Corporate Mentors and Undergraduate Students: A Qualitative Study of the Advancing

Women in Construction Mentorship Program

by

Matthew Eicher

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Graduate Supervisory Committee

Christine Wilkinson, Chair
Mistalene Calleroz-White
G. Edward Gibson, Jr.

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ABSTRACT

In a conscious effort to combat the low enrollment of women in construction management, a program was created to retain women through a mentorship program – Advancing Women in Construction. A qualitative analysis, facilitated through a grounded theory approach, sought to understand if the program was indeed successful, and what value did the students derive from the programs and participating in the mentoring process.

DEDICATION

Dedicated to my father, my first mentor.

Ich liebe dich

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Chapter 1

INTRODUCTION

This study focused on the student participants in the Advancing Women in Construction (AWIC) mentorship program to understand the value the students derived from the mentoring relationship and experiences.   The research was a qualitative design using Grounded Theory to determine the interactions the students had with the mentors and the influences of those interactions related to retention. The researcher sought to understand how the relationships established in the AWIC program led to eight of nine first-time freshman participants returning for their sophomore year.

Background

The AWIC program is housed in the construction management program that is part of the Ira A. Fulton Schools of Engineering at Arizona State University (ASU). ASU, a research-intensive university, is situated in the fifth most populace region of the United States. The Southwest and specifically the Phoenix metropolitan region, has traditionally been a benefit to the construction management program because it creates a great opportunity to interact with construction professionals and for students to work extensively in their degree area while attending ASU. The construction management program is well established having been formed in 1957 and has a long tradition of delivering excellent graduates (Arizona State University, 2013). Hundreds of alumni who are corporate executives and owners of companies exemplify this tradition.   The enrollment in the undergraduate program over the last ten years has averaged around 300

students with men constituting eighty five percent of the undergraduate program. The size of the academic program is small in comparison to the other academic programs in the Ira A. Fulton Schools of Engineering. The enrollment at ASU, which is in excess of 70,000 students, is often the largest of any university in the United States (Chronicle of Higher Education, 2012). Being a small academic program on a large campus has the advantage of intimate group activity while having the amenities associated with large campuses. The small size provides students an opportunity for more interaction among tenured and tenure-track faculty than other degree program areas in the college of engineering. The limited enrollment along with the open-door policy among faculty creates opportunities for student-faculty beyond the regular office hours. The proximity to Phoenix provides the opportunity for construction industry professionals to teach many undergraduate courses as adjunct faculty. It also provides a tremendous amount of co-curricular activities and course diversity.

The student dynamics in construction management largely reflect the rest of the college. White males constitute the majority of the students with an average age of twenty-three. The percentage of women has fluctuated from 11 percent to 18 percent over the last decade in the construction management program. At the start of data collection, there were twelve faculty and all were male. As of August 2012, one female tenure-track faculty member was hired. In the college as a whole, the average over the last ten years has been closer to twenty percent women faculty.

Like many universities across the United States, in the last decade a great emphasis has been placed upon women entering degree areas of science, technology, engineering and math (STEM). However, despite the increased enrollment of women in higher

education it has yet to reach parity in the STEM program areas. While women exceed

men in overall enrollment in undergraduate four year programs, 5.94 Million (56%)

women to 4.59 Million (43%) men (National Science Foundation, 2013), STEM related

programs, especially engineering, continue to lag behind the rest of higher education.

One of the results is an under representation of women professionals in faculty and

professional positions. Women faculty among science and engineering programs,

tenured, tenure-track, and not tenure track, is 31 percent (National Science Foundation,

2013). Among engineering faculty, women represent 16 percent (n=4,200) in the United

States (National Science Foundation & National Center for Science and Engineering

Statistics, 2013).

Women who are professionals in the construction industry helped establish the

AWIC mentorship program. They used their educational and professional experiences to

design the mentorship program within a short three month timeframe. Due to the lack of

any women faculty in the Del E. Webb School of Construction (DEWSC), there was not a

female academic perspective included in the development of the AWIC program. The

AWIC Core Group developed a 32-page manual that defined the program to be used by

the mentors and students. In addition to participating as mentors, many mentors, not all,

contributed $1,000 as an incentive grant to encourage the undergraduate women to

participate.

Statement of Problem

In the area of construction management, the business of procurement, construction

and maintenance, women are outnumbered ten to one. According to the Bureau of Labor

Statistics (2012a), only nine percent of the nine million people who are employed in

construction are women. The reported total includes administrative support staff and positions in the trades. Representation in management/leadership positions in construction across the United States, exclusive of Human Resources and Finance positions, is 6.4 percent (Bureau of Labor Statistics, 2012b). The disparities in employment make clear that the construction industry is a challenging, and potentially hostile, environment for women (Greed, 2000; Menches & Abraham, 2007; Thiel, 2013). The academic environment, with similar disparities in enrollment and faculty representation, would indicate that there are similar challenges.

In June 2008, a group of thirty professional women formed the Advancing Women in Construction (AWIC) mentor group to encourage more women to enter the professional ranks upon graduation. The AWIC program is unique in that there is a formal mentorship facilitated by industry professionals included for freshman women in construction management. Fall 2008 was the first cohort of mentors and students to participate in the formally structured AWIC program. Identifying the challenges associated with the retention of women in construction management programs is not documented. The lack of data is a result of national reporting standards, which does not report small data sets to ensure anonymity of enrolled students. Women in tenure or tenure-track positions in construction management programs, those accredited through the American Council for Construction Education (ACCE), are not reported, but it is reasonable to assume that they are similar to the national percentage of women faculty in engineering, which was identified previously as 16 percent. The challenges of retaining women undergraduates in STEM programs do identify potential challenges women in construction could face as an underrepresented group in a traditionally male dominated

curriculum area (Bart, 2000; Fenske, Porter & DuBrock, 2000; Lord, Camacho, Layton, Long , Ohland &Wasburn, 2009; O'Callaghan & Jerger, 2006; Shapiro & Sax, 2011).

The effort to couple undergraduate female students with female mentors from the construction industry resulted from the program director's belief that the lack of women faculty contributed to the lower retention rate among undergraduate women.   With a lack of representation among the faculty, it was assumed that the culture of the program was less inviting to women. Boyer and Larson (2005) affirm this idea that women and people of color often are the ones who must make the attitudinal, behavioral and philosophical shifts to fit into existing college climates. To create a more inclusive environment the AWIC program was conceived to provide support from external mentors who are practitioners in the construction industry.

Purpose of the Study

The purpose of the study was to understand the value student mentees in the Advancing Women in Construction (AWIC) mentorship program derived from the mentoring relationship and experiences in relation to retention through the sophomore year. The qualitative research design used Grounded Theory to understand the students' interactions with the mentors and the influences of their interaction. The researcher sought to understand how the relationships established in the AWIC program influenced six of eight first-time freshman participants to return for their sophomore year in the construction program. A seventh student changed majors for a short time but returned to the construction management program her sophomore year. Seven of the eight students ultimately graduated from the construction management program. The eighth student that started in fall of 2008 departed ASU after the first academic year.

Importance of the Study

It is desired that the discoveries from the interviews reveal tangible concepts that the AWIC program directors can use to improve and expand their efforts. It is unclear at this time if the program will provide generalizable information for other academic related endeavors, but the researcher is hopeful that it will be useful to others developing additional mentorship programs and meaningful communities for women in STEM or other fields where a group of individuals are mentoring.

Research Questions

1. Did the first time freshman females participating in the program have increased retention when compared to the freshman women prior to the program starting?

2. Did the AWIC program increase the retention of the non-freshmen who also participated?

3. What value has the Advancing Women in Construction (AWIC) mentorship program, respective to retention, created for undergraduate female student participants?

4. Did the student participants believe that the mentorship program created a greater opportunity to succeed in a male-dominated curriculum?

Conceptual Framework

The initial conceptual framework established for the study outlined certain expectations of the program and its effects because it was designed as a dyadic longitudinal model (Figure 1). There were specific program details that outlined many

of the activities and intentional efforts of a formal mentoring program in a linear format. The format of the AWIC program in figure one is inclusive of the program design that included formally assigning mentors, planned interactions that retain students into their final years in the construction management program. The conceptual framework in Figure 1 also considered antecedent elements of the students and mentors experiences prior to starting the AWIC program.
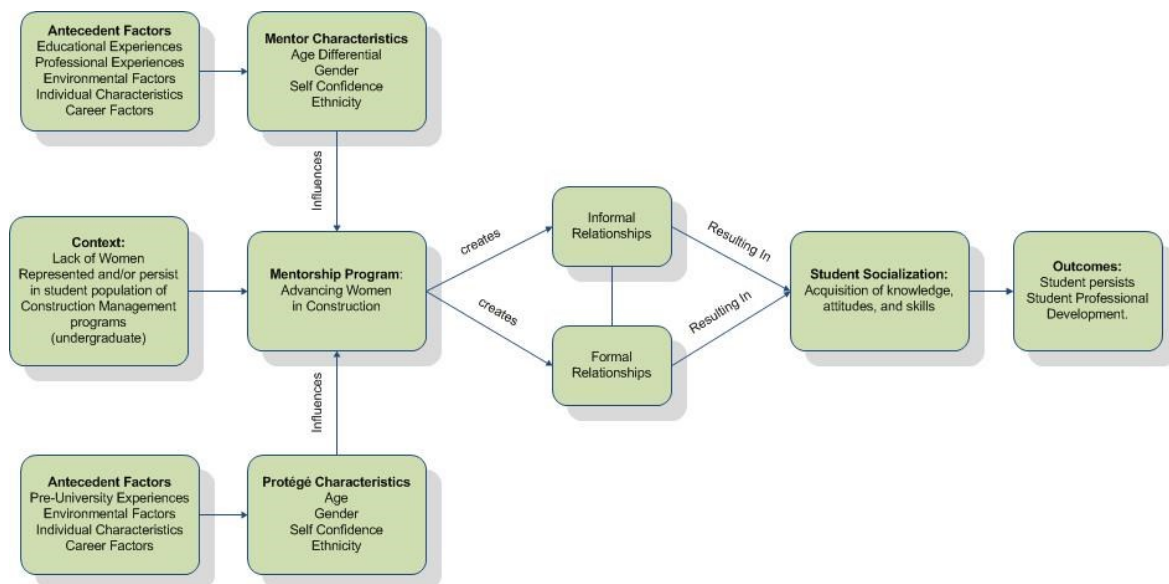
Figure 1. Conceptual Framework for AWIC Study

List of Abbreviations

AWIC – Advancing Women in Construction

ASU – Arizona State University

ASCE – American Society of Civil Engineering

CM – Construction Management

DEWSC – Del E. Webb School of Construction

Research Design

A grounded theory approach was used in this study to understand the intricacies of the undergraduate student mentorship program Advancing Women in Construction. This approach allowed for the gathering and inclusion of perspectives of the industry mentors, administrators and student mentees regarding the phenomenon of student retention, persistence and mentorship. The initial program design and implementation was done without any theoretical considerations and a grounded theory approach was helpful in identifying multiple theoretical constructs within the program.

Grounded theory is a systematic, yet flexible guideline, for collecting and analyzing qualitative data to construct theories "grounded" in the data themselves (Charmaz 2006). The grounded theory process when finished "is open-ended and relies on emergent processes and the researcher's emerging constructions of concepts shapes both process and product" (p.178).

Grounded theory fit this study well, as there was an attempt to understand what compelled the women in this mentoring program to persist and ultimately to graduate. Grounded theory allows for a greater understanding and a proposal of causality on the effects of this mentoring program on student retention. Current theories, such as Tinto's departure theory (1975) and numerous mentoring theory models do not define how the interaction between a female industry mentor and a female undergraduate student enables a student to persist. This research will provide information that will hopefully provide future women in construction management programs the opportunity to persist.

Chapter 2.

REVIEW OF THE LITERATURE

Nora and Crisp (2007) identified that research regarding persistence and mentoring research overlap in many ways. One can see in the two major sections of the literature review, retention and mentoring, that both sections overlap in their analysis and efforts to address many of the challenges facing students in higher education.

The literature and theory framing this study involves two major components, retention and mentoring. Striving to maintain the spirit of the grounded theory process (Glaser & Strauss, 1967; Charmaz, 2000) the literature review was conducted after the data had been collected and most of the data analyzed. The literature review is framed by the two components exclusively to keep focus on the original intent of understanding the experiences of the female students in the AWIC mentoring program contributed to their retention. While there were several unexpected results from the data analysis, the majority of the context was within the areas of student retention and mentorship.

Retention

Aspects of retention theory that applied to this study address the fundamental intent of the program to retain new incoming women students for the two years of the structured program. Female students that entered the construction management program could receive two years of scholarship funding and an industry mentor for support. The AWIC program offered four years of activities, but the first two years were considered by

the administration and the AWIC Core Group most critical for retention purposes. The two significant theoretical models, retention and mentoring, involve the environment that the university creates to enable the students to feel simultaneously accepted and enabled to graduate with a degree. When looking at the challenges that the AWIC student participants identified in their discussions, many of the theoretical underpinnings could be identified with the existing theoretical models, retention and mentoring, presented in this chapter.

One of the most relevant aspects of Tinto's theory is the recognition that the students that do not persist by choice, do so because they fail to make a meaningful connection with the institution. Although, the intentions and commitments with which individuals enter college matter, what goes on after entering college matters more and it is the person's perception or evaluation of the character of those interactions in college that in large measure determine decisions as to staying or leaving. It is in this sense that most departures are voluntary (Tinto, 1987).

The retention framework for this study is anchored by Vincent Tinto's interactionalist theory of student departure (1975, 1987, 1993). Tinto's theory, partly based on Durkheim's theory of suicide (1951) and Spady's 1971 retention theory (Berger & Lyon, 2005), sought to clarify why a student would voluntarily withdraw from an institution. Previous theories often viewed the student as flawed and often portrayed them as incapable rather than considering the role and responsibility of the institution in encouraging students to persist to graduation. Tinto writes, "My 1975 article and in turn my book, 'Leaving College' was the first to lay out a detailed longitudinal model that made explicit connections between the environment, in this case the academic and social

systems of the institution and the individuals who shaped those systems and student

retention over different periods of time" (Tinto, 2006, p.2). Though he was not the first to

identify the departure phenomenon, he was the first to lay out a detailed longitudinal

model that made explicit connections between the environment and student retention over

different periods of time (Tinto, 1975, 1987, 2006, 2012).

Tinto asserted in 1975 that theory development was necessary since previous

work had failed to define and explain the process adequately that leads a person to depart

institutions of higher education (p.89). "The student dropout is taken to be the result of a

longitudinal process of interaction of the individual's experiences in the academic and

social systems of the college" (p.103). The individual must be integrated academically

and socially on multiple dimensions. This involves developing commitments through

academic performance and institutional commitments through peer-group and faculty

interactions. See Figure 2 of Tinto's conceptual Schema for Dropout from College

(p.95).
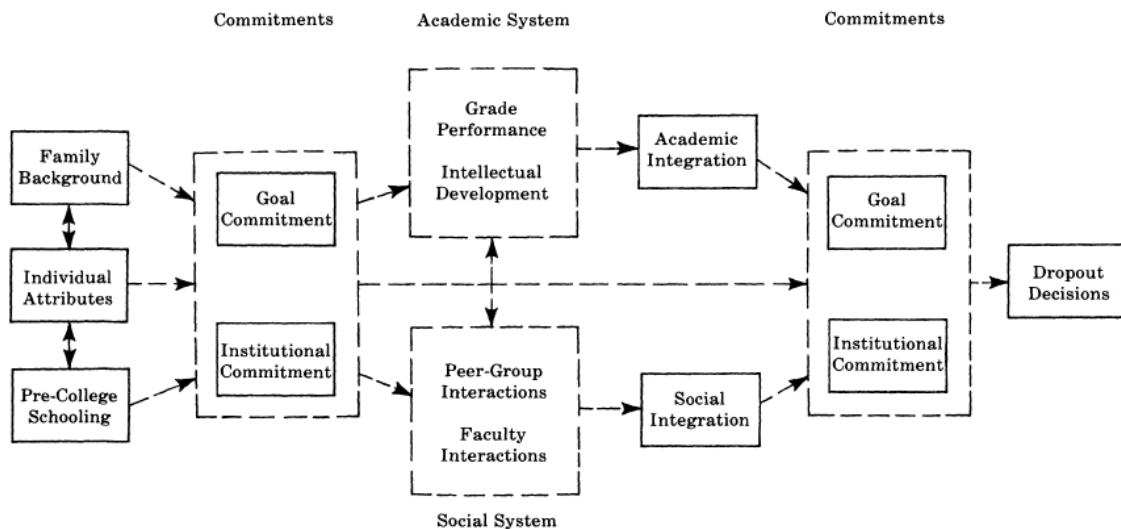
Figure 2 Tinto (1975) Conceptual Schema for Dropout from College

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It also involves conditional variables prior to college that included family background (p.99), individual characteristics (p.100) and past educational experiences (p.102). However, the emphasis, if the individual is academically sound, is focused on the environment of the campus and the socialization of the student. Tinto's process of departure examined the combination of variables that are unique to each individual and the institution of higher education. The theory also considers antecedent factors such as life experiences prior to coming onto campus, prior academic performance in high school, socioeconomic status and family background. While antecedent factors are recognized, the focus of the retention theory is on engagement and fulfilling their social and academic needs to persist. Tinto (1975) noted, "For each person, perception is reality and for a variety of reasons persons of varying characteristics may hold different perceptions of apparently similar situations" (p. 98). In Tinto's original theory one aspect of retention was the expectation that students forego prior social linkages to establish ones that were affective to their experience at the higher education institution. This was later revised and partly re-defined by Attinasi (1989), Rendón (1994), Nora (1996) and others as certain underrepresented groups either needed or chose to maintain relationships, as they were both beneficial and necessary for their persistence in an institution that may not be completely inclusive of their needs. While institutions cannot control for prior life experiences and prior schooling it can and should be a determinant in the processes that take place during the student's college experience.

Tinto (2012) wrote that by adapting his sociological model, he sought to "shed light on the role academic and social environments played in the success of its students …and in doing so to stop blaming the victim" (p. vii). Additionally, he noted that the

model does not argue that full integration in both systems of college (academic and social) is necessary for persistence. "Nor does it claim that failure to be integrated into either system necessarily leads to departure. Rather it argues that some degree of social and intellectual integration must exist as a condition for continued persistence" (Tinto, 1987, p.119). As students step foot onto campus they begin the process of establishing purpose and affinity with their specific institution. Students that develop a sense of purpose and develop goals, also develop a positive view of their institution that provides the personal justification for persisting through their academic experience. The positive view that a student establishes is reinforced by their interactions. The researchers considered interaction inside and outside of the classroom, which included faculty-student discussions and student extra-curricular activities, such as clubs, campus student hourly work, and residential life. This is particularly important in their first year as they establish a commitment to their campus. The combination of all of these effectual groups and activities increases a sense of belonging that leads the students to believe that they are accepted and found a niche within the institution that in their perception creates the motivation to persist.

The first wave of research collectively examined the student departure and retention phenomenon to establish a stronger link to empirical evidence (Endo & Harpel, 1982; Getzlaf, Sedlacek, Kearney & Blackwell, 1984; Munro, 1981; Pascarella, Duby & Iverson, 1983; Pascarella & Chapman, 1983; Pascarella, 1980; Pascarella, Duby, Miller & Rasher, 1981; Pascarella & Terenzini, 1976, 1979; Terenzini, Lorang & Pascarella, 1981). Much of the research focused on student-faculty relationships and involvement in the larger college community and its effectiveness in persistence. Tinto noted that while

retention research was in its infancy, it focused on the first year and transition into college and which were focused on academic life and the role of "faculty was largely absent from the research" (2006, p.3).

A second wave through the late 1980's and early 1990's focused on identifying and understanding the diversity of student backgrounds and the multitude of forces at play in the students' lives (Tinto, 2006). More recently researchers have sought to understand how a broader array of forces cultural, economic, social, and institutional shape student retention. Each category is covered in the retention section of this chapter.

Over thirty years there has been substantial work done examining Tinto's student departure theory (Berger & Milem, 1999; Braxton & Brier, 1989; Braxton & Hirschy, 2005). Researchers have elaborated upon his research to include psychological, environmental, economic and organizational factors (Braxton, Shaw-Sullivan & Johnson, 1997; Berger & Lyon, 2005). Additional research has provided for not only greater expansion, but also inclusion of factors not clearly identified in previous research. Efforts sought to quantify and validate the multiple aspects of the theory and to be more inclusive in the areas of women, ethnic minority, and non-traditional students.

Some have argued that there is a need for more empirical evidence to confirm all of Tinto's theory. Researchers Getzlaf, Sedlacek, Kearney and Blackwell (1984) cited limitations in the existing attrition research and only validated parts of the theory, and also cited the lack of flexibility in identifying different types of students' departures rather than a singular phenomenon. Munro (1981) stated that "shortcomings in the research included ambiguous definitions of dropouts, lack of control groups, and a lack of a representative sample of institutions for making estimates that could be generalized

to the college population in the United States" (p. 133). Attinasi (1992) and Tierney (1992) voiced concerns about differences between residential and commuter institutions. Cabrera, Nora and Castañeda (1992), noted that a major gap in Tinto's theory and allied research is the role of external factors in shaping perceptions, commitments, and preferences. This topic is particularly relevant from policy as well as institutional perspectives, given the different social and institutional programs aimed at stimulating enrollment and preventing attrition by addressing variables other than institutional ones (that is, ability to pay, parental support). Swail (2003), citing Braxton and Lien (2000), noted that when Tinto's theory was examined empirically as supportive or unsupportive they concluded that there was not enough related data to substantiate much of Tinto's theory.   Despite some of the identified weaknesses, it is considered the strongest theoretical structure for the research analysis.

Tinto in 2012 sought to close the loop on his theory and provide a larger perspective on his retention theory. The following components were represented in the analysis of this project and provide for clarity in understanding the AWIC program effectiveness and the student's utility of the program.

Prior Academic Achievement

The research literature shows that students' academic performance in high school is related to college performance (Moore & Shulock, 2009), though it does not tell the complete picture of students' potential to persist to their sophomore year. Mallette and Carera (1991) summarized the early research conducted regarding prior academic achievement found that precollege ability and background exerts no significant and direct effects on retention.   Assessing where students are at the start of college, which is

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inclusive of their background characteristics and pre-college behavior, is associated with what they do in their freshman year (Kuh, Cruce, Shoup, Kinzie & Gonyea, 2008). However, "prior academic achievement does not fully explain everything that defines student success in college" (p.546). Prior academic performance is only viewed as a small contributing indicator to students' capabilities in persisting to graduation.

Socioeconomic Status

Another aspect of the retention equation is the socioeconomic status (SES) of students. Research has shown that students from lower SES backgrounds have lower educational aspirations, retention in college and ultimately graduation than students from higher SES backgrounds (Astin, 1993; Cabrera, Stampen & Hansen, 1990; Cabrera, Nora & Casteñeda, 1992; Ethington & Smart, 1986; Mallette & Cabrera, 1991; Pascarella, et al., 1981; Pascarella & Terenzini, 2005; St. John, 1990, 2000; Tinto, 1987, 1993, 2012). Walpole (2003) noted that despite being underrepresented little research has been conducted due to the focus on mainstream, average or high SES students.

Early research noted that students from higher socioeconomic levels were more likely to graduate from college within four years. Walpole (2003) remarked that "low SES students who attend college after graduating from high school, and their enrollment in postsecondary education represents success in overcoming many obstacles. However, in the four-year period following high school they are less likely to persist to a bachelor's degree or to have graduate degree aspirations" (p.48).

Student Engagement and Involvement

A key factor to student performance is the extent of student engagement in educational activities that are beneficial to their performance (Berger & Milem 1999;

Astin 1984; Kuh, 2001a; Kuh, Kinzie & Buckley, 2007; Kuh, Cruce, Shoup, Kinzie & Gonyea. 2008; Pascarella & Terenzini, 2005, Tinto 2007). Astin (1984) stated that involvement refers to "the amount of physical and psychological energy that the student devotes to the academic experience" (p. 518). He formed five postulates regarding student involvement (p.519):

1. Involvement refers to the investment of physical and psychological energy in various objects.

2. Regardless of its object, involvement occurs along a continuum

3. Involvement has both quantitative and qualitative features.

4. The amount of student learning and personal development associated with any educational program is directly proportional to the quality and quantity of student involvement in that program.

5. The effectiveness of any educational policy or practice is directly related to the capacity of that policy or practice to increase student involvement.

Involvement was viewed as a key component to the student's desire to stay in college. Simultaneous to Tinto's theory of separation, Astin worked on developing a complementary theory of student development through involvement. Berger and Milem (1999) would later examine both models, because of their focus on the freshmen year experience, and found in both theories that student involvement leads to greater integration in the social and academic systems of the college and promotes institutional commitment. Their research confirmed that student involvement was important and their analysis showed greater effect than that found in Tinto's theory (p.660). Perhaps the biggest challenge to the theory was the lack of inclusion of minority students. This is a

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consistent trait among early retention research. Inclusion of ethnic minorities and other marginalized populations in higher education hit its stride in the 1980's and 1990's as researchers questioned the application of Tinto's theory as it applied to multiple institutions, two and four year institutions, rural and urban campuses, diverse populations and micro populations within higher education institutions (Hurtado, Carter & Spuler, 1996; Nora, 1987; Rendón, 1994). Aspects regarding these topics are addressed in the subsequent section, ethnically diverse populations.

Freshman Year – Critical Timing for Retention

In reflecting on three decades of research regarding student departure, Tinto noted "what we learned is that involvement matters and that it matters most during the critical first year of college" (Tinto, 2006, p.3). Tinto identified the first year as the most critical to student retention. Freshman development, as defined by Tinto, occurs in three stages Separation, Transition, and Incorporation (Tinto, 1987). "Coherent first-year experience programs, which include pre-college and ongoing orientation programs, first-year seminars, and other new student advising and study group experiences, appear to be linked to a variety of positive outcomes for first-year students" (Tinto, 2006, p.79). Upcraft, Gardner & Barefoot (2005) expanded Tinto's definition from merely successful completion of courses taken in the first year and continued enrollment into the second year to include (pgs. 8-10):

1. Developing intellectual and academic competence

2. Establishing and maintaining interpersonal relationships

3. Exploring identity development

4. Deciding on a career

5. Maintaining health and wellness

6. Considering faith and spiritual dimensions of life

7. Developing multicultural awareness

8. Developing civic responsibility

From their perspective, a successful retention and transition to their sophomore year is more than just a GPA, it is becoming a multifaceted, educated person (Tinto, 2006, p.10). To address the many variables, multiple programs were created to foster interaction and allow students to develop strong ties to the institution both inside and outside of the classroom. Kuh (2005) indicated that, after controlling for student background characteristics, the research indicated that a key factor for first year success is student engagement. The engagement process must include "programming that provides students with a more realistic understanding of college to make wise enrollment decisions", and "to engage in purposeful activities", and "all of this needs to be done early and often with freshmen students" (pgs. 99-100).

Socialization

Socialization plays a critical role to the process of inclusion in the college experience and a critical step in the retention of students. Weidman's model (1984) of undergraduate occupational socialization was identified for this research because he hypothesizes that students bring with them background characteristics (aptitude, ethnicity socioeconomic status, personality, achievement, etc.) developed through parental influences. Weidman's socialization model (1979), and considerations of antecedent factors show how socialization impacts the student's consideration for career development. Weidman's model includes consideration of students entering college with

certain existing values, exposure to various socializing influences and mechanisms exerted by faculty and peers (and in this case external mentors), changes or maintains values that were held at the entrance of college (Weidman, 1979; Pascarella & Terenzini, 2005).

Gender

Women make up nearly sixty percent of the beginning full time student body in higher education today (National Science Foundation, 2013). There are challenges women face in academic arenas where they are traditionally underrepresented (Fouad & Singh, 2011). Women in STEM related programs face additional challenges due to their limited numbers and the stagnating representation in undergraduate programs. Women in Engineering related programs have been the focus of retention programs that improve the learning methodologies and campus environments, yet data indicates that total enrollment full time first time freshmen undergraduate women in engineering has declined from 19.8% in 1999 to 17.7% (National Science Foundation & National Center for Science and Engineering Statistics, 2013, p.18). Yet, the overall graduation rate among men and women in undergraduate programs is quite close, with males at 55.1% and females at 53.6% (Lord, Camacho, Layton, Long, Ohland & Wasburn, 2009), leading many to believe that it is the perception between the student and the institution, and specifically program areas that are typically dominated by men, both in faculty and students, that often deter women from attempting the degree.

Tinto (1993) suggested that there is variability of persistence when considering gender. He noted that women, "are more likely than males to face external pressures which constrain their educational participation" (p.77). His views and wording have been

adjusted since 1975 where he clearly classified women and their retention within classical

degree roles. Bem (1993) has argued that the predominance of male faculty in academia

brings about a view of male superiority and it is reflected in the cultural ideas and norms.

Therefore, women's perspectives, especially in the fields of STEM, are seen as abnormal

and they must either conform or find another field of study (Cohoon, 2001; Fox, Sonnert

& Nikiforova, 2011; Margolis & Fisher, 2003).

Fox, Sonnert and Nikiforova (2009) stated that there were two ways of thinking

about retaining women in science and engineering, from an individual or institutional

perspective. Individual issues address individual characteristics like attitudes, behaviors

and experiences of women, which may affect their perception and ultimately their

academic performance. Institutionally, women can face challenges in science and

engineering through "patterns of inclusion or exclusion in academic or research groups,

selective access to resources, and different practices and standards of evaluation that may

operate for women compared to men" (p.335). The literature often portrays women's

perceptions toward STEM degrees as unwelcoming (Fox et al., 2011; Packard, Gagnon,

LaBelle, Jeffers & Lynn, 2011; Rosser, 1993; Fox, Sonnert & Nikiforova 2009) and

creates unnecessary stress on women due to the gendered male dominated rite of passage

type courses that is seen in introductory courses (Seymour & Hewitt, 1996; Seymour,

2002; Wilson & Kittleson 2013). This can include bias in the design of courses and the

paradigms of course pedagogy that is focused on the male perspective (Margolis & Fisher

2003; Rosser 1993). Cohoon (2001) defined the factors that impact women, which

included student composition, faculty attitudes, faculty turnover, presence of female

faculty, and mentoring. Cohoon concluded that it is a combination of factors that influence female students to depart.

Cultural Inclusion of Ethnically Diverse Populations

Aspects of cultural inclusion focus on students that are historically underrepresented within higher education. Kuh (2001b) defined the institutional culture as "the collective, mutually shaping patterns of institutional history, mission, physical settings, norms, traditions, values, practices, beliefs, and assumptions that guide the behavior of individuals and groups in an institution of higher education and which provide a frame of reference for interpreting the meanings of events and actions on and off campus" (p.25). Critical review of retention of students from ethnically diverse backgrounds has developed into a significant area of critical research (Cabrera, Nora & Castaneda, 1992; Cabrera & La Nasa, 2000; Hurtado, Cabrera, Lin, Arellano & Espinosa, 2009; Perna, Lundy-Wagner, Drezner, Gasman, Yoon, Bose & Gary, 2009; Riegle-Crumb & King, 2010; Tierney, 1992). Despite extensive research on student departure, institutions of higher education continue to face significant challenges in retaining underrepresented student populations (Cabrera, Castañeda, Nora & Hengstler 1992; Guiffrida, 2006; Hurtado, Carter & Spuler, 1996; Kuh & Love, 2000; Maldonado, Rhoades & Buenavista, 2005; Moore & Upcraft, 1990; Rendón, Jalomo & Nora, 2000; Tierney, 2000).   Multicultural perspectives seek to challenge the very fabric of institutional restructuring. "The goal is to transform colleges and universities in ways that are more reflective of the diverse student populations that attend them, as opposed to expecting diverse students to fall into line with white, Eurocentric norms. Accordingly, students of color are more likely to develop a sense of connection, because the institution

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reflects comparable values, norms and beliefs" (Maldonado et al., 2005, p.608). However, "students must contend with circumstance that may prevent them from taking full advantage of opportunities… due to cumulative disadvantages associate with substandard precollege academic preparation… and a less-than-congenial postsecondary learning environment" (Kuh, Kinzie, Buckley, Bridges & Hayek, 2006, p.45).

Many have asserted Tinto's theory was limited because it lacked considerations of underrepresented students and simply focused on the dominant culture (Nora, 1987; Rendón et al. 2000; Maldonado et al., 2005; Tierney, 1992, 1999). Like Tinto's original assertion in 1975, many believe that it is incumbent upon the institution to provide a more inclusive experience. Among critics though, the notion in Tinto's theory (1993) was that students in some capacity must disassociate from one culture to conform to their new life on a college campus. The notion that underrepresented students, especially ethnic minorities, will or must disassociate from their own culture and family norms to be accepted in their new environment was viewed as an unacceptable. (Rendón, Jalomo & Nora, 2000; Swail, Redd & Perna, 2003; Tierney, 1992). Nora and Rendón (1990) also took exception to the disregard of minority students in retention efforts and that discussions about improving retention of traditionally underrepresented groups must include, "ways to ensure campus environments reflect the norms and values of a wider variety of students rather than the norms and values of a select few" (Berger & Milem, 1999, p. 662).

Researchers argue that complete disassociation from family and their originating culture is not necessary for integration (Hurtado & Carter, 1997; Hurtado, Carter, & Spuler, 1996) and disagree with Tinto's overall concept of integration as it applies to

students of color at predominantly white colleges (Tierney, 1999). Guiffrida (2006) influenced by Rendón, Jalomo and Nora (2000) summarized the sentiment "that without refinement Tinto's theory remains a largely Western perspective that ignores bi-cultural integration or the ability of minority students to succeed at college while being part of both the majority and minority cultures" (p. 451). Caroline Turner (1994) indicated that without means for inclusion, underrepresented students often "feel like guests in in someone else's house" and that exclusivity of a majority culture is often conveyed in a subtle manner that has profound influence on student's decision to depart. Turner emphasizes cooperation and community and creating positive environments inside and outside the classroom as critical steps in changing campus climates to support diverse groups (p. 367)

Finances and Student Aid

Financing and aid required to attend an institution of higher education is a critical component of retention. The need for financial management and aid became acute during the great recession. Aspects of finances and retention were present in Tinto's model and those considerations have expanded considerably since 1975. Hossler, Ziskin, Jacob, Kim and Cekic (2009) define financial aid as a "dichotomous variable representing receipt of aid, or as a more or less continuous measure, representing the amount of aid" (p.398). The volume of studies reviewed examined the simple function of the receipt of aid, and in various categories such as grants, loans, merit-based and need based. Early research (Jensen, 1981, 1983; Jackson, 1978; Wenc, 1977) could not find a direct correlation to departure due to finances. Research did indicate it was a determinant in college choice. Tierney (1980) noted that question of finances "will not only influence

decisions on whether to attend college in the first place but will also shape choices as to the specific college into which entry is sought" (p.543). Manski and Wise (1983), Jensen (1981) and Voorhees (1985) all published on economic theory and the application of market forces, financial aid and effects on student retention. Tinto (1987) was hesitant to acknowledge their capacity to influence his theory. "They are unable to address the important question of how the social setting of the institution shares the patterns of departure, which arise among students on different campuses. As a result, the ability of economic theories to explain departure in its various forms has thus far been quite limited" (p.89).

St. John, Cabrera, Nora and Asker (2000) acknowledged that the primary focus of retention theory has been on student-institution fit. However, St. John et al. and others have also noted that the economic perspective must be included when the student has a financial need and financial aid packaging as part of his/her higher education experience (Cabrera, Stampen & Hansen, 1990; Cabrera, Nora & Castañeda, 1992; Fenske, Porter & DuBrock, 2000; Kim, 2007; Nora & Hovarth, 1989; St. John, 1990, 2000).

Recent research (Paulsen & St. John, 2002) indicates a varying effect on students related to SES and others have suggested that the discussion also be framed with the consideration of student antecedent factors. Hossler et al. (2009, p. 395) has examined the multiple threads of finances on retention and has advocated bringing the multiple perspectives together given that the questionable causal relationships lack longitudinal studies.

Discipline Based Retention

Tinto (1987) found that aspects of subcultures apply to the environment in which the student interacts within the academic area. This can include informal ad-hoc social structures, defined student cohorts or curriculum based groups like student clubs. Specialized programs can offset the decline in female enrollment and increase retention through facilitating programs that show inclusion in traditionally male dominated programs (Hyde & Gess-Newsome, 2000; Tobias, 1990).

Tinto's model was included as a frame of reference for use in the analysis because the model combines multiple aspects of the college experience. First, it is seen as a longitudinal process. Second, the theory has expanded its theoretical base to be more inclusive of women and minorities. Third, the theory considers antecedents as part of the student retention process. Tinto posits that individual integrative experiences in the formal and informal domains of the academic and social systems of college institution are central to the process of retention. "Students either reject the institution's attempt to socialize them or they have not found a cultural enclave from which they can draw support and guidance as they try to negotiate what seems to be an alien culture" (Tinto, 2007, p.120). The institutional environment, outside of residential life is often combined or generalized as a cumulative mass of programming. Some research has examined the motivations of discipline-based retention efforts (Cohoon, 2001; Collier & Morgan, 2008; Durkin & Main, 2001). This aspect was considered since this was developed within a specific discipline of study. This was especially important for the Del E. Webb School of Construction at the time of this study because the Ira A. Fulton Schools of Engineering was utilizing program specific retention statistics as part of their funding corollary.

Aspects of the discipline-based retention within the scope of this study involve the retention of students within the specific curriculum program of construction management. The challenges and motivations to retain students within a specific curriculum-based program are different from the entire university in which the metric is simply to retain the student to graduation. The challenges of discipline specific retention surrounds the rationale for discipline specific study skills (Durkin & Main, 2002) as a result of the idiosyncrasies of program specific faculty (Cohoon, 2001), which is shaped by the composition of the faculty in gender, ethnicity, size and turnover. There is also the potential for program specific jargon having a negative effect and intimidating students rather than creating a language of commonality (Collier & Morgan, 2008).

Mentorship

Theory for this section is drawn from mentoring research in the areas of higher education and corporate life because the involvement of AWIC participants is inclusive of both the corporate and educational environments. Given the diversity of the educational and corporate fields, descriptors of the recipient of mentoring may be addressed as a mentee, as is often the case when addressing student topics, or protégé, which is a common term, utilized in the corporate environment. The rest of the study refers to the recipient of mentoring as the *mentee*, except where direct quotes from authors are utilized. It is the intent of this section to focus on both models of mentoring and the mentors because the research conducted included students progressing towards an undergraduate degree, while seeking professional experiences in construction. Since the program was designed to retain students and to provide support to complete their

undergraduate degree the emphasis is on mentoring research that identifies the mentoring theory and dynamics related to this area.

Definitions and Characteristics of Mentoring

Researchers suggest that the origination of the concept of mentor is attributable to the saga of *The Odyssey* in which Mentor, son of Alcinous, accepted the duty to care for, educate and protect Telemachus, son of Odysseus. In *The Odyssey,* whether it was the actual Mentor, or a godly presence taking the form of Mentor, the function of Mentor was to guide, counsel and protect others at critical times (Koocher, 2002).

The contemporary paradigmatic concepts of mentorship emerged in the 1980's and reflected a learning-centered approach to mentoring. "This paradigm reframes mentoring as a type of developmental relationship characterized by reciprocal learning and focused on goal attainment and personal growth" (Campbell, Smith, Dugan & Komives, 2012, p.597). Kathy Kram (1985) is largely recognized as providing one of the fundamental definitions of mentoring in her book *Mentoring at Work* which offered a theoretical foundation for understanding developmental relationships at work for men and women (Ragins & Kram, 2007). The mentoring process is defined as "an interpersonal process in which a more experienced colleague provides professional guidance, instruction, and support to a less experienced individual" (Fassinger & Henseler-McGinnis, 2005, p.143). Fundamentally, the purpose of the mentor-mentee relationship is to enhance the potential of the mentee's success (Campbell & Campbell, 2007; Johnson, 2003).

Kathy Kram (1985) is credited with some of the earliest conceptualizations of the contemporary career-based mentor and aspects of the relationship between a mentor and

protégé.   Kram's model has had "considerable scholarly influence by inspiring empirical research and instrument development" (Fassinger and Hensler-McGinnis, 2005).   Kram expressed that mentoring served two critical functions, psychosocial functions and career functions.   "Psychosocial functions are those aspects of the relationship that enhance the sense of competence, identity and effectiveness in a professional role" (p.23).   "Career functions are those aspects of the relationship that enhance career advancement" (p.23).   These concepts were developed through her research efforts in large corporate environments, and were applied later to the academic environment.

Ragins and Kram (2007) note that though the definition has been refined over the years, "a core feature that defines mentoring relationships and distinguishes it from other types of personal relationships is that mentoring is a developmental relationship that is embedded within the career context" (p. 6).   However, even as mentoring is accessible when framed within our own experience, scholars continue to struggle with understanding the complexity of this pivotal, life-altering relationship.   "In a nutshell, we know it works; we are still grappling with why, when, and how" (Ragins & Kram, 2007, p.4).

Anderson and Shannon (1988) worked to identify a strong conceptual foundation for the mentoring experience.   At the time that they published their conceptualization of mentoring they believed that the focus was mostly on the responsibilities of the mentor, especially in education.   In an effort to conceptualize mentoring experience for educators they identified the following concepts as foundational to mentoring programs.   "First, mentoring is an intentional process. Second, mentoring is a nurturing process, which fosters the growth and development of the protégé toward full maturity.   Third, mentoring

is an insightful process in which the wisdom of the mentor is acquired and applied by the protégé" (p.38). As fundamental constructs of the mentoring developed in the 1980's there was consistently a difference of opinion on defining mentoring.

Finding a consensus on an exact definition of mentoring is challenging. Definitions vary and depending on the discipline in which the work originates, there is a continuous redefinition of the content of a mentoring relationship. Jacobi (1991) and Crisp and Cruz (2009) identified the diversity of definitions that spanned the business world and higher education. Crisp and Cruz indicated that from Jacobi's identification of 15 definitions in 1991, they later identified over 50 definitions in 2009 (p.257). Many researchers have concluded that there is a lack of consensus for a definition in both corporate (Fassinger & Henseler-McGinnis, 2005; Haggard, Dougherty, Turban & Wilbanks, 2010; Noe, 1988a) and higher education (Anderson & Shannon, 1988; Crisp and Cruz, 2009; Jacobi, 1991; Johnson, 1989; Nora and Crisp, 2007) publications. It would seem that rather than a movement towards consensus, researchers continue to diversify their interpretations of mentoring. Anderson and Shannon (1988) concluded that "definitions of mentoring by their generality were too vague to be helpful to educators" (p.39). Fassinger and Henseler-McGinnis (2005) noted that some of the expansion was attributable to "new theoretical models that consider the contributions of minority status, power relations and political consciousness to the mentoring process" (p.145). However, among the definitional diversity, Jacobi's research identified three categories of consensus among the research literature: the emotional and psychological support, direct assistance with career and professional development and role modeling.

Emotional and psychological support.

An essential function of the mentor and protégé/mentee relationship is to provide some aspect of emotional and psychological support as the employee or students develops. Support can vary depending on the formal or informal nature of the relationship, but Johnson (2002) indicates that the psychosocial functions "enhance the protégé's sense of competence, identity, and work-role effectiveness. Psychosocial functions include role modeling, acceptance and confirmation, counseling, and friendship" (Johnson, 2002, p.89). Lack of effort in supporting emotional and psychological support results in a failed mentorship or a potentially toxic mentorship if it is formally assigned.

Career development assistance.

In the corporate mentoring theory there is a direct line for the mentor to assist in the career development of the protégé. As formal mentors within a corporate structure it is their role to assist the protégé is developing a career path within the corporate system. "Career functions are typically focused on career development and include aspects of the mentorship that enhance 'learning the ropes' and preparing for advancement. Career functions include sponsorship, exposure and visibility, coaching, protection, provision of challenging assignments, and transmission of applied professional ethics" (Johnson, 2002, p.89). Informal mentoring can have a similar function within a corporate structure, though the relationship is often developed through unscripted activities and the mentor and protégé develop career plans for the protégé because of their affinities. "Although it is clear that formal and informal mentoring relationships differ in how they are formed, and the length of the relationship, there is little research on whether formal

and informal relationships differ in the functions mentors provide or the career outcomes protégés obtain during the mentoring relationship" (Ragins & Cotton, 1999, p.529).

Role modeling.

Johnson (2003) writes role-modeling serves to offer the protégé a firsthand example of achievement, success, and professional competence in the specific profession. Although mentors will not be equally skilled at delivering each of these salient functions, it is essential that mentors be deliberate models, appreciating the fact that both their implicit and explicit behavior will offer protégés a powerful example of how to be a professional. Kram (1985, p.33) noted in her research that role modeling was the most frequently reported psychosocial function. Contrary to common assumption, research suggests that mentees are highly selective in adopting role model characteristics, which meet their immediate needs (Schmidt, 1980). Schmidt asserts that with the selectivity of the mentee there are three types of incomplete modeling processes, partial, stage and option. "In partial modeling the most common type mentees will selectively choose attributes that are compatible with their own sense of self" (p.46). In stage modeling "newcomers in an environment will seek advanced students or colleagues as information sources for future aspects of their career development" (p.46). "In option modeling a new mentee will seek out variations to the status quo to provide examples of options for advancement" (p.46).

Higher education mentoring.

Jacobi (1991) noted that educational research has shown that mentoring definitions include distinct kinds of interpersonal relations and the link between the

mentoring and academic success. Beyond those critical elements the definitional

diversity continues to challenge researchers on a universally adopted definition.

The body of work of mentoring in higher education identifies the faculty-student

relations on educational experiences and outcomes as the focus of mentoring research.

Many studies have proposed mentoring models for use in higher education (Campbell,

Smith, Dugan & Komives, 2012).

Numerous reports have addressed the practice of pairing students concerning their

gender and or ethnic background. Nora and Crisp (2007) proposed that four major

domains were identified in the literature: "1) psychological or emotional support, 2) goal

setting and career paths, 3) academic subject knowledge support, and 4) the existence of a

role model" (p.337). They based their framework on Galbraith and Cohen's 1995

original six components. Nora and Crisp's contention with previous research

publications were that much of the content lack well-structured empirical efforts and

looked at the impacts of programs rather than focusing on design. They assert that, "only

when our definitional conceptualization of mentoring is extensive, solid, and consistent

can we begin to focus on the impact that it has within our persistence models" (p.342).

Types of Mentoring Relationships

Mentoring relationships are often categorized as being formal or informal.

Aspects of the relationships can be established by formal design with the intent to create

an outcome or by chance interaction. Ragins and Cotton (1999) noted one key difference

between formal and informal mentoring relationships is that "informal mentoring

relationships develop spontaneously, whereas formal mentoring relationships develop

with organizational assistance or intervention—usually in the form of voluntary

assignment or matching of mentors and protégés". A second distinction, Ragins and

Cotton drawing from Douglas (1997), is that "formal relationships are usually of much

shorter duration than informal relationships" (p.529).

Belle Rose Ragins and John Cotton (1999) examined mentoring relationships and

identified four additional processes within formal and informal relationships (p.531 -

532).

- Formal mentors may be less motivated to be in the relationships than informal

  because they may not be developmentally ready to mentor.

- Informal relationships typically develop because of the strong affinities and

  communication skills with the mentor.

- Formal mentorships may cross-match people in the professional world that

  may not have similar skill development goals. In contrast, informal

  mentorships often develop because of mutual interests and career paths.

- In formal mentors, there is the concern that a formal process may also

  construe inordinate favoritism and can lead to conflicts, which the mentor may

  not be able to intervene.

Eby, Rhodes and Allen (2007) questioned the long-standing notion of how formal

and informal relationships are defined. In the traditional scope of formal mentor in

higher education, the mentor is typically a faculty member, advisor, or someone derived

from an official mentoring program designed at the institution. Relationships that are

derived outside of formalized structures are considered informal. Eby, Rhodes and Allen

(2007) caution against considering formal and informal relationships solely on the basis

of the initiation of the relationship. Defining the relationship purely by the initiation

masks substantial and potentially important variability within informal and formal mentoring. They suggest that it is important to consider two different aspects of formality: "relationship initiation and relationship structure, since both may influence relational processes and outcomes" (p.13).

The Mentoring Process

Kram (1983, 1985) established a four-phase process for mentoring relationships; initiation, cultivation, separation and redefinition. This was in recognition that mentoring relationships are not static, but evolved through phases that have different functions, experiences and patterns of interactions (Ragins & Kram, 2007). Kram's phase process remains the standard in evaluating mentor-mentee relationships in the business environment and higher education. Further examinations of the phases are listed below. Carol Mullen and Dale Schunk (2012) have refined the definitions and aspects of timing for use in higher education. The focus was on graduate education, but the conceptualization is closer in timing to the educational environment than Kram's initial representation, which was solely focused on the corporate environment. Mullen and Schunk (2012) note that in higher education the timing is likely to be shorter due to the compressed nature of degrees.

    Initiation.

Initiation is "a period of six to twelve months of the relationship in which the mentee's 'fantasies' about opportunities become concrete and opportunities for interaction are focused around work tasks" (Kram, 1985, p.49). In higher education the process begins with invitations to join activities that define specific academic entities. Potential mentees build social capital by seeking guidance and advice early on in their

academic careers. They make connections not only through meetings with potential

mentors but also through making informal contact, such as during events that include

orientations, conferences, and seminars. They become knowledgeable about the

possibilities for creating the conditions for their own learning (Mullen & Schunk 2012).

Cultivation.

Cultivation is "a period of two to five years when the maximum range of career

and psychosocial functions are provided. Mentors and mentees continue to benefit from

the relationship with increasing interaction and emotion bonding" (Kram, 1985, p.49).

Cultivation is the most active of all phases. During this phase, the mentor is most direct

in the career or academic development of the mentee. This relationship shifts from a one-

way helping relationship to more of a mutual exchange that eventually ends when the

individual needs change or there is a physical change because of promotion, transfer or

graduation (Ragins & Kram, 2007).

Separation.

Separation phase is a period of six months to two years after a significant change

in the structural role of the relationship or emotional experience. The mentee no longer

wants guidance, rather the opportunity to work autonomously. "The mentor is less

available to provide mentoring functions" (Kram, 1985, p.49). Mullen and Schunk

(2012, p.99) note that "separation often is seen as having a negative connotation, but in

mentoring theory and practice, separation is an inevitable outcome that follows from an

intense learning experience, even one of mutual benefit".

Redefinition.

Redefinition phase is an indefinite period after the separation phase when the relationship ends or takes on significantly different characteristics, reflecting a more peer-related friendship. "The mentoring is no longer needed in its previous form. Resentment diminishes and appreciation increases" (Kram, 1985, p.49). The final phase of redefinition is where the mentor and mentee re-establish their relationship according to a new set of rules (Olian, Carroll, Giannantonio & Feren, 1988). The relationship at this point is more likely to resemble a friendship that is rarely focused on career components and more so of personal support.

Pairing.

Pairing, or relationship initiation, refers to the process in which a third party is involved in encouraging, facilitating, or matching mentors and mentees. At one end, a third party may determine who is matched in a mentoring relationship with no input from mentor or protégé. "This other-party matching process can range from random assignment to deliberate pairing based on one or more attributes" (Eby, Rhodes & Allen, 2007, p.13).

This type of matching can occur in the academic or workplace setting where mentor and mentee are paired up by a third party coordinator (administrator, faculty, and senior official). If it is a formalized program, coordinators will match individuals based on specific criteria to the program like, gender, ethnicity, career interests, or other affinities defined in the particular program (Campbell & Campbell, 2007; McLaughlin, 2010). At the other end of the pairing spectrum would be a situation where due to

environmental constraints participation is limited and the ability to match mentors and mentees with significant affinities is limited (Finkelstein, Poteet, Allen & Eby, 2007).

Mentor and Mentee Relationship Characteristics

Some relationships can be incredibly meaningful while others may be seen as superficial and negative (Chao, 1997; Dougherty, Dreher, Arunachalam & Wilbanks, 2013; Eby et al., 2000). The negative dynamic is situated differently depending on the research perspective. From the corporate work environment, much of the research dealt with the relational dysfunction. Eby, McManus, Simon and Russell (2000) identified three areas from previous research that while not exhaustive, defined circumstances in which the mentor-protégé relationships failed; "three such circumstances are: (a) the mentor and protégé have dissimilar backgrounds, (b) the mentor and protégé are dissimilar in terms of attitudes, values, and beliefs, and (c) the protégé has a direct reporting relationship with the mentor" (p.6).

Outcomes.

The challenge for many programs is the variability of description in outcomes, which makes it difficult to examine outcomes (Campbell, 2007; Jacobi, 1991). "Those programs that report outcomes typically utilize satisfaction measures to measure positive outcomes" (Campbell, 2007, p.332). Some of the challenges are due to many of the programs being small in scale and it is difficult to get statistical significance to understand effects.

Regardless of the degree of success of the mentor-protégé relationship, outcomes will result that may be positive or negative for the mentor, the protégé, and the organization or profession. Mentors may benefit greatly from positive mentor-protégé

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relationships. Mentors often get satisfaction and confirmation through helping less experienced individuals in their development (Hunt & Michael, 1983).

Positive outcomes.

From a corporate perspective, protégés experience an improved self-esteem improved attitudes of their work, increased promotions (Allen, Eby, Poteet, Lentz, & Lima, 2004). Nora and Crisp (2007) validated three domains in their conceptual framework that identify, when relationships go well; positive outcomes for student participants in higher education, psychological or emotional support, goal setting and career paths, and career benefits.

Psychological or emotional support.

As mentioned in previous sections, Kram (1985) identified efforts of "mentors in the role of psychosocial support as those aspects of the relationship that enhance an individual's sense of competence, identity and effectiveness" (p.32). Psychosocial functions include, but are not exclusive to, role modeling, acceptance and confirmation, and counseling (pgs. 35-36). Kram's research was based on the corporate workplace, but numerous researchers have validated applications of her work in higher education (Campbell, 2007; Crisp and Cruz, 2009; Ferrari, 2004; Hu & Ma, 2010; Jacobi 1991; Shultz, Colton & Colton, 2001).

Goal setting and career paths

Research from corporate related research finds that individuals that are mentored have a better outlook on career opportunities and are more likely to receive promotions and increased pay (Allen et al., 2004; Chao, 1997; Kenny & Medvide, 2012; Kram, 1985; Ragins & Cotton, 1999, Ragins & Kram, 2007). This is also inclusive of students in

higher education receiving mentoring in regards to career planning (De Tormes Eby, Allen, Baranik, Sauer, Baldwin & Evans, 2013).

Academic subject knowledge support.

Mentoring can have a positive impact on students in higher education and their educational outcomes, course and degree related, by having formal and informal mentors among the faculty, staff, and external mentors (Campbell & Campbell, 1997; Crisp and Cruz, 2009; Mangold, Bean, Adams, Schwab & Lynch, 2002; Nora & Crisp 2007). Undergraduate mentoring can include both planned (e.g., scheduled meetings, advising, formal mentoring program participation) and unplanned (e.g., impromptu conversations, unscheduled lunches) interactions between students and faculty.

Particularly for undergraduates, college is an important socializing agent and represents an important transition into adulthood (Eby et al., 2007)   Academic outcomes can be especially positive for underrepresented groups, like ethnic minorities, first generation students, and women, in undergraduate programs (Fassinger & Henseler-McGinnis, 2005). Interactions with faculty outside the classroom can also sharpen critical-thinking skills and help undergraduates develop self-confidence and positive attitudes about learning (Eby et al, 2007, p.16).

Negative outcomes.

Negative outcomes are different from negative interactions that can take place in a mentor-mentee relationship.   There are negative effects that can occur in healthy mentor-mentee relationships. Eby, McManus, Simon and Russell (2000) differentiate attempts by the mentor to help the mentee in their confidence or independence through tough discussions as different from dysfunctional relationships, which develop negative

outcomes, which are malicious and have negative intentions toward the mentee. Rather "dysfunctional mentoring is categorized in terms of whether the intentions underlying the mentor's behavior is bad or good" (p.5). The bulk of the research regarding negative aspects focuses on corporate style dysfunction, but has applicability to the higher education environment. Terri Scandura (1998) examined mentoring literature and mapped the unpleasant aspects of the relationships. To map her findings she utilized Duck's 1994 typology of negative relationships and identified seven categories, albeit in a corporate context, that encompass negative relationships in previous research that resulted in her model of dysfunctional mentoring. The categories that encompassed dysfunctional mentoring are Negative Relations, Sabotage, Difficulty, Spoiling, Submissiveness, Deception and Harassment.

Negative relations.

"Negative Relations encompass aspects of the relationship in which the mentor bullies the mentee" (Scandura, 1988, p.455). This may be a result of an egocentric perspective from the mentor in which the mentor must always be the center of attention.

Sabotage.

"Aspects of this category involve situations in which the mentor is seeking revenge through means of ignoring the mentee and limiting their opportunity or using the lack of response as a way of punishing the mentee" (Scandura, 1988, p.455).

Difficulty.

"Difficulty is not a resultant of malice towards the mentee, rather the lack of common bonds leads to ultimatums in their relationship to continue the interaction despite the negative effects on the mentee" (Scandura, 1988, p.455).

Spoiling.

"Spoiling relates to vocational issues in which one or both members of the relationship have good intentions but the resulting actions "spoil" the relationship. The actions put forth by either the mentor or mentee result in a perception of betrayal that is often not reconciled and creates mistrust and unfairness in their professional dialogue" (Scandura, 1988, p.455).

Submissiveness.

"Submissiveness is the result of an imbalance of power, a lack of mutual exchange of thoughts and ideas, in the relationship, which results in submissive behavior in exchange for relational or organizational rewards" (Scandura, 1988, p.455). Scandura notes that submissiveness only perpetuates the tyrannical nature of the mentor and lays the groundwork for dissolution of the relationship.

Deception.

Deception is the result of either the mentor or mentee manipulating information in order to get compliance from the other person (Scandura, 1988, p.455). This behavior is an indicator that the relationship is somehow dysfunctional because it results in the need for deceptive practices to create positive outcomes for either person in the relationship.

Harassment.

"Harassment is inclusive of sexual, gender or racial discrimination and creates an imbalance of power that results in dysfunctional behavior and ultimately psychological abuse" (Scandura, 1988, p.455). Scandura included Parker and Kram (1993) "the challenges associated with women mentor-mentee relationships that have

unacknowledged transference and projections from mother-daughter experiences" (p.50) that may be repelling rather than compelling.

Eby, McManus, Simon and Russell's (2000) review of Terri Scandura's theoretical model went further and examined relationships from the perspective of the protégé focused on three situations, which are often associated with negative mentoring experiences. Eby et al. suggested that; "(a) the mentor and protégés have dissimilar backgrounds; (b) the mentor and protégé are dissimilar in terms of attitudes, values and beliefs; and (c) the protégé has a direct reporting relationship with the mentor" (p.6). In their findings, they found that "mentor neglect was the most frequently reported negative experience by almost a third of the study participants" (p.15). This is not to be confused with the distancing that Kram identifies as a naturally occurring element in the distancing phase of mentor-mentee relationships. They also concluded that most of the negative experiences take place after the initiation phase or the relationship would likely terminate prematurely or not develop into a mentorship (p.16). In 2002, Lillian Eby and Tammy Allen "revisited the meta-themes identified in 2000 and identified that negative mentoring experiences clustered into two categories Distancing/Manipulative Behavior and Poor Dyadic Fit" (p.470). Feldman (1999) also questioned the aspect of a "protégé as victim" model that while the greater responsibility is on the mentor to restrain their actions when negative activities developed, that does not consider when the protégé's role misses the mark. He writes, "a broader view of dysfunctional mentoring is clearly needed in future research if only to understand how non-complementary personal styles – and not just personality flaws on the part of the mentor- contribute to these destructive dynamics" (p.274).

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Models for mentoring.

Benishek, Bieschke, Park and Slattery (2004) noted that the "vast majority of existing conceptualizations of mentoring fail to acknowledge the likelihood that difference in life histories and life contexts of both the mentor and the mentee may impact the mentoring relationship" (p.429). For reasons identified in troubles defining mentorship, numerous models are used to justify mentorship program structures. In addition to Kram's 1985 model and subsequent revisions, the following models are identified for their usefulness in addressing the AWIC program and the theory derived from the mentor and mentee interactions.

Social learning model.

Bandura (1977) is used in a limited way to provide a theoretical foundation for mentoring. Social learning theory describes the modeling process that takes place as individuals learn through senior members of an organization (Campbell, et al., 2012). Bandura's theory (1977) identifies four sources for self-efficacy graduated mastery, vicarious role modeling, social persuasion, and emotional experience. Jacobi (1991) noted that, "while social learning theory describes the role of modeling in learning, it does not address other aspects of mentoring such as professional or emotional support, and therefore it is not discussed further in this review" (p. 522). De Tormes Eby, et al. (2013) also recognized self-efficacy is associated with psychosocial support and relationship quality, but not instrumental support because it only addressed psychosocial related aspects of the mentoring process.

Involvement in learning.

Derived from Astin's theory of involvement (see retention theory section), it is believed that the more involved students are in their education process the more likely they are to persist and graduate. From this perspective, mentoring can be viewed as a vehicle for promoting involvement in learning. "The mentor would encourage and motivate the student mentee to deepen his or her involvement in learning and would provide opportunities for particular kinds of involvement" (Jacobi, 1991, p.523).

Reciprocal relations.

Hunt and Michael (1983) were one of the first to compile and complete a dyadic mentoring model that considered five factors contextual and environmental, mentor characteristics, protégé characteristics, stages and duration of the relationship and outcomes for the mentor, protégé and organization involved (Jacobi, 1991). "Their model focused on the corporate environment and looked for more efficient ways to 'fast track' recruits into advanced positions" (p. 475). While it is considered one of the most complete models in mentoring theory, it lacks empirical testing (Fassinger & Hensler-McGinnis, 2005). Noe (1988b) suggested that perhaps it's "lack of attention was due to operationalizing the identified mentoring functions" (p.459).

Multicultural feminist mentoring model.

Several researchers have written about the concerns related to traditional models of mentoring and its directive and hierarchical nature (Benishek et al., 2004; Fassinger, 2005). Ruth Fassinger proposed a new model in 1997, feminist mentoring, which was later revised by Benishek et al. in 2004 to include multicultural thoughts, which resulted in a multicultural feminist mentoring theory (MFM). Fassinger (2005) describes

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multicultural feminist mentoring as an interactive process in which differences are identified and explored as they affect the mentoring relationship and the professional development of each individual. Fassinger (2005) noted that "compared with traditional hierarchical mentoring models, multicultural feminist approaches can be used more democratically to develop the skills and productivity of individuals at all levels of organizations because power and privilege are consciously acknowledged, shared, and used to empower mentees" (p.151).

The model was derived from Fassinger's 1997 model of Feminist Mentoring theory that she cited in her 2005 work.

1. The acknowledgment of a mentee's potential need for multiple developmental relationships rather than an exclusive relationship with one mentor recognizes that individuals may define themselves through several identities (some or all of which may be non-majority identities), and also that it can be extremely difficult to find mentors who match even one, let alone all, of their identities (p.152).

2. Multicultural feminist perspectives value demographic and cultural diversity and promote personal and institutional flexibility encompassing a developed facility for moving, thinking, and understanding across disciplines, communities, and paradigms and a tolerance for ambiguity (p.152).

3. Mentors overseeing the development of individuals expected to thrive in a globally interconnected society must nurture an ability to embrace interdisciplinary, multilingual, multicultural approaches to human opportunities and challenges, and mentoring arrangements themselves must model this complexity in approach (p. 152).

Benishek et al. (2004) in establishing the MFM model recognized four critical dimensions that would differentiate MFM from other models. First, MFM would emphasize relational aspects of the mentoring process in recognition that no single mentor can be all things to a mentee. "Mentees are encouraged, especially from underrepresented groups, to establish a 'constellation' of mentors to meet the mentee's

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needs better" (p.437) Second, "MFM values collaboration and encourages mentees to get

involved in activity hands-on experiences that encourages mentees to bring their unique

perspectives and contributions, which respects the contributions of those that have been

traditionally marginalized" (p. 438). Third, "MFM integrates dichotomies in which there

is an integrative process of "connected knowing" in which abstract knowledge and one's

experiences are valued equally. This creates a better alignment of understanding between

the mentor and mentee because the mentees do not have to dismiss their prior experiences

or cultural background. This is especially important when considering, "the perspective

that many minority group members have been encouraged to disavow self-knowledge

and to adopt a majority perspective. This dimension of MFM encourages the application

and integration of self-knowledge (which takes place in a cultural context) to the more

abstract information with which they are confronted" (p.439). Finally, incorporation of

political analysis is addressed as a dimension of the relationship. "MFM mentors are

social advocates and aspects of the institution that reflect mainstream values (e.g.,

sexism, racism, heterosexism, and classism) are highlighted and confronted. Mentors

challenge the status quo and accept the conflict that ensues" (p.439).

Chapter 3.

RESEARCH PROCEDURES AND METHODOLOGY

Methodology

The methodology used for this research project was qualitative and specifically grounded theory. The rationalization for a qualitative process was two-fold. First, the number of participants within the program that fit the constraints of the first year, first time freshman category was extremely small and did not lend itself to statistical analysis. The generalizability aspect was not a significant consideration for the AWIC programmatic efforts as there were no theoretical or standardized guidelines for the structure of the program. Second, given the almost ad-hoc nature of the program design it was not apparent from the onset what theoretical constructs would be visible simply because they were not used in the program design. The realities of both these items make it necessary to follow a qualitative evaluation and specifically a grounded theory approach.

Grounded theory, a theory originally developed by Barney Glaser and Anselm Strauss (1967), "involves a process in which a constant comparative analysis is used strategically to generate theory" (p.23). Using the constant comparative method, theory development develops in four stages, "comparing incidents applicable to each category, integrating categories and their properties, delimiting the theory, and writing the theory" (p.105). As mentioned in previous sections, the grounded theory process provides the flexibility to identify current theory and/or develop theories that may be applicable to the student's experiences in the mentoring program. To identify the underlying theory to the

perceptions of the AWIC participants the grounded theory process relies on the constant comparative method (Glaser & Strauss, 1967, p. vii) that develops a conceptually rich theory (Strauss & Corbin, 1994). Strauss and Corbin noted that "theories are interpretations made from given perspectives as adopted or researched by researchers… that are living in certain eras, immersed in certain societies, subject to current ideas and ideologies" (p.279).
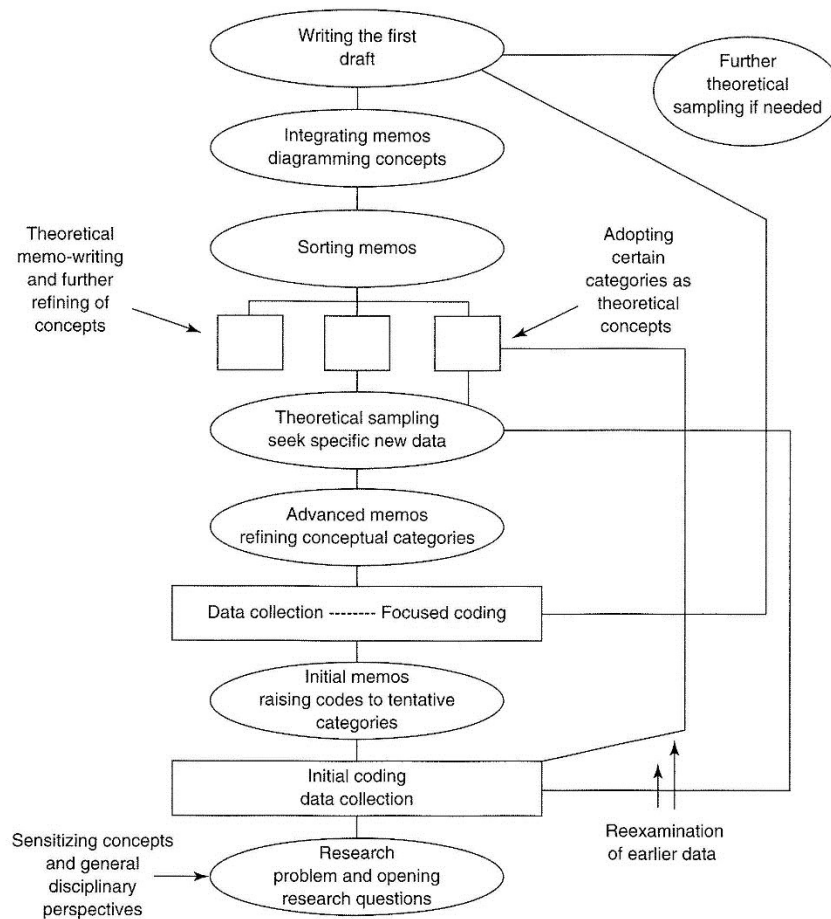
Figure 3. The grounded theory process (Charmaz, 2006, p.11)

Gathering data was an interesting process where at times there was a consideration that the researcher was part of the community and attended meetings, orientations and other activities of AWIC. The inclusion was not without reservations,

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certain activities were deemed "women only" and at other times meetings to discuss outcomes of the program did not include an invitation for observation. In the same way many of the mentors were quite candid during meetings and provided frank asides during AWIC activities. Those same individuals were however unwilling to discuss in the semi-structured interviews that were the core of the data collection process. During the cording process the lack of participation in the semi-structured interviews was clearly linked to disruptions with the mentor-mentee relationships. This type of revelation would not have been possible without a grounded theory process in which the flexibility to pursue the data as it presented itself and continue to provide rich data that involved ultimately in certain aspects of the theory development.

Selection of Research Participants

Participant selection for the study was obtained through the AWIC cohort in the construction management academic unit. All of the first time freshmen that participated in the AWIC program in the 2008-2009 academic year submitted contact information as part of the application process. Upon approval by the Arizona State University – Institutional Review Board (IRB) to contact the students and mentors, the academic department provided a list of mentors and students. There were twenty-two mentors and twenty-two students who participated in the 2008-2009 academic year. All of first time freshman participants were contacted for participation in the study. Eight students met the criteria of being first time freshmen and six students formally participated in this study. A seventh student provided partial feedback and was observed in the larger AWIC activities.

Data Collection

To understand the motivations of the mentors and students, multiple data collection techniques were used. Techniques used included face-to-face interviews with three different groups, mentors, students, university administrators and the collection of artifacts that define the AWIC program. Louis and Turner (1991) suggest that this qualitative approach is particularly useful when studying underrepresented populations where cultural difference and small numbers make the advantage of survey research less clear. The collecting of data from multiple sources helps triangulate motivations and effects of the Advancing Women in Construction mentorship program.

In an attempt to include possible disconfirming evidence, students were interviewed who chose to depart the AWIC program. One student interviewed chose another program instead of AWIC and a second student left construction management in 2010, but returned a year later. Interviews with both students included discussion about negative effects that may have contributed or failed to delay their departure from the academic program.

Student Interviews

A grounded theory approach often utilizes interviews to provide rich data. One method of interviewing that is highly effective for discovery is intensive interviewing. This permits an in-depth exploration of a particular topic or experience and thus is a useful method for interpretive inquiry (Charmaz, 2006). Interviews started in April 2010 and continued through the student's respective graduation dates. Six students participated in 2010 at the sophomore year and a final interview during the semester prior to

graduation. Student graduation dates varied from fall 2011 to spring 2012. Several students accelerated their coursework and graduated early. Both interviews were semi-structured open question interviews. Interaction with the students continued through 2012, both through contacts at the Del E. Webb School of Construction as well as formal recorded discussions in which they reflected on their experiences at ASU and within the AWIC program. A rapport and comfort level was established that enabled discussion of personal experiences in both formal interviews and at other AWIC or academic events. The interviews were semi-structured and guided by a series of open-ended questions so that at a minimum the questions touched the topics described in the research questions. The interview questions for the sophomore year interview are in Appendix B. Interview solicitation followed the guidelines set by the Arizona State IRB. A formal inquiry letter was sent to each candidate that identifies the researcher and the reason for the interview. The letter included contact information of the faculty chair and information that verified the research topic was legitimate. A copy of the solicitation letter is in Appendix C.

The interview questions were presented so that the interviewees had an opportunity to prepare their answers and to decline any question that they might feel was objectionable. All participants answered all of the questions provided and answered follow-up email clarifications. All participants had the ability to opt out of the research at any time. All the participating students discussed the results of the first interview in the final interview at the time of graduation. The second interview was completely open ended, but within the context of the AWIC program. It focused on their interactions since the sophomore year and their thoughts about their future and ideas to improve the AWIC program. In between the two interviews, the students and the researcher continued to

interact at AWIC events, in between classes and at general walk-in discussions. The impromptu discussions were often documented with a notepad and imported in NVivo 10. NVivo 10 is a software package that supports qualitative research methods that include literature review capabilities, content organization and analysis, interview transcriptions and coding. All interviews were digitally recorded. All interviews and field notes were transferred to NVivo 10 for storage, processing and coding.

Interviews with students often took place in an administrative office or classroom environment on the campus of Arizona State University. All discussions included the caveat of anonymity, the opportunity to withdraw responses, not answer questions or request exclusion at a later date.

Student mentees.

In an effort to retain anonymity, specific descriptors to the student's likenesses and information that would identify specific backgrounds were omitted. Pseudonyms were assigned to the students and mentors as part of this process.

Alana.

Alana is a native to Arizona and started ASU as a first time freshmen. Her background as she identified it was upper middle class with both parents being working professionals. She classified herself as white and decided to join the construction management program after encouragement from her father. Angela elected not to participate in the formal interviews, but did exchange emails and was part of many of the student-related meetings throughout her time at ASU. She graduated in four years and now works in the construction industry. Alana graduated in the top 25 percent of her high school class.   Alana was the most distant during the inquiry process and many of the

students were irritated by the perception that she was not committed to the AWIC program and simply going through the checklist to receive the grant money. She had a positive experience with her mentor and on several occasions indicated that they were more like friends. Both of her internships were with large construction companies and at the time of graduation Alana went to work for a large national general contractor.

Angela.

Angela is from California and enrolled at ASU as a first time freshman. She came from an upper middle class family and went to a large, diverse and elite high school. She identified herself as white and her parents are married and own a small construction company. Angela departed from the construction program after her freshman year and later returned in her sophomore year. The challenges she faced dealt with personal doubt and fitting in with other students in the construction management program. Part of her early departure was a result of not fitting in and the inability to work her way into a socially comfortable atmosphere. She would return her sophomore year after finding that kind of support group outside of the construction management program. Angela interned with a large heavy civil firm and interned with a large national commercial general contractor. Despite excellent experiences, she questioned what she might do because she did not like how she reacted under the work related stress in construction. Angela had a mentor assigned in her first year, but cut off ties when she changed majors in her first year. She would later find an informal industry mentor through another engineering club. At the time of graduation she was recognized in the Ira A. Fulton Schools of Engineering for outstanding volunteer work.

Ann.

Ann is a native to Arizona and a first time freshman. She identified herself as being bi-racial. She indicated that her family is middle class and that her parents are married to each other.   She was in the top 10 percent of her graduating class and said that courses were easy in high school. Ann was highly sociable and gravitated to the AWIC program events for their networking opportunities. Her mentor was a graduate of the construction management program and characterized her relationship as extremely beneficial. Ann completed two internships with her mentor's company.   Ann graduated in four years with a degree in construction and started work immediately upon graduation with a large national general contractor. She attributes a lot of her success to the AWIC program.

Judy.

Judy is not originally from Arizona, but finished her high school in the Phoenix area. She graduated in the top 10 percent of her class. She identified herself as brainy. Her parents are divorced and she resided with her mother until she went to college. Her father works in construction. She identified her family as being highly educated and a normal middle class standing.   Judy was very active in the AWIC program though she claimed that the greatest benefits were in her junior and senior year when she was networking. Judy interned with a large heavy civil firm and with a medium sized commercial firm. Her mentor was a graduate of the program. They talked a lot about common course experiences and life in general. Their relationship did not continue beyond her sophomore year. She did not identify another mentor after her formal mentor. Though she faced many personal challenges that included personal doubt, she persevered and

finished the construction program in 3.5 years. Judy indicated that the AWIC program was helpful in her process to stay in the construction program.

Mary.

Mary is a native to Arizona who entered the program as a first time freshman. She identified herself as a Latina and came from a middle class family where both parents work. She identified herself as an athlete in high school, graduated in the top 25 percent of her class and indicated that obtaining good grades in high school was rather easy. Mary's biggest challenge was procrastination in many things that she did. She was always upbeat and valued social interaction as well. Mary had a mentor in her first year and she described the experience as "fine", but the interaction with her mentor was limited and ended after her first year. In her sophomore year she found another mentor in a similar construction program called Advancing Minorities in Construction (AMIC). Mary indicated she was more comfortable with her AMIC mentor and felt the group was a closer community. By her senior year she was mentoring other young women in AMIC.   She interned with a mid-sized heavy civil company and a very small residential renovation company. She graduated in four years and started work for a local land development firm.

Renee.

Renee is another Arizona native, though she said her parents grew up in the mid-west. She identified herself as upper middle class. Her parents are married and both work at executive level jobs. She graduated in the top three percent of her class and indicated that classes in high school and college were not really challenging. Renee volunteered in a number of charities in high school and had several years of construction

related experience prior to entering ASU. She was the most focused out of all the students, extremely confident in her capabilities, and was often complacent about the lack of rigor in the construction curriculum. She initially double majored with civil engineering, but after calculating the time and money, she opted for construction management because of the financial opportunity after graduation. She participated in many student club and competitions while in school. She interned with the same large general contractor both years and was hired by the company at graduation. She finished her degree in 3.5 years. Her mentor was a project manager for a mid-sized commercial general contractor and their relationship ended after graduation. Renee was one of the most critical students of the AWIC program. She worked part-time with her future employer the last two years of her schooling and indicated that she had several mentors within the company that were closer in age.

Taylor.

Taylor is from out of state and considered herself as being middle-class. Her parents are still married and she identified herself as white. She graduated in the top 30 percent of her class and had several internships with a construction company prior to coming to ASU. She indicated that courses were challenging at ASU, but were manageable. Taylor was the most reserved of all the student interviews and most focused on answering questions succinctly. She was identified by the AWIC mentors as very mature for her age and was seen as a potential leader for AWIC in the future. She interned with two large commercial general contractors for her internships. She continued to work with her second internship sponsor part-time through her senior year.

Industry Mentor Interviews

Five industry mentors participated in the semi-structured interview. Interaction with the mentors was limited. Several of the mentors left the region and no longer work in construction. The mentor group indicated that many of the mentors departed as a result of the recession that hit the State of Arizona pretty hard. Other mentors contributed to the overall research program and provided rich feedback at meetings and other AWIC related activities, but unresponsive to conducting a formal interview.

Interviews with industry mentors were semi-structured and were guided by a series of open-ended questions to touch on the topics described in the research questions. Interview solicitation followed the guidelines set by the Arizona State IRB, see Appendix. The interview questions were presented in advance so that the interviewees had an opportunity to prepare their answers and to decline any question that they found to be objectionable. Like the students, mentors participants had the ability to opt out of the research at any time and had an opportunity to review the script and the eventual research results. Anonymity for the mentors was challenging. All interviews with the mentors were digitally recorded. Interviews with mentors were recorded digitally as mp3 files and transferred to NVivo 10 for transcription and coding. Field notes were also part of the interviews and were scanned and coded within NVivo as well.

Andria.

Andria is at the Executive level of a medium sized commercial construction company in Phoenix. She has a bachelors and masters degrees and has spent nearly twenty years in the construction industry. She is in her mid-40's and has been active in AWIC as mentor, though she has found finding time to be available difficult. Andria does

not have a construction degree and found herself in construction through a circuitous route from the financial side of the business. Her first intern was the only freshman that departed the construction management program in her first year. Her interaction was minimal. Most of her experiences were support for a transfer student that was not included in this study. She had several mentees since 2008 and says they have been more of an ad-hoc nature than a formal assignment.

Catherine.

Catherine chose not to do a formal interview, but provided a significant amount of feedback in formal meetings and at AWIC events. She is white and a Project Manager for a large national commercial construction firm and has thirty years of experience in the construction industry. She has been one of the most vocal about students developing professional skills and students developing a proactive approach to working with mentors. She has had three mentors since the inception of the AWIC program and none of the experiences have lasted beyond the first year of interaction.

Doris.

Doris is a Project Manager for a construction company. She is white and has an undergraduate and master's degree. She has worked in the construction industry for a little over twenty years. Doris was one of the most reflective mentors that was interviewed. She believed she provided valuable experiences for her mentor. She provided support and interaction for two years.

Estelle.

Estelle is a Project Manager for a construction company and has an undergraduate and graduate degree. She is not originally from the United States, but has become as

citizen. She is a graduate of the construction program and has over twelve years of experience. Estelle established one of the best relationships in the freshman cohort.

Penelope.

Penelope is an Estimator for a large commercial construction company. She is white and has an undergraduate degree in construction from ASU. Penelope has over eight years of experience in the construction industry.

AWIC program designer RL.

In addition to being a mentor to several AWIC students over the last couple of years, RL, is the CEO of a medium sized construction general contracting company and was the chief designer of the AWIC program. RL is white and is not from Arizona. She has a bachelors and masters degrees in business. RL was interviewed in August of 2012 and she provided details regarding her thoughts about the program and the resources she utilized to create a structured program.

University Employee Interviews

Two university employees over the course of the first year of the program played an integral role in establishing the program and helping industry mentors with the administrative work. The first employee ML helped establish the program, but departed in the fall semester of 2008 just as the AWIC program launched. ML was not responsive to inquiries about reflecting on the AWIC program. JM and DR functioned as internal administrative coordinators for the AWIC program and provided valuable data regarding the processes and perspectives of students and professionals.

Employee – JM.

JM was an administrator after ML departed ASU. Her effort was to maintain the integrity of the program through the completion of the first year in May of 2009 and to measure the effectiveness of the program through a questionnaire distributed to the students. Interviews with JM focused on her interpretations of the program and the participants in the five months that she was the administrator. JM was responsible for implementing the end of the year analysis for the AWIC program. JM is white is not originally from Arizona and has a PhD in higher education leadership and has extensive experience working in higher education. Her focus in recent years was online education. JM was interviewed in May of 2010 and helped shape several of the research design aspects for this study.

Employee – DR.

DR was interviewed in the summer of 2012. Her effort with AWIC continued through the completion of the research for this study. She continues to be a resource of information regarding the students, mentors and policy changes within AWIC. DR is white, is an Arizona native and has an undergraduate degree in journalism. She has extensive experience working with construction related associations. Prior to joining ASU she served as an interim mentor for a transfer student in the AWIC program from 2008-2010.

AWIC Document and Report Analysis.

Several documents were produced over the course of the first year of the mentorship program. The most definitive is the AWIC manual. The production of the

manual involved a series of sections posted to Google Documents and shared with the entire group. In the document analysis, the manual, email communications and the final questionnaire were examined to validate personal accounts to help triangulate emerging themes.

Program manual, events and incidental interactions.

Several documents provided supplementary information for the study. The manual that was developed by RL for the Advancing Women in Construction mentorship program is a thirty two page manual for both the mentor and student that describe the goals of the AWIC program, how mentors were assigned and how the effectiveness of the program would be measured. The manual defined how the supplementary interview questions were shaped.

As part of the mentorship program, there were regular events in which the entire group participated. The researcher attended board meetings to see how the group at large group interacts and if there is anything that may help with the overall analysis.

Student questionnaire.

As part of the mentoring program, a questionnaire was submitted to the twenty-two interns in May of 2009. The survey was an anonymous submission and may not be an effective measurement of the experiences of the students.   The researcher had no way of verifying the first time freshman comments within the survey results. The questionnaire included several probing questions for the students and mentors.   The response was limited, but enough to reveal several challenges that were consistent among all of the student participants.

Memo-writing

Grounded theory utilizes memo writing as a connection between the data collection and writing draft papers. "It is a crucial method in grounded theory because it prompts the researcher to analyze your data and codes early in the research process" (Charmaz, 2006, p.72). Memo writing was used extensively in this project because of the variable sources of data and the longitudinal nature of the project. The memos initially were self-reflective in nature as data were collected from meetings, formal interviews and documents such as the program manual. As the project progressed the memos were utilized as a transition point as coding stages moved into axial and ultimately theoretical categories.

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Data Analysis

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Transcriptions of all the interviews are through NVivo 10. Though time consuming, it provided an opportunity to improve questions and identify emerging themes more rapidly than if, it were outsourced. Additionally, field notes collected from the interviews were integrated into the transcripts. Data was collected and analyzed simultaneously using the constant comparative method, which involves "comparing incidents applicable to each category, integrating categories and their properties, delimiting the theory and ultimately writing theory" (Glaser & Strauss, 1967, p.105). Using the Grounded Theory method, theoretical coding was used to develop hypotheses based on what the participants said (Auerbach & Silverstein, 2003).

Coding

Using the grounded theory process coding is where interaction with the data begins (Charmaz & Mitchell 2001). In the coding process, there are three basic types, open, axial and selective (Strauss & Corbin, 1994). Initial coding begins with identifying everything that is observed in the data. As coding continues, relationships can be elaborated within the transcripts and meanings was addressed. Eventually themes are developed to theoretical narratives and research concerns (Auerbach & Silverstein 2003).

Initial coding, or first cycle coding, was facilitated using a structural coding process (Saldaña, 2009, p.66). The majority of the data representing the interaction and interpretation of the student mentees was the result of semi-structured discussions and students interactions over the course of three to four years. Several of the mentees graduated within three and half years. This was a highly effective process of initial coding that resulted in several hundred nodes within NVivo.

One of the challenges is not to over interpret what, especially the student said and representing it with a male interpretation of what the researcher believes the female student shared. The closer the researcher remained to their literal words; the closer to honoring their perspectives. Eventually, there is the hope that some of the data will be generalizable and can be utilized in a larger context, perhaps for other construction management programs in the United States.

Initial coding.

The logic of initial coding "strives to stick closely to the data and remain open to exploring whatever theoretical possibilities can be discerned in the data" (Charmaz, 2006,

p.47). Initial coding often includes a line-by-line or word by word process. In the case of

the AWIC interviews, many of the ideas were already encapsulated within elements of the

interview protocol and allowed for the use of structural coding which "enabled the

identification of larger segments of text on an ever-expanding number of topics"

(Saldaña, 2007, p.69). At the end of the initial coding, there were over 225 nodes

identifying numerous aspects of the AWIC program. As the initial coding continued,

NVivo was particularly useful in extracting specific phrases, word frequencies and re-

coding of interview transcripts. The ability to assign content to multiple nodes was

powerful and enabled a deeper utilization of the participant's responses throughout initial

coding.

Focused coding.

Focused coding is the second major phase in which the most significant and

frequent codes sift through to make the most analytic sense to represent all data

(Charmaz, 2006, p.57). Focused coding moved quickly in NVivo, as grouping nodes and

creating sub-nodes that aggregate can bring concepts together is a very coherent and

manageable process. The focused coding process initially increased the number of nodes

from 225 to 266 as additional artifacts were integrated. At the conclusion of the focused

coding process there were ten major areas of interest as nodes were aggregated in larger

content areas.

Axial coding.

Definitions on the timing axial coding varies among researchers, but in Charmaz's

conceptual flow of grounded theory, axial coding takes place after focused coding.

Fassinger (2005) defines the axial coding process in which "relationships among

categories are organized and further explicated, grouping them into more encompassing (key) categories that subsume several (sub)categories; thus, axial coding puts the fractured data back together in the form of categories and their interrelationships, the next step in generating theory" (p.160). During axial coding major categories were identified as the causal conditions to the student's experience. The conditions served as hinges to the central phenomenon, the student and mentor relationship, to define the impacts of the AWIC program. Four major categories emerged that encompassed the student-mentor experience.

Theoretical coding.

Fassinger (2005) identifies the Theoretical Coding as a core "story" being generated, which is a "brief narrative of the most important aspects of the data, subsuming all of the other categories and articulating their relationships to the core story" (p.161). Charmaz (2006) notes that the sophistical level of theoretical codes specify the possible relationships between categories developed in focused coding (p.63). The story, or what will be identified in Chapters 4 and 5, as the process for the utility of the AWIC program and the mentors, take into account all criteria identified in the coding process and articulated in the core categories defined in this study, which will be discussed in Chapter 4.

Accountability

An extensive record of interaction was kept during the data collection and analysis process of this study. Over 18 hours of interview audio recordings were documented and transcribed, which generated 252 pages of transcription notes, in addition to the 54 pages of interview notes and the memos generated from student emails

and unstructured interactions. Again, all data and subsequent coding, open, axial to theoretical, was cataloged through NVivo software. Within NVivo each iteration of coding was separated, which allowed for reflection and an audit trail as nodes were revised within the software.

Triangulation.

Triangulation is a validity procedure where "researchers search for convergence among multiple and different sources of information to form themes and categories in a study" (Maxwell, 2005, p.93). All student participants had the opportunity to review the data analysis in the second round interviews at the time of graduation. Each person had an opportunity to review their initial perspectives and to compare/contrast perspectives as they neared completion of their degrees. There was also a considerable amount of interaction during their time as students in which clarifying questions were asked. Student and administrator contact was constant through in-person discussion or requesting clarifications by email. Interaction with the mentors and AWIC board was less frequent. Questions were asked at formal meetings and supplementary dialogue during and after meetings. Answers during the discussions were used to clarify the AWIC program structure or the views of the mentors.

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Assumptions

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Qualitative research involves the researcher making certain decisions regarding the nature and interpretation of reality. The researcher's ontological assumption, based on a constructivist perspective, emphasizes the subjective interrelationship between the researcher and participants, and the co-construction of meaning, as demonstrated through the variable perspectives of the participants identified in this study. The resulting quotes

that are included in this study serve to demonstrate the differing perspectives of the participants, though they share the common experience of this program. There is also the acknowledgement that the research cannot be devoid of the personal perspectives, biases and values of the researcher. That said, values and the potential subjectivity of results are discussed throughout the study. Finally, the decision to use a qualitative research methodology to answer the research questions is a concerted attempt to explore and understand the intricate details of the participants' experiences, to represent them fairly and accurately, before seeking and identifying commonalities in their experiences.

Limitations

Methods to validate the research were through the examination of the data through the researcher's lens by triangulation, seeking disconfirming evidence, disclosing researcher's assumptions, and perspective-checking with student participants, industry mentors, administrators and selected faculty, male and female, within the construction management program. Including multiple reviews during data collection and analysis was an effort to balance potential gender bias, gender negligence and to ensure that artifacts, such as the manual or meeting minutes, were interpreted as accurately as possible. Efforts to observe and validate aspects of the research conducted had the potential to influence the progress and outcomes of the AWIC program and the mentees efforts to graduate. The researcher had significant interaction with the students and the AWIC Core Group and provided suggestions, support and policy solutions when asked.

Chapter 4.

FINDINGS

The findings in this chapter serve to address the central research questions and

help to draw conclusions as to AWIC's effect on student retention and the defining

program utility for the first time freshman participants. These findings are further

strengthened by the longitudinal nature of the research study. The researcher had four

years of interaction with the administration, mentors, AWIC Core Group and students

which resulted in rich descriptions relating to the program and student experiences. The

original scope of the research project was to end after students concluded their

sophomore year. The researcher continued observations and interviews until each student

graduated from the construction management program. The additional time provided

data on changing perspectives and how they chose to utilize AWIC programmatic

services. The content of this chapter reflects the continued interaction and provides

multiple perspectives on the AWIC program with respect to retention.

Student Persistence

Freshmen retention in review.

The following section is in response to research question 1. Several of the initial

research questions were more direct in nature and were intended to create a better context

to the AWIC program and challenges facing women students. Data collected from the Ira

A. Fulton Schools of Engineering indicated that the previous three years of the AWIC

program, the first-time freshmen enrolled and then departed from the university, was

minimal. Students remaining in the university was an impressive 91 percent (n=21) and

83 percent (n=19) of those students remained within the construction management

program after the first year of study. In the four years following the program

implementation, similar numbers for retention exist. Of the first time freshmen starting

in construction management 91 percent (n=21) of the students were enrolled at Arizona

State University the following year and 74 percent (n=17) were enrolled in the

construction management program. Again, of the student students that started, 88 percent

(n=7) students graduated in construction management as one of the students that departed

returned her sophomore year to construction.

	2005	2006	2007	2008	2009	2010	2011
	Non AWIC			AWIC Program			
First Time Freshmen	4	5	14	8	6	4	5
Lower Division Transfer	1	1	0	2	1	0	0
Upper Division Transfer	0	0	1	1	2	3	0

Table 1 New Undergraduate Women Enrolled Fall 2005 - Fall 2011

Statistically the student sample size was too small to see impact of program

effects as the departure of just one student can cause huge swings in the statistical results.

Lower division and upper division transfers also fall into the limits of statistical results,

as there are too few to infer any relevant statistical results from their enrollment data.

Non-freshmen retention in AWIC.

This section answers research question number 2 and specifically addresses

women who transfer, internally from other programs at ASU or externally from other

institutions, during the same timeframe as the data examined for the first time freshmen.

The challenge in reporting the data is a result of the few women transfer students during

this timeframe. Less than five women transferred into the program in any one year.

Among those that transferred 89 percent (n=8) were retained year over year from the first

year of entering the construction management program

	2006	2007	2008	2009	2010	2011	2012
	Non AWIC				**AWIC**		
First Time Freshmen							
In College	50% (2)	80% (4)	93% (13)	75% (6)	83% (5)	)% (2)	80% (4)
In Other College	50% (2)	0% (0)	0% (0)	13% (1)	17% (1)	5% (1)	20% (1)
Not Enrolled	0% (0)	20% (1)	7% (1)	13% (1)	0% (0)	5% (1)	0% (0)
Lower Division Transfer							
In College	100% (1)	100% (1)	.	50% (1)	100% (1)	.	.
In Other College	0% (0)	0% (0)	.	50% (1)	0% (0)	.	.
Not Enrolled	0% (0)	0% (0)	.	0% (0)	0% (0)	.	.
Upper Division							
In College	.	.	100% (1)	100% (1)	100% (2)	7% (2)	.
In Other College	.	.	0% (0)	0% (0)	0% (0)	)% (0)	.
Not Enrolled	.	.	0% (0)	0% (0)	0% (0)	3% (1)	.
Combined							
In College	60% (3)	83% (5)	93% (14)	73% (8)	89% (8)	% (4)	80% (4)
In Other College	20% (1)	0% (0)	0% (0)	18% (2)	11% (1)	% (1)	20% (1)
Not Enrolled	0% (0)	17% (1)	7% (1)	9% (1)	0% (0)	% (2)	0% (0)

Table 2 Undergraduate Women Persistence in Construction Management

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The remaining content of this chapter addresses research questions 3 and 4. The following sections provide the findings as a result of the grounded theory process which involved interactions with the students, mentors, and administrators associated with the AWIC program. The following individuals were participants in the research and were discussed and quoted in chapter 4.

Research Participants
AWIC Program Designer
RL
ASU Administrators
DR
JM
Student Mentees
Alana
Angela
Ann
Judy
Mary
Renee
Taylor
Mentors
Andria
Catherine
Doris
Estelle
Penelope

Table 3 Participants in the AWIC Research Study

Theme One: The AWIC Program Format

The design, relevance and impact of the program was an integral part of the questioning of both the student mentees and the mentors. This section examines how the AWIC program was created and how the students constructed their own interpretation of the program.

In early 2008 Carol Warner, then President of Johnson Carlier Construction was approached by the Dean of the Ira A. Fulton Schools of Engineering to increase opportunities for women in the School and specifically within the unit of the Del E. Webb School of Construction. Carol agreed to help with the project and enlisted the support of numerous women executives, which they termed the "Core Group". The Core Group facilitated the fundraising and leveraged their industry connections to find potential mentors. The Core Group started formulating a plan of how to improve the opportunities to recruit young women and then retain them through mentoring through the summer months of 2008. During that time, the majority of the program design was written by RL, the president of a local construction company. In her interview she identified that there were two core components that ultimately defined the AWIC program. She noted that initial discussions were focused on funding to draw more women into the construction management program.

> So, a lot of the discussion in AWIC was more around fundraising. We talked a lot about how do we raise funds for a scholarship fund. One of the things that ML had talked about was "If we could some of these girls, come from families that don't necessarily have a lot of money, and they are a little bit skeptical of their daughters going into this industry, could we for a lack of a better word 'entice' them a little bit through a scholarship and push them over the line to say yes I will go to ASU.

As dialogue continued with the industry mentors, ML, the recruiter for the construction program, set the stage to include additional support for the students once they arrived at ASU. RL discussed the decision to change from just a scholarship to include a mentoring component as well.

> As we talked more about AWIC in general we said do we really want this to be this fundraising thing. This type of scholarship program doesn't necessarily lead to retention. So we talked about the mentorship program. Can we help these students? ML did such a good job describing how a new female student feels when she walks into a room and it is her and 50 other guys. She remembered the dad that said don't go into this you are a girl. All of these things happened. So we talked about all of these things and said, it would be great if we could rally women in the industry that had been successful and take more of a leadership role with these women and help them in the areas specifically in the first two years. Honestly we talked more about helping them with confidence and just being that sounding board for them. More than just helping them finding a job.

RL summed up that the first two years of the AWIC program, "were more about getting them through the program and helping them see that there are women in the industry that have been successful that they can look to for guidance and advice and 'ear' than anything else." The last two years of the AWIC program would not include a scholarship and would focus on internships and job placement.

> The last two years were to be focused on internships, and lastly we felt would put the high note on the program, when they graduate they can have a job. So the last bit of the program for the mentor is really about opening doors and giving them access to decision makers in the industry that could evaluate their capabilities and say whether they would be a good fit for their organization.

As discussions among the core group continued, two components of the AWIC program were established, the scholarship and the mentoring program. The design of the mentoring program was created by RL in consultation with other board members. When asked how she came about developing the roles and responsibilities of the mentoring

program she identified two sources, the U.S. military and her prior experiences as a mentor to high school aged students at her church.

> I pulled from a variety of places, actually I had been a mentor at church prior to this, kids in high school, not college kids, although I tutored kids in college. Then I focused on one or two things from studies that I had seen. Then the rest seemed intuitive to me. But why wouldn't you do this for somebody?
>
> And I think that is where leadership skill comes into place. Everything that has been built here [the AWIC program] is how I approach every single person in my company. It's just logical to me. You know you support them, you build their confidence, you try to inspire them, you listen to them, you help them through problems, why wouldn't you do the same thing with your students? I think if anything I'm quite sure that the students are not at the point where they are self-aware; they become more self-aware as they get to be juniors and seniors. For them if they were more self-aware they would learn that what the mentor is doing is how they should probably be approaching their own employees some day when they are leading. That it is a great education exercise for them. If they have that awareness [her voice tightened]. I really feel like that phrase, to know thy self, that phrase, if we could instill that into the mentorship program, everything would take care of itself.

ML's references to the military was the *Mentoring Program Handbook* from Air University, found at http://www.au.af.mil/au/awc/awcgate/awc-prof.htm. In a follow-up email to the discussion, she identified the handbook source as a guideline for the AWIC program manual. The handbook defined roles and responsibilities for the mentor and mentee and clearly influenced the AWIC program handbook.

Program design and requirements.

All new female students to the construction management program received email and regular mail invitations to join the AWIC program. Students responding to the invitation were required to attend the orientation meeting on the Sunday before the start of the fall semester. At the orientation meeting students received the AWIC handbook and were introduced to their assigned mentor. The program requirements were detailed

in the AWIC handbook and distributed to the students as part of their orientation meeting just before the start of their first semester at ASU.

Page three of the manual defined the purpose of the AWIC program (Advancing Women in Construction, 2008, p.3).

> The overall Purpose of the Mentoring Program is to develop future leaders within the construction industry from a currently "underutilized" employment pool – women. The Program aims to support the recruitment, retention, and ultimately, the job placement of strong, qualified females from the Del E. Webb School of Construction (DEWSC). The success of this program will be measured by the Program Advisory Board through increasing female enrollment and retention in the DEWSC and 100% job placement in the construction industry.

Students had certain eligibility requirements to participate in the program and to continue receiving the funding (Advancing Women in Construction, 2008, p.3).

- Female

- Maintains a 2.5 GPA

- Remains in the School of Construction

- Participates in the required program activities

As part of the requirement to continue receiving the funding, they needed to complete a series of activities which involved interaction with their mentor or activities that would encourage their involvement within the construction management program. Figure 4 is an excerpt of the handbook checklist where the students and mentors utilized to track the student's progress in the AWIC program.

2.) Scholarship Verification Form

Advancing Women in Construction
Scholarship Program Verification

Student Name: _____

Obtain appropriate signatures to verify completion of each activity listed
below. A minimum of 80 points are needed to be considered for eligibility.

Scholarship Recipient Activity	Month	Signature	Date	Points
Orientation	August			5
Attend Welcome BBQ with mentor	September			5
Meet with your mentor	October			5
Meet with your mentor	November			5
Attend a DEWSC Student Club Meeting	First Semester			10
Shadow a professional in the construction industry – *minimum 4 hours*	First Semester			20
Meet with your mentor	January			5
Meet with your mentor	February			5
Meet with your mentor	March			5
Meet with your mentor	April			5
Interview a local business owner regarding the industry and submit a one-page report.	Second Semester			20
Attend an industry monthly membership meeting of an organization of your choice. (ex: ABA, AGC, CFMA, NAWIC)	Second Semester			10

Total Points Earned: _____

Figure 4 AWIC Scholarship Activity Form

Perspectives among those interviewed varied as to the effectiveness of this design.

Among the mentors there was an acknowledgement that something needed to be done to

create interaction and that the $1,000 scholarship had to be earned.

Penelope stated:

I understand the reason we needed a checklist, but I have to be honest and say it
was sort of pencil whipped it at the end. Yep, I guess we did that and we did that.
I don't know if it was a useful tool, but understand why you need something like
that.

Doris thought the format was the impetus for the interaction and made sense and that it provided clarity for freshmen.

> I don't know, when they are freshmen they are so clueless I mean they don't realize, I think giving them that structure and to go to the mentors as well. We get busy in work and in our personal lives as well. You committed to it and OK here is the structure and here is the minimal that we have to do.

Estelle, thought the formality added legitimacy to the program and appreciated the structure.

> It's almost like I have done this before. I initially thought this will go that far. You know everybody is excited when the project starts and it kind of fizzles, that's how I thought it was going to happen that way. When I first started seeing it. I was like oh yeah, we're going to do this and we are going to do that. Then when I saw that we are going visit every month, there was a responsibility chart, there was a date that you had to sign everything. I said oh wow, this is actually happening, this is actually true. It's not some fly by night thing. So I can see that this program is going to last.

Students had differing perspectives on the effectiveness to the program requirements. Taylor indicated that she was already fulfilling the requirement and that the checklist was more of chore. When asked whether she completed all of the requirements she replied, "No" [laughs]. Why not? "Gosh, first of all the money is just given to us. There is really no incentive to get those activities done. There is no drive or incentive is the perfect word, when the money is just given to you."

Taylor indicated that though she had completed all of the requirements she did not think they actually checked each student to see if they completed the checklist requirements. This was later affirmed by JM who said that many of the students would not have received their scholarships for the following year because the mentors were unresponsive or that the students were simply too busy to accomplish all of the things

needed to keep the scholarship.   JM indicated that she would create opportunities for

students to get points or ignore the requirements altogether if the mentor was not

supportive.

Renee indicated that she had done everything that was required in the handbook.

Renee looked back at the effectiveness in the first two years.

> I would say that last year the program was easier for the student to complete. I
> liked the things that they had you do last year with attending an industry meeting
> and to interview an owner of a construction company. The monthly meetings
> make perfect sense. I kind of liked it more last year [freshman year], because this
> year [sophomore] it seems to be more forced. They said they were trying to get
> the students more activities to keep their scholarships, but by doing that, they did
> incorporate the journal and other things that seemed fruitless.

Mary was asked about the program requirements and she had been too busy to

review all that she needed to do to continue the scholarship. Mary indicated that she was

overloaded her first two years with classes, club activities and a personal life.

> It's actually been on my desk for the past month. Like the packets no joke they
> are still on my desk, I need to look through them and find out. Especially for next
> year because I will have more opportunity. It is past my freshman year, past the
> stuff, I will have a car and the opportunity that I definitely get more into the
> program.

Angela, who left the construction program after her freshman year, thought

juggling the multitude of requirements, plus her schooling, was challenging for her,

especially when the intent was to retain the student in the program.

> It wasn't that I didn't like the program. Although when I was in it, not because of
> it, but my living situation, I wasn't really on top. There were all of these
> requirements to keep on top of the scholarship requirement and it just was my
> schoolwork, I wasn't on top of it. I used to be a lot better than that. I know the last
> one [AWIC event] I came to, they had a little pizza party. I think you just had to
> show up and sign a mentor name next to it.

Putsche, Storrs, Lewis and Haylett (2008) acknowledged similar problems when designing a mentoring program for undergraduate women in science. There was little literature concerning how to create a program let alone maintain one. The realization from their study was that an administrator was needed to maintain the program and facilitate the arrangement of mentor-mentee pairs. Nora and Crisp (2007 p. 348) noted that more often than not, mentoring programs (be they student support system or a faculty-oriented approach) are based on a "feel good" approach rather than based on firm theoretical ground.

RL noted, "It was always our hope that they would see the value, otherwise they will not get involved with it. That first year was trying to force involvement for recognition sake, more than anything else [laughs]".

ML, the first administrator to implement the AWIC program, identified some of the challenges with the students completing the requirements to maintain the scholarship. She soon realized that the lack of interactivity between the mentors and students created a shortfall of points in the activity checklist. Students were looking for points at the end of the academic year to stay qualified for their sophomore year. In the end ML stated she was creating opportunities for the students to maintain the scholarship.

> What I noticed with the girls was that I was creating stuff [activities] at the end of the year. I think there was a home show and they needed volunteers and I knew a bunch of the girls need points. So, I basically told them if you go to the home show you will get points or I would throw in points for other activities. It was like, 'hey I will throw in 5 points to this activity'. So there has been a little bit of flexibility added in [to the AWIC activity checklist].

RL clarified the AWIC program time and requirements during her interview. She indicated that at times she had to be the advocate for the students when the AWIC Core

Committee met. She had to remind them that the students were young, inexperienced and often overwhelmed. "I made a comment to the group that some of the girls had lost their paperwork and they just threw a fit about how irresponsible that was, you know my thought again, they are just 18 years old, just moving into their dorm room and the same week they got all this paperwork from all of their teachers too." The absence of the student perspective was remedied several years later when they started inviting students who were juniors and seniors to their planning meeting to be sure the student perspective was included. However, during the first year of implementation the biggest strain between ML and the AWIC Core Committee was the difference in perspective about program implementation and requirements for the scholarship portion of the program.

Recruiting students into AWIC.

The students were asked about their decision making process in joining the AWIC program. A couple of elements emerged from the discussion. First, there was the incentive of funding for participating in the program. Second, the acknowledgement that as a percentage of students, females were greatly outnumbered and the program was sold as an equalizer. Finally, students discussed that the program was more of an expectation and less of an option.

Judy indicated that she was already committed to trying out the construction management program and discussed the scholarship as a big selling point for participating in AWIC.

> She [ML] had also talked to me about the AWIC program. Kind of how she initially sold it to me was more of the scholarship than the mentorship program.
>
> Interviewer: Did she emphasize that or was that what you found more interesting?
>
> Maybe that was it. I thought well that is nice. I was gung-ho already.

Renee indicated that the scholarship was a selling point, but also used it as a hedge against the unknowns of the construction management program. "I think I jumped right in because of the scholarship opportunity as well." Did you think there was an expectation to do it?

> I wouldn't necessarily say it was expected by the construction school, just as a freshman and it was obviously aimed at girls in the school that it was, I just felt as though other students just figured you would be in it, kind of. Like, just amongst the females that freshman year were to join this organization.

> I just don't think I had any idea about it and going into a school where I knew where there weren't a lot of girls it was at least an opportunity to meet other women in the program.

> Interviewer: So you had a pretty good idea that there were not a lot of women in the program?

> I think speaking to Sue [academic advisor], at my first advising appointment, she kind of let me know what the demographics of the program, that the school is like 12% female, whereas ASU is like 51%.

Ann indicated she was tentative about the construction program and that it was a way of trying the construction program with an option to transfer out after the first semester.

> She was like well there are a couple of things you have to do but, overall this is what you put into it and this is what you get out of it. I don't know if I wasn't paying attention. I know one of the things that I thought first was "if anything I can try this out and see how I feel about it". One of my things was I had to see if I don't like construction and I had to discuss with my family about this.

There was an interesting conversion after her sophomore year where she became one of the biggest advocates for the AWIC program. By her senior year she was part of the group recruiting new students into AWIC and was using the "you get what you put into it" statement as part of her recruitment pitch.

Angela was the least decisive about how she decided to participate. In her interview she conveyed a level of ambivalence to the decision process that the other students did not share.

I definitely remember her [JM] sending a lot in emails.

Interviewer: Did she speak to you at all prior to that?

No, I don't think so. I think the only time that I met her was at that luncheon.

Interviewer: So, you weren't necessarily recruited, you put in an application and then you got the emails?

Yeah, then I got a letter. Then I said I'll do that.

Mary indicated that she was looking for a support structure within the program when she was considering the construction management program. Her decision to pick construction was facilitated through a discussion with a high school classmate that was a year behind her. The AWIC program was the linkage she was looking for to make the transition to ASU.

> The biggest thing for me was support from a woman in construction. That was the main goal. My parents talked to me about it. They said that it needs to be the most important thing, I said it was. Like I said I thought it was a scary thought that I was going to be one of the very few women in the field, and in my classes starting my freshman year. The support was definitely a big thing.

Taylor discussed how the program was introduced to the students, but the full details of the AWIC program were not worked out. She also discussed feeling that the freshmen were forced to participate.

> The first time I heard about it [AWIC] was from ML and she [pauses] I don't think it was quite developed at that point. She had told me that there were more opportunities for women and her big thing was more money for women, and I did not realize why there was a need for women in the industry.

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Interviewer: What finally compelled you to participate?

To be honest I felt I was forced to. [laughs] I got an email a week before I got here and it said 'you are receiving this scholarship and you are required to attend this meeting the day before school starts and it's this mentoring program and you will meet your mentor'. I was like - OK [laughs].

Pairing mentors and mentees.

Students in the 2008 cohort were assigned mentors prior to their first meeting. This follows the typical structure of a formal mentoring program. The explanation of how this happened varied.

The pairing process did not involve any kind of formalized assessment process. It relied on the construction management administrators' knowledge of the students and the mentors. In the first year of the program, there were 22 students as they were pairing continuing students and new students simultaneously. There were several factors used to pair mentors and students. Qualities included the students focus in the construction curriculum. In the construction management program, students had the opportunity to choose a concentration of curriculum in regard to construction management. The areas of concentration included, residential construction, vertical commercial construction, heavy highway construction, specialty subcontracting, and concrete industry management. As student entered the program, they had to choose one of the concentration areas, which was then used for pairing in the AWIC program. The challenge with assigning by concentration, as seen in the dialogue of this chapter, was that none of the students really understood what the concentrations really meant because of their lack of exposure to the construction industry. Students were also paired by the administrators' knowledge of their background and personality. This portion was effective for students already

progressing through the program because the administrators had at least a year of interaction with the students before pairing. In the case of the new students, it might be a couple of campus visits and email dialogue that provided the background.

In 2008, ML started the AWIC pairing process. ML knew the students and helped the Core Committee reach out to the construction community to gather interested professionals. In August of 2008, ML departed from ASU and the transition was left to the academic advisors to complete any last minute details and any mentor/mentee assignments that were not completed.

JM was hired in October 2008 and filled the role of AWIC administrative coordinator and described the pairing process in 2009 and indicated 2008 was a similar process. It was the responsibility of the ASU administrator, JM and later DR, to make the initial pairings and to help fix any problems that arise from unresponsive students or mentors. As JM related:

> I don't know how it was exactly done the first year, but I assume something similar was done. I really don't know that we should be making the choices between mentor and mentee because I know that we have some personality conflicts out there and we have some that are perfectly matched.

> We made the selections based upon the girls' interests seemed to be and what the mentors role was. So many of the mentors have changed jobs in the interim [because of the recession]. They had gone from being a project manager to an estimator during that time, maybe the match up wasn't perfect.

JM was asked to clarify if the key aspect of pairing was the academic concentration of the student and the corresponding corporate role of the mentor. This type of pairing would rely on the construction expertise of the mentor, like residential construction, commercial construction, highway construction, and the students' initial

interest in that particular construction section as noted by their concentration in the

undergraduate curriculum.

> Right, it was a job function, like "I feel like I want to go into the residential side". It was kind of based on specialization. We definitely based concrete girls with concrete women, that kind of thing.

> And most of the rest were matched with someone more general because I didn't have someone of any... I had residential, concrete and other than that it all got thrown in with... It is mainly general contractors who have provided us.

RL affirmed the matching process and indicated that as long as the administrator

was communicative and had a strong emotional intelligence quotient (EQ) that the

process was good.

> For me the ideal would be to have an individual like DR who knows the girls and at the same time knows the mentors. I think it was easier in that first year because there were less women. Melissa knew the students well and the mentors and she would say RL if you want to be a mentor this is exactly the person. She just knew them. She was very intuitive. She could figure out people fairly quickly. Not everyone can do that but she could. I think there was a better chance of success when you have someone that can do that. But you have to have someone that can read people pretty well. To me if you don't have somebody that has a good EQ, that is not going to work. But I do think DR has a good EQ so I would feel it would very much work. If she had the time. There is so much work leading up to the day of orientation and how do you fit it all in. We are scrambling to raise money right now. It is pretty hard putting it all together.

Retention.

The intent of the program was to create retention opportunities to support female

students specifically in construction management. While staying in higher education was

an underlying factor, the effort of the AWIC program and the Core Committee members

were to provide students support and meaningful activities that kept them in the

construction management program. Student responses varied on the impact of the AWIC

program in their decision to stay.

Mary indicated that though she left the AWIC program after the first year to find a mentor in a program elsewhere she affirmed it was a positive factor of her staying in construction. "Without a doubt. Like I said it was the beginning factor for me to say I am going to go into construction."

Ann also recognized AWIC as a positive influence in staying in construction.

> I think it helped with staying at Del Webb. Because, you know that in your first year you may not be sure of what you want to major in and some of the classes are just so general. Like I never would have thought about what I would have been doing after graduation. So having a mentor really showed you that there are a lot, well not a lot, but more than you think that went into construction and what there different jobs were. They are not all hard hats and boots and working with jack hammers and stuff like that.

> Interviewer: Did you ever consider leaving the Del Webb program?

> Mmm, no not really. I had a good experience so I didn't think about it.

> Taylor indicated it had no effect on her staying. When asked if the AWIC program contributed to her staying in construction after a long pause she said the following:

> I don't know, I don't think so.

> Interviewer: Why not?

> Because it didn't really show me what construction is ... Um, [pause]. I hate to reiterate the importance of my internship, but that is what really solidified me in construction, was being in the industry. And just hearing about it in comparison to doing it is a totally different world.

> Judy indicated that the AWIC program helped, but it was through the socialization process and not directly through the mentor.

> I was really skeptical about staying in the program. I was like I will at least finish out this year. I was going to lose one or two classes if I changed. The second semester rolled around and I started meeting more people. Made more friends,

definitely I consider my friends, to be friends for the rest of my life. I find that to be very comforting. That is kind of a benefit of the construction school. Most of the people are pretty genuine. I actually only had one construction class. There was English 102, Macroeconomics, and Electrical Construction CON 273. The electrical class, honestly, I think it gave me a whole different perspective. That was my only construction class. I really enjoyed that class. I enjoyed the estimating. I decided that I was going to stick with construction. I had emailed my mentor. I had contacted her the second semester and asked her if she would like to go for coffee some time.

Renee was neutral in her response. She indicated that leaving the program was

never an option.

I would say I never had any desire to leave. It helped because it was a scholarship but that I never thought of dropping engineering. I always knew that I wanted to stay in construction because that is what I wanted to do afterwards.

Interviewer: So you had your mind made up before?

Yes, at least about that aspect of it.

Interviewer: So what made it easier to stay?

I guess going through the mentor program and seeing what we are going to do after. It just made me realize how passionate I was for construction. And going out and getting to see Doris's project. Even though it was just a hotel, getting to see the phases and seeing it being built and a final project at the end. I think that is what is unique about construction and seeing that convinced me that it was what I wanted to do.

All of the students indicated that they never considered leaving college because

they were not academically capable. The entire group of students indicated that they

never considered leaving ASU. Angela departed the construction program after the first

semester at ASU. She returned her sophomore year after she found a support group

outside of the construction management program. She explained that it was a result of

some poor decisions she made and challenges of feeling like she did not fit in.

When I was a freshman I guess, I felt like I wasn't in the cool crowd. They all knew each other. I mean I knew them and they were all really nice to me. I don't know why I didn't feel like I got along. It might be because of my academic. I

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fell down on myself. Oftentimes it is because I am taking it out on myself, but like now I am in CON 252 and we are in a group project. For some reason when I go up to the group I feel that they either know more about, or they think my questions are stupid or they all I don't know that they have this bond that I don't have.

Interviewer: Why do you think that is?

I don't know. I'm trying to figure it out. Sometimes I have that problem not just with construction.

Interviewer: So what does that mean?

I'm really shy. It's with my peers. With older people I feel completely comfortable and generally I feel I can be myself . With my peers I am intimidated and shy.

Socialization.

The intent of the program was originally focused on the dyad of the mentor and student mentee. What was revealed through the interviews was the desire of the students, especially in their first year, to have a more communal interaction. The desire for interaction among the students was articulated in two ways; first, the importance of students establishing a network and second, the students struggled to find relevance with their mentors in the first two or three semesters of their education.

When discussing aspects of student interactions, Renee hinted at a desire among the students to get to know the other AWIC students in their freshman year.

Yeah, everything is email. I would say that most of the other students that I have met aren't in it, I haven't met them because of the program. I have met them just because we are in classes together.

When reflecting on her experience in her senior year Taylor suggested that, more interactivity with other students was important. "Well there weren't many opportunities

where we all go together. So, I can't tell you that there were any particular events that were useful. We are in need of more time together."

The freshmen were clearly looking for linkages among the other women in the program that had similar experiences. In the first two years, prior to their internships, there was a consistent desire to be introduced and to interact with students in their academic year and to have dialogue facilitated by the AWIC program. The students searched this interaction out in other ways such as the construction clubs. There were six in construction management in 2009, and in-class conversations. Angela found that aspect of socialization in another engineering student club, the American Society of Civil Engineers (ASCE). While she was not in civil engineering, her boyfriend and her new friends were part of ASCE. She commented that her grades and attitude improved when she started going to the science library with them simply because of the nature of their friendships. When asked if it would have been helpful to have a junior or senior to talk to in her first year she commented:

> Yeah, the only thing is, if you are going to someone for help I feel that they have to be eager to help you. Otherwise, they will just try to tell you a solution. Rather, why don't we study together? Rather than saying you are a mentor and really taking action. There is a difference between making a difference and just being there. So, that would help though. The thing I didn't join the ASCE chapter until this semester and that is when my grades really started turning around because I realized they would all go to Noble and when I started making friends I would spend all my time in Noble with my friends.
>
> Interviewer: Despite not taking the same classes?
>
> Yeah, it was just sitting there and focusing. I luckily got that from that club.

Mary was asked if she had friends as a result of the AWIC programs. "I do not", she replied abruptly. Her circle of friends were mostly male students that were on her engineering floor.

When Judy was asked if she at least interacted with all or any of the other AWIC participants she replied that Mary was the closest to a friend from AWIC, but not a result of AWIC.

> I don't know the other girls. I don't talk to them very much. Though last week I tried mingling with them a little more because the last time we spoke I felt like I was anti-social. I was sitting there eating my sandwich and trying to talk to Alana for a little while [laughs]. So, like I said, I don't know how they interact.
>
> Interviewer: Have you developed any friendships through the AWIC program?
>
> Not that I can remember. Like this past Friday there was this networking lunch sort of thing going on, that I couldn't go to because of the DPR Construction interviews but again the big thing that I know in the program were going mostly for the networking thing and not staying for anything else.

Ann was asked to describe some of the interactions with other AWIC students "None really. Me and Alana work together off campus and we went to the same high school. We didn't talk about it, but it was strange when we found out that we were both going to construction."

When asked why out of the freshmen only a couple of the students hung out she replied, "some are older". When asked if the AWIC activities brought the students together she said no. "I just don't see a lot of the girls and I don't think we make an effort to like meet outside of school. Which is really kind of sad. It would make sense to get together." When asked why the activities didn't bring students together she said that "it was more for the mentor - mentee relationship". During the sophomore interview she was asked why she didn't have more AWIC related friends, she replied, "I never really

thought about it. I have Alana and Jim (another student in the construction program), but if I didn't know anyone that [the AWIC program] would be a huge help."

Taylor spoke about her desires to share mentoring experiences among the students. "I think sharing different experiences that you had with your mentor would be beneficial, but it could also be detrimental if your mentor is not doing all these things that your friends mentor is... you know what I mean?" She was asked if that was something like students feeling short-changed with their experiences.

> Yeah, exactly. I have a friend that has found it difficult to get in contact with their mentor and she will ask me. 'So do you hang out with your mentor a lot?' And I'll say 'Oh yeah, we just went out to dinner a few weeks ago'. Oh man I wish my mentor would do that. So, it could be good or bad.

Funding and importance to students.

The importance of the funding component and its perceived importance to the students was significant. The scholarship was a major component for not only for joining, as stated in the recruitment into AWIC section, but also in staying with the program despite incongruities with mentors.

As part of the structured interview students were asked about the scholarship and its importance to their participation in the AWIC program. In speaking with Taylor in 2010 she said, "Yeah, it played a big role, but I would have done it if it wasn't there. I asked if she could provide the value in perhaps a percentage of value as a freshman.

> Interviewer: How big of a role percentage wise?

> Oh man, probably money 60%, mentoring 40%. But 40% is good enough for me to do it without the money if that makes sense. [laughs] Maybe it is 50-50. Money is the reason I am here you know. I mean I could never attend ASU if all those scholarships didn't add up. So... Like I said, it was automatically given to me. I felt a little forced in the program... Uh, because I am female they gave me this money and I was required to do this program. That is how I thought it was.

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Renee had a similar perspective when reflecting on the program in her senior year.

Yes, money does a lot [laughs] Yeah, I think because it was a scholarship opportunity and I don't know that I went into the program to necessarily get anything out of it. I just went in because I was a freshman and thought that this is kind of what you were supposed to do [nervous laugh].

When asked if the $1,000 was the significant factor she replied:

Yeah, it is hard to pass up that money when you are in college so.... Yeah, I would say that is why the majority of the people are in the program is because it is a scholarship. Yeah, I mean it; I would say that is the main driving force behind why the majority of the people are in it.

Judy was more balanced in her assessment of the financial value need despite having a higher financial need than Taylor and Renee.

I was thinking of financial issues, but it came to stick in my mind a lot more than the actual mentorship program.

I don't pay for school. I ended up getting a merit scholarship. With my Mom's support and the AWIC money, I ended up getting money back from the school. That was definitely nice and it paid for books and stuff.

Ann indicated the scholarship was important, but would have participated in the AWIC program if there was not a scholarship as an incentive. "Of course grants are always helpful. I would never turn down a grant. But if it wasn't available I wouldn't be mad about it."

Both AWIC administrators, JM and DR were asked a similar question as the students and their assessment of influence of the scholarship money was similar to the students.

 I'd say that 25% are really taking advantage of the mentoring part. That's really their thing and probably the other 75%, it's the money.

Interviewer: When you talk to the mentors what do they think?

You know I have never asked them that question; that would be a good one to ask them. They kind of felt that they were more concerned about the hoops [requirements of the program] and everything.

During several of the AWIC Core Committee meetings, members indicated that the scholarship portion of the AWIC program should have been a minor component and that the value of the mentor was of greatest value. JM was asked if she could verify if the mentoring value was the emphasis of the AWIC Core Committee.

Yeah, it should be. I'm afraid that's not how it was presented to the students [in 2008]. It [the scholarship] was a carrot to try construction… But this year at the kickoff meeting when I got up and spoke I said that the "true" value is the mentor that you are getting out of AWIC.

In speaking with DR she had a similar response regarding the freshmen interested in the scholarship rather than the mentor experience.

They will try to say it's not the money, but it is. I think it is, for the freshman year it is. I don't think the mentor is that big of a deal to them [freshman year]. I think you have probably seen that when you interview them. To bring them in with the money. The money helps solidify why they are here. A few, but not many decline it.

Program utility and shifts in need.

The students identified a wide array of functions within the AWIC program. This utility was shaped by their transition of needs as they progressed in their curriculum.

The students during their interviews were asked to reflect on the AWIC program and its effectiveness in meeting their needs. Mary discussed her decision to depart from AWIC and her current mentor and going with a different mentoring program that better fit her needs. She described her reasoning and discussions with her parents about a

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program that she identified with as a Latina, a mentor, Marie, that comes from a similar

background and a smaller number of participating students.

> The mentoring programs are really important and stuff like that. Why don't you choose one and try that and if you decide later that you want two, the next semester, that's fine, but who do you connect with more and what are you going to get out of, and I also thought, not only Marie being my mentor, but I like that the other mentorship program [number of participants] was a lot smaller.

> I felt that if I were to stay in AWIC and get a different mentor, I just felt like, I do better in small environments, I think maybe I get to know, I am very personable, I feel in that bigger environment I feel like I would be just another seat in the crowd.

> There were two decisions like I said, there was the mentor, like I chose between the mentors and the second part of it, yes, I did see it as a group because of the networking and all of the events. AWIC lays it out there and so does AMIC (Advancing Minorities in Construction), so, as far as me feeling comfortable going out there and networking I saw AMIC as a smaller community, less students, but you do have the yearly dinners, two golf tournaments a year, so those are big events. To be comfortable to talk at those events, I saw that smaller environment as a group, so I made that decision that my sophomore year and took advantage in a good way of Marie and she helped me with my estimating project, three site visits I think.

As was mentioned in previous sections, students did not interact much within

their cohort the first year and rarely interacted with juniors and seniors. Mary was the

one of two Latina freshmen in AWIC that year. There was other Latina student in that

cohort departed ASU. While she had a positive experience with the AWIC program,

there was a stronger affinity with the smaller amount of students, the sense of community

in AMIC and a greater sense of comfort with her AMIC mentor that were factors in her

decision to leave AWIC.

In Taylor's senior year interview she discussed her dis-engagement with AWIC

after her sophomore year concluded. When asked if she stopped shortly after her

sophomore year she replied, "Yes, I think I just lost interest for a lack of a better phrase."

When asked why she lost interest, she identified a variety of reasons.

> Maybe partly because I already had a job lined-up. I felt like I had a lot of contacts and some of the activities, I remember from prior years AWIC didn't have a great showing, from the mentors or mentees. Either half or less of the women would come so... I found it difficult to meet everyone per se. That was part of it. I don't think a lot of people took it seriously, so it was hard for me to take it seriously.

Renee described a similar decision. After her sophomore year she opted not to participate in AWIC.

> I stopped. It became pointless. What I was getting out of it was not substantial and it was more of a time commitment than it was worthwhile. So, it was fruitless to follow through with something that I wasn't getting anything out of. And I don't think I ever really agreed with the whole AWIC program to begin with. It exposed me to people in the industry but as a whole, it hasn't done much to build me as a student. I think the AWIC helps with opportunities for networking and doing careers, but as far as being a student, I don't necessarily think you get a lot.

> I think my freshman and sophomore year I probably thought that is just what I was getting just like "this is as good as it gets". Then after sophomore, it became, I have to find a job, I have to do this what am I going to do, I do actually need to market myself and do that networking, then I saw how confined the AWIC group had become and that the opportunities I was getting weren't coming from that experience. They were coming from Reno or people coming to my classes and spoken. Those people that I had spoken to were not remotely related to the people in AWIC.

Angela decided to leave the construction management program in the first year of attending ASU. She described contacting her mentor about leaving construction and the AWIC program.

> Yeah I emailed her. She said OK that is fine I hope that she wished me good luck or something like that. So, it wasn't like I could just not tell her. I think I called her actually. We had planned to be her shadow. I called her and told her that it just wasn't working out for me. So, I left.

Angela spent the remainder of her freshman bouncing between several different

academic programs. She returned the fall semester almost simultaneously to her

increased interaction with the ASCE student club.

> Actually, my major change happened fall semester of my sophomore year. One
> thing was the Housing and Urban Development (HUD) school and this program
> overlapped a lot so I was going to double major, but that was just another excuse
> not to commit. I don't know of any other mentors. Pretty much my only friends
> have been made through this ASCE but all of those people in that ASCE are ones
> that I ask questions about things.   I have been trying to get more involved. I want
> to be part of more construction programs.

In the interviews with Angela it was clear that she was seeking a positive support

on campus that created an environment where she felt capable of succeeding. After

returning to the construction management program she continued with ASCE. She had a

desire to be involved with AWIC, but could not find a point of connectivity because her

needs related to self-efficacy and communal support and she only identified professional

development type values in the AWIC program.

Ann and Judy were the stalwarts of the AWIC program by participating and

leading the AWIC related student initiatives. Both found value in AWIC as they

progressed, though Ann was the only person that maintained a formal relationship with

her mentor through her senior year. Both Ann and Judy had mentors that were graduates

of the construction management program and both were less than ten years out of school.

The rest of the freshmen had college-educated mentors, though none of them graduated

from ASU.

Though they found the program important at the time they were not sure of the

meaning behind activities. Judy speaking at the end of her sophomore year was just

beginning to understand some of the value related to AWIC.

I guess starting this year it started to click. I knew what to expect. I didn't know the value of some of things that we do. That could be said for a few other girls as well. They don't understand. Maybe it's not only for the student to get that, not just work with the student individually. To be honest most of the time that I meet with mentor, we just talk.

Both students had resonating statements of the need to invest to get the most out of the AWIC program. Ann summed their sentiment by stating, "You have to try, it's not going to come easily. You have to work your mentor or put in the time to do the events. Not because you have to but because you want to… kind of thing". Both students also had some of the strongest mentors that were within 10 years of graduation and had graduated from the construction management program. Ann and Judy were strong students, but not the strongest academically out of the first cohort. They did have the best pairings with mentors that matched their needs as they progressed through the construction management program, which encouraged them to invest more time and effort into AWIC.

Emergence of value in networking.

As part of their shifting need through AWIC, the most notable aspect identified, by the mentor and student mentee, was the ability to network. This definition of networking differed in their freshman year and at the end of their sophomore year. In the construction management curriculum requirements there are two mandatory internships and the first ideally should take place during the summer between the sophomore and junior year. The interviews revealed a difference in how they valued networking in their freshman year when they were establishing a place at ASU and near the end of the sophomore year, and later, when they were networking for employment opportunities.

JM viewed the difference in the students when she first filled the role of the

AWIC administrator.   JM saw the value as more than just a job opportunity, which was

important during a major recession.

> You know it is not just the job stuff it is the networking and being able to go and talk to anybody.

> Interviewer: Do you think that is really relevant to an 18 or 19 year old?

> I think that it is something that we should be imparting on them. This is one of the biggest take-aways out of all of this. Communicating as an adult as opposed to communicating as an 18/19 year old is something we hope that they get out of college.

When interviewing Ann in her sophomore year, she identified the networking

more for the students to find their niche with student or industry. "This is a program I

wholeheartedly believe in. I believe it helps the girls find a place their own little niche, to

either network with students or industry."

During Ann's senior interview the emphasis of networking was on finding a job.

Her comments were in response to what she perceived as valuable from the AWIC

program.

> Definitely the contacts that you make. When you go to industry events. You get your name out there and if you have business cards or your networking cards, you can hand those out they are going to think of you when an internship opens up or a job offer, or an interview comes up they are going to contact you. Carol McMullen contacted me and I volunteered at the ABA president dinner and I spoke in front of 300 people. That is exposure at its finest; a room full of presidents right there.   That is how I met Dennis Tucker at McCarthy [construction company] and he gave me his card right there and I think he remembered me from that.   He was asking about me personally because he knew I was interviewing and he knew that they knew me and I believe you have a better chance of standing out more and you have a better chance of getting a job or interview.

Angela also spoke about networking in her freshman year as a means of establishing a place at ASU. She described the effect the first AWIC meeting with industry professionals had an effect on her.

> We all kind of piled into a van. I think they picked us up from San Pablo [residence hall]. We were all "ha ha" because we were all new to college and it was all new. When we went in all I remember were their mentors waiting at the tables. We walked to each table that had our names on it. We introduced ourselves to our mentors. It was just kind of like a big meeting, like to meet and network. I remember thinking that was really the point of it. I know there was some speakers, but I am not sure what was said. What really strikes my memory was meeting people.

Mary also described networking and establishing relationships as being used to define what construction meant for her. "I think obviously, if I had been in it for the money, AWIC has a lot of students, a lot of activities and I could have done that if it was just about the money. It was about my networking and how someone can get me through. Because construction is so new to me".

Mary in her senior year interview was reflecting on a recent dinner event that she saw her mentor and she was asking about finding a full-time job.

> Now, I saw her at the AMCA dinner and she did mention that "if it comes down to it and you need me to give people your resume, give it to me and I will reach out to people" and stuff like that, so she was willing to help me network, but I needed to put in the effort. Just talking to people, you don't know and learning how to network, like I am personable person, it's not hard for me, but in a more professional situation, it's a lot different, when it really matters.

Taylor reflected on her first two years in AWIC and described the networking benefits as she was preparing for her first internship.

> Actually, the whole networking aspect of AWIC, networking skills and the Hensel Phelps networking event. I had to do an elevator speech and go up to a random person and give my speech. That taught me to go up to a random person and

introduce myself and make a contact out of it. I don't think I would have learned that skill without the program. That was definitely beneficial.

Taylor in her senior year was again asked about the value of AWIC and the focus on the networking benefit was on job placement.

It served its purpose in the way that it helped me find a job at [a utility contractor] at a networking event. But I don't see why I wouldn't meet them at another networking event that wasn't AWIC. It helped me in that sense. I know a lot of other girls that have gotten their jobs through their mentors. So, that is what it is all about.

When asked if AWIC was focused creating networks to find job she reframed her response.

No, it was more of... I think they wanted to keep the mentors there to help keep the girls in the program, so they don't get so overwhelmed and scared that it is all men... in the classrooms. So, I never had a problem with that to begin with. Other than, it got me a job and I have a good friend now [her mentor], that is what I got out of it.

Summary.

The AWIC program was a formalized structure created through the support of industry professionals with the intent to attract, retain and graduate more women within the construction management curriculum. The AWIC program has two components a $1,000 scholarship that is awarded to freshmen and sophomores for their participation in the program. The author and designer of the mentoring program, an industry professional, utilized prior experiences and sources from the Air Force.   The content was not based on any particular theory although it did reflect a corporate format.

Mentors and students were paired through an undocumented process facilitated by the ASU administrators. The selection process was based on minimal student interactions

prior to arriving at ASU, the concentration the freshman chose and the area of expertise of the volunteer mentors. The pairing process did not go well because of limited knowledge about everyone involved. Though the intent of the program was to retain students, few students attributed the AWIC program to their decision to remain in the program. Students also identified the desire for more social components of the program.

Mentors and mentees did not like checklist requirement, but for various reasons. Mentors found it difficult to set aside time for interactions as did students. Mentors indicated they were working more hours as companies struggled to secure work. They also indicated that they were wearing "multiple hats" as companies reduced their workforce. Many of the students found the checklist more of a formality than a path to meaningful interaction with the mentor or others in the AWIC program. All of the students put a high priority on the funding as a major reason for continuing in the program. As students progressed into the sophomore year the utility of the AWIC program, as identified by the students, changed as they started looking for their first internship. Some of the students utilized the relationships established through the program as a means of networking and finding job opportunities during a major recessionary period. Students such as Alana, Renee and Taylor established their internship opportunities outside of AWIC and their interaction declined. Students desired closer relationships with other students in AWIC, however the lack of strong linkages among the students made it easier for students to choose other resources such as clubs, other mentoring programs and internships as a responses for their decline in participation. Ann and Judy did find both social and work connections through the support of the AWIC program and continued to participate until they graduated.

Theme Two: Facing Challenges and Becoming Young Professionals

This section focuses on the student mentee responses that elaborated on elements regarding their academic experiences at Arizona State University. The students talked at length about their adjustments to ASU and how their perspectives changed over time as they dealt with personal doubt, focused on academic competencies and started the process of becoming young professionals.

Setting goals.

The student mentees were asked to reflect on goals that formed in their first year and what they hoped to accomplish at ASU. The results focus on a successful transition to college, managing academic responsibilities and becoming an adult. The consistency of the students goals were that they rarely went beyond the first year of school unless they discussed the desire to graduate. This stood in contrast to the dialogue with mentors who often were asking larger career oriented goal questions. The students were mostly unprepared for that kind of dialogue while their main goals were adjusting to ASU and maintaining an adequate GPA to maintain their scholarships. Students were asked to reflect on their freshmen year and personal goals they wanted to achieve. Judy, Taylor and Renee spoke specifically to academic performance and graduating in a timely manner.

Judy chose to articulate her goals completely on her academic performance. This was despite some of the other challenges she was facing in terms of paying for college, which was uncertain due to family turmoil in her freshman year.

> I know when I first got here, I wasn't really sure what to expect from my classes. I had ASU 101, ENG 101, CON 194, CON 252, CON 101, and pre-calculus. I

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didn't want to jump into calculus, I had taken pre-calculus the first semester of my junior year and I didn't want to jump in.

Taylor's goals focused on transitioning from her family and maintaining a GPA for the scholarships that enabled her to be at ASU. Taylor acknowledged that she had to work a bit harder to keep her scholarships.

> In general, living on my own. That was a new experience. What am I going to have for dinner tonight? That was a big-big change. I felt that I grew up a lot my freshman year. Goals, work hard get good grades, to not only GPA, but to keep the scholarships ASU had given me. If my grades dropped below a certain GPA there was no way I could continue at ASU and the construction program. Just to do well, to be the best. I know it sounds so generic but to do the best I could on my own. It was hard at first, but now I can't imagine living at home again. [laughs].

Renee was extremely focused in her answer. "I think a goal would have been to graduate with something that would have made me stand out. Not to graduate with a simple degree but to make me stand out." She had little doubt that she was going to perform academically. Her focus was on accelerating her academic career and planning for the next step. The challenge she faced was that she did not have a process to articulate what the next goals should be other than the academic requirements.

Angela, Ann and Mary emphasized more to personal competencies such as self-confidence and personal organization and less to academic performance and graduation.

Angela's comments clearly indicated her challenges were making the transition into college. Her personal doubts about socializing and fitting in resulted in her inability to focus on goals and led to social distractions like partying with her roommates.

> Um, well, the reason that I was kind of not in the program anymore. When I got to ASU I was in the engineering dorms in San Pablo dorms last year. Just moving in and being in a new place and no parents. My roommates were really crazy, just

bad, and I was completely alone and I had no friends, so they were my only friends. I didn't go crazy, but they influenced me and I didn't do well.

Ann did not articulate her goals, and it is likely that she did not have a plan about what she wanted to achieve when she arrived. "Well, I thought I was going to get lost [laughs]. I don't know I really didn't have any.... I expected huge classes, which some are but, my actual construction classes are a lot smaller than I thought they would be." Her goals would not take formation until after her first internship, which took place with her mentor Estelle.

Mary described her desires to complete in a timely manner and improve her self-discipline. In both interviews she identified herself as sociable and academically capable, but felt she hindered her capability by procrastinating.

> One goal in general, big picture was to graduate in four years, not to fall behind, if anything to get ahead. Everybody knows, for a lot of majors it can go longer than four years. My goal was to graduate and stay on track that Del Webb has for its majors. Another goal, for my stress level to be down; to stay on top of my classes. So my goal was to stay on top of that, be able to read the chapters and have self-discipline.

In Mary's senior interview she would later discuss her continuing challenges with a lack of focus and called herself the "queen of procrastination". Her inability to articulate goals slowed her job prospects through her senior year.

None of the students mentioned long-term goals beyond completing the four-year degree. They also failed to articulate anything to do with elements about professional development or job interest. It would be a 1.5 years before they would start to formulate discussions about job interests. Their reason for the increase in interest at the sophomore year was the academic mandate for an internship. This was in contrast to the comments

of the mentors that were specifically focused on longer term career related topics or specific elements despite the manual indicating that the focus in the first two years was acclimation to the college environment.

Dealing with challenges.

Students used a wide array of terms to express personal doubts that they faced during their time at ASU.   Students spoke to the intimidating aspects of coming on to such a large campus. They also spoke to aspects of self-confidence. The AWIC program was seen as intimidating by some as they did not know how to interact with the older mentors. Finally, students were initially challenged by coming into an environment in which they were heavily outnumbers.

The first year is a critical point in which all of the student identified the challenges of coming to such a large institution.   Mary said, "I was in PV Main [residence hall], the engineering dorm. My first impression of ASU is that it's huge. It's big and scary."   Judy provided a similar sentiment about the size of campus. "I remember when I came here for the job site tour, thinking 'that is a big campus'." Renee said, "It was huuuge! It almost like ASU is too big for its own good if that makes sense." Taylor described her first impressions of moving to ASU.

It was hot! [laughs] So hot, huge, overwhelming, I was looking online at the dorms, I don't have any family down here, where was I going to live? First stop was dorms and there were so many options I had no idea what I was going to do. One of my good friends also decided to come down here as a business major so I roomed with her in the dorms over here. First year, but just totally overwhelming at that point.

Taylor indicated that she quickly adjusted and that most of the challenges were in the classroom. When asked if there were any other challenges she said "not really". Ann described a similar situation of adjusting to a large campus.

> It was huge. When you first walking to some of your elective classes some of them aren't in the same vicinity as this building. It is all the way across campus and you realize that it is a larger campus than I thought. At first, it is like so big and so many people. I felt that I didn't know that many people. Does that make sense? Going from high school and being involved in so many activities I knew everyone and all of the teachers and everything. I definitely think getting involved is a challenge. Because in high school you knew everyone and everything. ASU is so much bigger and it's intimidating. You see all these older classmen that are already doing all these things. I guess I was shy my first year because I didn't want to apply to any clubs because I was intimidated. I should have just done things and gotten it over with.

Angela and Ann discussed challenges with their self-confidence and making the transition to the college environment.

Angela was asked initially what she might see as challenges in her first year. She said, "I just need to be able to deal with problems better, especially personalities. People that are mean and aggressive. I get real coward-like and they intimidate me. I just need more confidence I think. A lot of that, I feel more confident if I am more knowledgeable in the subject I think. Which is not often, which is why I am here." Angela would later talk about starting to address some of her issues with confidence.

> Although one weakness was confidence. But I was impressed about what you said about my last interview. I am going to do Toastmasters too.

> I have worked on the way I speak, when I do a task and I present it to someone, I am like 'oh is this right I should double check it'. They are like why don't you stand behind your work and back it. Also, confidence in my personal life. I am trying to figure out where it is coming from and get rid of it this year.

Ann spoke about her desire to gain more confidence as she started working for a construction company.

A weakness I found is that I tend to doubt myself. I would be completing a task that was assigned to me and want Estelle to check it when I was finished. This not only delays my project, but distracts Estelle from her work. I need to grow my confidence and believe in myself.

Ann was asked if she still felt intimidated as she was nearing the end of her sophomore year. "A little bit, but I really want to join AGC [Associated General Contractors student club] and get involved with going to Reno student competition. That is something that could change. Just they [AGC] host [corporate] presentations to try to get you involved, but it is not on a personal level, I guess. I don't know how to explain it. It's just that they are all older and it's scary almost."

The students also spoke about the intimidation of getting a mentor in their freshman year. The timing of the introduction was during an orientation event the Sunday before the fall semester started. Looking at the timing the students arrive on campus, move into residence halls, go to orientation events for four days, and the Sunday before the fall semester starts they are introduced for the first time to their assigned mentor. The succession of events was very challenging for the students.

Taylor described walking into her first Sunday AWIC orientation meeting with the new students, mentors and core committee members present.

> I was intimidated because there were a lot of older women, that I had never met before and I didn't know one single person. [laughs] So that was a little scary. Then I kinda just found my mentor there was talking going on just before we started and I was just kinda walking around by myself and she approached me and said are you Taylor? And I said yes, are you Danielle? and that is kinda how it worked out. I didn't know what to expect, but we just started getting to know each other, where are you from, what do you do. and just those first steps, but it was a good first impression.

> Interviewer: But a little intimidating?

> Oh, yes. I had never… I mean I had just graduated from high school and never

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been to anything like that.

There was also the reality that the gender differences in the classroom also translated into skewed demographics in the engineering specific residence hall spaces. Mary described her first experience moving into her room on one of the engineering floors.

> The surprise for me and my mom was when we walked into my dorm. I'm at the end of the hallway and it's guys doors all the way down. My mom was like, you live on a co-ed floor? [laughs] I knew it was going to be co-ed, but I didn't realize that there were so few girls. There were four doors that were girls out of the 25 doors. The floor below me no girls at all, and the floor above me there are four doors.

When asked about the challenges Renee faced in the first couple of years she noted the gender isolation.

> The most challenging part of being at this school was the lack of women in it. It changes your friend base around a little. I would say that 90% of my best friends are all guys. That is a change from high school and it took some adjustments and getting used to.
>
> Interviewer: Like what kind of adjustments?
>
> I guess I want to say you feel alone when you get into it. Going from being in high school where all of my friends were girls to coming here, where I have two other girls in my classes, and yes we are friends with, but I have 30 guys that I am friends with in that class as well. So, I think it not necessarily a bad thing you just have to be used to... [raises voice a bit higher and inflection would indicate that she is not sure].

Time management and prioritization.

Time management became a critical obstacle to students, in prioritization of their lives and the lack of interaction with mentors.

Students had so many obligations that they found it hard to make time for the AWIC program activities and specifically the mentors that were supposed to meet monthly. The challenge for the students is that students are focused on classes and social development. Adding the extra requirements of managing a relationship with a person that often has a professional level of expectation was very challenging for the students. Often the activities that were lost on their list of prioritizations were the mentor and related activities. This was further compounded by students' perceptions that the activities were off campus, less relative to their lives on campus and competing to get time with their mentors who worked on a completely different type of schedule than the students.

Mary completely forgot about the mandatory orientation meeting and was eating dinner with her family on Sunday and wondered out loud if she was supposed to be someplace else.

Judy claimed she showed up at the wrong venue for the orientation and was later given a stern lecture by Penelope about being a young professional and following up on commitments.

Taylor spoke about her challenges balancing her academics and starting to work part time.

> This year I can tell you, going to work and school at the same time. Um, time management is crucial. I took 18 credits and worked 20 hours per week. Getting my homework done and going to these networking events. There is a lot, very busy as compared to my freshman year. Freshman year, just adapting, not having my parents, money was a big thing, I didn't have a car and that was a huge thing. I don't know how much a freshman needs a car, but sometimes you just want to leave.

Angela spoke to her challenges organizing all of obligations.

Uh, one of my main things like the Getting Things Done book. I have a lot of work to do about that. When I was a freshman everything was on paper, now there was so many ways to try to keep track of everything. There is Blackboard, there's email, there's paper, and mathematics has its own different system. It was really hard for me to know what I needed to get done and that was just academics. Then there were things like this program. So I didn't have an inbox, I had my dorm room and papers everywhere. Um, I was missing deadlines. I was like 'oh, I have this deadline'. That was one thing that in construction, your class and ASU 101 I would have no idea something was due in class. I felt like I was on another page and I didn't know how to be on the same page, I was frustrated. That really was one of the hardest parts. That all has to do with [the lack of] organization.

Finding time for the mentors was also difficult. All of the students were carrying full academic loads, participating in students clubs in addition to AWIC and working in some capacity on or off campus. Mary discussed the difficulty balancing her classes and meeting her mentor in the first year.

I never really… Um, I only met with my mentor twice. I didn't meet with her much, I talked with them over email. I cancelled on Paula twice, both instances I was sick. But this semester, well, both semesters it has just been really hard, I don't have a car. So, I feel like… Well, the first time she picked me up. The second time, Paula wanted me to get a ride. I don't know I felt that without a car and without that kind of freedom where I could just go and do it, I felt like it was a burden on me. And that it was hard on me knowing that they had to come and pick me up or work around that schedule. She is a working woman so, not only is it her work schedule, which is really difficult, but also my school schedule which is really difficult. So, it was harder for me to work around it. She was very flexible, so I feel that it was more so me.

Interviewer: In your inflexibility?

Not in me being inflexible, it was my schedule and stuff like that. The schedule was really hampering any opportunity to do stuff like that? Yes, and if it wasn't the schedule it was tests, and all of that.

Judy presented her schedule as packed and chaotic as she worked and studied seven days a week. This was consistent throughout her college experience, though she did disclose that she needed to be busy and it was a personal choice to avoid boredom.

[I study] usually all through the night and I… Tuesday and Thursdays I am here, I have to leave my house, well I was leaving my house by 6:00 AM, but now the traffic got crazy and I barely made it to both of my classes.

Because my time could be more than just sitting there and doing nothing.

As a grown-up I am learning to understand that sometimes it's more important to take time out of your routine to go do something because in the long run its going to benefit you than working those few hours. So, now with the program.

In the spring semester of her sophomore year she indicated that there was a change in her focus and that she started to make a conscious choice to include AWIC and her mentor in her schedule proactively. "At first I felt that I was a little stubborn and thought that I just don't have time. Now, I don't have time either, but I make time. I'm really glad that I started doing that."

Renee discussed the challenges of managing time to meet with her mentor Doris.

To set up meetings, her and I haven't really, I would say, become friends through it. It's just merely the professional. And I know some people, their mentor is now essentially their boss and they are close to them, but that is just never really been how it was. I don't know if it was her doing it or my doing it, but it just never really worked out that way.

Interviewer: Why do you think that is?

I think that it was probably just because she was so busy with her job and then um, that I was so busy with school simultaneously that it was hard for that. I think partly it was because as I was entering into the program I would say I had a lot of questions about it, but I wouldn't have asked questions about it because I felt it was a stupid question. I understand that the mentorship program was there to help kind of clear that away.

Gaining confidence in the academic environment.

Mary noted that her selection as an intern was by her efforts in one of her construction classes. The adjunct instructor made a note of her attitude and academic

performance and invited her to work for his construction company after her sophomore

year.   She explains the interview and how she was selected.

> So, when I sat down in the interview. He said, "You students don't think that we
> know who you are, and we do. I know I had you as a freshman, I know that you
> sat in the right middle, you were always a good student. We watch out for that.
> You asked me questions." I didn't ask him a whole lot, but he could tell that I
> was, I have always been the mother of the group, like my group of guys that aren't
> here anymore, but especially freshman year, like John, Braden, Matt, and Alex
> and Russell, and he remembered who I sat with and he remembered me being
> mother and making sure that everyone was there and that stood out to him. So
> you think that not everybody is watching but they are.

Mary also spoke about the about her experience in the residence hall. Though the

move-in was daunting she would later develop strong relationships with the construction

students, mostly men, and form study groups in the first year. In her sophomore year

interview she was asked if the residence hall and construction courses were still a

concern. "The part of being one of the very few women in it [the construction program]?

I knew I could do it, still it was a little iffy for me at the beginning."

> No, not anymore. Just having the AMIC and AWIC program. When I talked to
> Dr. Ernzen about joining them, he said why they were created for women or
> minorities or both they tend to drop out because they are a smaller group and it is
> a little intimidating. I told him for me, yeah it is a little intimidating being a
> woman, but once I started getting into my classes there's a block schedule that you
> have like four or five classes that you have together as well, that I have five or six
> guys, we all live in the same dorm and we are always studying together. You are
> always building relationships with people. I know that I am going to be having
> classes with them for the next four years. Like next year it's not like the past two
> years where only one class for everything. There is more variety, but we have
> become such good friends stuff like that, built relationships that we are going to
> have the same classes for the next couple of years.

Confidence - value of experience.

There became a critical time in which students became aware of the need for practical experience in construction. The need was closely aligned with the mandatory internship after the sophomore year and became more intense the closer they got to graduation.

During Mary's first interview she was asked whether gender was the biggest challenge she faced within the construction management program. In response she said, "I was more worried… I think my biggest obstacle is not having any background in construction. Not feeling comfortable enough to do an internship because I feel that I don't know much, even after two years. I feel that I don't have the knowledge that someone else would. So I think that for me going through the last 3.5 years, that was my biggest challenge; Was not having any background in construction."

Mary described her transformation in her senior year where her work experience and club activities helped her become more professional in her public speaking.

> I don't think that I told you this yet, but I had a presentation in Contracts probably three weeks ago. You don't realize just talking in front of AMIC, giving those little presentations, once a semester, or whenever, helps, it helps. I gave a presentation for Contracts a couple of weeks ago and I sat down after thinking, the first thing I thought about was AMIC. It was absolutely incredible, I got in front of the class, we gave, the three of us that did it. I was thinking "I won't be able to pronounce indemnity" or something like that, it was a really boring topic like that , but I prepared for it, I got in front of the class and when I sat down, my hands didn't shake, I didn't even feel nervous, talking in front of those people… I sat down and thought "did that just happen?" I couldn't believe it. That it has helped my nerves being able to talk to a group of people that significantly in just three years.

Judy was challenged by her own doubts in her freshman year, despite her enthusiasm.   She continued to be enthusiastic, but having the value of experience to back her enthusiasm.

> I am so gung-ho now.   I think it's crazy how I went from first semester not being involved at all.   I was a freshman I had just turned 18. I was 17 when I started and I thought I was so mature. It amazing to see how much I have grown since then. It's amazing how I have grown since last semester.
>
> But I think that I take different experiences that I go through and do them again [laugh].
>
> I noticed this semester, looking back at the mistakes that I made and whatnot… it's a mistake. The world is not coming to an end. And worrying about it and stressing out about it, kills you that much more. Being calm about something and level headed, [laughs] Alright you know. Take a minute. Be upset with yourself and move on. And get done. And the second semester of the first year. That was the kind of attitude that I had towards things. I need to get going. I have wasted time, it wasn't waste, and it just could have been utilized a lot better.

Renee spoke about facing some of the criticisms she received for getting jobs as a sophomore that juniors were actively seeking. She showed strength and a resiliency as she had gained more confidence in her first two years at ASU.   She explains how she bested male students that were older and more experienced and how she did not let the comments affect her.

> I would say that comes into play as well as the fact that I am younger and I have... Like they are going into their senior year and have already completed an internship, where this is going into my first internship, so I think that has a lot to do with it.
>
> I made the comment that the only thing I can think of is that the Habitat for Humanity. And they were like well I did Habitat, but he had done it twice in another state. Well I said that I had done it for seven years so....

When asked if that was still the case now that she was in her senior year if issues

of jealousy were still prevalent she indicated that it was her experience and maturity that

allowed her to cope better.

> I think at this point I have enough confidence in myself that it's not really an issue, I think is how being a female in this school in general. You have to have a thick skin, you can't let it get to you. You have to accept that it's pretty much the way it is and you have to have the confidence in yourself before anyone else is going to have confidence in you.

> Taylor spoke about her work environment and her growing comfort working in

construction even though she was one of the few women on the management team.

> I don't mind working with all men. I was on a job over the summer with all men.

> Interviewer: It's not atypical?

> Right, it doesn't bother me, and some of the older women I think believe that it is going to bother the young girls. So that is why they try and convince them that they can be just as good as the guys, but I think if you are confident and know that you can be just as good if not better than those guys then why not.

> Interviewer: Did you have that attitude coming into ASU?

> Not at first. I was kind of worried about the girl thing and then once I started after my first internship then I thought "Oh, I will be OK" [laughs]

> Interviewer: So that was a watershed moment? The first internship.

> Oh, unbelievable first internship experience that really just I mean determined for me that I would be in construction forever.

> Interviewer: So they didn't scare you away? Why not?

> They took me under their wing, every person there. They were open and willing to teach me anything. Willing to let me tag along to any meeting, job walks, anything, you get involved in whatever you can. Because I let them know that I wanted to learn as much as possible that they were willing to hand out.

During Angela's interview, it was noticeable how calm and poised she was

compared to her sophomore year. When asked about her confidence she replied, "I'd like

to think that is from my experience since then. I've been trying to work on thinking before I speak. I always thought I didn't have a very good vocabulary and I don't like how I form sentences or say what I mean to say. Maybe you don't hear it, especially since my review this summer. So I am trying to slow down a little bit."

Angela had perhaps the best comment about the value of experience. "When we were in classes when we were in our first year there were guys that were like 'oh, I worked with this company and I have worked out in the field'. And I was thinking wow these guys have so much more experience than me. I was really worried. Then I realized after the first internship that what they were talking about was mostly crap. They were no better than most of us in there.

Summary.

The emergent theme was the result of students identifying challenges as they went through the academic process. Students all identified the typical challenges identified to coming to a university as a freshman with the additional perspective of being in a STEM environment in which classmates and those in the engineering residence were mostly men. The mentees were academically strong though some underperformed to their expectations because they could not prioritize and manage their personal time. Students did not have extensive goals beyond graduating in four years, which often led to a disconnect with mentors whose interactions focused mostly on career related discussions. As students emerged as academically competent they shifted focus to their first internship which is mandated after their sophomore year. After returning from their summer internships, all of the students indicated a boost in their self-confidence and a shifting focus toward career related competencies while managing their academic requirements.

The points of self-confidence were much easier to see because students had to participate in two internships as part of their graduation requirement. The industry experience was the impetus for students to network with AWIC members and acted as the leveraging agent as what they perceived as a weakness among their male peers prior to their first internship.

Theme Three: Mentors

Recall that mentors for the students were assigned in the first two years of the program. The selection process was left to the administrator in the construction management program to assign what she felt was the best fit for the student. This was done with a couple of considerations in mind. First, the students had to choose a concentration of study within the construction program and mentors were assigned given their background in construction. For example, a student that chose a concentration in residential construction would most likely get a mentor that worked for a homebuilder. It was assumed that this pairing would facilitate a linkage from the interest of the student and the expertise of the mentor. In at least one case DR changed the matching process when she arrived.

> I have them come to me and I say you try and find somebody and if not I will team you up. Because that helps me with a lot of the women that are coming in as mentors. I don't know them either. So when they come in for a kick-off their personalities, when they do the activities, and meet everybody. Most of them will team up and get them to sign off right then. Those that don't they tell me their areas and then I try to match them. So they are teamed up. Some are hit and miss, you can't get a full personality in the meeting.

Value of the mentor and timing.

Andria provided a mentor's perspective to the value they bring to the student's

academic experience.

> I think those girls [AWIC] are unique in and of themselves. Given what they
> want to do. So it speaks to them and their skills, not the program or anything else,
> but I hope that we helped them along the way. I know that our board has helped
> them find jobs. And I think with a few they took advantage of what was presented
> to them. I think that is the part that they won't understand until it is perhaps too
> late. That they really use us as a resource. There's so much at their fingertips.
> Some of them it could be a function that they are shy. Some of them it could be a
> function that they just don't understand and some of them are like "I just don't
> want to do it. The few that do recognize it there's a lot for them if they just say
> 'Yeah, I want it'.

Penelope explained that there is value in having a female mentor because of the

dynamic that can be created that men might not otherwise understand. Penelope was

asked to explain the benefit of female relationship dynamic between the mentor and

mentee.

> Oh yeah, you will never understand that [laughs]. Uh, so don't be offended by
> this. I think women are better at emotions in general, identifying them,
> acknowledging them, experiencing them, I think men are much better at ignoring
> them, which is an excellent tool. I also think men miss out on a lot of things
> because they don't experience a lot of things because they don't allow themselves
> and so when a woman is faced with something that could conjure up an emotion,
> anger sadness, frustration, whatever, they really feel it. I don't think a woman in
> construction, especially at that age, to experience those emotions especially with a
> man, a man doesn't get it. They don't understand it, why is she upset, why is she
> taking this personally, I think a woman gets it a lot better. I think it is totally OK
> to experience those, to deal with it and I think it is important to figure out how to
> deal with those types of emotions because you really can't in public, you have to
> sort of figure it out and I just don't think a man [laughs a bit] can get that. A
> woman can look at another woman and know exactly what that other woman is
> thinking or feeling just from a glance. So there is just a different dynamic there
> that... men just don't get. Which is OK, men are much better at other things that
> we are not.

Penelope was asked to expand on the betterment of these student by the female dynamic.

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I guess going back to whether a male mentor could be just as effective, I think if it's in terms of just a working relationship absolutely, but a mentor, a male mentor might not be able to see subtle signs of a mentee having anxiety or something else going on under the surface that the mentee might not be comfortable coming outright and saying. You have to see something is going on there and pick at it, work your way in and make them talk to you. I think women are just better and doing that with other women than men are. No offense. I wish I could compartmentalize like a man, but I can't so… [laughs].

Other mentors were more pragmatic about the value of the mentor. Estelle said the mentor and the AWIC program make the young women more responsible and accountable. She gave an example of when her mentee Ann asked her to sign for an activity that they had not completed.

...It [the AWIC program] makes you, um, responsible. accountable. Ann one time, she said hey we didn't see each other last month, but can you sign mine anyway. I said No. She said why not? I said did I see you last month? She said No. But I know you. I said I know you too, and your family too, you should be giving me money as well. But if you think that this program is not that important and you didn't feel that you should meet me last month then why should I make an effort to do that? I am very to the book you know.

Andria, Catherine and Doris stated that they brought tremendous experience and resources to help students.

Student desires for a mentor.

Students were asked what they thought the role of the mentor should be. There were a variety of answers. The answers were as various as their needs and some of their perspectives did change from sophomore to senior year as they reflected on the impact of their mentors. Taylor responded at length regarding what she perceived to be the role of the mentor and her disappointing experience with her mentor:

To help, the mentee adapt to a new environment, a new life, construction in particular. To help us into this industry. Like JM said before, a lot of the freshman girls are not going to be looking for a job, so does the mentor just help them with their homework? Or? [laughs]

Interviewer: What do you think the mentor is supposed to do then?

I don't know, because my mentor wasn't very impactful for me.

Interviewer: In what way? I get a sense she has had some impact. Where wasn't she impactful?

A lot of my on the job experiences have come from other people. She has never taken me to a job site or to her office to introduce me to any of her co-workers. I don't know why she hasn't done that, she just never has.

Interviewer: Did you ever ask her?

No, not directly. She never offered it up. All my on the job experiences were with my internship sponsor.

Interviewer: So, she was impactful in orientating you to the industry?

Yes, that is a good way of putting it. One of the good thing she did. One of the things says to spend 4 hours with a professional. I spent four hours with an estimating guy at Sundt who was really involved with BIM which I never had seen before, so that was really cool.   I don't think four hours is enough to learn how BIM works [laughs]. I just thought it was neat to spend time so. I also saw what I don't want to do. I don't want to sit in a cubicle everyday [laughs]. I went in there and it was just cubicle after cubicle in the entire estimating department. Yeah, huge. I'm sure half of them are empty now. I love being in the field and that is what I discovered last summer.

Judy spoke about spoke about taking the responsibility serious and taking the time

to coach the student.

I think it is someone that should take the responsibility. If they take on a mentee, you are taking on having to coach someone, guide them.   I think it is laid out pretty well in the handbook with definitions. What you exactly expect from a mentor. Someone that you can go to for help that is going to give you feedback. Sometimes it is going to be positive and sometimes negative they are going to judge you on that and do their best to work through that.

Renee was looking for exposure to industry, though prior to her internship she

could not articular her specific desires. It was in her senior year that she better defined

the role of the mentor from her perspective.

I think the role of a mentor in this program is to kind of give you exposure to it. To see a successful female figure working in the industry. More so to give you that exposure and give your first step in the door to see what you are going to be doing. That wasn't what particularly mine did was just to show me the roles and activities of workers in the construction industry.

I think the greatest mentor group that I have at DPR is the PE's because I mean you are just friends with all of them so you can go to them with anything, you are all on the same playing field. You all understand each other you all know the daily grind with submittals, RFI's and anything that is happening. I think that core group of people makes everything else easier. I mean you don't necessarily have to approach them for mentoring you are just approaching them with something that has come up and they can relate to it and maybe how they handled it or people in the past, where to go from there.

Ann reflected on her first year and what she thought she needed from a mentor. Her experiences with Estelle were some of the most positive of the interviews and it showed in her response to the question.

I just think she is supposed to approach you and make you feel comfortable. And really you know that she is a huge resource out in the real world. There are lots of things that I would not have gone out and done. She was like here I will show you. So she is definitely a leader. I would have never gone out to a job site and take 50 pictures of cement cracks and conduit running up the walls. I would have never known. I would have been like "what is this?" [laughs]. She is just like oh take a picture of that and that will fill that requirement for your class. It's really someone that can help you connect your classes to the real world.

Fight for my time.

There was the recurring comment at many of the meetings and interviews about students needing to fight for the mentor's time. In concept the mentor was working extremely hard, especially during the economic recession, and that the mentees had to essentially fight for their time. This was viewed as the student having initiative and showing desire to be mentored.

Catherine was declarative in several meetings that her function was to introduce the women to the world of construction and that as mentees it was their job to contact her. "My time is important and I don't have time to chase a mentee down. If they want my time they have to demand it wand work for it, otherwise I have work to do." Estelle's response was very similar to Catherine's comment.

> So we all very busy. You know students are busy with their schoolwork and we in the profession are busy working 14-15 hours is nothing anymore. You know you do that and you kind of put the mentor - mentee program on the back burner. You know if she needs me she will call me, you know if she needs help then she will call me. Otherwise why would… should I make an effort. I have a feeling that if you are a mentee and you are trying to learn, you do your darndest to annoy your mentor, calling and trying to make an appointment. Otherwise they will shove you aside. You know.

During another mentor interview, Andria was asked if she had seen the dynamic of mentors like herself desiring the mentees to fight for their time.

> I would guess that it is easier for the mentor, the industry people, to really jump in then because a lot of them given their positions are very direct drive people. So maybe they can be a little bit better mentor when those kinds of needs are there versus being there a little sooner for the coach, you know what I mean. It could very well be that half of them, the mentors are not prepared for that kind of relationship. Nor do they know how to go about that.

The mentor statements were juxtaposed to the kinds of needs that individuals such as Angela had in their freshman year. When she discussed what she really needed from a mentor at the time she was struggling with her personal doubts she was ready to demand anything from her mentor, rather she felt she needed an intervention in her life.

> If I would have said, I am struggling from the start and she could help me get organized or something. I needed some organization. If she would have said you need to go to Noble Library and rent a room, block out times, you know what I mean, taking my hand, not just giving some verbal advice but 'why don't we meet

after class and look over this', that would have been almost like a tutor, but isn't that what a mentor is almost for?

The question was posed to Renee about the value and role of the mentor, she concluded that she could not have demanded anything from her mentor because she didn't know what she needed.

> I don't think coming in as a freshman I would have been able to tell them [mentors] what mattered, because I was coming in with such a vague approach to what I thought this program. To be honest I had no idea of what I was getting into. I had no idea. I think more than anything this AWIC thing to be they reached out to me now show me what I am going to be doing for the rest of my life essentially. And so I don't think I knew well enough to know what I wanted and maybe that is what changed after my sophomore year because I came into my own person and figured out what I wanted and knew the type of company to be with the type of job I wanted and was able to pursue it on my own. I understand AWIC for the younger people coming in it is good for maybe networking amongst your peers but I think as a mentorship program, which is the core of it, it wasn't successful. At least for me. For others it may have been, but so...

Renee in here senior year interview reflected on her needs and whether the aspect of fighting for her mentor's time was in relevance to her need. She indicated that the need changed when she needed to get a job for her internship, but as a freshman she was looking for clarity of what she might be able to do with the degree. Without clarity Renee struggled with connecting with Doris, her mentor, who was much older, more advanced in her career, and to fight for her time.

> I came as a freshman, I think it was critical to see what I was going to get out of it. Like the possibilities that are available to me, so I wanted to know what I could do. And maybe that is why the project manager was the mentor to show you what you could do, but wasn't what I was going to be doing. I think what was important was the social part of it. I mean you are a freshman coming into college it is a huge step so you are looking for that relationship with your friends and your peers. I don't think I was focusing so much, as "OK I need to network with these people, I need to make sure they know who I am and know my name

so that when I want my job they know". So I think it was more personal based growth freshman and sophomore year and after that came "this is starting to be real life how do I get a job".

Judy spoke about how lucky she was to be matched with Penelope because she was accessible, but was willing to demand her time when she needed it. There was the additional dynamic that Penelope was a graduate and had verbalized that she would be accessible to course related activities, such as site visits and project examples.

Penelope was a graduate of the construction management program and had worked her way through school. Judy was reflecting in her senior year about how students get paired and that perhaps that should be identified through their needs and not necessarily by the area of interest in construction.

> Maybe backgrounds, someone that has dealt with similar experiences. If you have gone... It's hard for someone to help you if they haven't gone through the situation themselves. Yes, and no. If they have been through it they understand better. They have made it and it is kind of inspiring. You worked her butt off and made it. Penelope made it; she was a waitress and graduated in 3.5 years, taking extra credits. Her parents were here but she pretty much took care of everything herself. It ended up that we are together randomly, but we are two peas in a pod. I don't know how well that is with all the other girls.

Desire for peer mentors.

In all of the student interviews there was a clear interest in finding connectivity with students further along in the construction curriculum. They did however indicate that the program experience was more mentor-mentee focused and that specific activities for peer related interaction was limited. There was a desire to understand the immediate needs of what was next in course requirements and define more clearly what was needed as a young professional as they started to work in the construction industry. Some of the

best paths to understanding short-term success was identified through interaction or mentors from student in construction management that were in their junior or senior year.

Mary's discussion led to the question of whether it would have been helpful to have, in addition to the industry mentor, to have a junior or senior in the AWIC program to be an in-house mentor? "I think it would, if it was like, depending on how the program works, it would be a good opportunity because not only coming into it, do you have someone in the field but you have someone who is going through the schooling as well."

DR was supportive of the new students finding support among the junior and senior AWIC members. She said, "I seriously think the freshmen need to be with the upperclassman to take advantage to help them out." She indicated the point of relevance between new students and more seasoned students is the first internship. "Having a mentor within the actual school with the older students after they have completed an internship is best." While peer programs are not uncommon at ASU, the significance of this peer group is not their academic understanding, it is the combination of academic capability and their knowledge of what the students will do as interns in the job market and effectively help them manage both processes.

The same question was posed to Renee and what might be a feasible mentor on campus. She was asked if some of the graduate students could potentially be that kind of peer mentor.

> Um, I think that it wouldn't be as beneficial because they wouldn't be around as much. I think that a student mentor would also be helpful with the networking, interviews and the whole process successful. Because my mentor went through that process but it was over 8 years ago.

Realistically the current student is interviewing at least once a semester. That would give students a better preparation and better expectations of what is going to happen I don't think the mentors can give that kind of perspective right now.

It goes to a more realistic... [pauses] I work as a PE intern and work under six people and none of them are female. So I think it would give them a more appropriate view of what they could expect and in the short term. And the environment that they would be going in to.

Having a student mentor would not give them the grandiose scale of what gets done on a project but what to expect as an intern and what would be expected to do. Not necessarily what to do but just to prepare for what they are going to be doing for the very first time.

Ann responded in a similar way. She saw the potential of a junior or senior partly fulfilling a mentor role, something that she eventually did for AWIC when she became a junior. "I think the juniors and seniors could transition more into a mentor or into a mentor/advisor role. And you can still have your mentor. I still have my mentor. I never looked at it as just a grant. There is much more if you are willing to take advantage of it. To me it's not about the grant." By her senior year, she was helping with the freshmen and working on establishing a club for the AWIC participants.

In her senior interview, she was asked if she saw herself as a mentor now that she was proactively helping the new freshmen and sophomores that entered the program.

Um... I don't know, I feel I could be. But it's in a less authoritative way. I am more there as a resource now. But if I was assigned a mentor, I would be more aggressive about it, than I have been. If they want to come to me they can, but I usually don't have the time from school, or work to have a set time to be somewhere.

Interviewer: Have you found that they asked you different questions than their formal mentor?

Um, I don't think so. I think it is more related to school, because I had just taken the classes, but it wouldn't be anything that they couldn't ask their mentors.

Interviewer: What kind of questions do they ask?

Just what would I recommend for classes and teachers. Which I wish I would have had somebody that could tell me all the ins-and-outs before I signed up for classes. Like hey don't take this teacher when you take this class it will be too much. Or something like that [laughs] It's always good to get the inside scoop.

Connection or disposability.

There was a significant diversity among the assigned mentor-mentee relationships. Among the students interviewed Ann and Judy had the strongest and most continuous relationship of all of the students. Ann continued to meet and interact with Estelle through her senior year and formed a strong friendship with her mentor. Judy interacted with her mentor into her junior year. She indicated that they continue to exchange emails, but the mentoring concluded into her junior year as she found continuous work in construction. Angela left construction after her first semester and terminated her relationship when she changed majors. She returned in her sophomore year, but didn't connect with an AWIC mentor until her senior year and from her descriptions it was to help clarify some of her personal goals and network before graduation. She was asked what might have helped with the transition. She indicated that a peer mentor would have helped, but also a mentor that had greater affinity to her as a person. "She was great and I was great but we honestly weren't the right people for each other, she was very much a typical engineer, very driven, with not a lot of social skills. I don't think she felt comfortable with me."

Mary left the AWIC program after her sophomore program to pursue a female mentor in the Advancing Minorities in Construction mentorship program. Her justification for choosing a mentor with AMIC was the level of comfort, which loosely translated she preferred a Latina who had a similar background. "I felt comfortable with

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her instantly, and I thought that was really important when going somewhere to network or asking for help on a project. I'm sure the other lady would have been just fine, but I felt like I had that much more of a connection with Marie." She and her mentor in AMIC continued to interact until the time of her graduation, though the interaction lessened in her senior year. Mary indicated that Marie, her mentor, was busy trying to keep her company afloat during the recession and that Mary had figured many things out and didn't need to rely on Marie for support. She did indicate the Marie "had her back" if she needed a recommendation.

Alana, concluded the AWIC program after her sophomore year and indicated that she and her mentor would continue to be friends and were actually training to run a half-marathon together.

Taylor, concluded her relationship with her mentor after her sophomore year. Documentation from previous sections indicate that she was not pleased with the outcomes of her relationship, though she considered her mentor a friend at the time of graduation.

Renee concluded her relationship abruptly at the end of her sophomore year and didn't reply to her mentor through graduation. She was the most critical of the program for not meeting her needs as they changed in her academic progression. She indicated that the interaction lacked real intent and she withdrew as soon as she found a position in a commercial company as an intern. Her mentor Doris was unaware that she had graduated and found out several months afterwards from the ASU administrator.

Kram's (1983) model, stages of mentorship, was identifiable but in a more compressed format than the formal internships presented in her original study. Angela

and Mary did not get beyond the initiation stage, largely due to not finding the kind of support they needed within the current program. Alana, Ann, Judy, Renee and Taylor all went through a shortened period of cultivation. The cultivation period was shortened to the sophomore year except for Ann because she continued to work with her mentor in the corporate environment. For the rest of the students that experienced some level of cultivation by their mentor, they ended the significant interactions after their sophomore year. The greatest contributor to the decline in interaction was the first internship in their curriculum. During that timeframe, it was clear they discovered their capabilities, marginalized their doubts about the capabilities in the construction industry and started to seek mentors within their new work environments.

Three students eventually sought to continue their relationships with the mentors and redefined those roles as friendships, similar to Kram's model definition.

Summary.

The role of the mentor, as defined by the students, varied greatly. In regard to the standardized roles as defined in the AWIC handbook, the perspectives of the mentor and those of the students were inconsistent. Similar to the lack of comprehensive definitions (Jacobi 1991) identified in the literature review all participants had varying perspectives on the roles and ultimately the activities needed from mentors. Part of the varying perspectives was due to the diversity of needs from the mentees and how those needs changed over time. Young students found it difficult to look externally for mentor support when there were dramatic differences in age and their needs were specific to the academic environment. Also, students found it difficult to 'fight for their mentor's time'

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when they had trouble managing their own time and were not sure what they would ask the mentor if they did get their attention.

Several students found a significant amount of synergy initially with their mentors, Alana, Ann, Judy, Renee and Taylor. That changed by the end of the second year as students developed their own experiences in the construction field. Ann was the only mentee to remain close to her mentor through graduation. Those that remained closest to their mentors were those that had common experiences in the workforce, were closer in age and were paired with alumni from the construction management program.

Angela and Mary were never truly vested in the AWIC program because they had needs that either the mentor was incapable of providing or sought a better sense of community in another function on campus. Angela was the most doubtful of her capabilities in construction management and was desperately looking for emotional support and only found it later in another engineering student club. Mary, the only Latina, found more comfort with a Latina mentor in another mentoring program, because she had a greater connection and could more readily identify with that mentor.

All of the students spoke of the desire for greater community through meaningful interactions through AWIC with each other. The difference they identified was in most of the AWIC events. Student went to events where they were all mentees were present, but they were designed as a mentor-mentee function and there was little time for interaction between students. They also expressed the desire to have accessibility to juniors and seniors as peer mentors because they are closest to understand their next steps to be successful in the construction management program.

Students that continued in AWIC after their freshman year had varying sentiments about their mentors. Again, Ann found a rich and fulfilling relationship with Estelle her mentor. Judy identified her experience as positive, but limited her interactions with her mentor after her first internship. Renee and Taylor were dismissive of their mentors after their internships because they realized that prior interactions were not meaningful and were token interactions rather than authentic preparation for their internship experiences. Most of these challenges came from a lack of training for the mentors, lack of connectivity with construction management administration and varying perspectives of needs from the mentees.

Theme Four: Perspectives about Gender

Recognizing gender differences.

Comments of how gender relates to the mentor and AWIC program were a consistent thread in the dialogue with interview participants. The discussions were not intentionally designed to address a presumption of gender bias, only to acknowledge that the students statistically were outnumbered and to draw upon their perspectives about how that affected their educational experience and how AWIC might offer. While the program was designed to enable and empower women in the construction management program there were clear considerations regarding the vulnerability of young women both in the academic program and in the industry. The dialogue among students and mentors was not put in a negative perspective in which the mentors talked about their own struggles in a male dominated field. Dialogue took form in different venues. Students discussed some of the pressures of being a woman in construction classes and

the competitiveness of the men in the program. There were considerations with adjunct faculty and harshness towards women as a reality check and certain work related experiences.

Estelle described a time in which her mentee Ann was working part time in the office during the school year and spoke about defining a line of respect with Ann and men in the office. Ann was working with her mentor for the first required internship during the summer.

> One of our employees asked her to go out and buy a chew for him. And she went and got it for him. I sat her down in my office with the closed door and I lectured her for a half hour. I said, 'are you the pee-on in this company?' What did you get out of the chew? What was the educational value out of that? Why don't you get me coffee and breakfast in the morning for me? And when I am ready for lunch, I am going to ask you to heat my lunch up. And I lectured her. She said, 'well I didn't see it that way'. I said that's where… I'm not saying it's women's rights or anything, but what was wrong with his two legs to go buy that? So he is demeaning you, you don't even chew and you went and got a chew. I was furious. Furious! So I lectured her for a half hour and the next time someone asked her she said no. She's young. And they think oh she is just an intern she can go get it. But that's not the perception that I want people to have of her. She is young; she will do anything. I mean we all have our own self-respect. If you don't respect yourself, if he had asked me to go and get a chew, I would have given him 10 million names and words. But he didn't ask me. He went and asked her and she said yes. That is the kind of thing, I feel like when construction industry sees young women in the industry. They think they can be bullied, unless you stand up to them. I think AWIC helps that. It helps bring up your self-esteem.

Ann however never mentioned Estelle's stern comments or concerns and mentioned in both interviews that she never felt that she was challenged because of her gender.

In Ann's first interview she was asked if she was bothered that only 1 in 7 students were female. Her answer was a little surprising.

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No not at all. It is helpful actually. It's easier when you have more guys than girls, then it's not as dramatic. You can just form study groups and I just think it's easier almost. It's E-A-S-I-E-R!

Interviewer: No issues with being the only 1 or 2 women in the class?

No, it doesn't really bother me.

This sentiment carried through many of the interviews where the women thought there was less "drama" due to the low percentages of women and as they progressed further into the program, they saw the limited number of women as a means of standing out in a tight marketplace. This did lead to other types of tensions in the undergraduate study body.

Renee described some of the jealousy expressed when she attained a coveted internship opportunity with a large general contractor that was only offering a few internships as a result of the economic depression. The comments were particularly harsh at the time because of the effect of the recession was particularly hard on the construction industry and internships with larger contractors were highly sought after.

I guess the final challenge that I can think of is the most recent. With the internship that I got. The kind of ridicule that I got. Like 'why would you get that over me. You have no experience what made you stand out?'

Interviewer: Was that from your circle of friends?

No, just acquaintances - friends of friends I would say.

Interviewer: So people that didn't know you. Was this from people inside our outside of the program?

It was from inside, from people that we know each other but not necessarily friends.

Interviewer: Do you think they were jealous?

Yeah, I would say they're jealous, just because of the environment that we are in, that you need something [internship] lined-up. I mean two weeks ago I didn't

have any leads. It was kind of a surprise to me to come in and get two offers in the same week.

There was a point in Renee's first interview when she discussed her assertiveness and she indicated that she had to work extra hard to get credit. When asked if that was because of her gender she provided the following line of answers.

I would say there is still… that you run into people that believe that you don't have a place within construction.

Interviewer: Is that among the students?

No, I would say that is among the faculty.   Faculty, teacher, however you would say it. I feel that there are some that still have that 'old school' mindset that construction was supposed to be a certain way.

Interviewer: Were these the ones with the offices or the ones without the offices?

Without the offices [adjunct faculty]. The one's that come in from the industry that teach the classes I would say.   I would say those aren't. They aren't necessarily bad things because they have been in the industry forever doing it. I think it is unfortunate that they feel that way and that you are in their classes, just at the same time you have to work that much harder to prove yourself. That's not necessarily a bad challenge to face. When you do prove yourself and you receive that recognition, it is a lot more rewarding than anything else.

Renee's perspective changed slightly in her senior interview. By her senior year, she did not consider gender an issue because of the quality of her industry experience. She also believed that not having male mentors was potentially problematic because in the construction workforce new graduates were more than likely going to have a male supervisor and mentor.

I would think that having a male mentor, in addition to your first mentor, because you would get a balance of it. You are getting female mentor saying that " women can be successful and everything like that" but at least nowadays the realistic situation of walking onto a construction site is that you are going to have a PM that is male. I think it would just give you more of a reality of what the construction industry is.

I guess you can see that, they are segregating the women so it is not going to give you a completely realistic outlook of the profession. Because you aren't going to see the everyday set up on a site. Like Doris is the only female on her site. She had two superintendents, two project engineers and they were all men. So even though you are seeing that you are also seeing a female that is completely in charge than just a female project engineer that is just on the site. So, it's going to give you a perspective of what life is going to be after graduation. But not what you expect to see in the immediate future. It's giving you a very focused look in to the business. Not necessarily a look into a whole.

Taylor consistently felt that gender was a non-issue and that AWIC was sexist by not encouraging the best mentors, no matter the gender, to support the students.

I still don't realize why we need women, we need excellent people, smart people, people with common sense, and women can be all those things. I don't know why we need more women. I know they think differently, it's not better it's not worse, it is different. I want to ask you what you think but you probably won't tell me. [laughs]

Well, lately we have been laying a lot of people off. I work for an underground utility company in Phoenix. We recently laid off our receptionist and she did a lot the admin work, and since she had been laid off I had been turned into for a lack of a better word, "copy girl" [laughs] which I had a problem with because I wasn't there to learn how to make copies. So I talked to her about it and she said "well you are leaving in a few weeks so sit down with the boss and ask him if he wants you to be spending your last few weeks preparing to leave [hand off] or making copies [laughs] and I thought that was good [laughs].

Renee's and Taylor's perspectives are similar to a phenomenon that McLoughlin (2005) identified as spotlighting. A function in which women's based programs were seen as potentially negative by students because it singled them out in order to help them. Many of the students felt they didn't need help just because they were women and to pre-empt any need was not seen as positive.

Mary was also asked if she felt that there were challenges for women in the construction management program.

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It's there [gender bias]. I think that 90% of the women in this program are very strong-willed. To be a woman in construction, not in this program, but in construction, you have to be strong, you have to know the issues you are going to go through, you are more vulnerable.

Interviewer: Did your mentor talk about that at all?

I know we had a conversation like that; it was one of our first conversations. Honestly, I can't [pause] It never affected me being a woman in construction because I'm really personable and hard-headed. So I can run with the boys kind of thing. Yeah... I'm sure that she mentioned it. You know you are a woman in construction owning your own business. She, we, never talked about obstacles or anything like that.

Interviewer: Or anything that you should address...

Maybe because... I was more worried, I think, yes I do see being a woman in construction as an obstacle and I know that. I think my biggest obstacle is not having any background in construction. Not feeling comfortable enough to do an internship because I feel that I don't know much, even after two years. I feel that I don't have the knowledge that someone else would. So, I think that for me going through the last 3.5 years, that was my biggest challenge… Was not having any background in construction.

Interviewer: And getting that in some way...

More so than being a woman. I am sure that when I start in the industry, that it will flip-flop, that I will know more but have to struggle with....being a woman in construction. I know it will come up, but I haven't gotten there yet. See that's the other thing. I know that my relationship with my AMIC mentors, that it doesn't end with my graduation, I know that I can reach out to them. I guess that is why I am not so worried about the woman part of it.

Angela did not find the transition to ASU or the work environment as welcoming as the other students interviewed. This was a consistent perspective from her first year in college. In her final internship prior to graduation, she felt that she was constantly trying to adjust to the work environment that was not considerate to her desire not to keep conversations clean of sexual innuendo.

Yeah, they were talking about their personal lives. We all sat in an office, like one big room and the other intern Katherine, when she was in the office, she participated and they were always, like "oh you are just like one of the guys" and

participated in those discussions. While I was kind of disturbed by them and so in that sense, I wanted them to realize that I was a girl. You wouldn't talk about those things in front of... And they kept saying "oh, yeah your just one of the guys" . And I wanted to be like, "no, I'm not and I don't appreciate you talking about these things in front of me".

Interviewer: Why didn't you say that?

I didn't want to... I am a little over-sensitve about being like… which comes from my lack of confidence. Like I care too much about what people think about me. I would rather them think that I am the cool girl that is just like one of the guys than the office byotch [emphasizing the 'y' sound] or whatever..[laughs]

Angela was troubled by her experience and felt that because she was not participatory as "one of the guys" that she was not offered an opportunity to return as a full time employee after graduation. She indicated that she did not like the type of person she was becoming as a result of the work environment. She spoke with her friend-mentor from ASCE when she returned to ASU and discovered she had the same concerns in her engineering office. Angela did not want to be in a situation in which she had to address her discomfort and being viewed as the "byotch" and by not addressing it, she became upset, resentful and unhappy.

Penelope, the youngest of the mentors interviewed, had a similar perspective to the current students that gender bias was mostly a non-issue while she was in school.

It just never [pauses]… Honestly it just never occurred to me during my time at Del Webb. Obviously I was outnumbered, but it was just a non-issue, I never really noticed or cared I know. The guys that I went to school with treated me just like anybody else. I didn't even... It wasn't until a couple years ago when I was working on a project with somebody that was a little more old school and they quote "put me in my place" Uh, it wasn't until then that I actually like I realized. So, yeah, I guess there is an issue here.

Doris, who has a longer view of the construction industry, had a different perspective on the AWIC students and the effect of being the only woman in project planning meetings.

> Being a woman in this business at a time when there were no women in this business effectively, I know it is a little different now, but it is still male dominated industry. It still is. I still find myself in meetings with people and I am the only woman in the room. It is still that way. I think it is my job as a mentor to help them decide if this is where they want to be and get as much information as they can so they can make an informed decision about what it is they want to do. And to support them in that decision, help them understand a little more about themselves. That's how I see it. It's women in construction. It's not women and something else. So, to think that it was only about a personal relationship just to bond with a young woman? No, it's to help a young woman who has made a decision to look at construction as an industry. I'm all for helping people be better people, but this was specific to my industry. Or to make that decision is this the right decision for this person. A couple of people that I had, it wasn't the right decision for them, because this is not an easy industry.

Doris was also insightful on why students do not see it as purely as a gendered challenge. Emphasizing the experience and learning the professional skills in the construction industry often means adopting male dominated characteristics because they define the company dynamics in which the young women operate.

> I think when you are younger that is exactly the way you see it. I need to be this, I need to be like him. I need you to know... I think the older you get the more you realize, no I don't I recognize that there is that kind of response. I can choose to have that kind of response but we bring our own strengths to the table; we are just different. Right, it's just a different way of doing things. I have my own natural strengths. I can be kind of a hard ass when it is appropriate, otherwise I can be a little more mushy than a guy can be and still be successful at what I do. I think any younger person whether it is a guy or girl, they always think I need to be this way. A young man seems to think he needs to know everything. You know, that he doesn't need to learn anything. A young woman might come to the table thinking she needs to be a little harder than she probably needs to be.

Doris later added that while she has been in the construction industry she could only recount a couple of instances in which she was singled out purely for being a

woman. She clarified that the importance was on the skill and attitude that you brought

to company and the projects. The more critical aspect she emphasized is being tough

enough for an environment that is not as politically correct as other fields.

> I always think it is what you bring to the table for yourself. While it is a male dominated industry, I can barely think of any examples... Maybe one or two times where I can think that I was directly impacted because I was a female. Once, we had an owner that we were chasing where I was the proposed PM and they dismissed, one time in almost 30 years. And one subcontractor made a comment one time, "well I don't have a problem working with women". You just said that, so yes you do. You know, I think it is what you bring to the table with your own personal competence and your competency. If you are good at what you do and you are confident you cannot be overly sensitive in this business, guy or girl. I think that is some of the problems that I have seen with some of the women that get into this business is this is, I hope it never is, this is not the PC atmosphere that you have in corporate America, it's just not, and I enjoy that. I like goof off, I like to have a good time you know, be blunt with people and this is an industry where you can still be that way.

Getting a thick skin.

During the conversations there was a revelation that students do not necessarily

know what they are being protected from. The metaphor of getting a thick skin was

utilized a number of times with students and mentors. The usage was often in the context

of the development process as young people acclimate themselves to an adult

environment. The comments were focused on becoming tougher in an environment that

is male dominated, but not because they were oppressed by men in their classes or in the

workplace. The aspect of toughening up, of getting that "thick skin" was juxtaposed to

conversations dealing with the pressures of a construction work environment and one in

which they were the minority. It was a desire to get a thick skin because it happens at

some point, or it doesn't and they accept that they are not well suited. That everyone

needs to feel empowered enough to do their job and not be questioned about their

capability and diminished because of their age, gender, lack of experience or a variety of reasons.

Judy talking about developing her academic skills and starting to be more outgoing with her mentor and others described it as, "You can either do it one way, get nothing from it. I'm glad I was able to do a 180. It's not always bad to be hard headed."

Angela, indicated in her first interview that one of her key goals was to "get a tough skin".

> I just need to be able to deal with problems better, especially personalities. People that are mean and aggressive I get real coward like and they intimidate me. I just need more confidence I think.

> I think it is how being a female in this school in general.   You have to have a thick skin; you can't let it get to you. You have to accept that it's pretty much the way it is and you have to have the confidence in yourself before anyone else is going to have confidence in you.

Mary mentioned that many of the women that were successful in the construction management program were hard headed and could compete with the boys. She described the mental toughness that is needed to be successful in construction. Again, the consideration of the comment was not because she identified the system as biased, but that to be successful in construction the women had to be 'hard headed', such as herself, to be competitive.

The mentors commented that the students have to get that thick skin, but it was often left to their future experiences in hopes that they learn to cope and respond to situations in construction environment.

Summary.

Aspects of gender were a common topic in the discussions with the mentors and students. The concern with the mentors was to provide opportunity for the mentees who are dramatically outnumbered in their classes and on the jobsite. They often provided guidance to students when they felt the students were not asserting their role as a young professionals. Students acknowledged the gender differences in the statistical sense and said that challenges with men, students and faculty, occurred in their first couple of years. However, they stopped short of saying there were systemic issues with gender bias and focused on getting more experience in construction and toughening up (thick skin) because that brought parity among their male peers and prepared them for the tough environment in the construction profession. This is similar to (Cohoon 2001), Fox et al. (2011) and Margolis & Fisher (2002) in which the environment is male dominated and the norms and expectations are gendered despite the students not acknowledging its effect.

The majority of the mentees indicated that gender was not an issue by the time they were in their senior year of college. In the collection of interviews with students, the culmination of their strong academic performance, as they compared it to men in the program, and their construction internships, they believed that they were just as capable as future full time employees. Additionally, they indicated that there may be in greater demand because there is a limited number of women graduating each semester. There were clearly gender bias issues discussed, but the mentors and students indicated that their effects were minimal and that they had equal chances to obtain career positions at graduation.

Chapter 5.

DISCUSSION AND RECOMMENDATIONS

With respect to the students and utility of the AWIC program, the following framework was developed from the findings to identify the student needs and points of interaction that will provide a better dialogue of student needs as they progress through the construction management program. Two mandatory internships after the sophomore and junior academic years in the construction management program are unique. This provided for distinct points of development that may not be as easily identifiable in other academic programs. In the interviews, the needs were distinct in their freshmen, sophomore and junior years and they transitioned from solely focusing on academic competencies to career oriented discussions and finally to career development.

While the academic program offered distinct points, through the internship requirement, the students progressed at different rates depending on antecedent factors and elements related to their self-confidence. All of the students increased in self-confidence after their first internship. The experience served as a leveraging agent against the gender related interactions that might create doubt and toward questions of competency in the degree area and their capabilities of working in a professional environment after graduation. The developing competencies through the different transition points led to different interactions with the AWIC program and mentors as they further established formal and informal mentoring networks outside of AWIC. The utility of the mentors and the program shifted as the students' needs shifted through time. The AWIC conceptual framework accurately reflected the programmatic process, but

there were widely varying effects presented in Chapter 4 from the student's actual experiences.

Student Transition Process Framework

The student transition process framework, see Figure 5, was developed from the grounded theory process as the students identified their challenges and differing stages emerged as they progressed through the construction management curriculum and identified the effect of AWIC in addressing their needs over time.
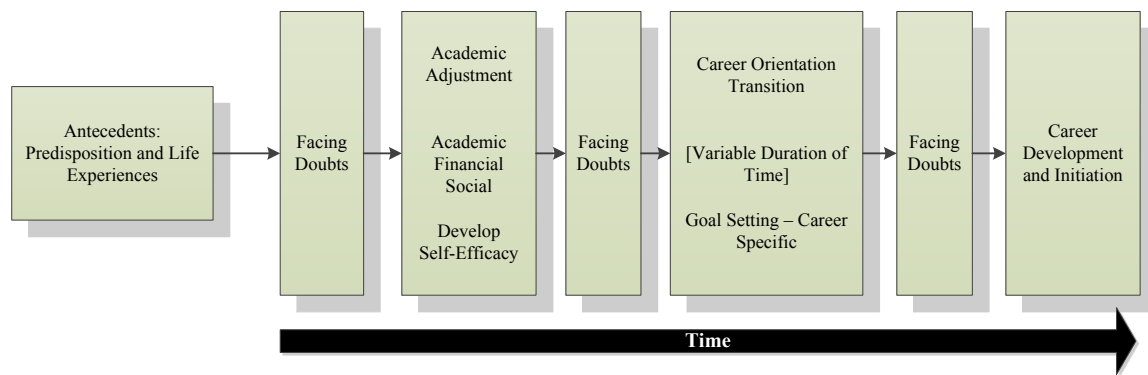

Figure 5 . AWIC Student Transition Process Framework.

The conceptual framework, see Figure 1, was an accurate representation of the AWIC program and the formalized structure in which the mentoring function operated. However, the framework was inefficient in identifying the student experiences, for most of the participants, as they departed from the program or utilized the AWIC program intermittently as they transitioned through the construction management program.   The following content summarizes the AWIC student transition process framework.

Antecedents - predisposition and life experiences.

Students who had prior exposure to the construction industry had a smoother transition into the academic curriculum and into a career orientation stage. Renee and

Taylor had substantial experience prior to their first year of college and it was evident that they were confident in their academic choice and only sought to clarify what they wanted to do with their experience and the degree.

Facing doubts.

Students identified doubts throughout their education and the majority of their doubts were in context to specific stages in their academic progress in construction management. The doubts were expressed as either a question of capability or a means of expressing their unease regarding the process of how to progress even though they believed they could achieve the challenges facing them. The first year doubts were expressed as elements of not knowing the relevance of the degree, how to navigate a new system dominated by men, both in faculty and students, in addition to normal adjustments identified by Tinto and others. The second series of doubts took place when students had to externalize their efforts as a means of finding their first internship. Internships are a clear transition point within the academic program. Students expressed doubts about how to go about selecting an industry sector, without having experience, and making the appropriate connections to secure a position. The third series of doubts were focused on securing a full time position upon graduation, especially during a major recession. These doubts were conveyed as a question of appropriateness of experience, networking within existing employment and clarifying career paths after graduation.

Academic adjustment.

Academic adjustment is the timeframe in which students acclimated themselves to ASU, the specific academic program and developed competencies to progress through the academic environment. Students articulated those adjustments in three areas, academic

courses, financial management and socialization among their peers. The combination of these categories, along with the student's mastery of the categories, were reflective of the student's development of self-efficacy in progressing in the construction management program.

Career orientation transition

Students identified a point in their academic career in which they were academically competent and starting to externalize their efforts to obtain career specific experiences. This effort is different from career exposure. Students looked for specific experiences, usually as employees, that contributed toward skill development that made them more marketable at the time of graduation. The transition was a variable timeframe for the students in this study. Several students aligned this transition with their internships and worked part-time during the academic year. Others had multiple employers as they searched out meaningful work, but lagged behind because they didn't articulate specific goals as to what they wanted to do after graduation. Students with the shortest transition were Renee and Taylor, while Angela and Mary were the longest.

Career development and initiation.

Career development was a final step through graduation and into a career related position. This was the culmination of academic capabilities leading to a degree and concerted efforts to have the experiential skill sets needed for job placement. During the recession this was a difficult step for students and five of the seven were placed in full time positions at the time of graduation. Two, Renee and Taylor, worked part-time in their last semester with their full time employers. Both students indicated they were getting more value from the working positions in their final semester than the actual

coursework because it was more relevant to their positions upon graduation. Alana, Ann and Judy all started a career related position at graduation. Angela and Mary had a delayed placement. Both students found positions later in the summer, but the job search was more difficult as a result of their inability to articulate what kind of work they wanted to do.

Program Effectiveness

Many of the students identified several missteps that led to decisions not to stay engaged with AWIC. Ann and Judy went on to help establish the AWIC student club and be effective leaders while the rest moved in other directions. The comments from Theme one and theme two were more critical in their final interviews. They stood in stark contrast to the anonymous survey conducted at the end of the 2008-2009 academic year in which 11 of the 22 students participating in the AWIC program submitted responses. The responses were very positive and identified significant value in the AWIC program. Why the difference from the interviews with the first cohort and the program-wide survey? The data from Mary, Taylor, Renee and Angela's interviews indicate a divergence of needs in the first two years that were socially specific to ASU and academically focused. All were appreciative of the interaction with the mentors, but the fit was not perfect. Mary went to another mentoring program because she identified closely with her mentor who was a Latina business owner and the interaction was oriented toward a smaller more diverse student group. Of the women that joined the program she was the only ethnic minority and the only one that did not have blonde hair. Neither her mentor nor the other women came from a diverse background. Angela,

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coming from another state and facing doubts about her choices, agreed that her mentor was receptive and open to discussion. Angela ultimately identified that she needed a confidant that understood what was happening in that first year and could provide some direction through ASU. She found her support through students and ultimately in a mentor outside of AWIC and the construction management program. Taylor and Renee were both incredibly strong academically and had prior construction experience before arriving to ASU. They both identified the positive interactions with their mentors and the AWIC program in their first two years. Those views changed immediately after their first internships during the summer after their sophomore years in 2009. During that time the recession made it difficult to find internships and both students secured internships without the help of AWIC or their mentors. Additionally they found mentors within those companies that were recent graduates of the construction management program and were providing direct feedback as to what was needed to perform their jobs well and providing clarity to the job related skills they needed to develop to be competitive at graduation. Reflecting on their experiences with AWIC and in some instances their mentors, the experiences prior to their internship looked token in nature.

Programmatic Suggestions

In reviewing the input from mentors, students and administrators as well as attending AWIC events from 2008 through 2012, the following suggestions were generated to provide greater utility for future mentees.

Identify the student's needs.

Mentors and mentee interviews revealed an unfolding discovery about career and life decisions through dialogue. Many students are missing the dialogue because the

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methodology of assigning students did not consider antecedent factors or student tendencies. RL was a proponent of establishing a personality assessment by colors, but the method was cost prohibitive. Utilizing an assessment tool that acknowledges prior experiences and articulates a student's preferences and interests would be more supportive identifying potential mentors.

Start early in defining goals.

Start articulating goals that are meaningful and immediate to the students' needs. Students entering the construction management program as first time freshmen are not all alike in their capabilities. The current method of using a checklist to create meaningful activity paradoxically inhibits dialogue between the mentor and mentee by focusing on the process of actions rather than the process of student growth. The checklist treats all of the students equally in the activity but fails to recognize where they are and what they need to accomplish in either first or second year.

Funding related to goal attainment.

One of the most contentious aspect of the AWIC program for the students was the ubiquity of the scholarship funds for all participants. The scholarship was promoted as something based on superior academic performance, but in reality funds were distributed to any woman that applied. Within their cohort, one student diminished the experience for most of the other students. Alana's poor attitude and lackluster approach really turned-off the other students. Without merit for getting the benefits of the program there was a sense of futility in participating after the payments concluded.

Another means of assessing qualifications for funding is utilizing the process of identifying personal goals and using measurable outcomes to measure progress and future

funding within AWIC. This method would provide the opportunity for dialogue between the administrators, mentors, and mentees. Personal goals from each student may also be aggregated and provide an opportunity for more impactful group activities in the freshman and sophomore years.

Create a community among students.

Students expressed a strong desire to interact with each other at AWIC related activities. Students also expressed a strong desire to establish peer mentors among the juniors and seniors in the construction management program. The students established an AWIC club that was formally recognized by the university in 2012. This was the first step in creating a more formalized community among the students.

Prepare the mentors.

Mentors need to be prepared to understand the students' needs and capabilities as freshmen. Most of the identified skills and expertise expressed by the mentors were focused on career related interaction and as the data revealed, most students were not prepared for that conversation until late in their sophomore year. It defeats the purpose of having mentors for retention-based interaction if they are underprepared to have discussions about the immediate needs of first time freshmen.

Define mentoring for AWIC.

The original handbook was a collection of items from disparate experiences and content. Now that the program is well established it is capable of working together, mentors, students and administrators to define what the mentoring experience is for the group. The definition should also be linked to basic mentoring theoretical principles so that measurements can be applied to the effectiveness of the program.

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RL's summation of the program is accurate and offers opportunity for improvement for future AWIC participants.

> I think the group has done a good job on focusing on providing students now with education events and resources. I think that has been quite good. Just a means to come together you know… if anything other than that. Even if it is just to have a support group. On the side of the board, we have brought in some younger people who have been actually a great resource and great advisors as part of our group. They can relate to the students more and at the same time they have a background where their universities did some things like AWIC, though not exactly like ours. So they have brought more ideas about student involvement. Somebody within the student group taking the leadership role and telling the board what they need. I think that would be wonderful. That in and of itself is a good thing as we can continue to fine-tune the program for what they value. My hope is that we continue to have that strong leader that can communicate well with us and feel comfortable to say no this doesn't work or this does and let's do more of this.

Future Research Considerations

As a result of the research continuing beyond the sophomore year the following research considerations can be made.

Questions remain as to why the students were unwilling to acknowledge gendered challenges as part of their education experience. Since the students changed some of their perspectives from sophomore to senior year it would be interesting to see if their perspectives would change again two years after graduation.

Research regarding the effect of mentoring programs with industry mentors and undergraduates in higher education. The AWIC experience was unique in that the design and implementation was done in large part external to administrative oversight and without university based funding. The administrative person within the construction management program was 100 percent funded by alumni donor. It would be interesting to see if other industry based mentoring program face similar challenges with industry expectations, training, fundraising, etc.

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Changes in the AWIC program continue. As the research progressed modifications were made and the overall programmed has started to implement many of the suggested changed mentioned. If the program continues the researcher is considering the effect of a successful mentoring program as part of the recruitment of future female students in construction management and other types of STEM programs.

Conclusion

Most of the students indicated in their interviews that they were likely to graduate from ASU, but the commitment to stay in the construction program was tenuous. The commitment and likely their staying in the construction management program was influenced by the AWIC program because it showed them real aspects of construction. It did not help them clarify what it was that they wanted to do in construction. The desire for job appropriate experiences was brought up in their senior year interviews. AWIC missed an opportunity to facilitate that discussion and keep relevance with the students that chose to disengage. They sought clarify their education and without clarity from the AWIC program they pursued other programs on campus. Many of the students also pursued mentor-like relationships with other professionals in the construction field that were often closely linked to their internship experiences. Students that found the greatest meaning were those that had young alumni as assigned mentors. The greatest linkage for the future is providing students tangible role-models that can articulate the next step in their development as students and young professionals. Readiness for development is highly individualized and has to be drawn out in meaningful dialogue. The best way to support students will be to teach them to articulate short and long-term goals and to provide both mentoring and programmatic support around student-based goals. This will

create meaningful interaction with the mentors, who continuously indicated time was precious, and provide support as the students work toward their goals. Goals cannot happen in a vacuum. Student's goals should be set in the context of academic, personal and professional development. Future research considerations could involve social cognitive career theory and the understanding that a holistic personal plan is needed to maximize student opportunity.

There were some unexpected observations as part of the research. The researcher noted changes in the way that the students articulated their ideas from their sophomore and senior year interviews. In their sophomore interviews the students consistently paused, changed ideas, and circled back to initial comments. It was very difficult to follow students in the transcription process. During their senior year they were more articulate and clearer on their ideas on their college education experiences and their future goals.

The value of the internships as a major leveraging agent was unexpected. It was clear that their choices of interaction and engagement with AWIC or other groups was motivated by their need and or desire to get an internship and solidify job opportunities. Mandatory internships are not mandatory in other programs within the Ira A. Fulton Schools of Engineering.

The researcher also noted the unique use of friends as a descriptor of other women in which they clearly we not friends. The use of friends was often a preemptive comment before they spoke critically of other female students. In addition many stated the belief that with more women there would likely be more gendered conflict which they termed

"drama". They often conveyed that drama among women in the program could be much worse than any of the male related issues that they encountered.

In conclusion, a theory of student mentee transition process was developed from this grounded theory study. The findings are important because they reflect the mentoring needs of young women in the construction management curriculum. This research identified clear transition points of student needs as they progressed through their academic program and identified areas of improvement for mentoring programs that involve industry professionals and undergraduate women in construction. The researcher hopes the research contributes to a better program and experience for participants in the AWIC program and others that may seek to create mentoring programs for women in construction management programs and other STEM related programs across the United States.

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APPENDIX A

IRB APPROVAL
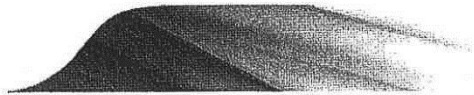
Office of Research Integrity and Assurance

To:	Caroline Turner
	ED
From:	*for* Mark Roosa, Chair *JTF/SM*
	Soc Beh IRB
Date:	01/27/2010
Committee Action:	**Exemption Granted**
IRB Action Date:	01/27/2010
IRB Protocol #:	1001004742
Study Title:	Mentorship Research - Advancing Women in Construction

The above-referenced protocol is considered exempt after review by the Institutional Review Board pursuant to Federal regulations, 45 CFR Part 46.101(b)(2) .

This part of the federal regulations requires that the information be recorded by investigators in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects.   It is necessary that the information obtained not be such that if disclosed outside the research, it could reasonably place the subjects at risk of criminal or civil liability, or be damaging to the subjects' financial standing, employability, or reputation.

You should retain a copy of this letter for your records.

APPENDIX B

MENTEE INTERVIEW PROTOCOL

Advancing Women in Construction Research Project

Interview Protocol – Student

Introduction (personal background)
Overview of project and purpose of interview

1. Please describe your background and your educational prior to enrolling at ASU.

2. What from your childhood lead you to where you are now? Events, people, work, mentors, challenges?

3. Tell me how you decided to come to ASU?

4. What were your first impressions of ASU when you arrived on campus?

5. Describe for me how you came to be at Arizona State University / Del E. Webb School of Construction .Probes: Describe the factors leading to your decision to apply to ASU and the Del E.Webb School of Construction.

6. When you arrived at ASU, tell me about your goals/thoughts of what you wanted to accomplish?
   a. Do you believe the AWIC program has helped you in those goals.

7. How were you approached to participate in the AWIC program?
   a. Did you think that it was a idea initially?

8. What compelled you to participate in the program?
   a. Money? Networking? Support?

9. What was your first impression of the AWIC Program?
   a. Had you participated in anything like this before coming to ASU?

10. Describe the first time you met with the AWIC group?
    a. Was your future mentor at this event?

11. How did you meet your mentor?
    b. First impressions?
    c. Did you get to select your mentor or were they assigned?

12. How did you communicate with you mentor?
    d. How often did you meet/communicate?

13. How would you describe your relationship with your mentor?

14. Describe an encounter/meeting that exemplifies your typical interaction.
    e. What other activities did you do with your mentor?

15. Did you find that you developed relationships with other AWIC mentors throughout the year?

16. Describe for me your interactions with other students that participated in the AWIC program.
    a. How did this bring you closer (not closer) as friends?

17. How did the DEWSC Administrator play a role in the program?
    a. What kind of interaction did you have with the ASU staff person?

18. Would you consider them (Administrator) a mentor as well?
    a. If yes, can you explain how?

19. Did you do everything that the AWIC program defined in their handbook?

20. Having gone through this experience what do you believe is the role of a mentor?
    f. What do you believe a mentor is supposed to do?
    g. What examples can you provide of your mentors doing these things (or not)?

21. Please describe 2-3 of your main challenges that you have faced while attending at ASU?
    a. How has the AWIC program helped (not helped) you face these challenges?

22. Did the AWIC program contribute to your staying in DEWSC/ASU?
    a. How? Explain.
    b. No? Explain.

23. What benefits do you think you derived from your participation in the AWIC program?
    a. What did you find useful?
    b. What do you believe wasn't useful about the program?

24. Now that the program finished do you still interact with that mentor?
    a. If so how?
    b. If not, why?
    c. Has your relationship changed at all?

25. What might you suggest as changes to the AWIC program?
    a. What should they absolutely keep?

26. What advice/recommendations would you give future AWIC participants?
    a. Probes: What to expect? How to survive? What to do or not to do?

27. I have asked several questions about your experiences, but is there anything else you would like to add?

THANK YOU FOR YOUR TIME AND FOR YOUR IMPORTANT CONTRIBUTIONS TO THIS PROJECT

APPENDIX C

MENTOR INTERVIEW PROTOCOL

Advancing Women in Construction Research Project

Interview Protocol - Mentor

Introduction (personal background)
Overview of project and purpose of interview

1. Please describe your background (where you were raised, education, work history)

2. How were you approached to participate in the AWIC program?

3. Prior to the AWIC program, did you have any other interaction with ASU/DEWSC?
   If so, please describe those interactions.

4. Tell me your thought process in deciding to be a mentor for this program.

5. Had you been a formal mentor prior to this?
   a. How long ago? Formal, informal? With college students?

6. What were your first impressions of AWIC program?
   a. What did you think about a woman focused internship?

7. How were you approached to participate in the AWIC program?

8. What was your first impression of the AWIC Program?
   a. Had you participated in anything like this before coming to ASU?

9. What compelled you to participate in the program?

10. Tell me about your goals/thoughts of what you wanted to accomplish?
    a. Did you convey these goals to your protégé?

11. Describe the first time you met with the AWIC group?
    a. Was your future mentor at this event?

12. How did you meet your protégé
    a. First impressions?
    b. Did you get to select your protégé or were they assigned?

13. How did you communicate with your assigned student?
    c. How often did you meet/communicate?

14. How would you describe your relationship with your student?

15. Describe an encounter/meeting that exemplifies your typical interaction.
    d. What other activities did you do with your protégé?

16. Did you find that you developed relationships with other AWIC students that weren't assigned to you?

17. What kind of interaction did you have with the ASU staff person?

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18. Would you consider them (Melissa/Jodi) a mentor as well?
    a. If yes, can you explain how?

19. Did you do everything that the AWIC program defined in their handbook?

20. Having gone through this experience what do you believe is the role of a mentor?
    e. What do you believe a mentor is supposed to do?
    f. What examples can you provide of your mentors doing these things (or not)?

    What expectations did you have of your protégé?
        Any surprises of differences between your expectations and the reality of the protégé?

21. What challenges did your protégé share with you?
    a. How has the AWIC program/You helped (not helped) you face these challenges?

22. Do you believe the AWIC program contributed to your protégé staying in DEWSC/ASU?
    a. How? Explain.
    b. No? Explain.

23. What benefits do you think you derived from your participation in the AWIC program?
    a. What did you find useful?
    b. What do you believe wasn't useful about the program?

24. Now that the program finished do you still interact with that protégé?
    a. If so how?
    b. If not, why?
    c. Has your relationship changed at all?

25. What might you suggest as changes to the AWIC program?
    a. What should they absolutely keep?

26. What advice/recommendations would you give future AWIC participants (Mentor or Protégé)?
    a. Probes: What to expect? How to survive? What to do or not to do?

27. I have asked several questions about your experiences, but is there anything else you would like to add?

THANK YOU FOR YOUR TIME AND FOR YOUR IMPORTANT CONTRIBUTIONS TO THIS PROJECT

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APPENDIX D

SOLICITATION LETTER

Advancing Women in Construction Mentorship Program Research Project

January 20, 2010

Dear _____:

I am a graduate student under the direction of Professor Dr. Turner in the Education Policy, Leadership and Curriculum Department of the Mary Lou Fulton Institute and Graduate School of Education at Arizona State University. I am conducting a research study to understand the experiences of the mentors and protégés that participated in the Advancing Women in Construction Mentorship Program.

I am inviting your participation, which will involve an interview with a researcher to discuss your experiences. The interview typically takes 1 to 1.5 hours and will only address your experiences at the university and your participation with the AWIC program. During the interview you have the right not to answer any question, and to stop the interview at any time.

Your participation in this study is voluntary. To participate in the study you must be 18 or older. If you choose not to participate or to withdraw from the study at any time, there will be no penalty and there is no disclosure of non-participants.

There are no foreseeable risks or discomforts to your participation. We anticipate that the results of the interviews will contribute to a better understanding mentor/protégé relationship and better programmatic practices for the AWIC program and other similar mentorship programs.

If you choose to participate your responses will be considered confidential. The results of this study may be used in reports, presentations, or publications but your name will not be used.

I would like to record this interview. The interview will not be recorded without your permission. The digital recorder will always be in plain sight. Please let me know if you do <u>not</u> want the interview to be recorded; you also can change your mind after the interview starts, just let me know. Recordings of participants will be kept in a secured room at Arizona State University and will be utilized for the duration of the study. The study will conclude in less than 12 months.

If you have any questions concerning the research study, please contact the research team: Matthew Eicher (Researcher) at (480) 727-6472 or Dr. Caroline Turner (Investigator) at (480) 965-2149. If you have any questions about your rights as a subject/participant in this research, or if you feel you have been placed at risk, you can contact the Chair of the Human Subjects Institutional Review Board, through the ASU Office of Research Integrity and Assurance, at (480) 965-6788.

APPENDIX E

VERBAL RECRUITMENT SCRIPT

Advancing Women in Construction – Research Project

RECRUITMENT SCRIPT – Personal Contact

I am a graduate student under the direction of Professor Dr. Christine Wilkinson in the Education Policy, Leadership and Curriculum Department at Arizona State University. I am conducting a research study to understand the experiences of the mentors and protégés that participated in the Advancing Women in Construction Mentorship Program.

I would like your participation in the research project. Your participation will involve an interview with me to discuss your experiences in the AWIC program. The interview typically takes 1 to 1.5 hours and will only address your experiences at the university and your participation with the AWIC program.

During the interview you have the right not to answer any question, and to stop the interview at any time. Your participation in this study is voluntary.

If you choose to participate your responses will be considered confidential.   The results of this study may be used in reports, presentations, or publications but your name will not be used.

I would like to record this interview. The interview will not be recorded without your permission. The digital recorder will always be in plain sight. Please let me know if you do not want the interview to be recorded; you also can change your mind after the interview starts, just let me know. Recordings of participants will be kept in a secured room at Arizona State University and will be utilized for the duration of the study. The study will conclude in less than 12 months.

If you wish to participate in the research study, please Matthew Eicher at (480) 727-6472 or Dr. Caroline Turner at (480) 965-2149. Thank you.

APPENDIX F

ADVANCING WOMEN IN CONSTRUCTION HANDBOOK 2008

**Advancing Women in Construction
Program**

**Arizona State University
Del E. Webb School of Construction**

TABLE OF CONTENTS

Section 1 – Introduction to the Program

Section 2 – Responsibilities of Program Participants

Section 3 – Program "Contracts"

Section 4 – Annual Program Outlines

Section 5 – Mentor Toolkit

Section 6 – Program Contacts

Section 7 – Incoming Class Participants

Section 8 – Event Calendar

Purpose of the Program

The overall Purpose of the Mentoring Program is to develop future leaders within the construction industry from a currently "underutilized" employment pool – women. The Program aims to support the recruitment, retention, and ultimately, the job placement of strong, qualified females from the Del E. Webb School of Construction (DEWSC).

The success of this program will be measured by the Program Advisory Board through increasing female enrollment and retention in the DEWSC and 100% job placement in the construction industry.

Overview of the Program

The Mentorship Program links female students with experienced members of the construction industry for the purposes of career development and professional growth, through sharing knowledge and insights that have been learned throughout the years.

The Mentorship Program is a 4-year program that focuses on:

➢ Aiding in the cultural and academic transition from high school to college
➢ Building confidence
➢ Providing practical knowledge and experience within the different facets of construction
➢ Opening doors to a career in construction

Student Eligibility Requirements of the Program

The following includes the eligibility requirements for students in the Program:

➢ Female
➢ Maintains a 2.5 GPA
➢ Remains in the School of Construction
➢ Participates in the required program activities

Mentor Roles and Responsibilities

A **Mentor** within this Program is a working member of the construction industry who voluntarily undertakes to coach, advise, and guide an ASU DEWSC student in order to enhance the student's confidence, technical/leadership skills, and personal/professional development.

Mentor Roles. The roles assumed by a mentor depend on the needs of the mentee and on the association established between the two. There are at least ten roles a mentor can assume:

1) **Teacher.** As a teacher, the mentor teaches the mentee the skills and knowledge required for success in the construction industry.
2) **Guide.** As a guide, the mentor helps the mentee to understand how to "navigate" and understand the inner workings of the Construction Industry. Sometimes this includes passing on information about the unwritten "rules" for success. The mentor also helps point the mentee to the appropriate ASU campus services, given the need.
3) **Counselor.** This requires an establishment of trust in the mentoring association. A counselor listens and provides guidance to help the mentee find his or her own solutions and improve his/her own problem solving skills. A counselor helps the mentee acclimate to the newness of college and the demands placed upon the mentee.
4) **Motivator.** A mentor shows support to help a mentee through the tough times, keeping the mentee focused on developing skills to improve performance, self-respect, and a sense of self-worth.
5) **Sponsor.** The mentor helps to create possibilities for the mentee that may otherwise not be available. Opportunities should be challenging and instructive, without being overwhelming. Do not set the mentee up for failure.
6) **Coach.** A coach observes performance, assesses capabilities, provides feedback to the mentee, and instructs with a view to improve performance and increase confidence.
7) **Career Advisor.** A mentor helps the mentee develop professional interests and set realistic study and career goals. Goals should be specific, have a time-frame and set deadlines, be results oriented, relevant, and reachable.
8) **Referral Agent.** Once a career plan is developed, the mentor assists the mentee in approaching persons who can provide training, information, and assistance. The mentor also points the mentee to relevant career enhancing schools, books, professional organizations, and self improvement activities.
9) **Role Model.** The mentor is a living example for the mentee to emulate. A mentor must lead and teach by example.
10) **Door Opener.** The mentor opens doors of opportunity by helping the mentee establish a network of professional contacts both within and outside the Program. He/she helps the mentee understand the importance of staying in touch with seniors, peers, and juniors to exchange information, ideas, and concerns, as well as give back to the Program upon its completion.

Time Commitment

The ideal is for the Mentor to be a part of the mentee's entire collegiate career (4 years), performing the above mentioned roles and operating to the program. However, the program is structured to provide additional Mentorship support, through a Mentorship Circle, in which other resources can be provided for flexibility for time demands. It is expected during the freshman and sophomore years, for a Mentor to be committed, as this is the most dramatic transitional time for students and consistent support and trusting relationships are necessary for success in retention. As such, the program requires a two-year commitment from a Mentor, although the hope is a four year commitment.

The Program Outline found in Section 4 highlights the Program's goals for each year of the mentee's time at ASU. In general, the Program calls for attendance at Orientation and Welcome Gatherings before the fall semester begins as well as an hour of time per month spent in visits with the Mentee during the fall and spring semesters only.

Preferred Skills and Experience of Mentor

- ➢ 3-5 years in construction industry
- ➢ Male or female
- ➢ Bachelor's preferred
- ➢ Technical understanding (PM, Superintendent, PE, Estimators)

Please note that these are *preferred* skills, not *required* skills.

What makes a Mentor successful?

- A desire to make a difference in the life of a young female.

As a result, the Program will be just as rewarding for the Mentor as it will be for the Mentee.

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Mentee Roles and Responsibilities

A **Mentee** within this program is a female, active student within the DEWSC who earnestly seeks to gain wisdom from construction industry professionals for the betterment of her personal and professional development. A goal of the Program is that this development is occurring in a safe and fun atmosphere, where both the mentor and the mentee possess a positive attitude.

Mentee Roles. The roles assumed by a mentee are born from a willingness to learn and develop into a productive member of the construction industry. There are at least eight roles a mentee can assume:

1) **Eager Student.** As an eager student, the mentee has the desire to absorb the working knowledge and wisdom of the mentor and possesses the ambition to understand how to apply this knowledge.

2) **Team Player.** As a team player, the mentee listens and respects the opportunities given to her and is willing to share opportunities and knowledge with others.

3) **Willing.** The mentee must want to improve performance, contribute to the Program, and enhance her development by seeking guidance and advice in her professional development.

4) **Active.** The mentee must take initiative or action through asking for feedback, accepting constructive criticism, and applying this feedback to the appropriate situations. The mentee is responsible for preparing issues, questions, and scenarios for discussion with the mentor.

5) **Committed.** The mentee participates in scheduled activities and events, adheres to the content and activities of the mentoring agreement, and follows school, scholarship, and program standards of excellence.

6) **Respectful.** The mentee shows consideration and respect for the mentor's willingness to help and seriously considers all advice and suggestions for the mentor. She is open-minded and mindful that progress takes time and effort. The mentee responds to messages promptly and is punctual with commitments or meetings.

7) **Open.** In order to succeed, the mentee openly shares with her mentor any thoughts, ideas, frustrations, and/or concerns and will need to communicate when she is feeling overwhelmed.

8) **Responsible.** A mentee is always willing to accept responsibility for her actions and attitude.

What makes a Mentee successful?

- An earnest desire to learn and positively contribute to the program and eventually the industry.

A successful Mentee is honest, takes initiative, is prepared, is receptive to feedback, is a good listener, and possesses a positive attitude.

Arizona State University Roles and Responsibilities

The Director of the DEWSC will support and provide the committee with feedback and information on existing and future recruitment strategies. The Student Recruiter will be responsible for monitoring and administrating the implementation of the program. In addition, the Industry Relations Manager will suggest industry members for the various committees. Lastly, the Scholarship Coordinator will be responsible for all scholarship communications between the donors and the scholarship recipients.

Lastly, it is the responsibility of the DEWSC staff to build bridges of understanding and acceptance with key constituencies, attend and participate in all committee meetings and activities, and express appreciation and gratitude to donors, advisory committee, and volunteered mentors.

Mentorship Advisory Board Roles and Responsibilities

The Advisory Board is responsible for the overall goals and content of the Mentorship Program, including its continuous improvement, identifying and linking qualified mentors with mentees, and monitoring the results of the program against its ultimate goals of increasing enrollment, retention, and job placement of females in the construction industry.

Mentorship Program Representative Responsibilities

As the leader of the Advisory Board, the Program Rep is ultimately responsible for the creation and execution of the Mentorship Program within the DEWSC. The rep ultimately "reports" to the Director of the DEWSC and responds to ASU's needs and concerns relating to the Mentorship Program.
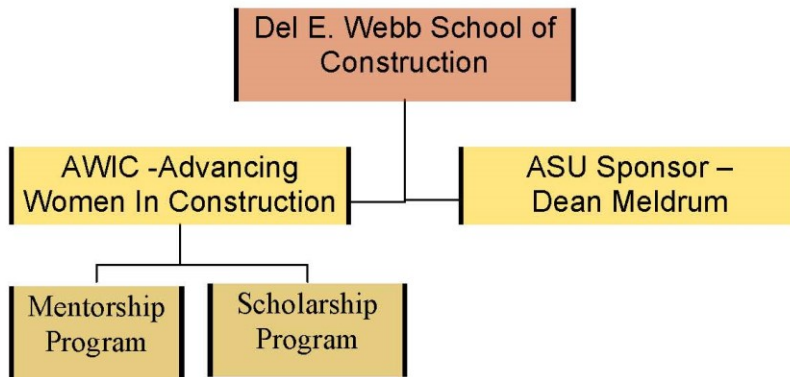
Please see the following two pages that include:

1) Participation Agreement

2) Scholarship Program Verification

Both of these contracts must be followed in order for the student to stay within the Mentorship Program over time.

1.) Participation Agreement

Keep this agreement for your records

The following conditions are required for renewal consideration.

1) Attend the <mark>Mentoring Kickoff Reception</mark> **on** Sunday, August 24th from 12-2pm at Karsten Golf Course.

2) Attend the Welcome Back BBQ on Saturday, September 13th from 3-6pm.

3) Meet with your academic advisor a minimum of once during each semester.

4) Attend a monthly meeting, activity or workshop.

5) Activate your @asu.edu email account to have fully supported ASU email service by visiting www.asu.edu/asurite.

6) Have a minimum of one contact per month with your assigned mentor.

7) Agree to review your grades with mentor.

8) Sign and return the Participation Agreement by August 24, 2008.

9) Maintain a minimum cumulative GPA of <mark>2.5</mark> by the end of the spring semester of the 2008-09 school year. *To be competitive for DEWSC scholarships, continuing students must maintain at least a 3.00 cumulative ASU GPA.*

10) If applicable, submit the FAFSA, the ASU General Scholarship application, and the DEWSC Scholarship application by the priority dates established for the 2009-10 school year.

11) Submit the Scholarship Program Verification form by May 1, 2009. (Only students who earn a minimum of 80 points out of 100 possible points will be considered for renewal.) Scholarship Program Verification forms will distributed at the Kickoff Reception.

12) To be considered for renewal, items number 8, 9, 10, and 11, listed above must *all* be met.

Participation in the following is strongly recommended.

13) Tutorial programs.

14) Volunteer to assist with special ASU programs, events and activities, as your schedule permits.

I hereby agree to the above conditions of the agreement:

_____

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2.) Scholarship Verification Form

**Advancing Women in Construction
Scholarship Program Verification**

Student Name: _____

Obtain appropriate signatures to verify completion of each activity listed below. A minimum of 80 points are needed to be considered for eligibility.

Scholarship Recipient Activity	Month	Signature	Date	Points
Orientation	August			5
Attend Welcome BBQ with mentor	September			5
Meet with your mentor	October			5
Meet with your mentor	November			5
Attend a DEWSC Student Club Meeting	First Semester			10
Shadow a professional in the construction industry – *minimum 4 hours*	First Semester			20
Meet with your mentor	January			5
Meet with your mentor	February			5
Meet with your mentor	March			5
Meet with your mentor	April			5
Interview a local business owner regarding the industry and submit a one-page report.	Second Semester			20
Attend an industry monthly membership meeting of an organization of your choice. (ex: ABA, AGC, CFMA, NAWIC)	Second Semester			10

Total Points Earned: _____

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SECTION 4. PROGRAM OUTLINE

In general, the Mentorship Program is designed to reflect the growth of the student within the School of Construction. The focus of the freshman and sophomore years is on building confidence, acclimating to collegiate life and studies, and technical exposure to the industry. As a student moves into her junior and aenior years, the focus becomes more technical and industry related, bringing practical applications and door opening for possible careers after graduation. In general, Mentors form their mentoring focus each year around the goals outlined below.

Freshman Year

The Overall Goals of the Freshman Program are the following:

➢ Create a trusting connection between the mentor and mentee
➢ Support the mentee in her transition from high school to collegiate culture
➢ Aid in the building of a network or community of support by providing her with exposure to campus services and other programs to improve studies
➢ Help build confidence within the mentee to benefit personal and professional development

Sophomore Year

The Overall Goals of the Sophomore Program are the following:

➢ Aid in the building of a network of support by providing her with exposure to industry associations
➢ Provide exposure to specific construction job functions through industry/company contacts where some "on the job" types of learning can occur
➢ Continue to help build confidence within the mentee

Junior Year

The Overall Goals of the Junior Program are the following:

➢ Help the mentee build a career development plan that reflects her areas of interest within construction
➢ Implement that career development plan throughout the year
➢ Aid in the search and securing of construction internships reflective of that interest

Senior Year

The Overall Goals of the Senior Program are the following:

➢ Open doors for the mentee to be exposed to construction companies and associations of her interest for the purpose of job placement upon graduation
➢ Encourage the mentee to support younger mentees in the program and give back upon graduation

The Mentoring Circle

The Mentoring Program will provide a list of active mentor participants, willing to play a role in the development of the mentee through one-on-one meetings, introductions to certain construction roles/jobs, and exposure to companies and associations. As a result, the Mentor does not need to feel like everything is placed upon her shoulders. A network will form to address specific needs within the Mentee's career development plan.

Section 7 highlights Mentor participants and their areas of expertise for such occasions.

SECTION 5. MENTOR TOOLKIT

Construction Bachelor of Science
Del E. Webb School of Construction
-    **See attachment A.**

Arizona State University Resources and Programs

Ira A. Fulton School of Engineering Tutoring Center
The FSE Tutoring Center provides Engineering students with tutoring for calculus and physics.
> Contact Information
> www.fulton.asu.edu/fulton/students/sas/tutoring_center.php

ASU Tempe Campus (Learning Resource Center)
The Learning Resource Center offers a large selection of services designed to help students get the most out of their academic experience. Services include academic coaching, software training, test reviews, tutoring & writing support.
> Contact Information
> Memorial Union (480-965-7728)
> Hassayampa Academic Village (480-965-6254)
> Palo Verde West (480-965-1021)
> http://www.asu.edu/lrc

Del E. Webb School of Construction Student Clubs
The Del E. Webb School of Construction has 4 student clubs. They are the American Concrete Institute (ACI), Associated General Contractors (AGC), National Association of Home Builders (NAHB), and Sigma Lambda Chi Honor Society. All of the student clubs are focused on student leadership development and community service. In addition, some of the clubs compete in regional and national competition against students from other U.S. Construction Management programs. The student clubs provide all construction students a chance to meet other students in the program, network with industry contacts, and assist in educating students on the career paths and opportunities in specific construction fields.

> *American Concrete Institute (ACI)* –The ASU Student Chapter of American Concrete Institute is a student run, student/staff supported organization that provides a link between the concrete industry and the University. This organization supports community projects, student concrete competitions, brings guest speakers from the concrete industry to inform students on current issues and techniques, and plans social events for the members of the organization.

> *Associated General Contractors (AGC)* - The ASU Student Chapter of Associated General Contractors is a student run, student supported organization that provides a link between the construction industry and education. This organization supports community projects, brings in guest speakers to inform students on current issues, and plans social events for members of the organization. ASU AGC also sends representatives to regional and national conferences in order to become more informed about AGC and the construction industry.

> *National Association of Home Builders (NAHB)*
> The ASU NAHB Student Chapter helps to enrich the educational experience of students enrolled in construction-related fields such as construction management, engineering, architecture, real estate, and the trades.

Sigma Lambda Chi (SLC) Honor Society
The fundamental purpose of Sigma Lambda Chi is to provide recognition to outstanding students in construction curricula. Sigma Lambda Chi is the society that offers students the opportunity to be recognized locally and internationally for their academic accomplishments as a construction major. Aside from the fundamental purpose, Sigma Lambda Chi has three objectives:

- The first is to render service to the major field of study. This is accomplished by active student participation in tasks and events that affect the construction program that houses the local Sigma Lambda Chi chapter.
- The second objective is to develop good relations among campus, industry, and the public. Undertaking projects which further this purpose is expected of members of Sigma Lambda Chi.
- The third objective is to recognize outstanding professional individuals in construction. Sigma Lambda Chi has honorary membership classifications that can be bestowed upon individuals who deserve special recognition because of their contribution to construction education or some facet of the construction industry.

Contact Information
American Concrete Institute (ACI) – Vern Loraditch – Vernon.loraditch@asu.edu
Associated General Contractors (AGC) Hillery Pickel   Hillery.pickel@asu.edu
National Association of Home Builders (NAHB) Craig Zimmerman
craig.zimmerman@asu.edu
Sigma Lambda Chi (SLC) - Kristen Barlish Kristen.barlish@asu.edu

Counselor Training Center
The Counselor Training Center provides confidential counseling services for ASU students, faculty, staff, and the community at large. The CTC provides counseling services for a broad range of problems, including but not limited to: anxiety, depression, family problems, relationship issues, career counseling, and stress management.
Contact Information
http://coe.asu.edu/ctc/

ASASU: Student Government
The Associated Students of Arizona State University (ASASU) is the student government of the university. Services include the Student Legal Assistance, Safety Escort Service, and student organization funding. Students can run for an executive office or college senator. Volunteer and internships are available.
Contact Information
http://asasu.net

Intergroup Relations Center
The IRC is an education, research, and advocacy unit that advances understanding and practice of effective intergroup relations. Their charge is to build awareness of and appreciation for diversity, and to foster a climate of inclusion both on and off campus. The IRC upholds and reinforces ASU's commitment to excellence, access, and impact.
Contact Information
www.asu.edu/irc

Career Services

Career Services is recognized as an exceptional resource for career expertise and totally iintegrated, university accessible services. They provide outstanding, outcome-driven programs, services, and information in the areas of career development, recruiting, and workplace trends for ASU students, alumni, faculty and staff, employers, community members, and the career-professional community.

Contact Information
http://www.asu.edu/studentaffairs/career/

Learning Community Program

Learning Community courses are designed and taught by teams of faculty members from difference disciplines. All of the CLAS Learning Communities are dedicated to enhancing student's information-literacy, critical-thinking and writing skills. Students has access to a designed librarian, peer tutors, and a specially assigned advisor for individualized research and academic support. The Fulton School of Engineering has a learning community in San Pablo.

Contact Information
http://www.asu.edu/studentaffairs/mu/mupa

Edson Student Entrepreneur Initiative

The Edson Student Entrepreneur Initiative harnesses the entrepreneurial energy, excitement, and creativity found in ASU's student body. It provides funding, office space, and training for teams of students across the university to explore their innovative ideas for business products and services in partnership with faculty, researchers and successful entrepreneurs from both the academic and private sectors.

Contact Information
http://studentventures.asu.edu/about/index.html

Memorial Union Programs & Activities

The mission of the Memorial Union Programs & Activities (MUPA) is to engage the ASU community in programs and activities that promote student learning and involvement.

Contact Information
http://www.asu.edu/studentaffairs/mu/mupa

Multicultural Student Services

The Multicultural Student Services is a program that hosts the Multicultural Student Center. The Multicultural Student Center provides a central location for multicultural students to access services designed to assist them in their pursuit for academic success.

Contact Information
http://www.asu.edu/studentaffairs/mss/

Community Service Program

The ASU Community Service Program strives to engage students, faculty, and staff in meaningful co-curricular service. Their goals include providing the campus community avenues to serve the Valley, increasing awareness of needs in the Valley, and engaging students in worthwhile service promoting a lifelong commitment to citizenship and social justice.

Contact Information
http://www.asu.edu/studentaffairs/mu/community/index.htm

American Indian Student Support Services
    Contact information
    http://www.asu.edu/clas/aisss/

Student Organizations
There are more than 500 student groups at ASU. Student organizations play an important role in planning social and educational activities, providing opportunities for students to network with business and community leaders, and building a sense of campus community.
    Contact Information
    http://www.asu.edu/studentaffairs/mu/clubs

Sun Devil Involvement Center
Located on the 3rd floor of the Memorial Union on the Tempe campus, the Sun Devil Involvement Center provides opportunities for student involvement through clubs, sororities, fraternities, community service, student government, and co-curricular programs and activities.
    Contact Information
    http://asu.edu/studentaffairs/mu/sdic

ASU Calendar of Events
Fall Welcome website for the latest events and for a complete listing of student social activities are listed on:
    Contact Information
    www.asu.edu/fallwelcome or call (480-965-4564)

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Industry Associations

Arizona Builders' Alliance (ABA)

The ABA represents more than 300 companies and their employees from open shop and union to general contractors, subcontractors, professional service firms and suppliers supporting the construction industry. Its mission is to lead its members and the industry to greater productivity and profitability.
Contact Information
Carol McMullen – Assistant Executive Director
www.azbuilder.org or call (602-274-8222)

Alliance for Construction Excellence (ACE)

The mission of ACE is to advance, connect, and enrich the construction industry. ACE was formed as a mechanism to assist the construction industry in assimilating technological change and research innovations that will impose themselves upon the industry. ACE is also a "think tank" for industry professionals to identify, define and resolve industry problems. Dedicated to the improvement of productivity, quality, profitability and effectiveness of the construction industry, members of ACE promote research; collect, analyze, manage and disseminate information; and provide continuing education and training that firms and practitioners do not have the capacity to do on their own.
Contact Information
Gary Aller, Director
www.Gary.Aller@asu.edu

Associated General Contractors (AGC)

AGC is the leading national construction trade association representing all facets of commercial construction for both public and private entities including building, heavy, highway, and municipal projects. The proud recipients of the National Building Museum's 2008 Honor Award, AGC and its nationwide network of chapters are recognized as the leaders in defining and advocating for the construction industry for nearly a century.

Contact Information
www.agc.org
(602) 252-3926

Home Builders Association of Central Arizona (HBACA)

The **Home Builders Association of Central Arizona (HBACA)** is a trade association for the residential construction and development industry. The Association provides a forum through which these businesses can work together to remain informed regarding new and proposed policies advanced by the local, state and federal governments which affect the housing industry. The Association acts as a source of timely and reliable information concerning the state of the local building industry and works to eliminate overly restrictive and costly building laws and regulations that drive up the cost of housing.
Contact Information
Connie Wilhelm, President and Executive Director

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www.wilhelmc@hbaca.org or call (602-274-6545)

American Subcontractors Association of Arizona (ASA)

ASA of Arizona represents the voice of Arizona's subcontractors statewide and with local, city and county agencies to promote legislation beneficial to subcontractors and defeat legislation that is harmful to the subcontracting industry. The Association, both in Arizona and nationwide, is dedicated to protecting the rights of each and every specialty contractor and supplier. In addition, the ASA is an important source of professional growth for construction specialty contractors and suppliers. The American Subcontractors Association is recognized as the united voice dedicated to improving the business environment in the construction industry, and has over 5,500 member companies nationwide
   Contact Information
   Carol Floco, Executive Director
   www.asa-az.org or call (602-274-8979)

National Association of Women in Construction (NAWIC)
   Contact Information
   http://www.nawicphoenix.org/

Construction Finance Management Association (CFMA)
   Contact Information
   http://www.cfma.org/ValleyOfTheSun/index.htm

SECTION 8. EVENT CALENDAR

Thursday, August 14th, 3:00 – 4:30pm – Mentor Orientation

Sunday, August 24th, 12:00 pm – 2:00 pm - Kickoff Brunch/Reception

Saturday, Sept. 13th 3:00 – 6:00 pm – Welcome Back Barbecue – Urban Systems Engineering Building on ASU Tempe Campus

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