their secondary school experience. Once a student is tracked out of the college preparatory course sequence, she is less likely to receive information about financial aid, college entrance and placement exams, and preparation for those exams. She is also at higher risk for becoming disengaged with schoolwork (Choy, Horn, Nuñez, & Chen, 2000). Finding and keeping this focus on college and keeping a high level of interest in school are the most important steps a student must follow to successfully complete the transition between secondary and postsecondary schools, since without these, the student's level of motivation will probably drop (Cabrera & La Nasa, 2000b; Gladieux & Swail, 2000).

During the last two years of high school, a student must be highly focused on academic success in order to graduate well prepared for college expectations (Crist et al., 2002). Nunley, Shartle-Galotto, and Smith (2000) list the six most common student-reported reasons for not doing well in high school as:

1. They did not take high school seriously.
2. They purposely did not take challenging classes.
3. Their major reason for going to school was to socialize.
4. They were not motivated in high school.
5. They did not think that college was in their future.
6. They took an "I don't care" attitude beginning in about tenth grade. (p. 60)

Students who do not perform up to their potential during high school because of these reasons often view community college as a second chance to gain the academic requirements for college (Kirst & Bracco, 2004). This attitude can lead to increased college attrition due to an inverse relationship between college degree attainment and remedial coursework hours required (Allen, 1999; Barth, 2003).

Secondary School Reform

Two related ideas have been developed that help high school students retain the desire and motivation to perform well in school. First, coursework must be relevant to every student. This requires multiple content delivery methods, since students will not all respond positively to the traditional school model. Second, relationships between K-12 school systems and postsecondary institutions require strengthening. At present, very little communication occurs between these two entities, which results in students being unprepared for the college environment both academically and socially.

According to many studies, successful completion of Algebra II holds some significance as a tipping point between students who will succeed in college and those who will struggle beyond high school (e.g., Barth, 2003; Berry, 2003; Carnevale &

Desrochers, 2003; Cooper, 2002; Davenport, Davison, Kuang, Ding, Kim, & Kwak, 1998; U.S. Department of Education, 1997). One of the major challenges facing high schools is how to persuade all students that they should continue studying math through this level. This can be addressed in several ways, including increasing the awareness of college entrance requirements and focusing much of the junior and senior years on high school graduation and college entrance exams. Cohen (2001) points out this is only successful if the high school works to "align pressure and support" (p. 9) with respect to the students. For example, every student should be aware of what is necessary to be successful on the college entrance exams, and the high school curriculum should focus on covering these topics. The National Governors Association (2003) expresses their support of this idea by saying,

> The single most powerful change that states could make in their graduation requirements and in their system of standards and assessment of student outcomes would be to align secondary exit requirements with postsecondary requirements for placement into credit-granting degree programs. (p. 14)

Defining a way to accomplish this goal without alienating students who have disengaged from the traditional instructional methods requires changing the methodology involved in high school instruction.

Some of the solutions that have been proposed for this problem include breaking large high schools into smaller "schools within a school" of no more than 400 students (Hill, 2001; National Governors Association, 2003), providing alternative ways for students to earn high school credit, and fostering programs that concurrently grant high school and college credit (Andrews & Davis, 2003; Cohen, 2001). Each of these methods involves developing programs that are more student-focused than the system used today. According to Cohen, high schools must move away from the old thinking

that students should be prepared for "college *or* work, for thinking *or* doing" (p. 3), instead ensuring that all students will be successful in both modes.

As such, the ultimate goal of the secondary school reform movement is to be sure every student graduates from high school with the skills necessary to be successful in college and in the workplace. Carnevale and Desrochers (2003) further support this by observing our nation's economy continues to require greater numbers of highly skilled workers, with a forecast shortage of at least 14 million qualified workers by 2020. The most reliable way to provide a person with the capacity to take advantage of these careers is with support and guidance through the higher education system. However, one additional change that must be made is to enhance the focus on workplace skills at all levels of education (Carnevale & Desrochers, 2003; Western Interstate Commission for Higher Education, 2003). This has the additional benefit of higher student engagement and motivation, since the relevance of their studies is apparent (Orr, Bailey, Hughes, Karp, & Kienzl, 2004).

This new thinking leads to the question of how to increase the numbers of students preparing for, enrolling in, and completing college. Within secondary school reform, this is often being addressed via increased collaboration between K-12 school districts and higher education institutions. High-performing high school students will be successful in their transition into college without much help. After all, more than half of high school students are enrolling in courses that were recommended by "A Nation at Risk" (Bailey et al., 2002). The disengaged and other at-risk students are those requiring much more support from high schools and colleges (Carnevale & Desrochers, 2003; Conklin, 1996; Conley, 2003). Keeping in mind the three R's have evolved into rigor,

relevance, and relationships, an effective way to engage the "forgotten half" is through Career and Technical Education (formerly Vocational Education).

Career and Technical Education Student Educational Choices

Career and Technical Education (CTE) has always focused on teaching applied skills in environments closely matching those found in the workplace. Many students are attracted to these programs since they can immediately see the "real-world" applications of what they are learning. With respect to secondary school reform, "CTE can and is being used to restructure high schools into smaller, career-themed learning programs, is resulting in students taking more rigorous coursework, and is helping students transition from secondary to postsecondary education through articulated pathways" (Brand, 2003, p. 4). CTE can be effective for nearly every student because even those careers traditionally considered strictly academic, such as medicine, law, and engineering, also require a great deal of practical training and a mastery of workplace competencies (Bailey & Merritt, 1997; Brand, 2003; Colorado Community College System, 2004).

Reform

Since the inception of the idea, teachers in CTE programs have always been required to work with business leaders to develop and make changes to curriculum. Fostering relationships between schools and businesses has a direct impact on student achievement, since students are receiving academic training in conjunction with authentic lessons and assessments not restricted to a traditional classroom setting (Bailey & Merritt, 1997). The "constructivist theories, active teaching strategies, and learner-centered, project-based instructional approaches" (Bragg, 2001, p. 9) attract many students who are not fully engaged by the standard high school setting. This

differentiation between CTE and traditional high school courses has led to increasing enrollment in CTE classes over the last twenty years (Bishop & Mane, 2004; Maxwell, 2001). Bishop and Mane also note this expansion of enrollment creates a positive feedback cycle because business involvement in the schools increases due to graduates acquiring better workplace skills during their time in CTE programs. These students stay in school longer and are more likely to graduate from high school and continue their training and education at a postsecondary institution (Association of Career and Technical Education, 2005; Bailey & Merritt, 1997; Bishop & Mane, 2004).

Several recent studies show students who take both CTE and strong academic courses in high school do as well or better over time than students who only focus on one or the other curriculum (Bottoms & Young, 2008; Karp, Calcagno, Hughes, Jeong, & Bailey, 2007; U.S. Department of Education, 2004). Hoachlander (2005) found students that balance academic subjects with CTE courses have the highest average salaries seven years after high school graduation. The U.S. Department of Education reports that more academically advanced students are enrolling in CTE programs than ever before, and standardized test scores of those students are improving faster than non-CTE students. The expectation is, however, that as high school graduation requirements become more academically stringent, CTE enrollment will decline because students will have fewer elective credits during the four-year period. Now, however, most CTE programs are showing steady or growing enrollment, especially those focusing on high-need vocations such as health care and technology (National Center for Education Statistics, 2000).

This developing dichotomy between academics and CTE programs has the potential to alter drastically the high school educational environment. Policymakers and

administrators are now deciding if CTE programs have value to the student population or if they should be cut back or eliminated (Hoachlander, 2005). Jacobs and Grubb (2002) pointed out lifelong learning is critical for nearly every career and this is emphasized in most CTE courses. They also note that in high school, adolescent students should learn skills that help them become adults, instead of only learning job or academic skills.

Pathways

One recent approach toward building CTE student success has been the creation of educational and career pathways for every student. Bragg (2001) described CTE pathways as showing how careers build upon the integration of many critical skills such as in the engineering and scientific fields rather than a separation and specialization in one specific area. Completely integrating secondary and postsecondary CTE programs creates an environment where every student is prepared for college work (Brand, 2003; Maxwell, 2001). This type of integrated pathway requires a great deal of collaboration between the K-12 school district and the college, since creating a seamless transition requires alignment of all high school courses with those in the college curriculum (Jacobs & Grubb, 2002; Silverberg et al., 2004). The U.S. Department of Education also contended this type of collaborative work upgrades the CTE courses since secondary CTE teachers will be required to meet many of the college-level course competencies in their curriculum. Students in these courses are then required to meet college level performance expectations, albeit with the support provided by the high school environment.

Specific programs have been set up both nationally and on the state level to provide the mechanism for secondary-postsecondary transitional pathways (Bailey &

Karp, 2003; Bailey et al., 2002; Berry, 2003; Kleiner & Lewis, 2003). In Colorado, community college CTE credit accrues in an escrow account while a student completes high school. Following graduation, the student has two years to use the credit by enrolling in any of the community colleges in the state (Colorado Community College System, 2004). This kind of program shows the student he is capable of completing college work and provides some direction and incentive during the investigation of college.

An example of a nationally supported transitional program is Tech Prep, which "offers students planned career pathways that link high school classes to advanced technical education at the colleges" (Bailey et al., 2002, p. 19). The program was instituted in the mid-1980's to encourage the creation of strong relationships between secondary and postsecondary CTE programs. It has proven to be attractive to students, because of the "outcomes-based curriculum" (Bragg, 2000, p. 26). Over the twenty years it existed, Tech Prep was implemented in 47 percent of all high schools, but has also grown to mean different things to each institution involved (Silverberg et al., 2004). The program has succeeded in giving students a good understanding of the work involved in college courses (Edgar, 1998).

It is apparent that focusing energy into ideas linking secondary and postsecondary education helps increased numbers of high school students continue on to college. However, as Berry (2003) noted, simply encouraging students to take harder classes will not go very far toward improving student achievement. The lines of communication in the world of education must become more freely used, especially between high schools and colleges. Berry also emphasized this idea, with the acknowledgment that the K-12

and higher educational systems are distinct. These differences should serve to enhance the reasons for collegiality instead of leading to rifts in ideology.

Postsecondary/Secondary Alignment

Planning and Curriculum Mapping

Concurrent enrollment in high school and college courses started in 1928 as a program to challenge students bored with the standard high school curriculum (Puyear, Thor, & Mills, 2001). This idea grew into the Advanced Placement program, which began in 1956. Providing a way for academically advanced high school students to receive college credit before graduation can be a useful motivational tool for many students (Chen, Konantz, Rosenfeld, & Frost, 2000). However, as Hugo (2001) noted, many students view exams as threatening, and may not be willing to trade the stress of an AP Exam for the possibility of a few college credits. Additionally, these programs are not designed to acculturate students into the community college environment (Bailey & Karp, 2003).

There are many students enrolled in high school capable of performing at the level required for college, but do not have the motivation or confidence to take AP courses (Bailey & Karp, 2003). Dual enrollment programs provide high school students with a way to take college-level coursework without requiring an exam at the end of each course. These programs have shown strong growth both in number and popularity over the last decade and were in place in 47 states during 2001 (Andrews, 2003; Bailey & Karp, 2003). This has been proposed as part of a possible solution to the motivational decline during the senior year (Andrews, 2004; Berry 2003).

Student success in college is greatly dependent on being academically prepared before enrollment and on understanding what expectations exist in the college environment (Karp, Bailey, Hughes, & Fermin, 2004). Students who are made aware of the importance of these factors while still enrolled in high school demonstrate greater motivation to do well in their remaining high school courses and are also more likely to enroll in college immediately following graduation (Bailey & Karp, 2003; Bailey et al., 2002; Lieberman, 1998; Palmer, 2000).

One problem students experience is the significant disconnect between high school graduation requirements and college entrance requirements (Boswell, 2000; Kirst & Bracco, 2004). A student taking high school courses defined as college preparatory probably believes she is preparing herself for a smooth transition to the introductory college courses, but often finds college instructors assume a level of knowledge and understanding beyond her experiences. In Minnesota, one study found strong evidence that enrolling in college-level coursework during high school resulted in higher first-year success rates than other students achieved (Michelau, 2001).

Creating a truly seamless system for student transition between high school and college requires a great deal of collaboration between the K-12 school district and the cooperating college. The first programmatic steps that must be addressed involve matching curricula and developing criteria for student participation (Crist, Jacquart, & Shupe, 2002; Gaskin, Helfgot, Parsons, & Solley, 2003; Karp et al., 2004). Minimum enrollment eligibility requirements are usually set by the school district, but may be overseen by the state (Michelau, 2001). This curriculum alignment results in the potential that students will know if they have received all of the material necessary to

begin a college level course successfully. At the same time, college instructors will know that incoming students who have passed prerequisite courses in high school are prepared to undertake work at the next level.

Once curriculum alignment has been completed, the possibility exists for students to receive concurrent high school and college credit. This can take different forms, but all provide high school students with a supported, controlled experience of being a college student (Bailey & Karp, 2003; Brand, 2004). Students who completed these programs reported the experience gave them more confidence that they can succeed in college courses as well as in other difficult high school courses (Hugo, 2001). Additionally, these students graduate from high school already having earned college credit, which serves as an incentive to enroll in a postsecondary institution immediately.

Students taking college courses in high school receive several additional benefits. For example, many students actually enrolling in courses at a community college report that interacting with adult students teaches them much about life outside of school, and many end up with grades comparable to their older classmates (Andrews, 2004; Brand, 2004). By sharing resources, such as expensive labs and technical equipment, high school students and college students are able to gain experience on devices they would not otherwise have seen (Azinger, 2000; Bailey et al., 2002). This kind of cooperation is especially beneficial in rural areas where the student enrollment at both the secondary and postsecondary levels can be very low (Boswell, 2001; Catron, 2001). Most community colleges require that incoming students take a placement exam such as Accuplacer or COMPASS, or they use ACT scores for placement (Berry, 2003; Boswell, 2000; Catron, 2001; Jordan, 2001). Although, as mentioned earlier, these exams can

raise the level of anxiety in some high school students, they are a good indicator of success for college students and can give high school students good information about deficiencies they may have before becoming full-time college students.

As dual enrollment programs have been implemented across the country, several common concerns have arisen in the educational communities. One of the most substantial issues concerns the cost of college tuition. Some programs require each student to pay tuition, which can present a barrier to lower SES families. Once the school district pays for a college class, however, the issue of "double dipping" arises (Bailey et al., 2002; Boswell, 2001; Education Commission of the States, 2001). This occurs when both the school district and the college are receiving public funds to educate the same student. However, Catron (2001) and Michelau (2001) noted that in most circumstances, double funding is allowed due to the small amount of money involved, and the incentive that the funding provides to the student, the high school, and to the community college.

Allowing high school teachers to instruct college level courses raises questions about whether the level of instruction is equivalent to that the college instructors provide (Andrews, 2000; Boswell, 2001; Catron, 2001; Education Commission of the States, 2001; Karp et al., 2004; Nunley et al., 2000). The curriculum alignment process can alleviate some of these concerns (Boswell, 2001; Haslam & Rubenstein, n.d.). For example, many of the criticisms are addressed if the high school and college collaborate to use a student data tracking system to demonstrate that all students are meeting the same course competencies (Crist et al., 2002). Assessments of dual credit programs has shown high school students are performing at levels comparable to those of the college

students, which led public four-year colleges in Virginia to accept credit from high schools for those students (Catron, 2001).

Remedial Work

When a student enters college unprepared for the level of coursework required, he must complete remedial classes before continuing with the standard classes. The remedial classes do not count toward degree credit requirements since they are not required to earn postsecondary credentials, and they cover knowledge that should have been gained in classes taken at the high school level. Many four-year colleges are making the argument they should not offer these courses and that the community colleges should be responsible for this type of instruction (Jenkins & Boswell, 2002; Oudenhoven, 2002). Oudenhoven also pointed out nontraditional students such as adults returning to college after being out of school for an extended period need access to remedial courses to review academic material. Outside of this need, however, strategies are being developed to integrate the curriculum across the entire K-16 system in order to minimize student remedial work in college. Edgar (1998) explained how the Tech-Prep program could serve this purpose, while Watson (2000) described the use of college placement exams throughout the secondary grades to keep students continually informed of their academic progress. However, as Boswell (2000) said, "reducing the need for remediation at two- and four-year colleges will happen only when state and institutional leaders work together across systems to identify and create solutions to overcome the causes of poor student preparation" (p. 8).

Enabling high school students to earn college credit before graduation is a successful way to re-engage many high school students. Other students, however, do not

respond to any programs that still involve the standard high school model. The middle college concept was developed for these students.

Middle College

In 1974, plans were completed at LaGuardia Community College for the first high school completely integrating students into the community college environment (Wechsler, 2001). This school was designed to help at risk students by building their self-esteem and giving them the opportunity to work toward an Associate's degree while still in high school. One strategy to motivate disenfranchised students is to provide a reason for each of them to continue attending high school. The middle college concept was created to provide this reason (Board of Governors, California Community Colleges, 1993; Lang-Jolliff, 2003).

Definition

A middle college can be considered a comprehensive dual enrollment program. Students concurrently count their credits toward high school graduation and community college degree requirements (Cunningham & Wagonlander, 2000; Hoffman & Vargas, 2005). Most middle college schools are located on a community college campus, which serves to integrate the students into the college environment (Brand, 2004; Brotherton, 2003; Cunningham & Wagonlander, 2000; Wechsler, 2001). Several variations of middle colleges are operating, including those that focus on CTE programs (Colorado Middle College Consortium, 2004).

Middle colleges have shown success through increased attendance rates, higher grade point averages, lower numbers of dropouts, and higher numbers of postsecondary enrollees (Borsuk & Vest, 2002; Cunningham & Wagonlander, 2000; Lieberman, 1998).

These results arise because of a complete focus on the personal and educational needs of each student, as opposed to the general approach to student support used at traditional high schools (Lang-Jolliff, 2003). Every student collaborates with a school staff member on a regular basis, which gives the student and the faculty member an opportunity to develop a strong personal relationship (Board of Governors, California Community Colleges, 1993; Borsuk & Vest, 2002; Brand, 2004; Chen et al., 2000; Houston et al, 1992). Through these relationships, students are assisted in developing an educational and career plan that fits their individual interests. When provided with this level of support, students tend to work much harder to reach their goals than they did in a standard secondary school (Asquith, 2002; Cunningham & Wagonlander, 2000; Lords, 2000; Wechsler, 2001).

Common Factors of Middle Colleges

Successful middle colleges require close attention to issues such as stakeholder involvement, student placement, and school logistics. This review of current programs provides an overview of the specific strategies used to address these issues.

A middle college high school must receive constant support from all stakeholder groups, spanning all aspects of the school program (Corallo, Redfield, Jordan, & Cavalluzzo, 2002). One of the most prominent issues centers on budget and funding, which must be adequate and stable during program initiation and maintenance (Cavalluzzo, Jordan, & Corallo, 2002; Corallo et al., 2002; Cunningham & Wagonlander, 2000; Hoffman & Vargas, 2005). School districts are often required by state legislation to offer student enrollment options such as dual credit programs and middle colleges, but state funds sufficient to support the programs are rarely provided (Bragg, Kim, & Rubin,

2005). Cavalluzzo et al. (2002) explained this type of programmatic challenge could be overcome through close financial cooperation between colleges and the school district.

Correctly placing students into high school and college courses requires a detailed eligibility plan. Attracting the correct type of students to a middle college application procedure is the first important step of this plan. Most middle colleges use a combination of student transcripts, faculty recommendations, and student interviews to select students from the applicant pool (American Institutes for Research and SRI International, 2005; Brotherton, 2003; Corallo et al., 2002; Cunningham & Wagonlander, 2000). This process allows middle colleges to select students having the educational background and motivation necessary to succeed in this type of program.

Once students enroll in a middle college, placement into the correct course level becomes important. Commonly, entering middle college students are required to take the same entrance exams used for traditional college students (American Institutes for Research and SRI International, 2005; Hoffman & Vargas, 2005). Collecting data from these tests also allows for direct data comparison between middle college students and the rest of the community college population.

Middle college programs consistently address several logistical issues. First, locating the school on a college campus is common to nearly all middle colleges, which encourages frequent interactions between faculty from both schools (American Institutes for Research and SRI International, 2005; Brotherton, 2003; Cunningham & Wagonlander, 2000). This kind of location also makes it easier for high school students to enroll in regularly scheduled community college classes along with traditional college students. Additionally, this arrangement provides a limited amount of space for the high

school, which bounds the maximum number of enrolled students (American Institutes for Research and SRI International, 2005). Overall, middle college high schools are usually kept below five hundred students to increase interactions between teachers and students, and to create small staff to student ratios (Board of Governors, California Community Colleges, 1993; Cavalluzzo et al., 2002; Husted & Cavalluzzo, 2001).

A second, related issue is curriculum alignment between high school and college courses. Instructors and other curriculum experts from both institutions meet to discuss how high school courses both prepare students for college classes, and may duplicate college curriculum (Barnes, 2001; Hoffman & Vargas, 2005). The results of this process increase the likelihood that middle college students will be able to enroll in college level classes while still in high school (American Institutes for Research and SRI International, 2005; Cunningham & Wagonlander, 2000; Husted & Cavalluzzo, 2001). Husted and Cavalluzzo also emphasized the flexibility this process provided to middle college students through the development of individualized educational pathways allowing each student to advance to courses that are more difficult when he is ready rather than based solely on time spent in the classroom.

Literature Summary

This literature review shows that a great deal of research has been done regarding secondary to postsecondary transition. Most studies show programs that ease this process for high school students are successful in addressing secondary school reform topics, the increasing demand for college remedial courses, and in using the middle college strategy to keep disenfranchised students in school at least through high school graduation. I also note, however, that most of the literature on the subject is not published in refereed

journals, but produced as reports in response to U. S. Department of Education funded projects, or as reports published by a branch of the U. S. Department of Education. While the results these researchers report seem to be well founded, each would be considered stronger with a more stringent route of publication.

My review of the literature confirms several possibilities exist for further research, such as:

1. Investigate effectiveness of transitional programs with respect to the "students' personal, academic, financial, and cultural perspectives" (Bragg, Kim, & Rubin, 2005).
2. Carry out a longitudinal, mixed mode study of students as they move from a dual enrollment high school program into college (Baker & Velez, 1996, p. 97).
3. Compare the rigor of coursework at high school and at community colleges (Bailey & Karp, 2003, p. 21).
4. Investigate student success given different transitional programs (Bailey & Karp, 2003, p. 22).
5. Research the effectiveness of different curriculum delivery methods in relation to remedial coursework (Oudenhoven, 2002, p. 43).
6. Interview middle college faculty and students who have completed studies at a middle college to understand their experiences and the barriers they encountered.

My study provided data with regard to a group of students who transitioned to college via a middle college program. While the research was not longitudinal, it allowed

for a deeper understanding of their perception of the program's value, which addressed numbers one and six above.

CHAPTER 3: METHODOLOGY

Case study consists in the imagination of the case and the invention of the study.
Kemmis, 1980, p. 119

All evaluation studies are case studies. The program, person, or agency being evaluated is the case. The study is, at least in part, a search for merit and shortcoming of that case.
Stake, 1995, p. 95

Introduction

The quotes by Kemmis and Stake above provide a meaningful basis from which to begin a discussion about the use of case study to review the MWMC program. While it was relatively easy to determine the limits of the MWMC case, the study was not as simple to define. There were many distinct stakeholder groups involved with MWMC, each of which were interested in analysis of different data. The case study methodology provided a vehicle that allowed all participants to relate their stories about experiences in the program. Adding other types of qualitative and some quantitative data into the analysis resulted in a large data set, which the case study method was well suited to handle (Bassey, 1999).

Research Design and Rationale

After the first two groups of MWMC students moved into postsecondary institutions beyond middle college, the MWMC planners wanted to evaluate the program based on student experiences. Stories of this student group and their parents comprised most of the data collected within the third case of this embedded case study review. Data

from program faculty and administrators, and district and state level administrators provided the basis for two additional cases, which defined the context of the program.

Overview of Case Study Research

One of the main ideas of qualitative research is to develop a theory based on the data collected (Merriam, 1998). Going the next step and using a case study method in a qualitative study allows the researcher "to uncover the interaction of significant factors characteristic of the phenomenon" (Merriam, 1998, p. 29). As Yin (2003) noted, case study can be very effective in a situation where the process is difficult to discern from the environment in which it occurs. This method is well suited for an evaluative study of a middle college, since student experiences and administrative actions encompass both the phenomenon and the context.

Benefits

The benefits to using case study in program review are numerous. Adelman, Jenkins, and Kemmis' (1980) list of advantages provides structure for this section. The first point is the strong base in reality. Qualitative data used in the review came from people directly involved in the program, which created the ability to investigate the program from many points of view. Presenting these multiple viewpoints in such a way as to connect the disparate stories into a coherent explanation was another advantage noted by Adelman et al. By focusing on these complexities, the researcher can also provide readers with the ability to generalize to other cases. Through this attention to detail, the case study report will be usable by readers with varied purposes. This is especially important during an evaluation of a project such as MWMC with a wide variety of stakeholders. Because of the variation in goals, expectations, and experiences

each person had both as an individual and as a member of a stakeholder group, the case study method allowed every perspective to be taken into account, since "each person constructs ... meaning according to his or her own context" (Kyburz-Graber, 2004, p. 54).

Of all the MWMC pilot program stakeholder groups, the enrolled students had the greatest variation in background and experiences. The creators of MWMC defined their ultimate outcome as increased academic achievement of the students via successful enrollment in college courses (M. Bloom, personal communication, February 16, 2006). This review tried to convey "as accurate a representation as possible of the lived experiences of the participants" (Mendaglio, 2003, p. 170). Merriam (1998) also stressed that gaining an understanding of the lived experiences participants had is the main goal of qualitative case study research.

The MWMC pilot program was in a stage that required clear and direct descriptions of its benefits. Case studies are ideally suited for this purpose, since they "are 'a step to action'. They begin in a world of action and contribute to it. Their insights may be directly interpreted and put to use..." (Adelman et al., 1980, p. 59-60). Every stakeholder constantly made judgments from his or her own viewpoint and using his or her own unique background knowledge. By using a client-centered or responsive evaluation model, all stakeholders had the opportunity to explain the reasoning behind decisions that affected the program.

Challenges

The main challenge researchers face in the use of qualitative case study is convincing the report readers that the conclusions reached are valid. I carried out the case study as both a researcher and a stakeholder, which presented me with a significant

challenge to perform this study while being cognizant of my biases. As Kemmis (1980) noted, "the unique problem in case study is in justifying to others why the researcher can be a knowledgeable observer-participant who tells what he sees" (p. 120). As can often be the case while evaluating a program as a participant (see Fraser, 1997), the requirements of my job limited the amount of time I had available to work on the evaluation, so I wanted the end product to be as useful as possible. Keeping an objective viewpoint even when the data identified problems in the program was the only way my evaluation report was worth the additional time spent.

Case Study Review Structure

Yin (2003) provided a general structure to the development of a case study review. First, questions are developed around which the case study is completed. Propositions then follow from the fundamental questions. Defining the unit of analysis limits the case study to a distinct group, minimizing the potential for a study growing too large. Finally, data must be interpreted, which requires the specification of criteria used in this process.

Embedded Cases

The MWMC case study was investigated as three embedded cases. The first group included the district and state level administrators who were involved in developing and implementing strategies related to secondary school reform, such as middle college. Administrators and faculty of Harris Tech and MWCC who actively participated in the planning and operation of the middle college pilot project comprised the second embedded case. Students and parents of those students who graduated from high school after being enrolled in MWMC made up the final group. Each embedded

case was investigated using a combination of existing data and newly collected data. Existing data were collected during the two years of MWMC operation and the two years of planning prior to project initiation. Data from all embedded cases were combined to study the MWMC pilot project as a whole.

Case Study Questions

Stakeholders stated the most important goal of the review of MWMC was to determine the impact this program has on the success of its participants (M. Bloom, personal communication, February 16, 2006). This information also helped in the evaluation of the ultimate outcome defined in the evaluation plan, which related to this issue. Additionally, data germane to this goal led to additional questions related more directly to the operation of the project. For example, administrative stakeholders voiced an interest in the effectiveness of the curriculum alignment process, resulting in a follow-up question addressing what effect had curriculum alignment on student transition to college-level coursework. Following lines of reasoning such as this helped provide a more thorough explanation of stakeholder views of the pilot project.

Propositions

When the first middle college formed in 1973, it addressed a proposition that still exists for every currently developing and operational middle college. Beginning with questions about why so few high school students enroll in college immediately after graduation, and what can be done to increase this number, the proposition becomes clear: Expecting and supporting high academic achievement from at risk high school students will result in greater postsecondary enrollment rates and success (Wechsler, 2001). The main proposition for the MWMC review was modified slightly, since most of the

students were not labeled "at risk." Instead, it addressed the type of student attending Harris Tech: Expecting and supporting high academic achievement from CTE concentrators will result in greater postsecondary enrollment rates and success.

Unit of Analysis

It could have been very simple for this case study to grow quickly beyond a manageable size. Questions and propositions addressing the philosophy behind the program, the administrative interactions between Harris Tech, the school district, and MWCC could have resulted in some contentious conversations and the creation of many more questions. Keeping the primary focus of this study on how effective MWMC was in improving student transitions from the senior year of high school into the first year of college served to keep the scope within reason.

Links to Propositions and Interpretation Criteria

Fraser (1997) discussed using a case study in an evaluation where "the viewpoints of all 'actors' must be presented, as what is vital to one, might be of little importance to another" (p. 164). In the process of defining how well the data and findings have addressed the propositions in the review of MWMC, it was critical to follow Fraser's advice.

The student perspectives of the program were completely different from that of any other stakeholder. As a result, interpretation of student data was the part of the process requiring the most subjectivity. Determining the effect the middle college program had on each individual student's success in transition depended entirely on individual student narratives. In addition, each student had experiences that differed from all other students, based on educational background, social upbringing, community

college course selection, and postsecondary aspirations. As they reflected upon the middle college program, the time spent in community college classes and on experiences during the first year of full-time postsecondary enrollment, the stories MWMC students related were affected by the new reality in which they were living at the time of the interview (Clandinin & Connelly, 2000).

Criteria for interview data quality depended on triangulating the response of each participant with that from other narrators. Adelman et al. (1980) suggested being continually cognizant of the "multiplicity of perspectives present in a social situation" (p. 55). It fell on me to keep this in mind as I analyzed interview data, and to understand that every story was grounded in personal reality. Each narration had parts that were not parallel to experiences of any other person, and these were the points that were worth further investigation. This was also important during analysis of qualitative data from sources other than interviews, since these responses were similarly influenced by each person's perspective and viewpoint.

An additional method to ensure interview data quality was to give participants the opportunity to review the transcript of their interview before the final report was completed (Guba & Lincoln, 1989). This process not only helped ensure the accuracy of what was reported, it also allowed each interviewee a chance to make corrections to my transcription of what was said. Opening up the data collection process to this type of review had the potential to cause several effects. For example, the participant may have disagreed entirely with parts of the transcription, causing the established data triangulation to become invalid (Kyburz-Graber, 2004). Additionally, sharing the interview experience necessarily altered the reality of the person being interviewed

(Robotham, 2004). Data that changed because of this type of review may have become suspect due to the additional interaction between the participant and me, and could have required further interpretation. However, in this study, no changes were requested by any of the interview participants.

Data Collection

All MWMC administrative and faculty stakeholder groups expressed the importance in understanding the value students gained from the middle college experience (M. Bloom, personal communication, February 16, 2006). Additionally, stakeholders stated data collected in this study may assist in making decisions about the direction the program will take in the future. In order to be successful in reaching the desired ultimate outcomes, all people involved in the project needed to cooperate in analyzing and interpreting the results of this evaluation. Table 1 provides a list of the data collection methods used with each stakeholder group.

Confidentiality of the study subjects in the research study was sustained by using pseudonyms and by identifying some people only by group membership. Data that were individually identifiable and in hard copy form such as interview notes, transcripts, and MWMC application materials were kept in a locked filing cabinet in the researcher's office during the study, and in a locked cabinet in the principle investigator's office following the study. Digital data were stored on a password-protected computer during the study. At the completion of the research project, these data were archived to CD and stored with the hard copy data, then deleted from the computer's hard drive.

Table 1

List of Data Collection Methods

Data Collection Method	*What*	*Who*	*Number of Participants*
Individual Interviews	45 – 60 minutes, semi-structured	1. First year students	6
	15 – 30 minutes, semi-structured	2. HCSD, CDE, and CCCS administrators	5
Surveys (2005, 2007)	Questionnaire	1. Parents of first and second year students	7
		2. Harris Tech administrators	3
		3. MWCC administrators	4
		4. MWCC instructional faculty	4
Document Retrieval	1. Student educational data 2. Program descriptions 3. Curriculum alignment matrices 4. Student demographics 5. Time lines 6. Application packet	Researcher acquired	N/A
Field Notes	Informal dialog Interview notes	Researcher acquired	N/A

Individual Interviews

I contacted every person who was interviewed for this study via telephone, mail, or email to explain the goals of the study and to schedule an interview time and location. Every effort was made to schedule face-to-face interviews, but phone interviews were utilized if a physical meeting was not possible. At the beginning of each interview, the participant was required to sign a consent form outlining how the interview data were to be safeguarded and utilized, and how anonymity was assured. If the interview subject declined to sign the form, the interview was not conducted.

Surveys

A survey instrument was used to collect data from the parents of first and second year students. Harris Tech and MWCC administrators and MWCC instructional faculty were also surveyed about the middle college. Open-ended questions were used to allow members of these groups to provide more detailed information about their experiences with the middle college. Questions were derived from literature about middle college programs (e.g., Bailey & Karp, 2003; Corallo et al., 2002; Cunningham & Wagonlander, 2000; Lieberman, 2004), the answers given on a brief survey given in April 2005 (Huffman, 2005), and on informal comments made by participants since the program's inception.

Stakeholder Groups

The three main research questions of the study are:

1. How can the MWMC planning and implementation process be described?
2. How does the middle college concept fit into high school reform programs?
3. Did MWMC have an effect on preparing students for college?

Each of these questions applied to different stakeholder groups, and either interviews, surveys, or a combination of both were used to gather data for the study.

First-year MWMC Students

First-year MWMC students were interviewed using a semi-structured format regarding their experiences while enrolled in the middle college. Semi-structured interviews provided me with an opportunity to guide the interview toward the case study issues, and so to receive the most useful data (Robotham, 2004). However, as Robotham also described, during this kind of interview, it was possible for participants to begin providing answers they believed I wanted to hear. Paying close attention to triangulation during analysis helped minimize effects of this problem.

Questions posed to the first-year MWMC students centered on the perceived usefulness of the middle college experience during their first year of postsecondary studies, which addressed research question 3. There was specific interest in understanding how effective the students felt the college class experience was in preparing them for postsecondary coursework. Additionally, understanding why students enrolled in MWMC helped determine if the middle college was set up to focus on the correct students. Interviews also addressed student thoughts about the support they received while applying to and taking classes in MWMC.

Parents of MWMC Students

During informal conversations about the middle college opportunities, parents of MWMC students stated their main interests in the program were the savings in tuition costs and providing educational challenges for their child (M. Bloom, personal communication, February 16, 2006). Many of the parents voiced surprise at the potential

differences in cost between four-year college costs and those of community college. Once they were introduced to MWMC, parents were interested in learning about additional benefits and challenges of this type of program. Survey questions addressed these issues with the goal of understanding the reasoning process parents used when making the decision to enroll their students.

MWMC Faculty and Administrators

Many faculty members from both Harris Tech and MWCC were involved in planning and implementing the program. Responsibilities included simply attending meetings, helping match high school and college curriculum, recruiting and counseling students, and informing the school district level administration about the plans and results of MWMC. Using a survey with this group allowed each member to relate their thoughts and experiences about MWMC, and gave each of them a chance to provide more input than they did on the brief survey that was completed in 2005 (Huffman, 2005).

HCSD, CDE, and CCCS Administrators

Small groups of district and state-level administrators were involved in discussions about the design and implementation of projects such as MWMC. These members were mainly interested in how the middle college concept fit into the developing secondary school reform movement. Members of this group were interviewed using a structured format that allowed them to provide useful data in a short amount of time. Personalizing some interview questions allowed for the inclusion of information from each person's specific area of expertise.

Document Retrieval

Several forms of data related to the planning and operation of MWMC already existed and were available for my immediate collection and use. Agendas, notes, and presentation materials were created and saved throughout the MWMC planning process. Additionally, MWCC and HCSD District curriculum specialists produced alignment matrices for several course sequences. During the middle college application process, students each submitted a high school transcript, current grade point average, a nomination form completed by a Harris Tech teacher, and a written interest statement. Students also submitted a copy of their grades to the MWMC coordinator at the end of each semester spent in MWMC. Data from the short survey of MWMC faculty members and administrators completed near the end of the 2004-2005 school year were also available (see Huffman, 2005).

Data Analysis

One of the main reasons to use the case study format is it allows a large amount of data to be presented in a format that will be useful to stakeholders as they judge a program or work to improve the program (Bassey, 1999). With the MWMC case, data took many different forms. The qualitative data collected primarily through interviews and from surveys comprised the majority of the review data. Quantitative data such as numbers of credit hours, grade point average, and Accuplacer test scores were integrated into the study to provide information about student performance and course placement. Using a case study is especially useful in an evaluation "because it provides thick description, is grounded, is holistic and lifelike, simplifies data to be considered by the reader, illuminates meanings, and can communicate tacit knowledge" (Merriam, 1998, p.

39). Combining all of these reasons created a program review that was thorough in the data collection and analysis, while also being meaningful and useful to the program stakeholders.

Data Categorization

Analysis of interview data was accomplished in a way that most readily conveyed the participant's meaning. Using an inductive coding scheme was the best way to look at all of the data while keeping generalization in mind where possible. This required the identification of variables before and just after conducting the interviews (Stake, 1995). Using qualitative analysis software to assist in the coding and analysis of the interview and survey data helped me identify both significant and subtle similarities and differences in the information provided by every participant. Most of the variables centered on program effectiveness, and others addressed the program's application process, logistics, and cost.

Compilation of Analyzed Data

By paying close attention to the similarities and differences the data analysis methods bring to light, I was able to explain how the middle college program affected the college experiences of the first-year MWMC students. Through the coding schemes and matrices, the notes, plans, and outcomes from the planning and implementation meetings were compared to the effects the students talked about in interviews.

The findings of this case study include a large amount of detail regarding the student interviews, including direct quotes from the interview transcripts. Stake (1978) provided a list of commonalities in most case study reports, including:

> Descriptions that are complex, holistic, and involving a myriad of not highly isolated variables; data that are likely to be gathered at least partly by

> personalistic observation; and a writing style that is informal, perhaps narrative, possibly with verbatim quotation, illustration, and even allusion and metaphor. Comparisons are implicit rather than explicit. (p. 7)

The data analysis for this study lead directly to the use of implicit comparisons through coding.

This review of the MWMC Pilot Project will be most useful to the stakeholder groups by following this guideline. Providing many details about the process leading to the analysis gives readers opportunities to make connections between their own experiences and those of the review participants (Rossman & Rallis, 2003). However, to not overwhelm the readers with data, I followed Stake's (1995) advice when he urged the case study researcher to "ruthlessly winnow and sift" (p. 121) information to separate critical pieces from the superfluous.

CHAPTER 4: FINDINGS

Description of Embedded Cases

Based on the successes other middle colleges around the country showed (e.g. Barnes, 2001; Cunningham & Wagonlander, 2000; Houston et al., 1992; Lang-Joliff, 2003; Wechsler, 2001), faculty members of Harris Tech and MWCC agreed that developing a CTE-focused middle college was possible in their environment. A significant amount of time went into the development of the project, which included administrative discussions and meetings between curriculum specialists from both institutions. This chapter is composed of three sections, each corresponding to one of the embedded cases within this study. Within each embedded case, data related to the applicable research questions are presented along with sub-themes that emerged from the data during initial interpretation.

Embedded Cases I and II provided the context for the project, which was derived from interviews of state-level and HCSD administrators in Case I, and interviews and surveys of faculty members at Harris Tech and MWCC in Case II. These data directly addressed the rationale behind the activities that took place during the planning and implementation stages of the project. The research questions included in Case I focused on the applicability of the middle college concept to high school reform goals, challenges that arose during implementation and operation of middle colleges, types of support available for middle colleges, and successful experiences with regard to middle college planning and operation. Research questions in Case II focused directly on MWMC, and

included the student selection process, faculty preparation and professional relationships, communication between Harris Tech and MWCC, curriculum alignment, and the project planning process.

Embedded Case III addressed the effectiveness of the project via student experiences related through interviews with MWMC students and surveys of their parents. Research questions focused on student performance issues, and on the effects of the middle college experience. Performance-based questions asked why students chose to enroll in MWMC, the number of college credits they earned through MWMC, student college placement exam scores, college course pass rates, and what grades they earned while enrolled. Experience-based questions addressed difference between high school and college classes, how well MWMC met student educational needs, how well MWMC met student social needs, effects on educational goals, student successes, student challenges, and the lasting effects of MWMC experiences. Students and their parents were also asked for recommendations regarding the program.

Embedded Case I: District and State-Level Administrators

Data Collection

Participants included in this embedded case were state-level or HCSD administrators concurrently with the planning and implementation of MWMC. Data related to Embedded Case I were collected in semi-structured interviews. The CCCS administrator interview occurred in February 2007; the HCSD administrator's interview was held in March 2007; and the CDE administrator participated in April 2007. Pseudonyms substitute for the names of each of the Embedded Case I participants in this study.

Case Findings

These administrators are generally concerned with school district-level implementation of state and federal policies, and as a result, their responses to interview questions and topics usually have a broader focus than those from school level personnel. This policy-focused viewpoint provides a useful perspective from which to begin investigating the context of the middle college project.

Research Question 1.1: How well do the goals of middle colleges match the goals of secondary school reform?

Two middle college goals directly correspond to those listed in the secondary school reform movement. School district and state administrators who took part in this study discussed how MWMC gave students an alternative way to earn credits that counted toward high school graduation requirements, and guided students into college degree or certificate programs. These were two of the main secondary school reform goals that helped students transition from secondary to postsecondary institutions (Andrews & Davis, 2003; Cohen, 2001). HCSD, CDE, and CCCS administrators all had similar views about the benefits of middle college with respect to these two goals, and their comments reflected the differences in professional and career perspectives. The HCSD administrator addressed the benefit of students earning credit during the senior year of high school, and the ways MWMC gives students an advantage upon college enrollment. State-level administrators mainly focused on the ways a middle college fits into the career and educational pathways and career clusters required in the Carl D. Perkins Career and Technical Education Improvement act of 2006 (Perkins 2006), with the additional idea of ensuring college preparation beginning in middle school.

HCSD Administrator

Linda, a district-level administrator for HCSD Schools, was heavily involved in the planning and implementation of MWMC from the beginning. She worked closely with the administrators from Harris Tech and from MWCC to help define the goals and vision that defined the pilot project during the two years studied as part of this research.

Linda said this kind of program provided "a head start on [students'] future," and helped keep the enrolled students from "wast[ing] their senior year." Also according to Linda, the MWMC student population was successful because:

> They were ready, especially the twelfth graders, for moving on beyond the high school diploma. They were getting a taste of that early. And then it was motivating to get to that diploma, and then know exactly their future; what they wanted to be and what they wanted to do. That again supports that whole pathway concept. They had a plan of study from the time they walked in [Harris Tech's] door.

Providing twelfth grade students with some college experience is one of the documented ways to help keep those students engaged and successful at school (Hugo, 2001). Linda cautioned middle college planners about the potential "duplication of efforts with PSEO," but said MWMC addressed this issue, since the middle college:

> Had with CTE the ability for dual enrollment, so students could already get dual enrollment CTE credit, so then they could even get further, if they were taking their English and math at the same time, before they ever graduated from high school. And when you think about career and tech ed. students, some of them aren't thinking college, hadn't thought about college, and if you get them on a college campus in a comfortable setting with transitional skills and people helping them and support for that, then they will continue on.

MWCC and Harris Tech administrators also expressed this thought during the interviews and in the surveys.

In addition to the secondary school reform goal of keeping students connected to school through college experiences, supporting collaboration between Harris Tech and

MWCC addressed another reform goal. Linda said she believed MWCC faculty "figured it out, and were willing to help a struggling student who was a high school student if they were motivated, if they were attending and were serious about it." She also noted the positive effect of increased communication between Harris Tech and MWCC when she described the importance of this close relationship by saying, "it was just a natural that we look[ed] at Harris Tech students that could jump into some of the academic courses that would support their CTE program as they were finishing the Associates degree." Also according to Linda:

> I think the other positive thing was to have academic core faculty talking to academic core faculty. For the first time, there was some communication going on between high school and community college. Because it's still the perception by community college faculty that "We are better than, and your curriculum doesn't match our curriculum because you are lower level." And the same thing happens between community colleges and four-year colleges.

CDE and CCCS Administrators

Two state-level administrators participated in this research. Alison, an administrator for CCCS, was very familiar with MWMC through close work with MWCC personnel during the planning and operational years of MWMC. Karen was a mid-level administrator at CDE when MWMC was operating, and was familiar with ways other locations implemented the middle college concept in Colorado.

At the state level, both administrators also primarily focused on the ways the middle college concept addressed high school student achievement through connections with the community college. Alison described this as "an intentional pathway for students to really understand why they were learning what they were learning." This can help keep students on track for graduation, especially if support begins before high school, as noted when Karen said:

> An important component to make sure at-risk students achieve in a middle college, dual enrollment, or postsecondary option program would be additional support in the middle school grade levels. If they come into ninth grade behind, the challenges to getting the students to grade level may be too much for some students to overcome.

The middle college concept supported students' work toward reaching high school graduation by keeping them focused on educational or career pathways. Pathways consist of "specific course-by-course recommendations for students in order to be fully prepared for postsecondary studies and entry into employment" (p. 3, Colorado Community College System, n.d.). Interpretation of MWMC meeting minutes showed the project planners aligned secondary and postsecondary core academic courses to help provide students with a smooth transition between educational levels along the pathways. According to Alison, "most of the middle college models, the ones that are successful, use the career pathway, so there's a connection to the technical side, the career side, as well as the academic rigor." The Reauthorization of the Perkins 2006 emphasized educational pathways through the implementation of career clusters. Alison explained that:

> The career clusters are really a broad grouping of technical and workplace skills that might have been called SCANS competencies years ago, and academic pieces. It's a broad base of knowledge that allows students to enter different pathways and determine where they really want to go. And they're prepared to have lots of options if they take this intentional curricular pathway.

In emphasizing this point, Alison also said, "Learning the skill to focus on homework and the discipline to complete homework assignments is best learned long before reaching ninth grade."

Research Question 1.2: What have been the challenges in implementing and operating middle colleges with respect to high school reform issues?

Finding funds to operate middle colleges was the largest challenge MWMC faced during the planning process and the first two years of operation. This limited the ability of the administrators to hire people to work on the project, which was the second challenge addressed in this study.

HCSD Administrator

Most challenges noted by Linda were local in extent, and centered on funding issues. Colorado had a funding mechanism called Post Secondary Education Options (PSEO) to pay college tuition for K-12 students under certain conditions. In the case of MWMC, HCSD schools determined PSEO funds could not be used to pay for middle college tuition, because, as Linda said, the students needed to be "either on your campus full days, for full [Per Pupil Operating Revenue], or less than full days is half, even if it's one class, or nothing." This equated to five full-time courses at a district high school, leaving little time for community college coursework. Linda provided an explanation of this decision:

> One of the rationales is, why spend [PSEO] on an English 121 class, when that class is replacing the high school level, and they don't have to take the English 12? Why would we be spending money on a class they could take at their home high school?

According to Linda, the MWMC steering committee thought, "If we wanted to start this project again, would it be feasible to go to the board and ask for 20 slots of funding out of PSEO for this, to get these students on a college pathway?" Gaining this type of exception to the district's ruling about PSEO would provide basic operating funds for the

middle college, which would allow the district to pay for the college courses, eliminating tuition charges to the students.

The second sub-theme surrounding funding at the district level centered on the need for a dedicated faculty member to run the project. Linda noted, "There needed to be a structure in place to keep that going, and keep track of students. We just didn't have the manpower to get that done." Additionally, she thought MWMC needed "a dedicated person, either a counselor, and that's part of their job, or a dedicated person to be in charge of, be a middle college coordinator." Linda claimed the district would not fund a coordinator for two reasons. First, the number of students receiving district educational services effectively decreased because MWMC students took some of their courses at MWCC. Second, the PSEO funding model would cause the district to lose money. The district may have interpreted these issues to mean a decreased need for personnel instead of an increased need as Linda described. The result of this decision is that the middle college was attempting to operate without a full-time liaison between the high school and the community college. This left the students without a person to contact immediately when they needed help or guidance.

CDE and CCCS Administrators

State level administrators focused almost entirely on the challenges related to funding middle colleges in Colorado. According to Alison:

> The Abraham Lincoln High School model, the early college model, came under scrutiny. It made the newspapers, it made the television stations, it caused a lot of skepticism, and raised a red flag with legislators that the school district was using PPOR money to pay college tuition for students while they're still in high school. So, it opened a little bit of a can of worms at that time.

This experience resulted in the introduction of state budgeting legislation focused on

solving this problem, because, as Alison also explained:

> If you look at the mission and the role of a public school and the district and the funding they receive, how that money is to be earmarked and used, and then you look at the colleges, there is a disconnect.

Karen from CDE also declared the resulting lack of funding to be the main complication keeping middle college initiatives from being successful. This is similar to the reasons given by Linda at HCSD, and shows that without a consistent funding stream, people running programs such as MWMC will find it difficult to succeed.

Research Question 1.3: What support is available for middle college programs?

CDE and CCCS Administrators

Alison discussed local support as well as state and national support mechanisms for middle college programs. She believed the state and national government were beginning to work on support mechanisms for student educational choices, and said:

> I think we're going to have some things happening that will put some sustainability to some of these initiatives that work. And you know, it's only one initiative, but I firmly believe that high school students, and for that matter, all students, should have lots of options. It's not just one-size fits all, and there should be a way to make that happen for students.

Alison believed this type of support and understanding about student educational options from state educational administrators would result in more legislation easing the creation and operation of cooperative programs such as middle colleges. These student educational options began receiving legislative attention during the course of this study, which Alison noted by saying, "We have new attention on education reform. Not just high school reform, but higher education reform, all of education reform, and the connecting of different learning levels, and the different pieces of that pathway for students." This attention extended to the federal level through the Perkins Act of 2006

(ACTE, 2006). Since the Perkins act required states and districts to begin developing explicit pathways students should follow through high school, options such as middle colleges began receiving more attention and support.

On the state level, students in dual enrollment programs needed to begin using some of their 145 credit hours of postsecondary funding provided by the state, called the College Opportunity Fund (COF). Alison addressed this by saying:

> When the middle college students had to pay, they used the COF voucher also. They did because they paid $70 or $80 per credit hour. So, they started on their 145 hours that was allowed for a Bachelor's degree. Even though they can get waivers at the end if they're not finished with that.

State legislators addressed this challenge, which Alison discussed, saying, "There is a piece of legislation that is speaking to the fifth year program. It focuses on students in high school being able to graduate from high school, and graduate with an Associate's Degree." This legislation, called the Fast College Fast Jobs Program, passed into law soon after the interview (Colorado General Assembly, 2007). The state support provided by this legislation addressed some of the same goals middle colleges had, and created a state-level support structure for middle college programs. By debating and passing the law, state legislators effectively raised the awareness local and state-level educators had about the different ways school districts and colleges could work together to provide educational options for students, such as middle colleges.

Research Question 1.4: What have been the successes in implementing and operating middle colleges with respect to high school reform issues?

MWCC and Harris County specialists were successful in aligning the curriculum across several courses. This type of curriculum alignment between secondary and postsecondary institutions directly addresses one of the main issues in the high school

reform movement (Conley, 2005). This alignment allows students to understand that their experiences in high school classes are preparing them to succeed in postsecondary coursework.

HCSD Administrator

In this embedded case, Linda focused on the ways middle college students were able to use credits earned at the community college level. This helped prepare high school students to become successful full-time college students. Using core academic courses to satisfy both high school graduation requirements and college entrance requirements was one of the main advantages noted. Additionally, Linda observed the excitement of the students when they found out a Harris Tech teacher nominated them for MWMC enrollment: "Just being selected made them feel really special, and made them feel like they could be college bound whether they jumped in or not." This enthusiasm carried over to their college classroom experiences, which this administrator heard, "when I was able to sit in and listen to their discussion of their experiences over [at MWCC], and being treated like an adult [in the classes]. Then the people in their classes not knowing necessarily they were a high school student. They were just so proud." Linda expressed her belief that the positive feelings the students were having during their college experience helped motivate them, since it helped them to know "what they wanted to be, and what they wanted to do" after high school. The increased level of enthusiasm for school directly addresses one of the common problems related to high school reform. According to the reform ideas, these students will be more likely to stay interested and involved as they finish high school, and will enter college with a more positive attitude about education (Nunley et al., 2000).

A second distinct success reported by Linda centered on improvement in the understanding of each institution's course offerings, and the alignment of the instructional expectations between both institutions. Specifically, she noted MWMC's success in bringing curriculum specialists from both levels together to enhance the "understanding of curricular differences and high school exit outcome expectations versus collegiate entrance requirements." MWMC administrators hoped this would lead to a smoother transition from high school to college, which was another goal listed in high school reform studies (Cohen, 2001). This process required several work sessions where the curriculum specialists compared the standards and expectations of high school classes with the entry-level community college courses. Accomplishing this took a close look at degree requirements for every MWCC program with enrolled middle college students, and Linda explained this as:

> The courses became, so we didn't deter any of those students from finishing Harris Tech and entering a four-year college, became the transferable math and English courses, rather than the [lower-level] courses that were for the AAS degree. So, they would be a transferable course, but they would definitely count for an AAS degree also, if a student wanted to finish Auto Tech, or jump into the Business Technology program over there or whatever.

She also related her observation that the combination of higher levels of self-concept and transferable courses served to increase the educational motivation levels in MWMC students.

Case Summary

According to the state and district level administrators, the challenges in setting up and running a middle college are more than offset by the benefits the students receive from these programs. The creation of MWMC provided participating students an opportunity to earn college credits while still in high school, and helped guide students

into college certificate and degree programs. For the high school students enrolled in the middle college program, mechanisms such as PSEO existed to pay college tuition. However, the college and school district still faced the challenge of providing funds for time spent by faculty members in the planning and running of MWMC. HCSD decided not to provide this, but MWCC agreed to support the involvement of their faculty and administrators. From a legislative perspective, state and national governments started creating legislation to encourage programs such as middle colleges, which began addressing issues such as funding and cooperation between secondary and postsecondary institutions. Finally, the alignment of high school and college curriculum created a better environment for students to transition between the two educational levels by ensuring that middle college students had the skills necessary for success in college-level classes.

Embedded Case II: Harris Tech and MWCC Faculty

Data Collection

Participants in Embedded Case II were faculty members at Harris Tech and MWCC who were involved in the planning and implementation of the MWMC pilot project. I gathered data related to Embedded Case II using two surveys and collected documents throughout the planning and implementation of MWMC. The Harris Tech and MWCC faculty members completed the first online survey in May of 2005, and the second online survey between December 2006 and March 2007. All names of Embedded Case II survey contributors have been changed to pseudonyms in this study. Document collection occurred throughout the planning and operation of MWMC, and my document analysis began in November 2006.

Case Findings

The data studied through the document analysis provided a clear picture of the context in which the student experiences happened. Two online surveys provided detailed information from Harris Tech and MWCC faculty members. These survey data were coded using deductive analysis, which helped to identify several sub-themes described in relation to the project planning process.

Three administrators from Harris Tech, William, Shawn, and Jeff, one administrator from MWCC, Carol, and three faculty members from MWCC, Lisa, Cathy, and Melinda, participated in the two surveys during 2005 and 2006. Surveys were designed and administered by me, in 2005 as part of the MWMC operation, and in 2006 as part of this study. In 2006, six additional faculty members were either interviewed or participated in the online survey: Teri, Sandra, and Connie from MWCC; and Hiram, Jim, and Anne from Harris Tech. These faculty members were all involved in planning and implementing the project.

Document Analysis

I completed an extensive review of MWMC records to gather information related to the project planning and implementation process. Records reviewed included MWMC planning committee meeting agenda and minutes, student application packets, student grade updates, and the alignment of curriculum between the secondary and postsecondary institutions, called curriculum maps. Based upon these records, I prepared Figure 1, which shows a relative time plot of events during planning and implementation of MWMC, which helps describe the context of the project, grouping documents by subject and placing them on a time line. In this figure, cross-hatching symbolizes the starting

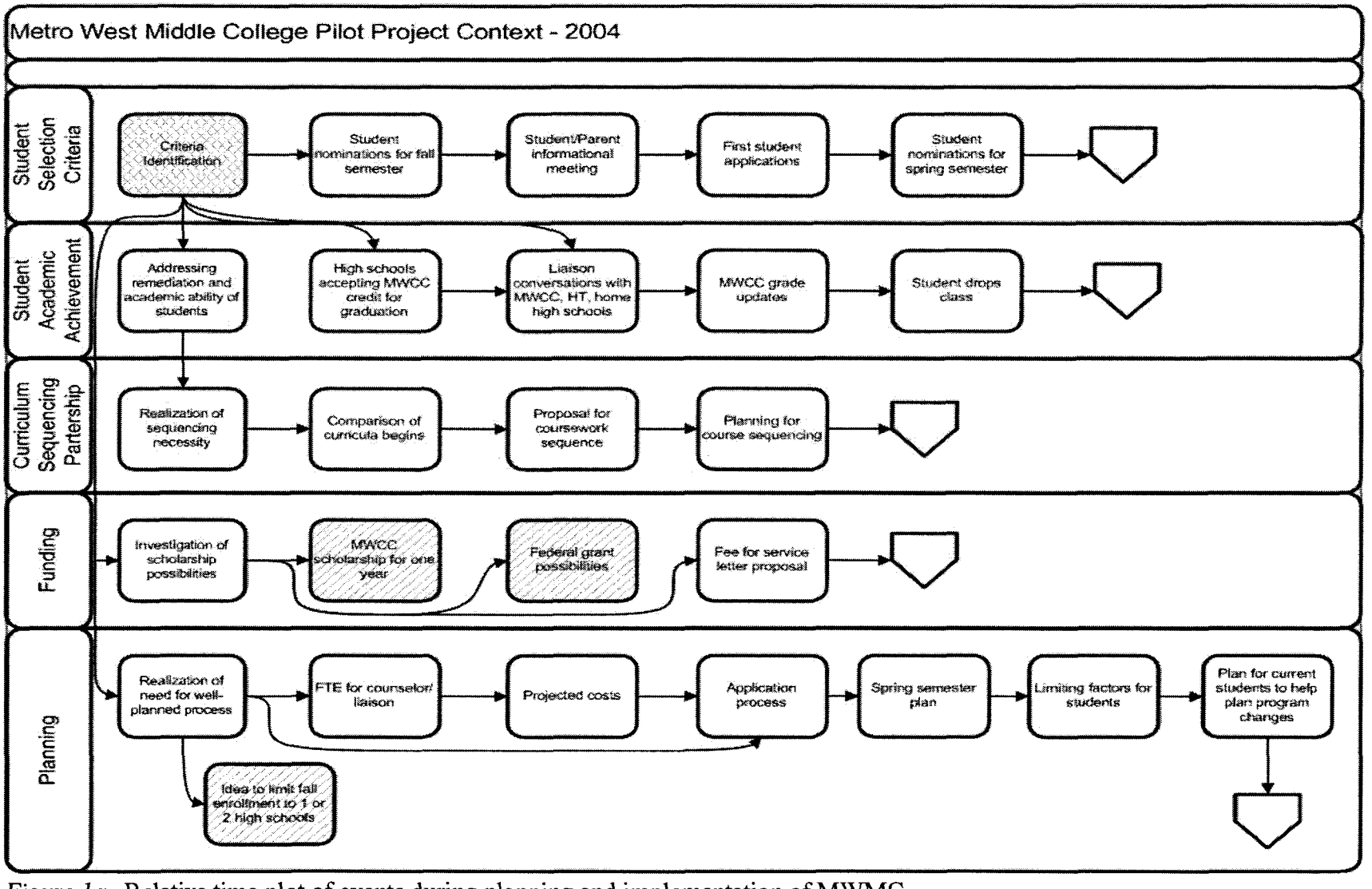

Figure 1a. Relative time plot of events during planning and implementation of MWMC.

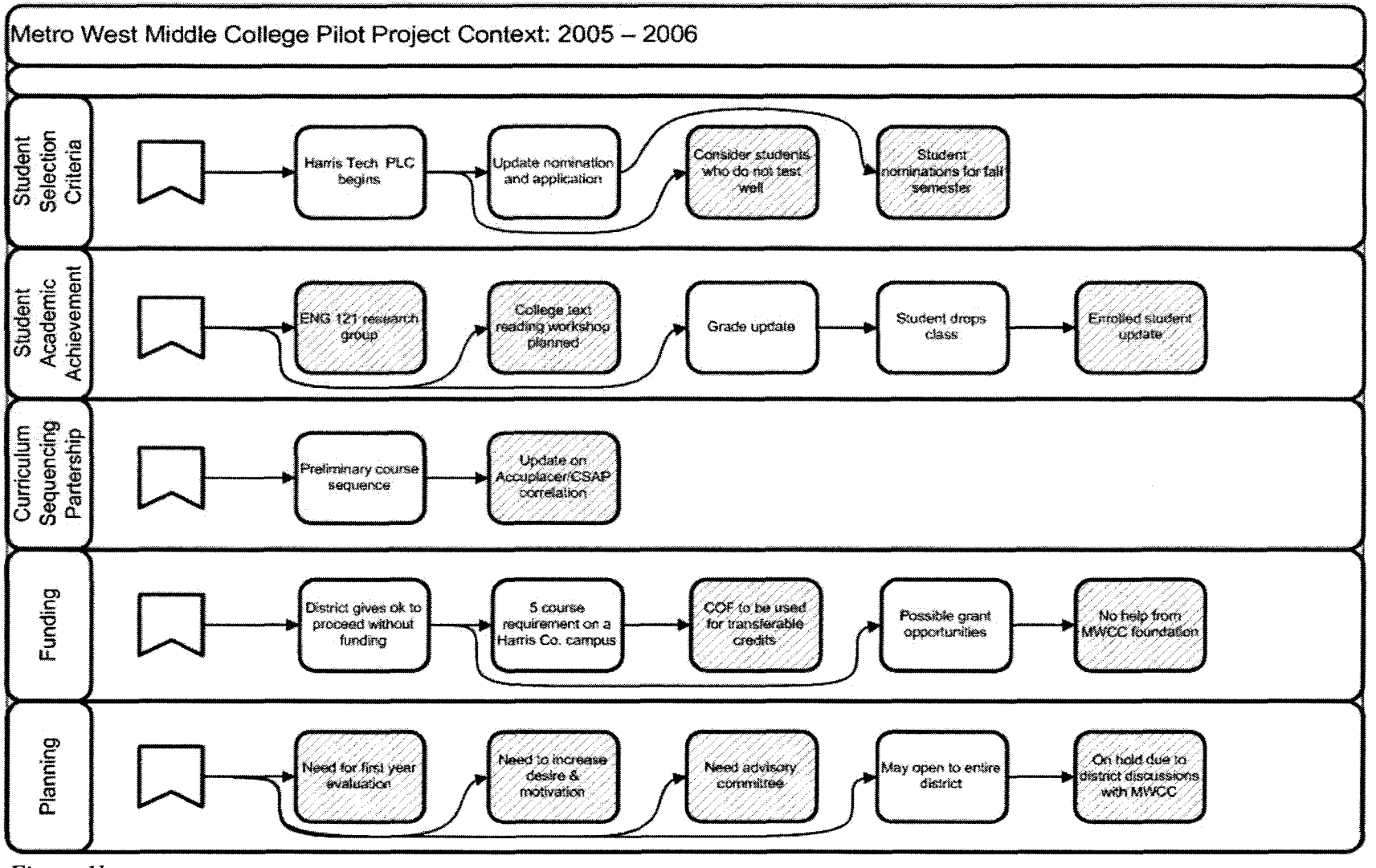
Metro West Middle College Pilot Project Context: 2005 – 2006
Student Selection Criteria
Harris Tech PLC begins
Update nomination and application
Consider students who do not test well
Student nominations for fall semester
Student Academic Achievement
ENG 121 research group
College text reading workshop planned
Grade update
Student drops class
Enrolled student update
Curriculum Sequencing Partership
Preliminary course sequence
Update on Accuplacer/CSAP correlation
Funding
District gives ok to proceed without funding
5 course requirement on a Harris Co. campus
COF to be used for transferable credits
Possible grant opportunities
No help from MWCC foundation
Planning
Need for first year evaluation
Need to increase desire & motivation
Need advisory committee
May open to entire district
On hold due to district discussions with MWCC

Figure 1b.

point and diagonal hatching denotes a step without any following associated steps. Pointed boxes at the end of each horizontal group in Figure 1a note a continuation of the flow into Figure 1b, while boxes with inverted points in Figure 1b symbolize connecting points from Figure 1a. As can be seen in the figure, the level of administrative activity was greatest in 2004, and decreased to nearly zero by the spring of 2006.

In addition to the actions shown in Figure 1b, the Harris Tech and MWCC staff involved in MWMC participated in an online survey in 2005 asking for input on the progress of several topics within the middle college. Data from the 2005 survey are included in this study to provide further understanding of the planning and implementation process.

Research Question 2.1: How were Harris Tech students selected to enroll in MWMC? Students were nominated for MWMC enrollment by their Harris Tech teachers based on in-class performance and perceived level of maturity. Quotes from the 2005 staff survey addressing this question related mainly to the reasons why these staff felt involvement in the project was important to the participating students. Two reasons given by Jeff, an administrator from Harris Tech were, "to recognize some kids" and "to motivate other [students]." Lisa, an administrator from MWCC, said she enjoyed, "encountering students excited about their future." According to staff from both institutions in the 2005 survey, the program was providing an overall positive experience for the students, which was a direct result of a successful selection process. There was a realization by William from Harris Tech that, "initial advisement needs to take place between the student, teacher, counselor, and parent" to help the students be successful in college courses. Shawn from Harris Tech said a positive influence of the progress of MWMC at the time

of the first survey was that staff members were "now becoming more involved in middle college and have a better understanding of how to recommend students."

Answers to this research question from a second online survey completed in 2006 focused entirely on the mechanics of the selection process rather than on the reasons for student involvement. For example, some of the specific requirements for selecting students were Accuplacer scores; teacher recommendations; GPA; and high school credits earned. Two respondents out of the six who participated specifically identified the student interview as part of the student selection, and three more mentioned teacher nominations as part of the process, showing that most administrators involved in MWMC had a good understanding of how students became involved in the project. Hiram, the participant who said student Accuplacer scores were the only data used for student selection, was the only administrator not involved in MWMC planning discussions. This may show that MWMC administrators were not spending enough time marketing the student enrollment criteria during the first two years of the project.

Research Question 2.2: How were Harris Tech and MWCC faculty prepared to work with the middle college students?

Answers to the 2005 survey questions reflected differences in opinion about the levels of faculty preparation. Some seemed to believe the MWCC instructors were not prepared at all, did not know about the presence of middle college students in their classes, and were unsure of the goals and mission of the project. Cathy from MWCC suggested, "The mystery surrounding the inception, goals, and objectives of Middle College must be solved in order for it to be meaningful to faculty and staff at MWCC." However, the data also reflected positive feelings about Harris Tech staff, described by

Shawn when he said they "definitely wanted to be involved in the start-up and continuation" of the project. According to Lisa, the MWCC faculty "liked the insight into how high school teachers approach their subjects" during work related to curriculum alignment or mapping, which increased familiarity with the similarities and differences between the secondary and postsecondary teaching methodologies. Overall, the MWCC faculty did not report receiving much, if any, preparation to work with high school students in 2005.

Sub-themes similar to those raised in 2005 existed in the 2006 data. In 2006, some Harris Tech faculty were prepared for MWMC involvement by participating in in-services. Jim mentioned the importance of "staff development and professional learning community work" addressing middle college student needs at Harris Tech. Additionally, Anne said, "a Middle College Student Selection Committee was created when the middle college idea was formulated. Members were administrators, staff, MWCC staff, and teachers. Teachers were given an extensive orientation before being a part of the process." Hiram described the process at MWCC, where, "faculty members were consulted as to what skills were necessary [for students] to enroll in a class and what skills would be mastered after completing a class." Finally, Sandra said she worked with a peer "at MWCC to devise ways to offer classes to interested middle college students" addressed the curriculum mapping process. Through these various types of staff development, teachers at both institutions received direction and guidance on how to select and teach the MWMC students they encountered.

Research Question 2.3: What methods were used to facilitate communication between Harris Tech and MWCC staff?

Examination of the available records showed the main methods used to facilitate communication between staff members at both institutions were face-to-face meetings. Most of the meetings took place during the curriculum mapping work and during the steering committee's project planning work. Figure 1 notes these meetings, especially within the Curriculum Sequencing and Planning rows.

The issue of communication also included the topics of student progress, faculty discussions, and student preparation. In the 2005 survey, faculty from both institutions made requests for increased communication. As one example, Carol wanted to "be more informed of students' progress throughout the semester." In another example, Shawn commented on the need for the project planners to provide more communication on, "What the middle college is to colleagues and administrators." Increased communication among all project stakeholders was seen to be a potential benefit to students since, as Jeff said, even with the second group of students to enroll in MWMC, "Some students take a while to realize that MWCC is not 'pretend college.'"

Research Question 2.4: How did the program alter the relationship between Harris Tech and MWCC instructors involved with MWMC?

Planning and operating the middle college pilot project changed the relationships between instructors from Harris Tech and MWCC by creating opportunities to collaborate on curriculum planning and alignment. In 2005, survey participants reported the relationship helped both Harris Tech and MWCC instructors who directly dealt with the curriculum mapping process understand the curricular and instructional differences

between the two institutions. For example, Carol described the collaborative planning process as a "way to help high school and college instructors finally come together and be on the same page as far as instruction." Also in 2005, Jeff said the "discussion between the MWCC faculty and the HCSD curriculum specialists was very beneficial in highlighting a variety of issues that need to be addressed." While faculty from both schools appreciated the process, they already had ideas for changes, such as the expansion of "opportunities to focus on dual enrollment allowing high school students to take gen ed. math and English while still in high school that will transfer to four year degrees," as explained by Lisa.

The 2006 survey data also showed strong feelings about this topic, with several faculty reporting positive changes due to a strengthened relationship between MWCC and Harris Tech. Anne described this improvement when she said:

> The program, even though a small pilot test, seemed to bring both Harris Tech and MWCC together. It focused on student pathways for success and achievement. It allowed faculties to review new educational opportunity offerings for students. New locations, new experiences for high school students to be on a different campus.

Jim thought this work "made for a more collaborative and transparent approach to the overall partnership" between MWCC and Harris Tech. Expansion of the curriculum mapping process to involve representatives from additional academic departments could have the effect of improving this partnership across both institutions.

Research Question 2.5: What process was used to align HCSD and MWCC curricula?

Research Question 2.5 was only directly addressed in the 2006 survey, since the process was still ongoing at the time of the 2005 survey. Curriculum alignment was accomplished through many meetings between MWCC and HCSD content area

representatives, who, according to Connie, "reviewed curriculum to align/correlate college competencies to HCSD content standards." Each community college course has a list of competencies set by the state, and every class with a specific number must cover those requirements. The secondary courses also had lists of benchmarks students needed to learn. These restrictions caused the MWCC and HCSD content specialists to spend a significant amount of time developing curriculum that covered both sets of requirements. At the beginning of the process, these meetings also included input from representatives from another local middle college. Anne discussed the importance of this process by saying, "we wanted to be sure students understood that they were in a 'College Level Class' and followed MWCC standards."

Research Question 2.6: How did the curriculum alignment process help students transition between high school and college?

Because the curriculum alignment process minimized gaps in curriculum between high school and college courses, most faculty members felt the MWMC students transitioned between the two institutions more easily than other students. Faculty perceptions addressing this question focused on the effectiveness of the middle college with respect to preparing students to transition from high school to college. In 2005, William thought the way to support students in this transition required steps to understand "what classes [they should] take that appropriately fit into the student's schedule and requirements." Additionally, Carol noted the benefits of working with the high school curriculum specialists to learn "what math abilities different high school students are entering college with." This helped faculty working with MWMC to counsel

the students into the college math course that best followed the last high school math course taken.

In the 2006 data, survey participants focused on the alignment process and student success in college classes rather than credit issues. Two comments related to student preparedness for college coursework were negative. First, Sandra did not "believe the alignment process helped or hindered the students' transition from high school to college." Sandra also commented, "I do not feel that students were adequately prepared for the radically different college culture they were entering." In contrast, Jim felt this process "became a seamless part of the students learning opportunities. Students did not see a distinction between their high school course or the college course." Additionally, Anne said:

> Students in the Middle College program had to meet curricular requirements relating to the college course. Curriculum alignment only took place in the limited courses that Harris Tech allowed students to enroll in. Students had to use their high school knowledge and relate it to the college program.

In addition, Anne thought the process had a direct effect on student success in college level coursework. She reported noticing:

> Students realized that they had to perform at their highest levels in order to make the grade in the MWCC classes. Many times, some review and remediation took place in the subject areas to keep pace with their college-selected course.

Connie felt the limited curriculum mapping also helped the students through the "development of understanding of curricular differences and high school exit outcome expectations versus collegiate entrance requirements." Teri responded that this led to recommendations "for course modifications and shifting the sequence of courses taken at MWCC." Since the community college instructors had a greater understanding about the

curriculum covered in high school classes, they were able to alter their curriculum to address the knowledge level of entering college students.

Research Question 2.7: What challenges arose during and because of the curriculum alignment process?

The curriculum alignment created confusion among some MWCC faculty members surrounding the purpose of this process and with the differences in the institutional policies. Comments from 2005 were collected while the alignment process was ongoing, while the 2006 comments followed completion of the process in two content areas. In 2005, faculty members had not seen significant data to justify or negate time spent aligning the two systems. By the time the second survey was completed in 2006, most of the involved faculty had seen data such as MWMC student grades and had heard success stories related by the students that may have been attributed to the curriculum alignment.

In 2005, some faculty members found difficulty in dealing with the requirements of two different educational institutions. For example, a challenge Carol faced was the "minutiae of dealing with the policies and procedures of two different educational structures." Additionally, there was some confusion about the purpose of the middle college, as Cathy noted:

> If HCSD only wants to know if MWCC classes meet HCSD's standards in order to award high school credit for classes the student take at MWCC, then it would be much easier to give HCSD a report showing the relationship than creating a confusing program in order to receive the information.

However, even with these problems, some faculty members requested an expansion of the alignment process to additional courses and departments.

The 2006 survey responses on this topic closely mirror those of 2005. Teri said the main challenge for the alignment process was that, "High schools teach a wide range of [math] curricula and not all adhere to state math standards," and Connie said it was difficult to meet "HCSD content standards for graduation requirements while covering and teaching collegiate level competencies students are expected to have." This survey included some positive reactions to the alignment process, including Jim's appreciation of "time to collaborate on alignment between campuses and programs." Overall, the general feeling reflected in the 2006 survey was that curriculum alignment should have been addressed long before the creation of MWMC, which would have helped strengthen the relationship between the two institutions.

Research Question 2.8: What changes could have been made to the planning process that would have improved the implementation of the program?

Both MWCC and Harris Tech faculty focused on two sub-themes when addressing this research question. The first sub-theme requests a clearer definition of the purpose and goals of the project. Possibilities and plans to expand the program constituted the second sub-theme related to programmatic changes.

Sub-theme 2.8.1: Define Purpose and Goals

One of the strongest opinions of MWCC and Harris Tech stakeholders in both the 2005 and 2006 surveys centered on this sub-theme. Data from both surveys demonstrated a consistent desire for a definition of the project's goals and purpose. One of the most direct comments related to this sub-theme came from the 2005 survey, when Cathy asked, "High school students already take classes at MWCC. Why do they need middle college?" Questions such as this showed that some faculty involved in the

program did not receive information about the additional benefits of a middle college such as increased faculty and peer support for students. Additional responses also displayed a lack of understanding about the project's reasoning, and questioned items such as possible duplication of PSEO activities, the academic leadership of the program, and logistics of high school students attending MWCC classes. For example, Cathy said, "The mystery surrounding the inception, goals, and objectives of middle college must be solved in order for it to be meaningful to faculty and staff at MWCC." Cathy also said, "Instructors are unsure of the reasons behind middle college and what the program is supposed to accomplish." It was suggested that a review of the process and vision of MWMC would help resolve these issues.

A similar feeling persisted in the 2006 survey data, as demonstrated by this comment from Sandra, "Instructors, especially, were under informed or uninformed because information from the organizers was unclear." Connie also said she was "not sure that the two institutions got to a true shared mission/vision," and that, "Attention is needed to answer critical questions as to the validity of and need for a middle college." Again, however, there were some positive thoughts in response to the survey, as Anne said:

> MWMC is an excellent opportunity for all high school level students. Especially, students that need a different pathway for success. By this I mean a student that is ready to explore new places, a different campus, a different environment, more mature, yet an opportunity to 'want' to attend the class, not 'must' attend. It is a breakaway from the normal high school campus.

Other Harris Tech and MWCC faculty replicated these positive ideas about the student experiences in 2006 and in the goals of the steering committee. The communication of the project's goals and objectives to all participants may have helped everyone

understand why the middle college model would help students. From the survey results, it appears the Harris Tech faculty was better informed than the MWCC faculty.

Sub-theme 2.8.2: Expansion/Future Implementation

In the 2005 survey, MWCC and Harris Tech stakeholders addressed what the project would look like in future years, and all suggested increasing student advisement in their comments. William mentioned, "To really grow the program training for staff needs to be done for advisement of students and appropriate placement." William also addressed communication among all people involved when he mentioned the importance of the "Initial advisement that needs to take place between the student, teacher, counselor, and parent." Faculty members also pointed out that increased numbers of students would require more counselors involved with MWMC. However, some respondents said this was not a reason to limit growth, as when Shawn said the district should "make middle college an integral part of HCSD Schools plans."

Anne's response in 2006 mirrored the 2005 sub-theme when she said:

> I really feel that the planning, enrollment, and orientation process was excellent. This same process could be used for all students. If this selection process was used, we would need more counselors and support personnel to take care of the details required to support students in their advanced courses and to track them in support of achievement requirements.

Finally, the advisement of students was again addressed when Teri said, "Students should be recruited as freshmen in high school so that their course taking patterns prepare them for college."

Case Summary

Administrators and faculty from Harris Tech and MWCC met many times and discussed the changes in the relationship between the two institutions concerning

MWMC. Since this study was limited in scope and the surveys only included the 13 respondents who worked closely with MWMC during the formative stages, these data only relate to those faculty directly involved with the middle college project. The data I collected from MWMC meetings showed the process used to plan and implement the middle college, and this activity peaked just before the first group of students enrolled in MWMC. These students were nominated for enrollment by their Harris Tech teachers, based on the levels of motivation and self-confidence displayed in the classrooms. Survey and interview responses illustrated that faculty members agreed the increased level of communication between the two institutions was a positive result of the project, but they felt the goals and objectives of the middle college were not clearly defined. Study participants recommended more preparation about the project for staff members at both Harris Tech and MWCC. Many meetings focused on the planning and initial implementation of the project in the year before students enrolled, but the meeting frequency diminished during the first academic year of MWMC.

Early collaborative work between Harris County and MWCC faculty included alignment of math and English courses. This curriculum alignment eliminated gaps between secondary and postsecondary coursework, and the work helped improved the communication between the two institutions. Planners noted challenges in simultaneously dealing with the requirements defined by the school district and the community college. However, the work strengthened the working connection between Harris County and MWCC faculty. This institutional relationship directly affected MWMC students, which Embedded Case III exhibits.

Embedded Case III: MWMC Students and Parents

Data Collection

Participants in Embedded Case III were students and parents of students who enrolled in MWMC during the first two years of the pilot project. I gathered data for this embedded case by interviewing individual students, by using an online survey to question parents of students who were enrolled in MWMC during the first year of the project, and by gathering forms containing quantitative data such as GPA and standardized test scores. All names of Embedded Case III interview and survey participants have been changed to pseudonyms in this study. My interviews of MWMC students occurred during December 2006 and January 2007. Six students from the 2004 – 2005 class of MWMC participated in the interviews, but no students from the 2005 – 2006 class agreed to take part. The pseudonyms given to the students are Mark, Tom, Sam, Tony, Sarah, and Jerry. These students came from five different high schools, and enrolled in five different colleges after graduating from high school. Tom, Sam, Tony, and Jerry agreed to return to Harris Tech for face-to-face interviews. Mark and Sarah were not able to meet in person, and instead participated in phone interviews. Their parents completed the online survey between December 2006 and April 2007. One parent of each of the 2004 – 2005 MWMC interviewed students submitted survey answers, and four parents of students in the 2005 – 2006 class participated in the survey.

Case Findings

Once my work transcribing the interviews was complete, I entered these data into qualitative coding software. I used an inductive process to analyze interview data with the software, with codes derived from the research questions (e.g. Stake, 1995). Since

the students were all enrolled at Harris Tech, stories they told had many similarities. However, each student had unique background educational and social experiences, which became apparent through similar sub-themes derived from their stories. Several of the sub questions related to research question three were addressed through interview and survey data.

Research Question 3.1: Why did the Harris Tech students enroll in the pilot project of MWMC?

The first question MWMC stakeholders were interested in addressing focused on reasons why Harris Tech students and parents were initially interested in MWMC. Four main sub-themes arose from student interview data and from parent survey responses. Two sub-themes surrounded practical and financial issues; credit to get ahead in college, and having MWCC pay for tuition and books. The remaining two sub-themes were less tangible, and dealt with student interest in a more appropriate educational environment, and parent support to move into a new, and possibly intimidating situation.

Sub-theme 3.1.1: Credit to get ahead in college

Nearly every student and parent interviewed listed the ability to earn college and high school credit concurrently as a major interest in the project. Students particularly focused on completing credits at a community college instead of a four-year university, as shown by this quote from Tony: "I really liked the fact that I could earn high school and college credit at the same time. That was the big thing, and not having to go to high school was really nice." Sam said, "I did get ahead as far as the English class goes. I was happy I didn't have to take that class again." Tom also described this benefit by saying, "it was the prospect of going into college with already having credits for college.

That and being able to get an experience of college before I even got out of high school." Parents took a more global view of this topic as shown by this quote by one of Sarah's parents:

> One of the first appealing facts about the middle college program was that our child could meet high school graduation requirements and receive college credit while taking classes. She could also have vocational experience and exploration during this program.

Several other parents echoed this thought as well, and these comments showed that they were focused on the opportunity for their children to experience the college environment and earn credit while still being connected to high school. This gave students the chance to be successful at the postsecondary level, and to be more certain about the educational plans they had made.

Sub-theme 3.1.2: Change to a More Positive Environment

Most students and parents also listed the need for a new educational or social environment as a main reason for becoming interested in MWMC. The reasons for this included students feeling shy, the students need to be treated "like an adult," and a feeling by both parents and students that the high school curriculum was not challenging the student. A representative quote from Mark described how many MWMC students felt about high school:

> I was ready to be done with high school. At the time, I was in the mindset that I just needed to get out of there anyway. It felt good to not have to get up so early and go to [my high school] and have this set schedule where we were treated like babies every day. In a sense, I missed my friends, and I missed the stories, and I didn't like being left out, but to me, it was definitely worth leaving early. Just because, I liked more freedom, and I liked being treated like an adult just for once. In high school, you're not treated like an adult; you're treated like a kid, even if you act like an adult. That makes it hard.

Students also mentioned difficult relationships with teachers as a reason to enroll in

MWMC. For example, Sam said, "To be honest, I didn't like my high school teachers very much and just the surroundings in general," and that he "was a pretty shy kid at high school anyway, so I just never got along with my teachers very well compared to other people, and my grades reflected on it I think." The desire to get away from the high school environment was also a common sub-theme among the students. Again, Sam said, "I was just ready to get out of that environment. I didn't really have any friends there anyway, because I was [at Harris Tech] most of the time." A quote from Tony sounded very similar: "My senior year I was never there. I just went for senior pictures and that was all.... I loved it. That was a very attractive part of [MWMC]."

As in the previous sub-theme, parents responded with a more global view of their student's educational needs. For example, Sarah's parent said, "We did not believe that the traditional high school program was meeting our daughter's needs and the middle college program seems to offer something that would challenge her." Another parent said, "We knew he could benefit and it was a chance for him to see that he could succeed in college."

Sub-theme 3.1.3: Parent support

The students generally reported strong support from their parents when they introduced the middle college concept. Commonly, students were immediately excited about becoming involved in the project, while their parents were much more cautious, and spent some time determining the benefits and potential pitfalls. All students described having lengthy discussions with their parents about the decision to enroll in MWMC, similar to what Tom said:

> Well, I can remember getting the letter, and going home and talking to my parents about it. We all kind of sat down and talked about whether I was ready or not to

> do this. And I remember that they were kind of worried. They didn't think I was ready to do it. But then we all kind of agreed upon it, that it was a good idea, a good opportunity, so we went with it, and it turned out to be a good thing.

Tony reported a conflict about taking Economics through MWMC instead of at high school, but he ultimately reached agreement with his parents:

> Me and my mom were talking about it and I was all for it, and she was trying to figure out if it would actually help me at all. She was worried about me not getting the high school credits I needed and not being able to graduate. I mean, they kind of fought me on taking Economics at Metro West instead of [at my high school]. I mean, [high school] economics is the opposite. I think I took macro at Metro West, and they have micro at [my high school]. But I got over it eventually.

Parents reported supporting the students in ways similar to the student responses.

Sub-theme 3.1.4: Tuition Paid by MWCC

Along with school environment and earning college credit, students reported a main reason for becoming interested in MWMC was receiving free tuition and books. Most parents said they would have been willing to pay tuition for one or two classes per semester, but Tom mentioned the cost would have been a limitation without financial support:

> Having the school help to pay for that was a big plus. College is an expensive thing, you know, so if you can have the opportunity to have someone help pay for that, and do that while you're still in high school, I think it's a great opportunity.... I would have thought it was a cool program and something I wanted to do, but beyond that, virtually all interest would have stopped there because I couldn't do it.

Providing tuition help such as Tom described was one of the factors the MWMC planning committee recognized, with the goal of eliminating cost as a barrier to college for any capable Harris Tech student.

Research Question 3.2: What were the overall high school grade point averages of MWMC students before, during, and after involvement in the program?

MWMC student grade point averages did not change much because of involvement in the project. Table 2 shows that the six 2004 - 2005 students' GPA increased slightly during middle college enrollment. These data include classes taken at both the high school and the college levels.

Table 2

Grade Point Average of the 2004 - 2005 Class Before, During, and After MWMC Enrollment

	Grade Point Average		
	Before Enrollment	**During Enrollment**	**After Enrollment**
2004 - 2005	3.360	3.411	3.482

Research Question 3.3: How many college credits did the MWMC students earn?

Students in the MWMC class of 2004 – 2005 earned a total of 71 college credits through the middle college during the academic year. All MWMC students enrolled in ENG121, four took ENG122, five took MAT121, and three enrolled in MAT122, as Table 3 shows. All ENG courses and MAT122 were three credits each, and MAT121 was a four-credit course. Students in this group also took additional courses such as economics and CTE electives.

Table 3

MWCC Credits Earned by the 2004 - 2005 MWMC Student Class

	MWCC Credits Earned				
	ENG121 (3 credits)	**ENG122 (3 credits)**	**MAT121 (4 credits)**	**MAT122 (3 credits)**	**Other**
2004 - 2005	18	12	20	9	12

Research Question 3.4: What were the college placement exam scores of entering MWMC students?

MWMC student Accuplacer scores were above the threshold for ENG121 and MAT121 in all but one case, as Table 4 shows. All community colleges in Colorado use the Accuplacer exam to determine course placement for first-time students (CCCS, n.d.). MWCC requires every entering student to take three different tests covering math, reading, and sentence skills. If a student did not score high enough to warrant placement in college algebra, the college math or arithmetic tests were administered.

Table 4

Accuplacer Test Scores for the 2004 - 2005 MWMC Students

	Accuplacer Test Scores				
	Arithmetic	**College Math**	**Elementary Algebra**	**Reading**	**Sentence Skills**
2004 - 2005	104.0 (1 student)	48.0 (1 student)	86.1 (6 students)	95.9 (6 students)	100.0 (6 students)
State Mandated Placement Score	57 for MAT060 enrollment	61 for MAT106 enrollment	85 for MAT121 enrollment	80 for ENG121 enrollment	95 for ENG121 enrollment

Research Question 3.5: What were the differences between community college classes and high school classes from the MWMC student perspective?

Perceived differences between high school and college classes related to changes in the learning environment and class size, and the need for self-motivation and increased responsibility. As I explain below, in their interviews, students keyed on the reasons for initial interest in the middle college, as illustrated by the two related sub-themes.

Sub-theme 3.5.1: Better Learning Environment

When MWMC students began experiencing college classes, they reported interacting with a much more motivated group of classmates than they had in high school. Their comments keyed on the ages and focus of the other students, which was one of the first changes they noticed. For example, Sam noted:

> They were more mature and more inclined to learn. I think any time you go from high school to college, even at [my first college] when I went there, for the most part, is more inclined to learn. You just listen a lot better, and there's a lot more maturity in the classroom.

Many additional comments focused on the age discrepancy between the middle college students and the other community college students. Jerry reported:

> Some of them seemed pretty old. I mean, I think it varied a lot. Some were just out of high school, and a couple were second or third year college people. Then there were a couple of 40 year olds, 50 year olds.

Even though the coursework was college-level, MWMC students reported the work was not significantly harder than they experienced in high school. It was, as Jerry described, "More mature, more adult than [high school], but as far as the class goes, it was a regular high school class." This was also reflected in another opinion offered by Jerry:

> I was really surprised at the students, I mean, how far the range of students was. I had a generic idea of college I'd seen from the movies and everything, but I wasn't expecting the older kind of people there were at Metro West. But that's cool to meet 25 year old people taking the same classes as me. And just getting different viewpoints like that was cool. And the teachers were really receptive at Metro West. They were not like 'Oh, you're a high school student. I'm going to talk down to you in class.' They were really treating us just like normal students and continued on.

Because of this level of difficulty, the students reported that the college environment gave them the opportunity to learn how to study for a college class. For example, Mark said:

> I was already used to going to a class, and used to just focusing and taking notes. Studying was definitely another thing that I learned how to do through Metro West, because I had to learn how to. It was better for the smaller classes, to learn how to study for those, than it would have been for me to have gone to the university and learn how to figure out how to study for an exam then. Because in high school, I don't know many people that ever studied for exams, because they were always fairly straight-forward. You just regurgitate the material pretty simply.

Several other students, who agreed that making a small step up in course difficulty helped to provide a better learning environment than they found in high school, echoed this.

Additionally, MWMC students appreciated how starting college in classes with small numbers of students created a better learning environment than they expected in college. Sam said, "I mean, Metro West is a pretty good sized community college, and still, their [classes are] incredibly small. I was in English class with like 11 other people." This was also a change from their high school classes, which generally had 25 to 35 enrolled students. Students said the smaller class sizes were helpful when learning about how to survive in college, as Mark reported:

> It was better for the smaller classes, to learn how to study for those, than it would have been for me to have gone to the university and learn how to figure out how to study for an exam then.

This is also consistent with the statements related to the initial reasons students enrolled in MWMC.

Sub-theme 3.5.2: Self-motivation

Both students and parents realized self-motivation and responsibility is important to be successful in college classes. This desire to be successful in higher levels of education was related to some of the initial reasons the students became interested in MWMC. It also matched some of the goals for middle college creation in that students showed they understood learning this lesson while still in high school was an advantage. Time management was mentioned by several students, each of whom provided a message similar to Mark's:

> They manage your time for you [in high school]. They tell you when to be to class, when to go to lunch, and when to take a break, and when to be done with your day. It was too big of a transition for a lot of people, to go from high school to college, with all your time managed for you. You're told exactly what to do and what you can and can't do. Then they go to college, where the rules are really vague. You don't really know what you can and can't do, you know.

The student responses also reflected an appreciation for the college experience, as Tom reported, "You learn a lot more responsibility, I think, being in those kinds of classes in high school, as opposed to just being in regular high school classes." Tom also said, "I was always doing good in high school too, but there was definitely more motivation when I was in a college atmosphere as opposed to high school."

Parents had thoughts similar to their students, and their answers to the online survey questions focused on the increased responsibility necessary to succeed in college courses, since the college environment was less structured and required more accountability from the students. One parent described this experience as a benefit, saying, "He was very responsible about his homework and cared about how well he did."

A second parent made similar comments: "He had to take more responsibility for his education. He had to make a commitment." Inconsistent commitment by the student sometimes caused the parent to work with the student to take responsibility for the inaction, as in this example: "He did make a B in the first semester English class. Unfortunately, second semester he reverted to his old behaviors of not showing up for class and had to withdraw so he wouldn't get an F." Overall, the parents saw the experience as a significant opportunity for personal growth of their children, both in classes that went well, and in classes where students were less successful.

Research Question 3.6: Are there differences between the college course pass rates of MWMC students and other MWCC students?

MWCC does not compile data on course pass rates, so it was not possible to make any comparisons between the general MWCC student population and MWMC students. As part of routine middle college operations, MWMC administrators tracked student grades both to gauge student progress and to determine when students may need extra support. Course pass rates for MWMC students enrolled in ENG121, ENG122, MAT121, and MAT122 were used from academic years 2004 – 2005 and 2005 - 2006. The numbers of courses taken other than these four were very small, and usually only taken by one MWMC student. The community college course pass rate for MWMC students enrolled in 2004 - 2005 was 91%, or 30 out of 33 courses completed with a grade of D or higher.

Research Question 3.7: Are there differences between the college course grades earned by MWMC students and other MWCC students?

MWCC did not collect data about student grade point averages in specific classes, so a comparison of MWMC students to the other students in these courses was not possible. Table 5 shows the grade point average of the MWMC students in the core academic courses they took at the community college.

Table 5

Grade Point Average of 2004 – 2005 MWMC Students in English and Math Courses

	ENG121	**ENG122**	**MAT121**	**MAT122**
2004 - 2005	3.50 (6 students)	4.00 (4 students)	3.50 (4 students)	2.67 (3 students)

Research Question 3.8: How did MWMC meet the educational needs of Harris Tech students during enrollment in MWMC?

Student interview and parent survey data showed five distinct ways the middle college met student educational needs. Sub-themes 3.8.1: Positive Learning Environment and 3.8.3: Educational Support for Students specifically addressed the positive differences each student experienced when moving to a postsecondary institution. These sub-themes are similar to those related to student interest in college, as discussed above in Research Question 3.1. Students also reported they had been ready to enroll in college during their senior high school year, which is discussed in Sub-theme 3.8.2: Timing of College Enrollment. Sub-themes 3.8.4: Increased Background Knowledge and 3.8.5: Transferring Credit to a Four-year University directly address student desires to earn

college credits and take specific courses, which were made available through enrollment in MWMC.

Sub-theme 3.8.1: Positive Learning Environment

Similar to sub-theme 3.5.3, students and parents emphasized the importance of the change to an environment where students are taking classes to learn rather than simply being there to fulfill a requirement. Several students described how they liked the teaching style in college, especially in English courses, such as in this example from Tom:

> I took an English 122 class with the same instructor as my English 121 class. I decided to take her again just because she was an amazing teacher. I mean, my parents used to tell me that they saw an improvement in my writing after I took that class. They would read some of the stuff I was writing and they just said it was drastic, how much I improved just from being in that class.

Students also appreciated the different teaching style they experienced in MWCC classes. In another reference to an English class, a Tom also said:

> She didn't make you feel like everything you were doing was for a grade. She made you feel like it was to improve your writing. She wasn't a very "by the book" teacher, I guess. I think that's sometimes what it takes.

As they also related in their interviews, all of the students appreciated having instructors who had teaching styles different from what was experienced in high school, as in Tom's quote above. This change in the learning environment resulted in the students feeling more motivated to work hard on their coursework.

When discussing the college learning environment, MWMC students also mentioned the support of classmates both inside and outside of class. An example given by Sam showed both of these scenarios:

> In your math classes, it was more of a solo effort to kind of learn based on the work. You didn't really have any group help or anything inside the classes in

> general. But outside, I mean before and after classes, I ran into people in my math class all the time in the library or at lunch, or whatever. We always sat down and tried, and discussing answers and ways to go about doing things. With English, honestly, I don't think I ever saw one of my English classmates outside of class, but inside the class we were always in groups. Our final project, we had a group of three people, and we had to proofread and check over all of our work and everything, and turn it in. Basically, the only way you got credit for that was to turn in a project and actually helping other people learn.

Also in relation to this topic, students reported that the motivation levels of most of their college classmates helped them work harder to succeed in all of their MWMC classes.

Sub-theme 3.8.2: Timing of College Enrollment

The students agreed that, given the format of MWMC during the first year, the senior year of high school was the correct time to enter the middle college. Beginning to take college courses at this time gave the students an opportunity to grow educationally in a way they did not feel was available to them in high school. Tom described it this way:

> I think that when I did start the middle college program, it was a good time for me to start the middle college program. I was right here at Harris Tech, I had other students who were at Harris Tech who were in the same program. I could talk to them; I could talk to [my teacher] about things. It was right there next to the school. It was a very convenient time for me to do it. I think that definitely would have been different if I had taken it a year later. Also, I wouldn't be where I am now. I'd be almost a full semester behind where I am now. I might not have had the same instructors I had the opportunity to have. I liked all of my instructors. I think those are things I wouldn't want to change.

Sarah agreed that this was the best time to take advantage of a program like MWMC, and thought it was:

> Such an enlightening experience to be able to go from high school into kind of this middle step. Where I kind of get used to college, and get to learn what it's like and then go and get to do the real thing and be comfortable with it.

Other MWMC students, who believed that they were ready to move on to the educational environment college provided, also shared her view.

Sub-theme 3.8.3: Educational Support for Students

Students came to a relatively rapid conclusion that they needed to learn new personal strategies to succeed in college classes. The comments they gave explained a variety of these strategies, ranging from using the formal tutoring center at MWCC, called the Learning and Resource Center, or LARC, to learning how to take effective notes during class. According to Tom, "I think the school down at Metro West had a lot of support on its own. You know, they had the LARC, the Learning and Academic Resource Center, free tutoring, computer labs, everything you'd want." These kinds of resources were not available to the students at Harris Tech because of the class schedule, which significantly restricted the amount of time students spent there outside of class. Tom discovered the help available both on his own and from teachers by:

> Kind of wandering around the school, for one thing, and also a lot of the teachers point that out when you first start. They say, "If you're having trouble, you can come to me, or we have the LARC and the free tutoring on this day, this day, at this time, so take advantage of that." They also have things where you can start study groups.

A parent echoed this comment, saying, "He learned where the library, writing lab, employment center were and he did pass the first semester with a B." Two students said this type of assistance helped them learn how to take notes and study more effectively, which they found very helpful once they moved into four-year universities.

Sub-theme 3.8.4: Increased Background Knowledge

Most of the students talked about the acquisition of subject knowledge in MWCC classes, and how their perception was that this would not have been attained in a high school class. This idea seemed to grow from the feelings that high school courses did not progress at a rapid enough pace, or have high enough performance expectations to

prepare them for college-level coursework. Some examples the students gave described the usefulness of MWCC math classes in subsequent courses. Tony, who was an advanced math student, said the placement did not work exactly correctly, but ended up helping him in the long term:

> I tried to take Calculus but they wouldn't let me because, I don't know. They said they required Trigonometry credit, but I had Trigonometry credit from high school, but I guess they didn't count that or something. But the Trig class was helpful. I've used a lot of stuff I learned in there in Calculus and continuing on. It's always coming back. The Trig class I definitely recommend. But I don't know about the other. I mean, you could take that your first semester, then Calc I your second semester, and that would work pretty well, if you've had pre-calc already.

Tony also talked about the benefits of MAT122, which most MWMC students took during their second semester in the program: "I've used Trig so much in Calc I, II, III. Everything has a Trig thing in there." Sarah mentioned how the economics course she took at MWCC was "a very interesting course, and very nicely designed to help me succeed." She did not feel that the economics course offered at her high school would have taught her at the same level, which would have decreased her understanding of the subject.

Sub-theme 3.8.5: Transferring Credit to a Four-year University

Many comments from parents keyed on transferring credit to four-year universities, while students only briefly mentioned the issue. One student, Mark, said, "All of [the credits earned through MWMC] transferred. Some of them transferred for more credits than they were at Metro West." Tony reported that he received "nine elective credits and microeconomics credit" when he transferred his courses to a four-year university, and Sara had "my first semester of my freshman year taken care of, completely." Most parents reported the MWCC credits helped their students once they

transferred to universities. This parent seemed very satisfied with the process: "The courses taken at MWMC were an excellent fit for our daughter. All courses she took have transferred to her new college." Not every student transferred credit without trouble, however, as reported by the parent in this example: "It really just helped fulfill his high school credits. It did not help with college credits since they did not have a way to apply this particular class."

Research Question 3.9: How did MWMC meet the social needs of Harris Tech students during enrollment in MWMC?

Both students and parents described adjusting to changes in the college social environment as an important experience. Many of the students talked about being involved in cooperative learning situations, while parents focused on how their children felt greater respect because they were college students. One student, Tom, described the programs MWCC made available to students when they enrolled as a student when he said, "I think the school down at Metro West had a lot of support on its own. You know, they had the LARC, the Learning and Academic Resource Center, free tutoring, computer labs, everything you'd want." Tom also mentioned a similar experience, and talked about the support provided in study groups, similar to Sub-theme 3.8.1:

> When I first started off, you know, you don't really know anyone when you go into a program. But if you start to talk to people around you, and meet people, there's a lot more support, I think, in college. A lot of people start study groups, that kind of stuff. You can lean over and talk to anyone, and they'll help you after class or whatever, so it's a good atmosphere, I think.

Parents also mentioned positive effects the students experienced, such as increased self-confidence. For example, "He seemed pleased to tell people he was in college," and, "He felt more like an adult, and it increased his level of responsibility."

Research Question 3.10: What effect did MWMC have on the educational goals of each student?

Enrollment in MWMC had an effect on student levels of desire to be a college student, self-confidence about the ability to succeed in college, and understanding of the college environment. Student and parent quotes addressing these three sub-themes are included in this section. The sub-themes differ slightly from one of the national middle college goals, which was to provide students with successful college experiences during high school, with the hope of changing student educational goals to include college enrollment (Lang-Jolliff, 2003). Students selected to participate in the first year of MWMC already had plans to attend college immediately following high school, so participation in the project was not expected to have much effect on this student goal.

Sub-theme 3.10.1: Reinforced Desire for College

Three students explicitly described how participating in MWMC increased their desire to enroll in college. One focused on the people with whom he interacted at MWCC, and the effects of these new relationships, the second discussed discovering the career opportunities that college was going to provide for him, and the third was able to enroll in university level coursework before the fall semester began. Tom said he "definitely met a lot of different people in the college environment, and I'd say it strengthened my goals." He went on to say, "It just kind of reinforced what I wanted to do. It kind of set me on it: Just talking to different people who were doing the same thing I was." Sam learned more about double majoring in college, which he said he needed to do to meet his career goals:

> Eventually, I want to double major in game design or something and business management. I don't want to work for people when I get older. I didn't know

> that was possible, actually, until I went to Metro West and was talking to people that were taking lots of the credits down there. I thought you had to major in one then major in another at some other portion of your life.

Additionally, Sarah described how her university counselor guided her into a summer course, which she was able to take because of her enrollment in MWMC. She said this raised her excitement and anticipation about her university program during the spring semester of her senior high school year.

Sub-theme 3.10.2: Strengthened Self-confidence

Even though the students entered MWMC with a strong desire to study at the postsecondary level immediately following high school, they were unsure about their ability to be successful in college courses. Tom reported, "It gave me peace of mind that I could succeed in college, that I could do all these things if I put my mind to it. I'd say that's how it strengthened my goals." This feeling was also apparent in this parent's comment: "It did give her confidence that she could complete college level work and be successful in college." Another parent said, "Participation in the MWMC program encouraged our daughter's educational goals. She was a more enthusiastic learner and more adventurous in choosing courses. She felt she was actually working toward her future while in high school!"

Sub-theme 3.10.3: Increased Understanding of College

The third sub-theme that arose from research question three relates to students gaining an increased understanding of what being a college student meant. The student quotes described how students focused on topics such as choosing a major to what "college level material" really is. In thinking about how the experiences in MWMC affected his future, Sam said:

> Eventually, I want to double major in game design or something and business management. I don't want to work for people when I get older. I didn't know that was possible, actually, until I went to Metro West and was talking to people that were taking lots of the credits down there. I thought you had to major in one then major in another at some other portion of your life. I want to do that because it would be a great way to get out of school faster and start doing my own thing sooner.

Tony said the experience was "a nice little stepping-stone between high school and [university], just to get to Metro West and take classes," which smoothed the transition out of high school and into the college environment.

Research Question 3.11: What successes did students experience during time spent in MWMC?

Many of the students' successful experiences were initially introduced in other research questions. For example, Sub-theme 3.5.3: Self-Motivation and Sub-theme 3.10.2: Strengthened Self-Confidence, are both key issues MWMC students talked about during interviews, and directly relate to Sub-theme 3.11.1. The second sub-theme related to this research question was quite important to the students. Sub-theme 3.11.2 focuses on the amount of credit students received when they transferred to another post-secondary institution.

Sub-theme 3.11.1: Reinforced Self-Confidence in Ability to Perform at College Level

The students addressed their self-confidence in Sub-theme 3.10.2, but the parents' comments on their perceptions of increased self-confidence are more appropriately listed under this research question. Parents noticed significant differences in their students' performance between high school and college. For example, one parent said, "Our daughter made good grades while in the middle college program. Participation solidified the belief that she could be successful in college. This parent was encouraged by adult

learners to take advantage of this time and work toward a degree." Additionally, the guidance regarding student placement helped, as this quote shows: "He successfully completed English and got a taste for college. It also humbled him (a good thing) into listening to counselors' advice about what classes to take."

Sub-theme 3.11.2: Passed Several College Courses to Gain Credit

The students were attracted to the possibility of earning core college credit while in high school, and the results were favorable from their perspectives. For example, Tony said:

> I think I got nine elective credits and Microeconomics credit . . . from Metro West. It actually transferred over. I was really surprised. I didn't even know I had it until last semester I figured it out. But the Economics they require isn't Micro, it's mixed macro and micro. So, I had to take that class over again. It was easy.

Not every course transferred as core academic credit, but students still received elective credit for most of the courses, as Tony also described: "I think the two English and one of the math transferred over as elective credit. But that's nice."

Research Question 3.12: What difficulties did students experience during time spent in MWMC?

Overall, MWMC students reported few difficulties while enrolled in the middle college, which may be due to the high levels of motivation and responsibility of individuals in this group. The challenges that were discussed centered around two areas. Sub-themes 3.12.1 and 3.12.2 address how students dealt with keeping in contact with three schools, both for educational and social reasons. Sub-theme 3.12.3 provides data relating to two students who did not do well in a MWCC class.

Sub-theme: 3.12.1: Logistics of Three Schools

Every MWMC student had to solve the challenges of traveling between and communicating with three schools during the school year. Each student had unique challenges related to this logistical problem, as Sam related:

> Really, the only bad thing about the middle college program was I totaled my car a week before it started and it was hard to get from [my high school] at 7:00 in the morning, and math ending at 9:00 at night. By that time, I'm sick of school, and I go home and have six hours of homework. That and working a full-time job during the weekends didn't help at all.

These challenges were not only related to transportation and jobs, however. Some students had many conversations with high school counselors about scheduling and graduation requirements. Tony tried to educate his counselor about MWMC through many sessions:

> I don't think the guy ever really understood. I mean, it was his first year counseling, and I don't really think he understood how to do it. He was always kind of, "Ok, you got this credit and this credit, I guess you're good." I mean, he knew I was going to Metro West for classes, but I think he thought I was going for really high-level classes or something. I don't think he understood I was going for dual credit.

Finally, MWMC students had to juggle course schedules among three schools, which often proved difficult. Tony also talked about these experiences:

> I mean, the atmosphere here [at Harris Tech], it's really set up as a college atmosphere, like the way you take classes. I think it's easier going from here to Metro West than it would be going from high school classes to Metro West. It would be really hard to schedule, I think. I remember that [my high school] offered some classes once, and you had to take it at this time. I couldn't take a Physics II class in high school because of the time it was offered. They had one class, and it was right in the middle of Harris Tech. I'm not skipping Harris Tech for a physics class.

Parents of MWMC students had similar stories about the challenges each student faced. As one parent told, some of the problems were simple, such as this: "His school

day was longer than it would have been if he had taken the class at his high school."

Parents also discussed the lack of communication with high school counselors. This parent seemed somewhat frustrated by the high school:

> He had little or no communication from his high school, which resulted in many problems for his senior year. This was due to the high school's lack of participation in this program. The only class he missed that affected his college education was chemistry.

Other parents agreed that directly involving more high schools in the program would help improve communication among all institutions.

Sub-theme 3.12.2: Missing Out on Activities at Home High School

Not spending much, if any, time at the home high school meant MWMC students missed participating in activities with their friends and other peers. Students apparently kept their focus on the college credit and the other benefits MWMC provided, and felt these were more important than continuing the integration with their social network in high school. Tom related this to the change in priorities in the senior year of high school by saying:

> I mean, it was last semester, senior year. That's supposed to be the best times in high school. But I just looked at it as I was getting a better opportunity out of it. I was getting college credit; I was getting a head start.

Students did convey feeling loss about high school activities, since many MWMC students did not return to their high school during the spring semester of the senior year. Mark described the experience during the interview:

> I missed a lot the second semester of my senior year. You know, there are a lot of stories that my friends would talk about on the weekends when I'd hang out with them from the school day that I completely missed. It sucked in the sense that it kind of made me feel a little left out.

Students did not report feeling a sense of community within MWMC; however, they did feel a connection with other Harris Tech students.

Sub-theme 3.12.3: Lessons Learned from Poor Performance in a MWCC Class

One interviewed student and a parent of another student discussed troubles in MWCC classes. Sam was placed in a math class that he was not prepared to take. At first, he was not sure how to handle the problem. He said:

> Honestly, the first day I was in there I realized that everything was a little over my head. I tried to pick it up as I went, but I probably should have backtracked and tried to learn a little bit of material before what was being taught. I would have been a little bit behind, but that would probably have been the best way to go about it.

After reflecting on the experience, he realized how he ended up in a class too difficult for his ability level:

> See, I only had like a ten percent on the Accuplacer, which was like the class before the class I was in, and I still got in based on ACT scores. I was happy at the time. I wanted to take that class so I could get out of [my high school], but it ended up hurting me a lot in the end.

In this quote, he reported learning about resources available at MWCC, which he later said was very useful:

> I learned what resources I had available to me, because, at that point, college was something new to me, especially still being in high school. I wasn't really sure where to turn or where to go to get help for it. And when I did do it, it seemed to help me a lot. That last test, I know I got a decent grade on it, but by that time, it was too far, too late.

Sam was not remorseful about his experience in the math class, and still felt MWMC helped him learn a significant amount about the college environment.

The parent of another student also recounted the troubles encountered during the second semester of MWMC enrollment. According to the parent, this student:

> Didn't take advantage of the opportunity presented him second semester by attending classes. I attribute it to "senioritis" as he was told in early January that he had enough high school credits to graduate. After that he lost interest in MWCC.

This decision turned out to cause extra challenges for the student in subsequent years, as the parent said in this quote:

> Dropping the math class put him behind, but I hope to have him take another class at Metro West this summer. His major is in computer science at [university], but he can't take a full load because he doesn't have the math requirements to get into some of the classes.

Just as with the first student's story, this parent felt the MWMC experience was very helpful, since it was seen as better to learn this lesson at this time instead of during full-time enrollment in college.

Research Question 3.13: How did experiences during enrollment in MWMC affect student success during the first year of postsecondary studies?

Descriptions of two experiences consistent among first-year MWMC student interviews demonstrated how students benefitted by understanding the differences between the college and high school environments. This became apparent to the students during the first year of college, when they entered classes already understanding the expectations and structure of a college course. Sub-theme 3.13.1 addresses the college course expectations, while Sub-theme 3.13.2 describes the effects of knowing about college class structure.

Sub-theme 3.13.1: Understood Expectations at the Beginning of the First College Year

Nearly every student reported a major benefit of the time spent in MWMC as a greater understanding of post-secondary expectations before they enrolled in college following high school graduation. The quotes related to this sub-theme explain the

reasons they felt this way, which range from having a small number of college courses through MWMC, to having smaller classes and greater support while taking classes at MWCC. As Mark said, "It was really helpful to have that transition, and to have that little middle area, and to make it a little easier to move from one to the other." Tom realized the transition to university expectations would have been much more difficult without middle college:

> I think it was pretty good to do that while I was still in high school, to get a little taste of it. I think I would have jumped into it a lot harder if I hadn't been in high school. I probably would have taken more than just those two classes. I probably would have had at least three, four classes and it probably would have been a bigger shock.

Other students also mentioned that the classroom environment at MWCC was very similar to what they found at four-year universities, and having the experience of being a college student while still in high school helped prepare them for full-time college enrollment.

Sub-theme 3.13.2: Familiarity with the Structure of College Classes

Exposure to the different structure and expectations of college classes was a second common sub-theme addressing this research question. Though the students selected for the first class to enter MWMC all had plans to enroll in college, they all admitted they did not have much understanding of the differences between high school and college classes. Tony described the feeling by saying:

> I wish I had looked at what classes you had to take at [university] before I started scheduling. My high school was never really big on it. They would say this is a college prep class, but they never really told you why it was a college prep class. I never really understood what I was going to take in college when I was scheduling classes in high school. That was a big thing that kind of surprised me. Middle college really helped with that. I knew what I was going into when I was going to [university]. I had an idea of what college was going to be like. That was nice; those stepping-stones were just perfect.

Another misconception about college reported by MWMC students dealt with the type of coursework required. MWMC helped them prepare for this reality, as detailed by this comment from Tony:

> Before middle college, I always assumed that college was more of a focused kind of thing, where you took a major and you did classes on your major. I never knew there was core classes and all that. I didn't know I had to take English more. I figured math more. No one really explained to me what college really was. I just always thought I was going to go take 4 years of computer classes and learn a lot about computers and that's it. But, no.

Mark talked about the way MWMC prepared students for the change in the educational environment:

> The biggest difference is the classes at [my university] are bigger. There's a lot more students, and there's less one-on-one interaction. But other than that, at Metro West it was like half and half. Like half of what I'm used to at high school, the same class sizes, but they acted like college professors. So Metro West was definitely good to adjust for the class style, just because the difference between high school teachers and college professors is that college professors give you the information and that's all they do most of the time. In general, all they're going to do is give you the information and let you do whatever you want with it. In high school, they generally give you the information in a ton of different ways and once you learn it, they're a little bit more creative in their teaching styles.

This was a recurring sub-theme with nearly every MWMC student. The benefits of an introduction to college expectations stayed with the students as they moved into university life.

Research Question 3.14: What were the stakeholder recommendations for improving this program?

MWMC students and parents were strongly in favor of continuing and expanding the project. Sub-theme 3.14.1 addresses project expansion, and Sub-theme 3.14.2 provides student recommended classes for future inclusion in MWMC. Sub-themes 3.14.3 and 3.14.4 address the support mechanisms in place for middle college students,

and possible enhancements to that support. Finally, Sub-theme 3.14.5 addresses the necessity of clearly defining the goals and purpose of the project.

Sub-theme 3.14.1: Continue Funding and Expanding the Program

Every parent had very positive ideas about continuing to fund and operate MWMC. Some discussed the necessity of expanding the program, making it available to students in other high schools. Parents thought the experiences each student had were positive, and they wanted other students to have the same opportunities. Comments started with the program publicity:

> The program should be much more widely publicized. Several students referred by our daughter or us were discouraged to participate on the local high school level or were not able to find information easily about the program.

Another comment addressed the need for all students to have this type of option:

> This was an excellent programming option for our daughter. It is not just for students who are having difficulty in the traditional high school program. Our daughter was an honors student in the local high school but was frequently told that she and others in her class were not "college material." She was frustrated. This program put her into college classes (where she was ready and willing to perform) and showed her she was competent and able to compete on a college level. She intends to pursue her lifelong goal of being a teacher. MWMC is part of the reason she has been successful!

Finally, a parent spoke about the counseling support provided by MWMC:

> I felt the counselor did a good job of trying to counsel with our son and call us only when things looked dire. I would hope the counselor from Warren Tech could still be in place to provide the "safety net" for the students.

Overall, parents voiced very strong support for continuing and expanding the project to more students within the HCSD school district.

Sub-theme 3.14.2: Additional Course Recommendations

Students made recommendations for courses at MWCC that would have been helpful in subsequent college coursework. These courses ranged from physics to

chemistry to computer programming, and included a request to expand the economics course offerings. For example, Tony said:

> I would take high school chemistry, though. I had a really hard time in chemistry. I never took it in high school. The class was taught for people who had already taken a chemistry class, so I was always struggling in that class. That would be a big thing. I know Metro West offers a class, so if you could do that, that would be a class I would take at Metro West.

Tom voiced some frustration with university course requirements in relation to middle college offerings this way:

> I guess, maybe instead of taking a class you don't like to get it out of the way, a class you do like would be better. As far as high school goes, the only classes I liked and I wanted to take were at Harris Tech, and the rest were stuff I had to take. Because you have to take math, you have to take science, you have to take English, and then you can start going to the things that you like. So, I don't know if they offer any of those Freshman year at college, though. Because, at [university], I just took the [programming] class, which was a downer, this semester. It kind of took me three semesters. So, if possible, I don't know if you can take any classes you want to take through middle college.

Additional students mentioned the advantages of having more classes available at MWCC, and wanted additional counseling related to course scheduling as they planned their transitions to the university level. Sam voiced his desire to be able to take economics at MWCC, which he said would have also helped keep him on the Harris Tech/MWCC campus more of the day. Mark, who was able to schedule economics and all of his other courses at Harris Tech and the college during the spring semester of his senior year, said this helped him transition out of the high school environment.

Sub-theme 3.14.3: Have a Contact at the Home High School

Another recommendation students made was for every middle college student to have a specific contact at the home high school. This person was usually a counselor, and the former MWMC students felt it was extremely important to make a strong effort

to talk with this contact throughout each MWCC term. Tom said he:

> Kept in contact with one of my counselors back there, who used to be one of my seventh grade teachers, then started up there at the high school as a counselor. I kind of kept in contact with him, talked every once in a while. He'd ask me "how are things going?" it was good to have him to there to talk to about that kind of stuff.

Keeping a focus on high school graduation requirements continued to be an important thought with Tom:

> You do need to keep in contact with your home high school, and be sure that your credits are going OK with your home high school. Because at the time, I had a certain amount of credits left to graduate, and you have to make sure that all that stuff transfers properly before graduation. So I think it's definitely important to have someone you can go to at your home high school.

The MWMC counselor also constantly made sure every student was aware this topic throughout the middle college year.

Sub-theme 3.14.4: Group Support

Two former students mentioned the positive effects of having some type of group support at Harris Tech while enrolled in MWCC courses. According to student quotes, group meetings could focus on general feelings about the college environment, and on specific tasks and homework required in MWCC classes. Tom suggested:

> I think it might be a good idea to get all the middle college students together at one point and see how things are going with them. Maybe get a meeting together with them every once in a while.

This sub-theme was also present in Mark's comments:

> It would definitely be really helpful for the newer middle college students to have, maybe, seminars. Or have meetings together to study ... it would be nicer to have a larger group of people that are all in the same boat.

Sub-theme 3.14.5: Communication about Goals and Purpose

Parents of the first students who enrolled in MWMC recognized and understood the challenges of the MWMC planners and administrators, and they were clear about their desire for more clarity in the goals and purposes of MWMC. A parent showed awareness of the experimental nature of the project in this comment: "This was the first time the MWMC was offered. There was little time to understand what this was and how it would affect us and our son." Nevertheless, parents mentioned the need for more communication among the students and all involved faculty members. This included MWCC faculty as well as the MWMC counselor and Harris Tech administrators.

Case Summary

Students chose to enroll in MWMC for four main reasons, including opportunities to earn college credit in high school, to experience classes in the college environment, to take advantage of strong parent support, and to have their tuition paid by the middle college. Students performed well in school once they became MWMC students, as demonstrated by an increase in their grade point average of 0.1 points, and by the 71 college credits the group earned during the 2004 – 2005 academic year. Most of the student group also scored well enough on the Accuplacer exam to qualify for enrollment in freshman-level coursework, which also transferred to four-year universities. Students passed 91 percent of the college classes, and earned grades of A or B in most of the classes, with the exception of slightly lower grades in MAT122.

The college learning environment required an increase in the self-motivation of the students, and helped show them how different this is from their experiences in high school. Understanding these expectations helped the MWMC students successfully

transition to full-time college undergraduates. Enrolling in college classes gave students the chance to learn from older students who had different life experiences than students still in high school. High levels of motivation were also required for the students to take classes on three different campuses, and to keep in contact with counselors and administrators at each school.

All students and parents involved in this study recommended continuing and expanding the program. Suggestions for improvement included adding more classes to the list of possibilities, developing more formalized student support structures, and clearly defining the goals and purpose to prospective students, their parents, and the high school administrators.

Summary of Findings

Data gathered from state and district-level administrators showed several different areas of focus. Administrators from the state education departments concentrated on large-scale effects such as the funding mechanism in place to pay college tuition for high school students. MWMC did not have a consistent funding source to pay for student tuition at the community college, and students enrolled during the second year of the project had to pay for all of their tuition and fees. Additionally, since HCSD did not have any funds available to commit to MWMC, the project had only limited staff involvement after completion of the initial planning phase.

Administrators in Case I also talked about the benefits of improving the link between high schools and colleges, which was one of the main ideas discussed by the school-level participants in Case II. Setting up the middle college required many hours of alignment meetings between administrators and curriculum specialists from both

institutions, which resulted in a better understanding of expectations and requirements across the core academic courses of English and math. MWMC stakeholders agreed that the improvement of the cooperative relationship between HCSD and MWCC was one of the greatest benefits that arose from the creation of the middle college.

Completion of the course alignment process helped create an environment where MWMC students earned credit in college core academic courses. This ability mirrored one of the high school reform issues as discussed by Karp et al. (2004) and Michelau (2001), and is important because it helped build the confidence of high school students.

MWMC students and their parents spent time describing how becoming a college student while still enrolled in high school helped with the transition between the two educational levels. Students described that their increased levels of confidence helped them feel ready to begin making this transition, and that their motivation levels were already high before enrolling in MWMC. The classroom experiences of the students were generally positive, but even when the students did not perform well in a class, they agreed that it was better to learn from the experience at this point instead of later during full-time college enrollment. Dealing with the logistics of attending three different campuses in one semester was the main challenge noted by parents and students. This group supported expanding the program, and suggested developing a mentor-led support group in which every student would participate.

Participants in all three cases generally agreed that the middle college concept helped students to understand more about the college environment. The students who enrolled in MWMC were already motivated to do well in school, and were high performing in their high school courses. This small group was manageable with the

limited resources available to the faculty associated with MWMC, but some parents and students mentioned that expanding some of the support services would have made the experience even richer.

CHAPTER 5 – DISCUSSION

This chapter synthesizes the data described in Chapter 4. In order to disclose all involvement the author had in the MWMC Pilot Project, section one provides a detailed description of all these aspects. The second section describes study results in relation to design principles created by the Middle College National Consortium (MCNC). The third section speaks to the three main research questions that were proposed and addressed in this study, and the MCNC design principles are discussed and further incorporated into results from all three embedded cases. Areas for future research into middle colleges are included in the fourth section at the conclusion of the chapter. In Figure 2, I show a flow chart relating the research questions and sub-themes discussed in Chapter 4, and in the second, third, and fourth sections of this chapter. Data related to research questions were gathered into sub-themes where appropriate, then these sub-themes were further analyzed and interpreted using the MCNC Principles, and finally grouped into four main themes. Following all data interpretation, recommendations for the project were developed.

Researcher Involvement in MWMC

As I stated in Chapter 3, I was greatly involved in the planning and operation of MWMC at throughout the project. This had two main effects on my views into the research described in this study. First, I had a deep understanding of why certain decisions were made, and I saw how those decisions led to consequences with regard to the project. Second, my relationship with the first-year MWMC students probably

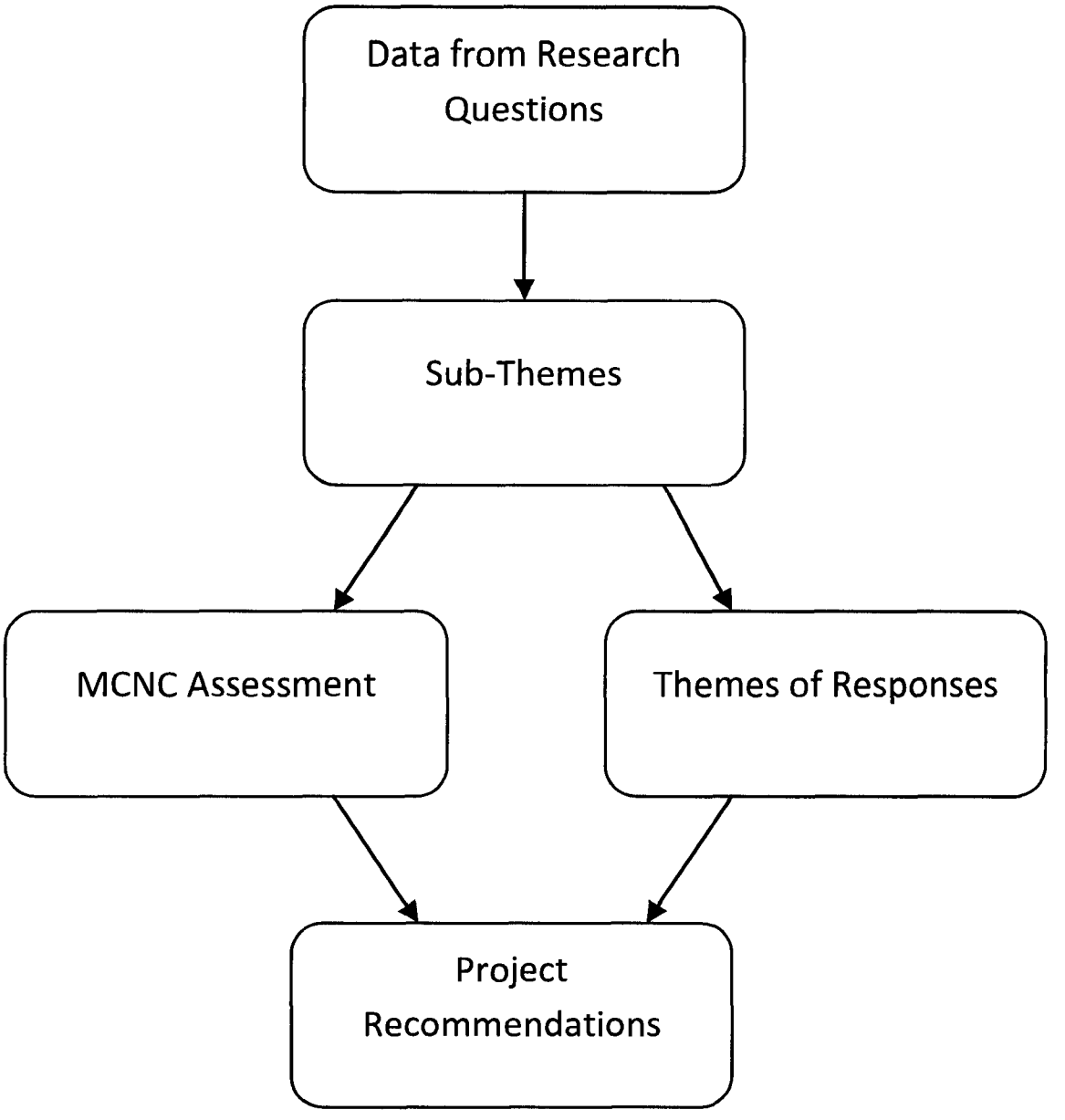

Figure 2: Flowchart showing relation between data analysis steps.

resulted in those students being more willing to be interviewed for this study. While a connection this close to a project can result in strong biases, I believe that in this case, the connections resulted in a more detailed study than would otherwise have been possible.

Rice and Ezzy (1999) provided this definition of reflexivity, which pertains well to my involvement in this research: "An acknowledgement of the role and influence of the researcher on the research project. The role of the researcher is subject to the same critical analysis and scrutiny as the research itself." Additionally, Reinharz (1997) notes that a critical step researchers must take to understand the study topic is to be aware of the effects of the research on the research subjects. This awareness can be used to enhance researcher understanding of the interview subjects and their stories, and can help find deeper meaning in those stories (Carolan, 2003; Koch, 1994).

My role in the MWMC Pilot Project started three years before this research study began. As a dedicated member of the planning committees, one of my goals was to help create an educational opportunity for Harris Tech students. A factor that worked in my favor as a researcher was the time that elapsed between the main work to plan and operate the project, and when most of the data collection in this study was completed. While the state, district, and school administrators still remembered that I worked with them on this project, they had all reflected on the efficacy and efficiency of their own work related to MWMC. By the time I collected the data, most of these people were ready and willing to share both their positive and negative views of MWMC. They may have felt my involvement in the middle college gave credence to my research, and perhaps they were able to speak more openly about details they may not have otherwise felt secure explaining.

My close involvement with the students of MWMC undoubtedly had some effect on the data I was able to collect during the interviews. Being familiar to the students allowed them to feel more comfortable during the interviews, which most likely helped me hear stories they would not have told another, unfamiliar researcher. However, the students may also have been more positive in the interviews, since they probably remembered that I had spent a great deal of time working on the project. Overall, my impression was that the students appreciated having someone listen and value what they had to say about their experiences.

Looking back on the research process I undertook in this study, I realized that many of the people whom I interviewed and surveyed shared my reasons for doing the research. My top priority while working on MWMC was to provide opportunities for students to progress in their education. Without exception, this was the implied goal for all stakeholders. The main conflict was around how best to achieve that goal. A national collection of middle college educators wanted to provide guidance toward this, and the structure they created would have helped the MWMC designers, including me, address more of the necessities of this type of project.

Middle College Design Principles

In 2005, the Middle College National Consortium (MCNC) developed a set of six design principles for their member schools (Middle College National Consortium, 2005). The consortium members identified the power of the site, teaching and learning, student assessment, student support, democratic school government, and professional development as the major principles necessary for the successful creation and maintenance of a middle or early college.

Each of these principles can be thought of as analogous to one of the pillars supporting a passageway such as my representation of the Brandenburg Gate in Figure 3. In this analogy, every pillar is equally important to support the structure of the gate. The gate represents MWMC and its effect as a passageway between the secondary and postsecondary educational worlds. Continuing the analogy, each principle consists of a list of practices that MCNC determined middle colleges needed to address, and these practices were analogous to the bricks that made up the pillars. A specific pillar may have continued to stand missing a small number of bricks, but if too many were missing, the structural integrity would be significantly diminished. The existence or absence of each of these practices at MWMC was determined through the data described in Chapter 4, and is noted in the six tables below.

Principle One: Power of the Site

> *Locating schools on a college campus is integral to student motivation and success and to an enduring collaborative partnership. It is a visible symbol to the community of dual accountability for student outcomes and academic success. Students are treated as college students and see themselves as college completers.*

According to the MCNC, this principle has effects on student motivation by putting high school students in an environment where adult behavior is expected. Table 6 lists the "Effective Practices" identified as necessary to implement successfully this principle, and if it was implemented at MWMC.

As Figure 1 in Chapter 4 shows, MWMC staff did work together, to develop educational paths that helped students transition from high school to college. However, the two schools were always separate institutions, and did not work to develop any type of shared governance related to middle college students. This may have been due in part

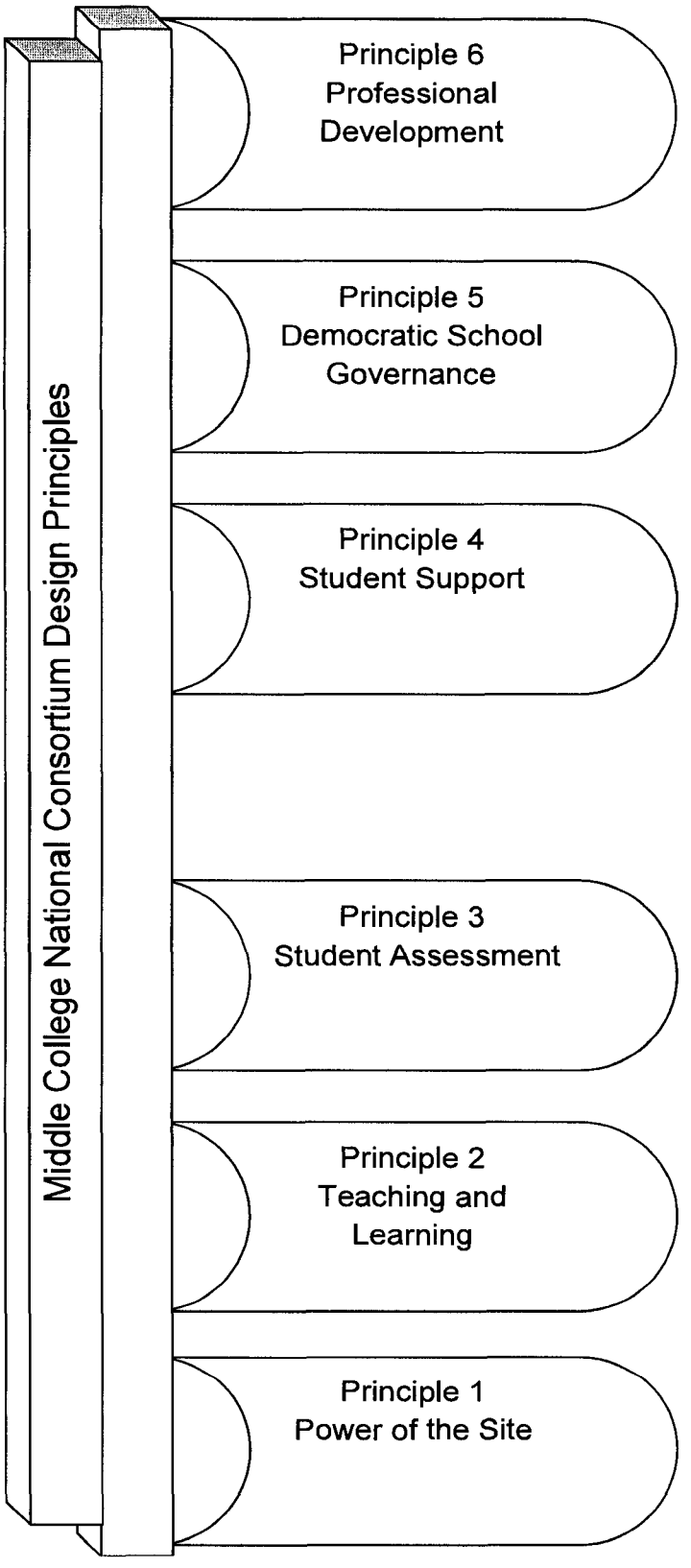

Figure 3: MCNC Design Principles represented as a gate. Each pillar consists of one of the six principles defined by MCNC.

Table 6

Power of the Site Effective Practices

MCNC Effective Practice	**Implemented at MWMC**
Locate on a college campus.	Yes
Integrate faculty and students.	Yes – curriculum mapping and planning committees
Share resources and facilities and coordinate schedules and calendars.	No
Integrate the high school in the college's governance structure.	No
Establish an on-going collaborative team of college and high school personnel.	Yes
Co-design a four or five-year academic path for all students that leads to a high school diploma and an Associate's Degree or two years of transferable college credits.	No
Designate a college faculty member as 'college liaison' to help the high school to smoothly transition its students into college.	Yes
Ensure priority enrollment in college classes for Middle College and Early College students.	No

to the limited extent of the pilot project, and may have changed as greater numbers of students enrolled in MWMC. Collaborative teams of faculty from both MWCC and Harris Tech continually worked together to design the project, although most of this work happened early in the project's timeline. The college liaison only worked one day per week throughout the academic year, who, as students and parents reported, only had time to provide a limited amount of help. Since students only enrolled in MWMC for one year, it did not include a four or five year plan for any of the students. However, the core academic courses were chosen to be those that would be guaranteed to transfer to four-year universities in Colorado.

Principle Two: Teaching and Learning

> *Developing students' literacy skills is critical to academic success. Schools regularly engage students in rigorous, in-depth academic work, use active intellectual inquiry and sustained writing and revision in all classes.*

The goal of principle two is to ensure enrolled students are experiencing a school that is constantly providing the best learning environment. This includes the following criteria set by the MCNC: "High standards are set for all students; learning is meaningful, engaging and celebrated; learning is real and connected to world experiences and students' lives; and school is organized to support in-depth learning within a diverse student community" (MCNC, 2005, p. 1). Table 7 compares the effective practices involved in successful teaching and learning at middle and early colleges as defined by MCNC, with what was developed and implemented at MWMC.

As shown in Table 7, some of the instructional practices used at MWMC were focused on student achievement, but several were missing. The first item in the table deals with making sure the students understand exactly what the expectations are once

Table 7

Teaching and Learning Effective Practices

MCNC Effective Practice	Implemented at MWMC
Establish and publicize high expectations and standards for students with regard to:	
1. Academics (e.g. local and state standards, graduation by exhibition/oral defense, admission to college, pass college courses)	1. No
2. Communication (written and oral)	2. No
3. Behavior (in classes, on campus)	3. No
Literacy is emphasized in all disciplines.	Not systemically
Readings are assigned and projects designed that connect to students' identities.	Only in CTE courses
Collaborative, student-centered, project-based, interdisciplinary curricula are implemented.	Only in CTE courses
Projects and assessments ask students to make meaning of knowledge, apply it and create or construct new knowledge.	Yes
Career oriented classes and internships help students build their own bridges between school and the world of work.	Yes
Community service promotes future volunteerism and is encouraged or required.	Not systemically
Students are comfortable using technology and a variety of media to gather information and present their learning.	Yes
Classes are small and heterogeneously grouped and class time is lengthened for in-depth, sustained learning.	Only in CTE courses

they become middle college students. These were not present in MWMC, which may have left some of the students who were not completely successful in the program feeling unsupported. Since MWMC focused on CTE students, practices addressing practical applications of curriculum and how class topics relate to careers were already built-in through the mission and vision of both Harris Tech and MWCC. The curriculum in nearly all CTE courses required extensive use of technology, which resulted in the students understanding how to use these methods effectively to demonstrate their learning. The CTE courses at Harris Tech met for at least three hours per day, which gave the teachers and students opportunities to study the curriculum in great depth. Academic courses at MWCC ranged in length from 1 hour per session, meeting three times per week, to three hours long, meeting once per week. Effects of the variations between schedules were not addressed in this research study.

Principle Three: Student Assessment

> *Schools design a system of assessment that provides multiple opportunities for students to publicly exhibit what they know and can do. Assessments grow out of classroom work and provide on-going feedback to the school community, the teacher, the student, and the parent on a student's progress toward achieving academic proficiency.*

Authentic assessment is critical to continuing the momentum of student achievement, according to the MCNC. All assessments should be "interwoven with classroom activities," be "measured using multiple assessments," and "inform school-based decisions" (MCNC, 2005, p. 3). Table 8 describes effective practices related to assessment, which were not addressed by any of the study participants. All of the MWMC data in Table 8 were based on document review and researcher observations.

Table 8

Student Assessment Effective Practices

MCNC Effective Practice	Implemented at MWMC
Projects and assignments are scaffolded, providing structure and support in progressive stages so that all students achieve at higher levels.	Only in CTE classes
Feedback and assessment are continuous and on-going.	Only in CTE classes
Assessment strategies include: portfolio presentations, oral defense, other forms of performance based assessment and local and state assessments.	Only in CTE classes
Assessment may be determined by individual teachers, peers, self, and local-state-national measures.	Yes
Qualitative and quantitative data is reviewed and used regularly to assess and modify pedagogy, school structures, and systems.	No

As Table 8 shows, CTE courses used many of the effective practices identified by MCNC. The assignments and assessments in these classes were designed by the teachers to address industry-defined standards and requirements, where possible, and were generally intended to be similar to tasks the students would encounter in the workplace. Most of the academic classes at MWCC operated in a more traditional manner. Teachers and administrators from the two institutions did not hold ongoing meetings to review teaching and assessment practices, although they did discuss some procedural issues. It followed from analysis of Tables 2 and 3 that the MWMC pilot project did not focus on changing instructional or assessment practices during the first two years. This may have been another result of the small scale of the project, which limited the time and resources available to the teachers and administrators at both institutions.

Principle Four: Student Support

> *"Smallness," less than 100 students per grade level, helps to create a learning community for students and teachers and provides opportunities for flexible and innovative structures to support students academically and emotionally. All students are known well not only because the school is small, but also because the school values and gives priority to small class size and extended time with a teacher both daily and over the course of the student's high school years.*

As MCNC (2005) described, keeping middle and early colleges at a size allowing every staff member to know every student created environments that supported students both academically and emotionally. While the size of the school is critical to this goal, the class schedule and structure of the school also need to be designed to encourage interpersonal relationships with all staff. Table 9 lists objectives to meet the goal of this principle.

Student support mechanisms were not developed as part of the MWMC planning process, as Table 9 shows. Most classes did consist of mixed-ability students, and the

Table 9

Student Support Effective Practices

MCNC Effective Practice	Implemented at MWMC
Adults see themselves as teacher-counselors.	Only in CTE classes
All administrators and teachers meet daily or weekly with the same small group of students (house/advisory/focus) for one to four years. Informal conversations cover academic and family, and social concerns.	No
Small learning communities are formed to enable a cluster of teachers to work with a group of students over an extended period of time.	No
Classes are small and meet for a lengthened period of time.	Only in CTE classes
Daily seminar for concurrently enrolled students helps them to 'unpack' college-level work and navigate college systems.	No
Mixed-ability student groupings and classes enable the academically 'stronger' to help the less prepared.	Yes
Counseling is structured for small groups as well as for individuals.	Yes
Peer mediation and conflict resolution are taught and used.	No
Parent-support groups meet to discuss teen rearing issues and challenges.	No
One-on-one mentoring helps students prepare for their graduation oral defense.	No

counseling services at MWCC used both individual and group settings. It is difficult to say whether using the practices listed in this principle would have helped students in the pilot project, but several of the students mentioned how a regularly scheduled seminar or counseling group would have been useful. With two exceptions, students involved in this study did well in their courses and with the process of transitioning to college, and these students may have experienced circumstances that a support group or mentor could not have addressed.

Principle Five: Democratic School Governance

> *Purposefully designed structures provide for everyone's voice to be heard and respected in the decision-making process with regard to hiring personnel, managing budgets, determining curriculum and pedagogy, developing students' activities and any other policies that affect the daily life of students and faculty.*

In contrast to the governance model most schools use, MCNC determined that a plan including the entire school community in decision-making is most beneficial to student achievement. Their reasons behind this included ensuring "issues of teaching and learning are at the center of a dialogue among entire school community" and "students and parents are empowered to participate in the life of the school and to have their voices heard in school-based and national forums" (MCNC, 2005, p. 5). The consortium also developed effective practices to help meet these goals, listed in Table 10.

As Table 10 shows, school governance practices did not change appreciably when MWCC and Harris Tech began working together on the middle college. Some of the practices identified in this principle were implemented at one of the institutions, but were not addressed within the structure of MWMC. Committees that were created to plan and implement MWMC operated through reaching consensus about most decisions. Other

Table 10

Democratic School Governance Effective Practices

MCNC Effective Practice	Implemented at MWMC
School committees (e.g. student activities, curriculum and assessment, personnel) include administrators, teachers, counselors, parents, students and college and community representatives.	No
School committees make recommendations; decisions are made by consensus.	Yes
A "Personnel Committee" assumes the responsibility for hiring, supporting, and assessing staff.	No
Teachers work in instructional teams, create program designs, develop curricula, and select classroom materials.	No
Collaborative relationships are developed with local educational unions.	No
Students are members of school governance committees.	No
Students are peer counselors, peer mediators and peer tutors.	No
Students represent their schools and discuss significant social issues with students from across the country at annual student conferences.	No

than this single exception, the practices listed in this principle were not met because the two institutions continued to operate separately.

Principle Six: Professional Development

> *Staff participates in on-going, embedded professional development that focuses on student success. Time during the school day is provided for staff development and the creation of learning communities. New teachers are mentored in order to help them to understand and to implement the goals of the community.*

Enabling all staff to support the professional growth of the entire school requires a commitment from every staff member, and a structure where dialog among professional learning communities is the norm. As described by MCNC (2005), implementing such a strategy requires the entire staff to understand:

> Schools are communities of reflective practice and continuous learning; professional development and growth is expected of all adults; regularly scheduled, sustained professional development enables adults to model learning communities for students; and feedback and refinement of practice is the responsibility of all members of the school community. (p. 3)

Developing such a strong belief system within a middle or early college is best met through use of the effective practices listed in Table 11, according to MCNC.

Half of these practices were apparent at MWMC during the study, at least at the two individual institutions. Both MWCC and Harris Tech faculty members had regularly scheduled time to work together on professional development activities that were developed by the faculty at each school. The schools did not have any systemic, collaborative professional development, which resulted in practices that were not focused on the improvement of the middle college project. Examples of student work were generally not shared among faculty at the individual institutions, and were almost never shared with peers at the other school. Faculty members were supported in traveling to conferences, and the information they gathered was shared to other faculty within the

Table 11

Professional Development Effective Practices

MCNC Effective Practice	Implemented at MWMC
Schools participate in the Middle College National Consortium Critical Friends Review that focuses on goals established by the school.	No
Professional development goals are set by the school staff.	Yes – individual institutions
Meeting time for small, professional teacher groups is built into the school's schedule and occurs daily or weekly.	Yes – individual institutions
Faculty regularly review and give feedback to each other with regard to teacher constructed class projects, assignments and assessment tools.	No
Faculty members regularly share samples of student work and seek feedback from their colleagues.	No
Faculty members attend local and national conferences, make presentations and bring back new strategies and information to the school community	Yes

individual school. No sharing of this type of new knowledge was shared with the partner institution in MWMC.

Summary of Design Principles

Of the six MCNC design principles, the MWMC pilot project addressed the first principle most completely. The practices in this principle were the easiest to implement for MWMC due to the physical location of the two schools, and the pre-existing relationships between faculty members. Most of the practices in the other five principles dealt with issues that were more difficult to execute, and most were not discussed during MWMC planning and steering committee meetings. As the next section of this chapter shows, many of the concerns the project stakeholders identified could be attributed to these missing pieces.

Review of Responses to Research Questions

This research study centered around three major research questions. The first question addressed the planning and implementation process. The second question discussed MWMC in relation to high school reform issues, and the third question looked at how well MWMC helped prepare students for college. This section discusses each of these questions in relation to the six MCNC design principles.

How can the MWMC planning and implementation process be described?

Project Funding

The main theme consistent among all district and state level administrators described in Embedded Case I was the challenge of securing funds to operate middle colleges. In the case of MWMC, a MWCC-funded grant paid the costs of first year tuition and books. Second year students did not have this support, and were required to

pay the full costs related to their college courses. Even without direct support from districts, the data also showed that state level administrators reported programs of this type were probably going to be sustainable in the near future.

Colorado Legislators passed a bill in 2007 providing state funding for students to obtain both an Associate's degree and a high school diploma within five years of high school (Colorado General Assembly, 2007). This was similar to the middle college model in that public school funds paid for community college classes. However, it did not provide for the support and community that successful middle colleges used to support student success.

Staffing and Support

A topic mentioned by the HCSD administrator, the students, and the parents was the need for greater student support in the form of a dedicated MWMC staff member. This was also addressed in MCNC Design Principle 1, Power of the Site. During the two years of MWMC operation studied in this report, one person working four hours per week covered the jobs of liaison between MWCC and Harris Tech, student support, and course registration counselor. Students and parents suggested hiring a person to work full-time at Harris Tech who could facilitate student support groups in a "homeroom" atmosphere. In addition to being one of the MCNC Design Principles, this is also similar to what is in place at many other middle colleges throughout the country (Board of Governors, California Community Colleges, 1993; Borsuk & Vest, 2002; Brand, 2004; Chen et al., 2000; Houston et al., 1992; Lang-Jolliff, 2003). None of the students who had trouble in the college courses thought this would have helped them pass the courses,

but they did say the increased interaction with such a counselor might have kept them out of the higher-level courses to begin with.

Curriculum Mapping

Successful completion of the curriculum mapping process is a critical step toward middle college success, especially when student achievement and academic rigor are the highest priorities (e.g. Andrews, 2000; Catron, 2001; Crist et al., 2002; Education Commission of the States, 2001; Gaskin et al., 2003; Nunley et al., 2000). MCNC Design Principles 1, 2, and 3 also addressed this topic, and the implementation of these principles at MWMC had mixed results. Many of the MWMC faculty and administrative stakeholders agreed this was one of the most beneficial aspects of the project planning process. One of these benefits was the increased communication between HCSD and MWCC faculty. Initially, this occurred between administrators, and once the planning for MWMC was well underway, academic faculty completed a great deal of the curriculum mapping work. English/Language Arts and mathematics courses were the first to align, and members of both institutions voiced hope about continuing the dialog in subsequent years.

The long conversations between faculty members from both HCSD and MWCC resulted in a realization about the large numbers of similarities and strengths in the relationship. Indirect effects of the mapping included partial elimination of the hierarchical perception prevalent between faculty from high schools and community colleges and development of a greater understanding of the curriculum requirements necessary to be successful in both institutions.

Student Selection Process

Selecting the correct students to enroll in MWMC was one of the critical steps of the project, and several reports stressed its importance in this type of program (American Institutes for Research and SRI International, 2005; Brotherton, 2003; Corallo et al., 2002; Cunningham & Wagonlander, 2000). The student selection process was well defined by the selection committee, but not clearly articulated to other Harris Tech and MWCC staff. The lack of implementation of integrated school governance practices listed in MCNC Principle 5, Democratic School Governance, may have contributed to the feelings of these faculty members.

A challenge that arose before and during the selection of MWMC students was the feeling that Harris Tech faculty needed a better understanding of what type of student to nominate. This information would help teachers choose appropriate students, and would ultimately lead to enrolled students who have the best chance of succeeding in the college environment. The process did address the MWMC goal of increasing student self-confidence simply by nominating each student. When a Harris Tech administrator personally delivered the nomination letter to each student, the students seemed proud to have their accomplishments noticed.

Accuplacer scores contributed significantly to the selection process. Students were required to arrange a time to take the test at MWCC and to bring the placement scores to the interview. In many cases, the test scores were higher than the students expected, which also gave those students confidence about their ability to succeed in college coursework. The students who did not receive high test scores were generally not surprised, and had very realistic attitudes and expectations about their current academic

abilities. These exam scores provided pre-enrollment data for the MWMC administration, but no data were collected at the end of the students' tenure in the project, so analysis of student growth based on Accuplacer scores was not possible.

How does the middle college concept fit into high school reform programs?

Secondary School Reform

At the time of this study, many school districts were looking at ways to address secondary school reform needs. As noted in Chapter 3, several strategies were implemented around the country to reach this goal, such as matching graduation requirements with new college entrance requirements (Cohen, 2001; National Governors Association, 2003), searching for new methods to engage students in education (Cohen, 2001), and integrating secondary and postsecondary programs (Brand 2003; Maxwell, 2001). These strategies were also present in all of the MCNC Principles discussed earlier. In successful examples, student motivation stayed high during the senior year (Cabrera & La Nasa, 2000b; Gladieux & Swail. 2000), and remedial coursework requirements were diminished upon postsecondary enrollment (Bailey & Karp, 2003).

HCSD and Colorado state level administrators were looking for ways to connect with students at an earlier stage. Keeping a P-20 perspective was seen as one of the best ways to accomplish this. From the district viewpoint, preparing all students to continue their education following high school graduation provided a mechanism to meet many federal, state, and local goals for schools and student achievement. As Chapter 4 and MCNC Principle 1 showed, the MWMC project addressed this goal by facilitating cross-institutional conversations between Harris Tech and MWCC faculty involved in project

planning and curriculum mapping. These dialogs allowed involved staff to gain a better understanding of the other institution's perspective.

Cooperation Toward a Goal

The HCSD, CCCS, and MWCC administrators all discussed the deliberate choice to begin the middle college project with CTE students. Three of the main reasons stated for the CTE focused middle college were to introduce the importance of college to CTE students, to give the students a positive first experience with college coursework, and to provide an incentive to continue education beyond high school. As noted earlier, MWCC and Harris Tech had a strong relationship prior to MWMC planning, and the middle college built upon this strength. Two distinct instances in the data demonstrated this accomplishment. First, the students reportedly gained a great deal of self-confidence in their ability to succeed in college level work, and second, MWMC students earned 71 credits in their MWCC core courses during the first academic year.

Although MWMC students reported mostly positive results from the middle college experience, some MWCC faculty said they did not have a good understanding of the mission or goals of the project. Being unaware of these issues may have hindered their effectiveness in working with the middle college students, since faculty members were unsure what support mechanisms were needed, as discussed above in MCNC Principle 4. This was also reflected in MCNC Principle 1, in that the two institutions did not work together to the extent necessary to share resources or coordinate schedules, and in Principle 2, since there were few changes in teaching methodology. Collaborating on topics such as these may have helped faculty members at both Harris Tech and MWCC understand how much cooperative work was necessary to implement the project. MWCC

faculty also reported the desire to create a mechanism to share student successes related to the MWMC goals and mission. This type of community sharing is prevalent in other middle colleges, and helps create a supportive environment for the students' first college experience (Carnevale & Desrochers, 2003; Conklin, 1996; Conley, 2003).

Did MWMC have an effect on preparing students for college?

Participants

The students and parents of the 2004 - 2005 class of MWMC students were generally willing to participate in this study, with seven out of the sixteen students and their parents responding to my requests for interviews or survey completion. A scholarship fund at MWCC paid for all tuition and required books for this group, which may have engendered a positive outlook toward the experience. In addition, as Figure 1a in Chapter 4 showed, MWCC and Harris Tech faculty and administrators spent a significant amount of time planning and implementing MWMC during that academic year. This amount of energy devoted to a successful start to the project seemed to have a positive effect on the type and motivation of the students selected and enrolled.

In contrast, the parent and student groups from the 2005 - 2006 academic year were much less interested in participating in this research project, with only three of the ten parents willing to join the research, and no students agreeing to be interviewed. During that school year, MWMC faculty gave much less effort to the project, as was shown in Figure 1b in Chapter 4. It also seemed the Harris Tech teachers remained unclear about the goal and vision of the middle college during this school year, and thus continued to be uncertain about what type of student to nominate for MWMC enrollment.

Experiences

The overwhelming reason students and parents gave to explain their participation in MWMC was to earn academic core college credit while still in high school. In addition to putting the students ahead of the standard college degree path, this benefit addressed several of the other reasons students voiced about their interest in middle college. Many said they were ready to move beyond high school, and to challenge themselves in courses that had a direct impact on their educational plans. Students reported six additional benefits they received because of their enrollment in MWMC and these were consistent with selected publications in the literature, as noted:

1. Received extra support and training for college (e.g. Bragg, 2001).
2. Liked MWMC better than high school (e.g. Asquith, 2002; Cunningham & Wagonlander, 2000; Lords, 2000; Wechsler, 2001).
3. Gained confidence to succeed in college by participating in college classes (e.g. Bailey & Karp, 2003).
4. Gained knowledge of college expectations (e.g. Bailey & Karp, 2003; Bailey et al., 2002; Lieberman, 1998; Palmer, 2000).
5. Maintained high level of motivation during senior year (e.g. Cabrera & La Nasa, 2000b; Gladieux & Swail. 2000).
6. Obtained greater focus on academic performance (e.g. Crist et al., 2002).

These six benefits also led to indirect advantages for the students, such as being in a different social and educational environment, and the opportunity to explore career choices while earning both high school and college credit. None of the students

interviewed reported a change in perception or expectations regarding college attendance after high school.

Students and their parents reported many differences between college classes and high school classes, each of which served to better prepare MWMC students for postsecondary coursework. Foremost of the differences was the increased level of responsibility required to succeed in the college level classes. This was a significant change to some students, as they were able to complete high school coursework without a significant amount of effort. However, the same students said they were more motivated to do well in at MWCC, since the atmosphere in each class was more conducive to learning than that in high school (e.g. Andrews, 2004; Brand, 2004). These high school students reported this change was due to the presence of adult students in the class, and implied the cost of college courses seemed to provide external motivation for traditional MWCC students.

Generally, the students did not report much effect from MWMC in their decisions to attend college after high school. As noted above, it did serve to reinforce the educational plans of the students, and provided a situation that improved their levels of self-confidence, similar to the description in Hugo (2001). Parents mentioned the benefit of the higher levels of engagement that community college instructors exhibited.

Students addressed their personal needs in ways similar to their educational needs. MWMC students learned to self-advocate both in their college classes and at their home high school. Senior year activities such as prom, pictures for yearbooks, and graduation assemblies were important to the students, and keeping in contact with counselors who could provide the necessary information took significant effort.

Additionally, students noted the increased teamwork required in MWCC classes. Since this was a change from the high school learning environment, they learned to work with diverse age groups both in and out of class. Parents reported noting these expectations and increased demands on students through improved study habits and more mature behavior with regard to schoolwork.

Both students and parents reported challenges related to the experiences in MWMC. If a student was required to enroll in classes at three schools, logistical obstacles were more likely to affect school performance. One student in particular needed to commute between the three school sites and a job via public transportation, which took several hours every day. Another challenge surfaced when a few students reported feeling intimidated to speak up and ask for help at either MWCC or Harris Tech. This was in contrast to the feelings of increased self-advocacy noted earlier. Two more themes emerged during the investigation of two students who had troubles in classes. The first of these themes related to a decreased level of motivation during senior year of high school, and the second was due to a discrepancy between ACT and Accuplacer scores. In these cases, however, both the students and their parents reportedly understood why the coursework was not successful.

Stakeholder Recommendations

Recommendations made by students and parents for future years of MWMC were all positive. Parents asked for increased marketing of the program and voiced the need for additional faculty involvement at both Harris Tech and MWCC. Students asked for increased course offerings, and for regularly scheduled peer group meetings to talk about college and work on assignments. Both groups mentioned the need to increase the

number of courses available for transfer to four-year colleges (e.g. Husted & Cavlluzzo, 2001).

Project Recommendations

Combining the MCNC Design Principles and the discussions about the state, district, institutional, and personal perspectives, it became apparent that many of the bricks supporting each pillar in the gate were missing from the MWMC Pilot Project. Summarizing the practices consistent among the missing bricks produced these five themes:

1. State-level structures to finance middle college programs were missing or were contradictory, resulting in a lack of available funds.
2. The mission and goals of the program were not clearly defined, which contributed to the lack of effective communication between institutions.
3. MWMC governance was not collaborative between Harris Tech and MWCC.
4. The student selection process was not explicitly delineated.
5. A formalized, ongoing student support structure was not provided.

While the MWMC Pilot Project successfully engaged twenty-six students over two academic years, it appears that these five distinct factors restricted the potential for long-term success of the project. Each of these factors was reflected in at least one of the pillars of the project, and each was equally important to the project's structure. Overall, the MWMC students were successful and saw great value in the project despite the missing programmatic pieces, which shows that a middle college of this type can be a valuable expenditure of institutional resources.

Future Research

As Baker and Velez (1996) recommended, longitudinal studies of the long-term effects of middle college enrollment are needed to evaluate these programs more fully. Beginning the data collection process just after students enroll in a middle college program and following them through high school and any college would provide an opportunity to compare college enrollment rates, performance in college, and college completion rates with students who did not take part in a similar program. It would also allow a deeper understanding of why they made their choices about education and careers. Additionally, comparing the results of this research with other CTE-based middle colleges would allow further refinement of the application of the MCNC principles to the needs of secondary CTE students.

A broad-based study of all middle/early colleges in Colorado is also missing. Since the state is introducing legislation that addresses these types of transitional programs, developing a research program that compares program success before and after the legislation would help show the effectiveness of newly enacted state plans. This would help new programs with the planning and implementation phase, and existing programs would benefit from information other schools could provide.

More generally, Bragg, Kim, and Rubin (2005) suggested the need for more quantitative studies about the effects of PSEO programs. These transitional programs are becoming widespread throughout the country, and are seen as significant pieces of the solution to needs defined by secondary school reform. Providing evidence regarding the effectiveness of these projects will help determine if the goals are being met, and will

help more school districts decide if these types of models will work for their student populations.

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APPENDICES

Appendix A: Interview and Survey Questions

Questions for HCSD administrators, CDE and CCCS administrators:

1) How well do the goals of middle colleges match the goals of high school reform, given these goals of middle college programs:
   a. to get students involved in college level work as soon as possible to show they were capable of operating at this educational level
   b. to give students support during the critical first two years of postsecondary coursework
   c. to keep students in school to receive their high school diploma
   d. to encourage CTE students to consider attending college
2) What have been the successes in implementing and operating middle colleges with respect to high school reform issues?
3) What have been the challenges in implementing and operating middle colleges with respect to high school reform issues?
4) What support is available for middle college programs?
5) Is there any other information you would like to add relating to middle colleges?

Questions for MWCC and Harris Tech faculty:

1) How were Harris Tech students selected to enroll in MWMC?
2) How were Harris Tech and MWCC faculty prepared to work with the middle college students?
3) What methods were used to facilitate communication between Harris Tech and MWCC staff?
4) How did the program alter the institutional relationship between Harris Tech and MWCC?
5) What process was used to align HCSD and MWCC curricula?
6) How did the curriculum alignment process help student transition between high school and college?
7) What challenges arose during and because of the curriculum alignment process?
8) What changes could have been made to the planning process that would have improved the implementation of the program?
9) What other thoughts do you have about MWMC?

Questions for MWMC students and their parents:

1) Why did you enroll in the pilot project of MWMC?
2) How many college credits did the MWMC students earn?
3) What were the differences between community college classes and high school classes?
4) How well did the courses you took through MWMC meet your educational needs?
5) In what ways was MWMC different socially from high school?
6) What effect did MWMC have on your educational goals?
7) What would you say were some of your successes during your time spent in MWMC?
8) What were some of the difficult things you experienced during your time spent in MWMC?
9) Do you think you were more motivated for college because you were in MWMC?
10) Did your experience in MWMC affect your choice about enrolling in college?
11) How did your MWMC experience affect your first year of college after high school?
12) What recommendations do you have for improving MWMC?
13) What other thoughts do you have about MWMC?

Appendix B: Administrator Interview Consent Form

Consent to Participate in a Research Study
Colorado State University

TITLE OF STUDY: **Metro West Middle College Pilot Project: An Embedded Case Study**

PRINCIPAL INVESTIGATOR: Dr. Leonard Albright, School of Education, Colorado State University, Fort Collins, CO 80523 (970) 491-1172

CO-PRINCIPAL INVESTIGATOR: Arlie Huffman, School of Education, Colorado State University, Fort Collins, CO 80523 (303) 982-8560

WHY AM I BEING INVITED TO TAKE PART IN THIS RESEARCH?
You are being asked to participate in this study because you participated in the planning and implementation of the Metro West Middle College (MWMC) pilot project. Your experiences during these phases of MWMC are important to us as we investigate the effectiveness of the middle college pilot project.

WHO IS DOING THE STUDY?
The researchers are associated with the School of Education at Colorado State University, and the Co-Principal Investigator is an employee of Jefferson County Public Schools.

WHAT IS THE PURPOSE OF THIS STUDY?
The purpose of this investigation is to study how well MWMC prepared students to transition into college. This information will be used to improve way the middle college is operated, and to help guide future MWMC students.

WHAT WILL I BE ASKED TO DO?
You are being asked to participate in a 45 – 60 minute interview with one of the researchers. The interview will be recorded and the researcher may take notes. Recordings and notes will be transcribed verbatim, and your identity will be replaced with a pseudonym in the transcription documents and will not be recorded elsewhere. Following the interview transcription, you will have the opportunity to review the researcher's interpretation of what was said.

WHAT ARE THE POSSIBLE RISKS AND DISCOMFORTS?
If at any time you are uncomfortable with a question, you may refuse to answer.
The only risk to you is if your identity would be revealed. However, your name will not be recorded with your interview responses, so this would be very unlikely.
It is not possible to identify all potential risks in research procedures, but the researcher(s) have taken reasonable safeguards to minimize any other known and potential, but unknown, risks.

ARE THERE ANY BENEFITS FROM TAKING PART IN THIS STUDY?

There is no known immediate benefit to you as an individual participant in this study, but we hope you will gain a greater understanding about what motivates Career and Technical Education students to succeed in college, and you will receive an executive summary of the study when it is complete. The survey process may result in an opportunity for you to review and report the successes and challenges you encountered. Your information may also benefit students in middle colleges.

DO I HAVE TO TAKE PART IN THE STUDY?
Your participation in this research is voluntary. If you decide to participate in the study, you may withdraw your consent and stop participating at any time without penalty or loss of benefits to which you are otherwise entitled.

WHAT WILL IT COST ME TO PARTICIPATE?
There is no cost for you to participate in the study.

WHO WILL SEE THE INFORMATION THAT I GIVE?
We will keep private all research records that identify you, to the extent allowed by law.

Your information will be combined with information from other people taking part in the study. When we write about the study to share it with other researchers, we will write about the combined information we have gathered. You will not be identified in these written materials. We may publish the results of this study; however, we will keep you name and other identifying information private.

We will make every effort to prevent anyone who is not on the research team from knowing that you gave us information, or what that information is. For example, your name will be kept separate from your research records and these two things will be stored in different places under lock and key. You should know, however, that there are some circumstances in which we may have to show your information to other people. For example, the law may require us to show your information to a court.

WILL I RECEIVE ANY COMPENSATION FOR TAKING PART IN THIS STUDY?
You will not receive any compensation for taking part in this study.

WHAT HAPPENS IF I AM INJURED BECAUSE OF THE RESEARCH?
The Colorado Governmental Immunity Act determines and may limit Colorado State University's legal responsibility if an injury happens because of this study. Claims against the University must be filed within 180 days of the injury.

WHAT IF I HAVE QUESTIONS?
Before you decide whether to accept this invitation to take part in the study, please ask any questions that might come to mind now. Later, if you have questions about the study, you can contact the co-investigator, Arlie Huffman at (303) 982-8560. If you have any questions about your rights as a volunteer in this research, contact Janell Meldrem,

Human Research Administrator at (970) 491-1655. We will give you a copy of this consent form to take with you.

Your signature acknowledges that you have read the information stated and willingly sign this consent form. Your signature also acknowledges that you have received, on the date signed, a copy of this document containing _2__ pages.

_____ _____

Signature of person agreeing to take part in the study Date

_____

Printed name of person agreeing to take part in the study

_____ _____

Name of person providing information to participant Date

_____

Signature of Research Staff

Appendix C: Administrator Survey Consent Form

Consent to Participate in a Research Study
Colorado State University

TITLE OF STUDY: **Metro West Middle College Pilot Project: An Embedded Case Study**

PRINCIPAL INVESTIGATOR: Dr. Leonard Albright, School of Education, Colorado State University, Fort Collins, CO 80523 (970) 491-1172

CO-PRINCIPAL INVESTIGATOR: Arlie Huffman, School of Education, Colorado State University, Fort Collins, CO 80523 (303) 982-8560

WHY AM I BEING INVITED TO TAKE PART IN THIS RESEARCH?
You are being asked to participate in this study because you participated in the planning and implementation of the Metro West Middle College (MWMC) pilot project. Your experiences during these phases of MWMC are important to us as we investigate the effectiveness of the middle college pilot project.

WHO IS DOING THE STUDY?
The researchers are associated with the School of Education at Colorado State University, and the Co-Principal Investigator is an employee of Jefferson County Public Schools.

WHAT IS THE PURPOSE OF THIS STUDY?
The purpose of this investigation is to study how well MWMC prepared students to transition into college. This information will be used to improve way the middle college is operated, and to help guide future MWMC students.

WHAT WILL I BE ASKED TO DO?
You are being asked to complete a 15 – 30 minute on-line survey. Your survey answers will be completely anonymous, and there is no way for the researchers to associate any responses with individuals.

WHAT ARE THE POSSIBLE RISKS AND DISCOMFORTS?
If at any time you are uncomfortable with a question, you may refuse to answer.
The only risk to you is if your identity would be revealed. However, your name will not be recorded with your survey responses, so this would be very unlikely.
It is not possible to identify all potential risks in research procedures, but the researcher(s) have taken reasonable safeguards to minimize any other known and potential, but unknown, risks.

ARE THERE ANY BENEFITS FROM TAKING PART IN THIS STUDY?
There is no known immediate benefit to you as an individual participant in this study, but we hope you will gain a greater understanding about what motivates Career and Technical Education students to succeed in college, and you will receive an executive summary of the study when it is complete. The survey process may result in an

opportunity for you to review and report the successes and challenges you encountered. Your information may also benefit students in middle colleges.

DO I HAVE TO TAKE PART IN THE STUDY?
Your participation in this research is voluntary. If you decide to participate in the study, you may withdraw your consent and stop participating at any time without penalty or loss of benefits to which you are otherwise entitled.

WHAT WILL IT COST ME TO PARTICIPATE?
There is no cost for you to participate in the study.

WHO WILL SEE THE INFORMATION THAT I GIVE?
We will keep private all research records that identify you, to the extent allowed by law.

Your information will be combined with information from other people taking part in the study. When we write about the study to share it with other researchers, we will write about the combined information we have gathered. You will not be identified in these written materials. We may publish the results of this study; however, we will keep you name and other identifying information private.

We will make every effort to prevent anyone who is not on the research team from knowing that you gave us information, or what that information is. For example, your name will be kept separate from your research records and these two things will be stored in different places under lock and key. You should know, however, that there are some circumstances in which we may have to show your information to other people. For example, the law may require us to show your information to a court.

WILL I RECEIVE ANY COMPENSATION FOR TAKING PART IN THIS STUDY?
You will not receive any compensation for taking part in this study.

WHAT HAPPENS IF I AM INJURED BECAUSE OF THE RESEARCH?
The Colorado Governmental Immunity Act determines and may limit Colorado State University's legal responsibility if an injury happens because of this study. Claims against the University must be filed within 180 days of the injury.

WHAT IF I HAVE QUESTIONS?
Before you decide whether to accept this invitation to take part in the study, please ask any questions that might come to mind now. Later, if you have questions about the study, you can contact the co-investigator, Arlie Huffman at (303) 982-8560. If you have any questions about your rights as a volunteer in this research, contact Janell Meldrem, Human Research Administrator at (970) 491-1655. We will give you a copy of this consent form to take with you.

Your signature acknowledges that you have read the information stated and willingly sign this consent form. Your signature also acknowledges that you have received, on the date signed, a copy of this document containing _2__ pages.

_____ _____

Signature of person agreeing to take part in the study Date

_____

Printed name of person agreeing to take part in the study

_____ _____

Name of person providing information to participant Date

_____

Signature of Research Staff

Appendix D: Parent Survey Consent Form

Consent to Participate in a Research Study
Colorado State University

TITLE OF STUDY: **Metro West Middle College Pilot Project: An Embedded Case Study**

PRINCIPAL INVESTIGATOR: Dr. Leonard Albright, School of Education, Colorado State University, Fort Collins, CO 80523 (970) 491-1172

CO-PRINCIPAL INVESTIGATOR: Arlie Huffman, School of Education, Colorado State University, Fort Collins, CO 80523 (303) 982-8560

WHY AM I BEING INVITED TO TAKE PART IN THIS RESEARCH?
You are being asked to participate in this study because you are a parent of a former Metro West Middle College student. Your experiences during and after your child's time in MWMC are important to us as we investigate the effectiveness of the middle college pilot project.

WHO IS DOING THE STUDY?
The researchers are associated with the School of Education at Colorado State University, and the Co-Principal Investigator is an employee of Jefferson County Public Schools.

WHAT IS THE PURPOSE OF THIS STUDY?
The purpose of this investigation is to study how well MWMC prepared students to transition into college. This information will be used to improve way the middle college is operated, and to help guide future MWMC students.

WHAT WILL I BE ASKED TO DO?
You are being asked to complete a 15 – 30 minute on-line survey. Your survey answers will be completely anonymous, and there is no way for the researchers to associate any responses with individuals.

You are also being asked to provide permission for the release of your student's ACT scores, high school transcripts, student grades, and MWMC application materials to the researchers. These will be combined with all other data from MWMC students in your student's class, and information from individual students will not be reported.

WHAT ARE THE POSSIBLE RISKS AND DISCOMFORTS?
If at any time you are uncomfortable with a question, you may refuse to answer.
The only risk to you is if your identity would be revealed. However, your name will not be recorded with your survey responses, so this would be very unlikely.
It is not possible to identify all potential risks in research procedures, but the researcher(s) have taken reasonable safeguards to minimize any other known and potential, but unknown, risks.

ARE THERE ANY BENEFITS FROM TAKING PART IN THIS STUDY?
There is no known immediate benefit to you as an individual participant in this study, but we hope you will gain a greater understanding about what motivates your child to succeed in college, and you will receive an executive summary of the study when it is complete. The survey process may result in an opportunity for you to review and report the successes and challenges your child has encountered. Your information may benefit other students in middle colleges.

DO I HAVE TO TAKE PART IN THE STUDY?
Your participation in this research is voluntary. If you decide to participate in the study, you may withdraw your consent and stop participating at any time without penalty or loss of benefits to which you are otherwise entitled.

WHAT WILL IT COST ME TO PARTICIPATE?
There is no cost for you to participate in the study.

WHO WILL SEE THE INFORMATION THAT I GIVE?
We will keep private all research records that identify you, to the extent allowed by law.

Your information will be combined with information from other people taking part in the study. When we write about the study to share it with other researchers, we will write about the combined information we have gathered. You will not be identified in these written materials. We may publish the results of this study; however, we will keep you name and other identifying information private.

We will make every effort to prevent anyone who is not on the research team from knowing that you gave us information, or what that information is. For example, your name will be kept separate from your research records and these two things will be stored in different places under lock and key. You should know, however, that there are some circumstances in which we may have to show your information to other people. For example, the law may require us to show your information to a court.

WILL I RECEIVE ANY COMPENSATION FOR TAKING PART IN THIS STUDY?
You will not receive any compensation for taking part in this study.

WHAT HAPPENS IF I AM INJURED BECAUSE OF THE RESEARCH?
The Colorado Governmental Immunity Act determines and may limit Colorado State University's legal responsibility if an injury happens because of this study. Claims against the University must be filed within 180 days of the injury.

WHAT IF I HAVE QUESTIONS?
Before you decide whether to accept this invitation to take part in the study, please ask any questions that might come to mind now. Later, if you have questions about the study, you can contact the co-investigator, Arlie Huffman at (303) 982-8560. If you have any questions about your rights as a volunteer in this research, contact Janell Meldrem,

Human Research Administrator at (970) 491-1655. We will give you a copy of this consent form to take with you.

Jefferson County Public Schools requires you to affirm that your signature acknowledges your agreement to release your student's ACT test scores, transcripts, grades, and your student's MWMC application materials to the researchers.

Your signature acknowledges that you have read the information stated and willingly sign this consent form. Your signature also acknowledges that you have received, on the date signed, a copy of this document containing _2_ pages.

_____ _____

Signature of person agreeing to take part in the study Date

_____

Printed name of person agreeing to take part in the study

_____ _____

Name of person providing information to participant Date

_____

Signature of Research Staff

Appendix F: Student Interview Consent Form

Consent to Participate in a Research Study
Colorado State University

TITLE OF STUDY: **Metro West Middle College Pilot Project: An Embedded Case Study**

PRINCIPAL INVESTIGATOR: Dr. Leonard Albright, School of Education, Colorado State University, Fort Collins, CO 80523 (970) 491-1172

CO-PRINCIPAL INVESTIGATOR: Arlie Huffman, School of Education, Colorado State University, Fort Collins, CO 80523 (303) 982-8560

WHY AM I BEING INVITED TO TAKE PART IN THIS RESEARCH?
You are being asked to participate in this study because you were a Metro West Middle College student. Your experiences during and after your time in MWMC are important to us as we investigate the effectiveness of the middle college pilot project.

WHO IS DOING THE STUDY?
The researchers are associated with the School of Education at Colorado State University, and the Co-Principal Investigator is an employee of Jefferson County Public Schools.

WHAT IS THE PURPOSE OF THIS STUDY?
The purpose of this investigation is to study how well MWMC prepared students to transition into college. This information will be used to improve way the middle college is operated, and to help guide future MWMC students.

WHAT WILL I BE ASKED TO DO?
You are being asked to participate in a 45 – 60 minute interview with one of the researchers. The interview will be recorded and the researcher may take notes. Recordings and notes will be transcribed verbatim, and your identity will be replaced with a pseudonym in the transcription documents and will not be recorded elsewhere. Following the interview transcription, you will have the opportunity to review the researcher's interpretation of what was said.

You are also being asked to provide permission for the release of your ACT scores, high school transcripts, student grades, and MWMC application materials to the researchers. These will be combined with all other data from MWMC students in your class, and information from individual students will not be reported.

WHAT ARE THE POSSIBLE RISKS AND DISCOMFORTS?
If at any time you are uncomfortable with a question, you may refuse to answer.
The only risk to you is if your identity would be revealed. However, your name will not be recorded with your interview responses, so this would be very unlikely.

It is not possible to identify all potential risks in research procedures, but the researcher(s) have taken reasonable safeguards to minimize any other known and potential, but unknown, risks.

ARE THERE ANY BENEFITS FROM TAKING PART IN THIS STUDY?
There is no known immediate benefit to you as an individual participant in this study, but we hope you will gain a greater understanding about what motivates you to succeed in college, and you will receive an executive summary of the study when it is complete. The interview process may result in an opportunity for you to review and report the successes and challenges you have encountered. Your information may benefit other students in middle colleges.

DO I HAVE TO TAKE PART IN THE STUDY?
Your participation in this research is voluntary. If you decide to participate in the study, you may withdraw your consent and stop participating at any time without penalty or loss of benefits to which you are otherwise entitled.

WHAT WILL IT COST ME TO PARTICIPATE?
There is no cost for you to participate in the study.

WHO WILL SEE THE INFORMATION THAT I GIVE?
We will keep private all research records that identify you, to the extent allowed by law.

Your information will be combined with information from other people taking part in the study. When we write about the study to share it with other researchers, we will write about the combined information we have gathered. You will not be identified in these written materials. We may publish the results of this study; however, we will keep you name and other identifying information private.

We will make every effort to prevent anyone who is not on the research team from knowing that you gave us information, or what that information is. For example, your name will be kept separate from your research records and these two things will be stored in different places under lock and key. You should know, however, that there are some circumstances in which we may have to show your information to other people. For example, the law may require us to show your information to a court.

WILL I RECEIVE ANY COMPENSATION FOR TAKING PART IN THIS STUDY?
You will not receive any compensation for taking part in this study.

WHAT HAPPENS IF I AM INJURED BECAUSE OF THE RESEARCH?
The Colorado Governmental Immunity Act determines and may limit Colorado State University's legal responsibility if an injury happens because of this study. Claims against the University must be filed within 180 days of the injury.

WHAT IF I HAVE QUESTIONS?

Before you decide whether to accept this invitation to take part in the study, please ask any questions that might come to mind now. Later, if you have questions about the study, you can contact the co-investigator, Arlie Huffman at (303) 982-8560. If you have any questions about your rights as a volunteer in this research, contact Janell Meldrem, Human Research Administrator at (970) 491-1655. We will give you a copy of this consent form to take with you.

Jefferson County Public Schools requires you to affirm that your signature acknowledges your agreement to release your ACT test scores, transcripts, grades, and your MWMC application materials to the researchers.

Your signature acknowledges that you have read the information stated and willingly sign this consent form. Your signature also acknowledges that you have received, on the date signed, a copy of this document containing _2_ pages.

_____ _____

Signature of person agreeing to take part in the study Date

_____

Printed name of person agreeing to take part in the study

_____ _____

Name of person providing information to participant Date

_____

Signature of Research Staff

Appendix G: Human Subjects Protocol Information

PART C. RESEARCH PROTOCOL:

I. PURPOSE, METHODS, AND PROCEDURES: Describe the following:

a. Purpose (will be used in assessing the risk/benefit ratio for subjects. The hypothesis to be tested may be listed.)

The purpose of this investigation is to study the effectiveness of the middle college model in preparing secondary students from Harris Tech, the Career and Technical Education (CTE) focused school in the Harris County Public School District (HCSD), to transition to postsecondary education. Since the empirical base for middle college programs is limited at this time, the research will make this determination for one specific middle college, Metro West Middle College (MWMC). This will be evaluated through the perspectives of students who participated in the program during the 2004 – 2005 and 2005 – 2006 school years and are no longer enrolled in MWMC, and contextualized by information from faculty and administrators at HCSD, Harris Tech, Metro West Community College (MWCC), the Colorado Department of Education (CDE), and the Colorado Community College System (CCCS). With respect to MWMC, this research will help identify how the program reinforced the importance of postsecondary education to CTE students and to the participating institutions MWCC and Harris Tech. Achieving this goal requires an understanding of how and why MWMC was created and implemented, and what the student perspectives were before enrolling in the program.

b. Research methods and procedures of the study. (It is OK to diagram complex designs. Please include information on the time commitment required for each activity.)

Data Collection Method	*What*	*Who*
Individual Interviews	45 – 60 minutes, semi-structured 45 – 60 minutes, semi-structured	1) First year MWMC students 2) HCSD, CDE, and CCCS administrators
Surveys	10 – 15 minutes, electronic questionnaire (www.surveymonkey.com)	1) Second year MWMC students 2) Parents of first and second year students 3) Harris Tech administrators 4) MWCC administrators 5) MWCC instructional faculty
Document Retrieval	1) Student educational data 2) Program descriptions 3) Curriculum alignment matrices 4) Student demographics 5) Time lines 6) Application packet	Researcher acquired
Field Notes	Informal dialog Interview notes	Researcher acquired

This study will use data from students who graduated from high school having completed at least one semester in MWMC, from the parents of these students, and from MWMC faculty and other school district and state level administrators. Interviews with former MWMC students will be used to investigate student perceptions of the middle college experience and to understand the educational benefits each student received from MWMC. Information from the interviews will be supported by archived student achievement data such as student grade point average, college placement test scores, and course grades routinely collected by Harris Tech and Metro West Community College (MWCC) staff

involved with MWMC. Harris Tech and MWCC administrators and MWCC faculty members will be asked to complete a survey including questions about the continuing operation of MWMC. A small group of administrators (a maximum of 7) from HCSD, the Colorado Department of Education, and the Colorado Community College System will also be interviewed regarding their views about how middle colleges address secondary school reform issues. Survey and interview questions are included in Appendix A.

c. Variables to be studied (what is being measured or examined).

- Student perceptions of the effectiveness of the middle college program
- Student high school and community college grades
- Administrator descriptions of the project planning and implementation process

d. Describe equipment used with subjects, if any.

Digital audio recording equipment will be used during interviews.

e. How will subject confidentiality or anonymity be maintained? If a linked list is used, list when it will be destroyed. Provide a sample of the code that will be used.

Surveys will be given in an online format, with each respondent answering the survey questions on a web site. The web site does not collect any information about the respondent, so the person remains anonymous. Interview subjects will be identified in the report only by membership in a particular group, such as K-12 administrator, community college instructor, or student. It may become necessary to provide more information, such as when comparing answers provided by a student currently attending a four-year university and another currently attending a

community college. In cases such as these, only general information will be provided, and individually identifiable information such as college names will be omitted.

f. Describe the consent process and method of consent to be used. (*signed consent, cover letter, other)*

A signed consent form will be collected from each interviewee and survey respondent (Appendices B through F). When a telephone interview must take place, a telephone consent form will be used (Appendices G and H).

g. How will research records be maintained during and upon completion of the project? (This may include audio or videotapes). Indicate when the records and/or tapes will be destroyed. *Federal Regulations require that study data and consent documents be kept for a minimum of 3 years after the completion of the study by the PI; for longitudinal projects, a longer period may be needed.*

During the study, data will be kept in locked filing cabinets in the Co-PI's office which is Room B-123 at Harris Tech. Following transcription, digital audio recordings of interviews will be transferred to CD and stored with other data. At the completion of the project, all data will be transferred to locked filing cabinets at the PI's 212 Education Building office and stored for the requisite three years. After the three-year period has ended, all data will be destroyed.

h. Address how you will monitor this study to ensure that the study is being conducted according to the protocol.

Throughout data collection and interpretation, the PI, Co-PI, and other members of the Co-PI's dissertation committee will review the progress of the

study. A checklist of required steps for the use of data from each subject will be constantly used and reviewed.

i. Is a Data Safety Monitoring Board required to conduct such monitoring?

YES ☐ NO ☒

If yes, the HRC may request copies of the reports.

II. SUBJECT SELECTION: Indicate the following (this section must also be completed for secondary data analysis):

a. How will subjects be recruited and where will the recruitment take place? (submit recruitment material)

Teachers, administrators, students, and parents who have been involved with the program will be contacted in person, by phone, or by email to ask for their involvement.

b. If secondary data analysis is being conducted, please describe the original consent procedures.

Not applicable

c. What are the characteristics of the subject population? (age, gender, student, disease conditions, behavioral abnormalities; affiliations or memberships)

All subjects are adults, and every student is at least 18 years old. No other characteristics will be defined.

d. How many subjects do you plan to study?

Up to 100

e. Address the inclusion and exclusion criteria. Federal regulations consider minors, pregnant women and prisoners vulnerable populations that require

added protection. When vulnerable populations are involved, describe why they are necessary. Excluding any group, i.e., minors, elderly, gender, ethnic minorities, must be clearly justified and inconvenience can't be the reason. For example, if minors are in a classroom where recruitment will take place, parental permission must be obtained or justification must be made to exclude the minors.

All people involved in the project may be included in the study. Participants will be excluded if they do not give consent for the interview or survey.

f. **Will subjects be compensated for participation? If so, please describe the proposed compensation.**

No

g. **Criteria for excluding participants involuntarily (such as "failed to keep food diary as required")**

Not applicable

h. **Letters of agreement/approval from the organizations that will be recruiting subjects for the project will be needed. Such letters need to be initiated by the organization, on organization letterhead, and signed by a person authorized to do so. The letters need to include statements a) that the organization is familiar with the scope of the project, b) that it is satisfied the individuals it is involving are adequately protected as human research subjects, c) that the subjects' participation is completely voluntary, and d) identify what the organization's involvement will entail.**

Letters of cooperation from HCSD and Harris Tech are provided in Appendices I and J.

III. RISKS AND DISCOMFORTS:

a. Describe any potential risks to subjects and assess the likelihood and seriousness of those risks. (If there are no known risks, state as such, but do NOT respond "NA".) These could include: physical, psychological trauma or stress, legal, social, economic, loss of confidentiality.

Loss of confidentiality could occur if the interview data collection and analysis protocol is not followed. The seriousness of this risk is low, and would have little impact on any subject due to the nature of the information being discussed.

b. Please describe the proposed methods to minimize the risks and discomforts associated with the research. For example, document how potential psychological distress will be addressed, by whom, and with what credentials (provide letter of agreement from counselor explaining their role – this must be someone other than the researchers on the project) Specify what factors will lead to stopping procedures causing physical or emotional stress.

Subjects may stop the interview at any time. All subjects will have the opportunity to request removal of their data from the study at any time during the study. Since the on-line survey does not collect any personal information, and so does not provide a way to identify one individual's responses, survey respondents may request removal of their data by sending an email to the researchers including

examples of their answers. Upon receiving this request, the Co-PI will remove the specified answers from the collection of responses.

c. If the methods of research create potential risks, describe other methods, if any, that were considered and why they will not be used.

First year MWMC students and HCSD, CDE, and CCCS administrators have unique perspectives of the project, which could not be investigated effectively using on-line surveys. Since interviews will be semi-structured, the researcher will loosely follow a line of questioning, allowing the subjects to add information they feel is relevant and important.

d. Address procedures for maintaining confidentiality if a breach of confidentiality represents a risk.

The group to which the subject belongs will be the only identification attached to transcribed interview data. Names will not be released in the report. Recordings will be stored separately from the transcripts while the study is ongoing. Anonymous surveys also guarantee confidentiality.

IV. ADVERSE EVENTS: Explain your reporting mechanism for reporting adverse and serious adverse events to the HRC. (Even if no adverse event is anticipated, a plan should be in place. Generally, an accepted procedure is for the PI to notify the HRC through the RCO as soon as communication is available and reporting the event.)

In the unlikely case of a serious adverse event, the PI will report the event to the HRC through the RCO as soon as communication is available.

V. BENEFITS: Describe the anticipated benefits of the research to the individual subjects, to the particular group or class from which the subject population is drawn. The benefits must be realistic and not overly stated of what each person is likely to gain from the research. If there is no direct benefit to the subject, state so. For example: "There is no known benefit in participating in this study, but we hope you will gain more knowledge on..." Compensation, payment for participation, gifts, etc., are NOT benefits.

For the student group: "There is no known benefit from participating in this study, but we hope you will gain a greater understanding about what motivates you to succeed in college, and you will receive an executive summary of the study when it is complete."

For the administrative and faculty group: "There is no known benefit from participating in this study, but we hope you will gain a greater understanding about what motivates Career and Technical Education students to succeed in college, and you will receive an executive summary of the study when it is complete."

VI. Other matters pertinent to the human participant.

Not applicable