THESIS

NEEDS ASSESSMENT: STRATEGIES FOR RAISING AWARENESS OF CONSTRUCTION MANAGEMENT PROGRAMS AMONG HIGH SCHOOL COUNSELORS

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ABSTRACT

NEEDS ASSESSMENT: STRATEGIES FOR RAISING AWARENESS OF CONSTRUCTION MANAGEMENT PROGRAMS AMONG HIGH SCHOOL COUNSELOR

High school students comprise a high percentage of prospective students entering Construction Management (CM) departments. High school counselors are in a unique position to impart significant influence on these students as they make decisions about attending college. This is significant to CM departments because it has been observed by department advisors that high school counselors do not heavily influence current CM student's decisions to pursue a CM degree. The authors performed a needs assessment to test the accuracy of this observation, determine counselor's knowledge and perceptions of CM, and determine strategies for raising awareness.

Phase I of the needs assessment surveyed first semester CM students to determine if counselors played a significant role in their decision to pursue a CM degree. The results revealed that students were meeting with their counselor for advice, but few reported the counselor influenced their decision. This confirmed the need to further explore the high school counselor's knowledge and perceptions of CM.

Phase II of the needs assessment surveyed high school counselors in the state of Colorado. The results show that counselors do not possess a high level of knowledge regarding CM degrees and careers, but also shows that they would be willing to learn more if the right information and training opportunities were provided to them. The results also highlight the

counselor's barriers to learning more about CM, namely lack of available information, lack of time, lack of training opportunities, and lack of student interest.

In Phase III of the needs assessment, the High School Counselor Outreach Program (HSCOP) was developed with the specific goal of raising counselor's knowledge of CM programs. The HSCOP was specifically developed to address the counselor's need while respecting the barriers reported in Phase II. This two stage program closes the counselor's CM knowledge gap by giving CM departments an outline to provide targeted information packages to counselors in Stage 1 and accessible training opportunities in Stage 2.

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Chapter 1 – Introduction

Introducing the Study

Universities devote considerable time and resources to recruiting new students. Departments within the university focus their recruiting efforts on various demographics for future enrollment: high school students, undeclared university students, community college students, trade schools, non-traditional students and military veterans. It is important that departments provide the right information to aid a prospective student's decision making process, making it necessary to implement a proactive approach to recruiting.

Targeted recruiting exists in many forms: web pages, college career days, open houses, summer camps, email updates and information mailers to name a few. Department web pages may be the first stop for many prospective students, providing them with general information on the program and admissions requirements. College program administrators may also choose to attend college career days on high school campuses, or hold an open house on the university campus as a way to provide more detailed knowledge to the prospective students. Others many choose to hold a more involved summer camp in order to immerse prospective students in what joining the program will truly entail (Hedrick & Williams, 2001). Programs reach prospective students by sending out information packages via email or postal service to provide them with detailed information on the program. Each targeted recruiting effort requires the department to commit resources, and therefore it is important that departments know the effectiveness of each effort.

Many social factors influence a student's college choice process (Cabrera & La Nasa, 2000). These influences can be viewed on a micro-level in terms of personal relationships between the student and family members, teachers, and counselors. They can also be viewed on a macro-level in terms of a student's involvement in social networks or institutions like churches, schools, and community organizations (Bryan, Moore-Thomas, Day-Vines, & Holcomb-McCoy, 2011). Additional factors may include economic climate (National Association for College Admission, 2009), cultural upbringing (Schaeffer, Akos, & Barrow, 2010), and personal knowledge of university programs. University can realize these influences exist and work directly with them to share information about the program.

Parents have the highest level of influence on students, however, high school guidance counselors impart a high level of extra familial influence (Bryan et al., 2011). High school guidance counselors are in a unique position to shape the lives of young people as they make decisions that will affect them for many years to come (Lapan, Harrington, & University of Massachusetts Amherst, 2010). Studies indicate that increased contact between counselors and students results in a higher college application rate (Bryan et al., 2011). In particular, counselors are tasked with the duty of helping prospective students make informed decisions regarding their choice of college major and ensuing career (Landis, 1999). This task, however, is often difficult to accomplish. Counselors have many competing responsibilities and tend to be overworked and under informed about degree and career options that exist for their students (Johnson & Rochkind, 2010).

The construction management (CM) degree option seems to be underrepresented by high school counselors. Anecdotal evidence observed by an advisor at Colorado State

University (CSU) suggests that most students entering the department do so because they are following in the footsteps of a family member in the construction industry. This advisor observed that few, if any, stated that their high school counselor directed them towards the CM program. It is hypothesized that the typical high school student without a family member in the construction industry is not aware that CM is a viable college degree option.

Even if a high school student has heard about CM, they may not fully understand what a CM career entails, perhaps assuming that there is no need to earn a college degree to work in the construction industry. Construction jobs are often viewed as having less prestige than jobs in engineering, architecture or business, and a counselor advising a student to enter a CM program might only do so as a last resort (Schleifer, 2002). As a result, many students enter CM through a change of major. Since CSU began tracking change of major statistics in Spring 2012, an average of 13% of current CM students entered the program through a change of major, peaking at 20% in the Fall 2013 as shown in Table 1.

Table 1: Students entering CSU CM Department via change of major

Term	Change of Major Students	Total Students	Percent
Spring 2012	45	572	8%
Fall 2012	54	496	11%
Spring 2013	53	473	11%
Fall 2013	98	492	20%
Spring 2014	89	523	17%

Changing from one major to another often results in earned credits that do not count towards the new degree's requirements, costing the student both time and money while delaying graduation and postponing earnings. As suggested by Johnson, Rochkink, and Ott (2010), the opportunity for college bound students to talk with counselors was very helpful in their decision making process, but these change of major statistics suggest that high school

students may not have been properly informed about CM when choosing their initial program of study when entering college.

In addition to the above change of major statistics, enrollment data reported by department heads from the Associated Schools of Construction (ASC) peer seven institutions (Colorado State, Auburn, Texas A&M, Virginia Tech, University of Florida, Arizona State, and Purdue) indicate that enrollment numbers in CM programs are down an average of 34% from 2008 to 2011 as detailed in Table 2.

Table 2: ASC peer seven enrollment numbers

Institution	Fall 2008	Spring 2009	Fall 2009	Spring 2010	Fall 2010	Spring 2011	Fall 2011	% Difference Fall 2008 to Fall 2011
Colorado State	1034	950	972	845	768	681	621	-40%
Arizona State	361	Not tracked	328	Not tracked	311	Not tracked	247	-32%
Auburn	637	584	575	513	477	393	372	-42%
Purdue	512	496	480	445	426	407	397	-22%
Texas A&M	661	617	599	581	590	586	Not reported	-11%*
Florida	403	383	359	319	275	272	232	-42%
Virginia Tech	324	Not reported	290	Not reported	262	Not reported	175	-46%

*% Difference Fall 2008 to Spring 2011

Conversely, overall university enrollment at the same institutions from 2008 to 2010 has increased an average of 2% (Institute for Education Sciences, 2011). These statistics indicate that while university enrollment is remaining level or slightly growing, enrollment in CM programs is in decline. Some of this decline can be attributed to the current economic climate

(National Association for College Admission, 2009). Nevertheless, a need exists to increase awareness of the construction industry among the high school counselors.

Statement of Purpose

The above discussion suggests a need exists for CM programs to improve the way they represent the CM degree option to high school counselors. The purpose of this study is to gauge high school counselors' knowledge and perceptions of CM. It is a Needs Assessment that seeks to identify the knowledge gap between counselors' current knowledge of CM programs and the level of knowledge that CM program administrators would like for counselors to possess and share with their advisees. Furthermore, the study will identify strategies to effectively close this knowledge gap.

Rationale

Many students change their major to enter the CM program at CSU, indicating that they do not find out about CM until they are already on campus. Additionally, enrollment in the CM department is down, prompting department administrators to explore various outlets for better promoting themselves. Resource allocation is an important component of organizational planning; a major function of policymakers and management is to decide where to put the organization's resources – what programs or services to add, what to maintain, what to cut back or delete (Reviere, 1996).

Initiatives intended to bolster the visibility of CM programs require resources. There is a need to identify which strategies are the most effective in addressing the knowledge gap that is assumed to exist among high school counselors' about CM. To assess such strategies, CM

departments need understand this knowledge gap and what tools to learn more about CM high school counselors are missing. With this information, CM departments will be better equipped to make decisions regarding allocation of department resources and target areas that will result in the greatest opportunity for improvement of knowledge.

Formulation of Question

In a Needs Assessment, the research question(s) are the questions about needs that the study seeks to answer (Reviere, 1996). The following questions and sub-questions begin to address the needs of high school counselors working with prospective college students:

1. What is the gap in counselors' current knowledge of construction career options?
    a. What do counselors know about construction careers?
    b. What level of knowledge do counselors possess about CM programs?
    c. What are counselor's perceptions of construction careers and CM programs?
2. What outreach from CM programs would counselors most like to receive to help close this knowledge gap?
    a. What information do counselors find most useful to pass onto prospective students?
    b. Which communication methods work best for CM programs to contact counselors?

Delimitations

The study acknowledges that universities target various categories of incoming students. Prospective students may include high school students, undeclared university

students, community college students, trade schools, non-traditional students and military veterans. However, the scope of this study chooses to focus specifically on the recruitment of high school students in the state of Colorado.

The study also acknowledges that numerous sources influence a high school student's decision to attend college. These influences include, but are not limited to parents, teachers, counselors, community organizations, and peers. The study again chooses to focus its scope on one specific group: high school college and career counselors.

Counselors play an important role in helping high school students make college and career decisions. Although counselors may advise their students on a number of different subjects, this research project chooses to specifically study the counselor's role in making prospective students aware of CM programs.

Chapter 2 – Review of Literature

Role of Counselors

High school students often lack both the knowledge and foresight to look decades into their future (McCuen & Greenberg, 2009). Schools play a dominant role in shaping students educational goals and thus are a primary source of social capital (Bryan et al., 2011), and high school guidance counselors are in a unique position to shape the lives of young people as they make decisions that will affect them for many years to come (Lapan et al., 2010). In particular, counselors are tasked with the duty of helping prospective students make informed decisions regarding their choice of college major and ensuing career.

Linking school counseling interaction to student achievement outcomes is complicated, mainly because there is a wide array of other influencing factors. Among these factors are school size and structure, teaching practices and curricula, policies, school climate, programs, and resources, as well as the students, families, teachers, support staff, and administrators (Militello, Carey, Dimmitt, Lee, & Schweid, 2009). However, existing research on the impact of school counseling on student achievement shows that both specific school counseling involvement and comprehensive programs can impact student achievement (Militello et al., 2009).

School counselors create a culture of college-going students when they provide comprehensive counseling programs that convey clear expectations that every child will be prepared for college or some other form of postsecondary education. Counselors can achieve

this culture by providing students with information, resources, and tools to successfully navigate the college decision making process. They can also partner with feeder and postsecondary school program administrators in order to provide college preparation experience to all prospective students (Bryan et al., 2011; Corwin & Tierney, 2007). Construction Management (CM) programs can help support this culture building effort by providing counselors with information on their programs that can then be shared with their advisees.

Influence of Counselors on College Going Students

A study conducted by Bryan, Moore-Thomas, Day-Vines, and Holcomb-McCoy (2011) sought to measure the level of contact between high school students and counselors with the specific purpose of collecting college information. The study indicated that increased contact between counselors and students results in a higher college application rate. In particular, student-counselor contact by the 10th grade provided students a positive advantage in the college application process. Likewise, contact after 10th grade still offered students a positive advantage in the college application process, but at a slightly lower rate (Bryan et al., 2011). This study's results indicate that the earlier prospective students contact their counselors for college information, the higher their subsequent college application rates.

Another study conducted by Johnson, Rochkink, and Ott (2010) of postsecondary students showed 72% responded that the opportunity to talk with advisors about different college opportunities and job training programs was very helpful in their decision making process. Those numbers increase to 91% among black students and 83% among Hispanic

students, further solidifying the influence counselor's play among college going students (Johnson et al., 2010).

A pitfall of student-counselor interaction, however, is the lack of knowledge that a counselor may possess about a particular field of study. Without sufficient knowledge of a degree plan, counselors may place many students at risk of making poorly informed decisions about their postsecondary school choices (Ensor, 2005). Counselors may simply send students on their way with armloads of catalogues, forms and applications, but without spending any real quality time with the students (Ensor, 2005). If CM programs are able to more effectively connect with counselors in order to share information about what CM programs entail, the counselors will be better able to pass that information on to their students.

Additionally, school counselors are sometimes criticized for their gatekeeping tendencies and the disparities in providing differing levels of college access service to different groups of students. One student summed up his experience with his high school counselor with the statement, "They'd look at your grades and then say, 'Oh, you can get into these schools (Johnson et al., 2010).'" This disparity could be a result of lack of training programs for counselors (Bryan et al., 2011).

The literature acknowledges that counselors play a vital role in prospective student's decision making process. Why then, are counselors sometimes failing to provide those students with the information they need to make well informed college choices?

Challenges Faced by Counselors

High school counselors play an important role in young people's lives and are instrumental in leading them to a college career (Johnson & Rochkind, 2010). Often counselors are fortunate to have numerous occasions to positively impact students' lives. Unfortunately, many counselors recognize the missed opportunities throughout the years that have undoubtedly occurred due to enormous caseloads, excessive demands on their time, requirements to perform non-counseling tasks, and in some cases, lack of training and knowledge regarding the various resources that may be available to help their students (Ensor, 2005). Counseling high school students is often a difficult job, and many times counselors are overworked, outnumbered, and otherwise not properly informed about the degree and career options that exist for their students (Johnson & Rochkind, 2010).

Often counselors are vastly outnumbered by the students they serve and are therefore not able to provide those students with the highest level of service. The number of counselors in schools and the resulting student-counselor ratio has an effect on college application rates (Bryan et al., 2011). The American School Counselor Association recommends a student-counselor ratio of 100 to 1, but recognizes that on average in public schools across the United States, the actual ratio is more than twice that – 265 students to every counselor (Clinedinst & Hawkins, 2009; Johnson et al., 2010). Some schools face even higher student counselor ratios; in California some counselors serve over a thousand students, while a counselor in Minnesota, Arizona, Washington D.C. and Utah may serve over 700 students. During the 2008-2009 school year, counselor ratios in the state of Colorado were 387-to-1 (Colorado Department of Education, 2011). These high ratios can leave students feeling like "just another face in the

crowd" when counselors cannot properly devote the personal attention that the students feel like they deserve (Johnson et al., 2010).

In addition to high ratios of students, many counselors are assigned various other duties that take away from their time advising students. Much of their day is committed to administrative tasks, discipline issues, and dealing with scheduling issues. Many counselors are involved in overseeing testing programs, as well as other tasks such as lunch duty, attendance monitoring, and substitute teaching. Within this current system, many public schools expect counselors to juggle this entire roster of duties while still effectively assisting hundreds of students to plan their futures (Johnson et al., 2010). One source noted that after completing these other job duties, only an estimated 20% of a counselor's time was left to advise students about their future career choices (Parsad, Alexander, Farris, & Hudson, 2004).

CM programs have an opportunity to step in and help counselors advise their students on CM programs by providing them with preparation materials on the construction industry. If information about CM programs is provided to the counselors through targeted marketing efforts in clear and concise format, the counselor will better be able to disseminate that information to their students. Information on CM programs will be at their fingertips, allowing them to effectively advise their students, even while they are dealing with all the other challenges that their job presents.

Counselors and Engineering

Engineering is one area of study that has faced many of the same recruiting challenges as CM. CM and engineering are different degree programs, but are often grouped together due

to their similar technical nature. Little research exists on how CM programs may effectively communicate with counselors in order to improve student knowledge of the construction industry. Engineering programs, however, have made efforts to leverage high school counselors, and CM programs can apply the lessons learned from engineering to make their interactions with high school counselors more successful.

A recent survey of undergraduate engineering students conducted by McCuen and Greenberg (2009) identified that as high school students, many were interested in learning about the daily lives of engineers, but none had interactions with their counselors to do so. The researchers concluded that it was unlikely that a counselor who has not been specifically trained in engineering would be able to answer the student's questions, therefore, a counselor can play a valuable role in leading students to engineering only if he or she has obtained sufficient knowledge to connect the curricular subject matter to the daily practice of engineers (McCuen & Greenberg, 2009). These findings suggest that engineering needed to find ways to connect with high school counselors to better educate them on engineering careers.

High school counselors are in a position to significantly influence their students' choice of college major, however this potential is not being realized for engineering (Landis, 1999). When asked why they thought this was the case, counselors replied that they did not feel that they had adequate information and background to effectively guide their students towards engineering as a field of study or career choice. They also acknowledged their lack of engineering knowledge as a problem, and stated that they would welcome a solution to this problem (Landis, 1999).

Efforts have been made to create engineering K-12 programs geared towards students. Programs geared towards helping teachers incorporate engineering into their classrooms have also been developed (Douglas, Iversen, & Kalyandurg, 2004). School counselors, however, were recognized as a neglected resource that could be cultivated to encourage and advise all students about the engineering profession (Beck, Diefes-Dux, & Reed-Rhoads, 2009; Douglas et al., 2004; Noeth, Cruce, & Harmston, 2003).

A program initiated by the American Society of Civil Engineers (ASCE) in the 1970s attempted to send an industry representative into schools to meet with counselors. The programs enjoyed limited success; some counselors reported that it was a helpful experience, while others declined the meeting, stating that there "wasn't much interest in the engineering field" among their students. This attitude is most likely a reflection of the counselors' lack of interest in engineering as opposed to their students' interest (Lanius Jr, 1974). CM programs can utilize the lessons learned in engineering over the past several decades in order to effectively promote the construction industry among high school counselors.

In 1997, a course titled, "Introduction to Engineering for High School Teachers and Counselors" was offered to help increase participants' awareness of engineering as a career opportunity for their students, direct participants' to the engineering education process, help teachers and counselors identify students who would be prepared for an engineering education, and enhance participants' capability to advise their students to be successful in engineering study (Landis, 1999). The course sought to answer the following questions: what is engineering, what are the differences among engineering disciplines, and what do engineers do? It answered these questions by touring engineering facilities, exploring case studies,

outlining engineering education, participating in industry outreach, and completing hands-on classroom activities. It also explained the resources available to counselors with regard to advising their students on engineering education. The results of the course were very positive, with many of the participants stating that they could now confidently direct their students toward a career in engineering (Landis, 1999).

In 2009, researchers at the University of North Carolina, Charlotte developed a Teaching Engineering to Counselors and Teachers (TECT) workshop (Gehrig, Abrams, Bosley, Conrad, & Kuyath) funded by the National Science Foundation (NSF). The TECT workshop was a week-long session for Science, Technology, Engineering, and Mathematics (STEM) teachers and counselors and focused on teaching the participants about engineering. The goals of the workshop were to improve STEM educational programs and career guidance counseling in high schools, enlarge the pool of technical diversity trained counselors and teachers, and broaden the diversity of students engaged in STEM educational programs. Data gathered during a post-workshop survey showed that a change in overall positive attitude towards engineering among counselors was improved significantly, as well as their self-efficacy in counseling their students about engineering majors and careers. These results indicate that initial counselor awareness of engineering was less than desired and improved dramatically during the workshop (Gehrig et al., 2009).

Beck, Diefes-Dux, and Reed-Rhoads (2009) acknowledged the counselors needed to be better informed about the occupational and educational opportunities provided by a post-secondary engineering education. They recognized that limited research on school counselors advising on engineering existed, so they conducted a study to discover the perceptions school

counselors held about engineering, and what need for support is desired by counselors as they advise students on academic and career development with regard to engineering. Their study concluded that many counselors acknowledge that their lack of knowledge acts as a barrier when advising students on careers in engineering. Lack of time was cited as one of the main factors preventing counselors from learning more about engineering, solidifying the need for a better system that would allow them to access the information and resources they need more efficiently (Beck et al., 2009).

Chapter 3 – Method

Quantitative Research Strategy

Quantitative research is a method of testing a theory by specifying a narrow hypothesis and collecting data to support or refute this hypothesis (Creswell, 2003). Data may be collected through the use of a survey or experiment. Survey design provides a numeric description of trends, attitudes, or opinions of a given population. Experimental design tests the impact of a treatment or intervention on an outcome while controlling all other factors that could influence the outcome (Creswell, 2003). Quantitative approaches seek to gather factual data, to study the relationships between facts. Analysis of the data yield quantifiable results, and conclusions derived from evaluation of the data can then be compared to previous theories and literature (Fellows & Liu, 2008).

Method

The methodology implemented was a Needs Assessment to explore the counselors' knowledge gap with regard to the construction industry and university construction management (CM) programs. The research studied the counselors overall knowledge and perceptions of CM. It sought to identify the best strategies for CM programs to employ to decrease this knowledge gap among counselors with the ultimate goal of having counselors pass that knowledge on to their advisees.

Anticipated Ethical Issues

The researcher had no personal contact with the study's participants during the data collection process, nor did the researcher obtain any personal information from the participants. The participants were offered the opportunity to provide their contact information so that their answers could be clarified during the data analysis process or so they could participate in future, follow-up studies. However, participants' choice to provide contact information was strictly voluntary, and at no time did the researcher make any attempt to link the individual participants to the research results.

Needs Assessment Overview

Many definitions of a Needs Assessment exist, but for the purpose of this study, the definition defined by Reviere, Berkowitz, Carter, and Ferguson (1996) will be used. They state that a needs assessment is a *"systematic set of procedures undertaken for the purpose of setting priorities and making decisions about program or organizational improvement and allocation of resources. The priorities are based on identified needs. (p. 4)"*

To further this definition, it is necessary to clearly define need. As a noun, need is generally considered to be a discrepancy or gap between the present state of affairs, or "what is," and the desired state of affairs, or "what should be," with regard to a group or situation of interest (Reviere, 1996). Simply defined, a needs assessment is a detailed exploration of this discrepancy or gap within the limitations of the study.

Needs Assessment Phases

Needs Assessments are organized into three distinct phases (Altschuld & Kumar, 2010; Altschuld & Witkin, 2000; Witkin & Altschuld, 1995), and are described in greater detail below:

Phase I: Pre-Assessment entails organizing and focusing the potential areas of concern. It aims to find out what is already known or available with the goal of determining if further.

Phase II: Assessment entails collecting new data or information based on the discoveries made during Phase I. It aims to define specific needs and measure their level of importance.

Phase III: Post-Assessment entails developing and implementing solutions to the high priority needs discovered and quantified in Phases I and II. An action plan should be developed to address the needs, and the results communicated to the stakeholders of the study.

Within the context of this research, Phase I entailed a brief survey of first semester students in the CM program at CSU. The survey explored the level of influence imparted by their high school counselor in their decision to pursue a degree in CM. Phase II involved a survey of high school counselors in order to determine their level of knowledge of CM, and what outreach from CM programs counselors would most like to receive. Based on the results of Phase II, Phase III is a set of recommendations for CM programs to best reach out to high school counselors with the goal of improving their knowledge of CM.

Level of Need

Ongoing throughout the phases of a needs assessment are the three levels of need, each representing a target group (Altschuld & Kumar, 2010; Altschuld & Witkin, 2000; Witkin & Altschuld, 1995). The three levels of need are defined generally below:

Level 1 – service receivers (the primary level): This level consists of the primary users who receive a product or service to resolve their need.

Level 2 – service providers (the secondary level): This level consists of policymakers who provide the service to the Level 1 recipients.

Level 3 – resources or solutions (the tertiary level): This level consists of the resources utilized by members of both the Level 1 and Level 2 when addressing the need.

Within the context of this research project, Level 1 recipients were the high school counselors, as well as the prospective college students that they serve. Level 2 providers were university CM program coordinators wishing to increase knowledge among counselors. Level 3 resources were the budgets, facilities and manpower available to the CM programs in order to reach out to counselors and prospective students.

The needs of Level 1 recipients should always be primary during the needs assessment process. Needs assessments are often conducted, however, by Level 2 service providers, and it is not uncommon for the Level 1 needs to be overlooked by a Level 2 and 3 foci (Altschuld & Kumar, 2010). This is a common pitfall that should be carefully avoided when conducting a needs assessment. To address this, the methodology for this research project was developed specifically with the needs of the high school counselors in mind.

Role of the Researcher

Generally speaking, the Needs Assessment Committee (NAC) is the group that oversees the conduct of all aspects of the needs assessment. The NAC follows the research through from Phase I to Phase III, including the development of plans for addressing the need. The Needs

Assessor(s) is the person in charge of providing the NAC with the leadership for planning and implementing the needs assessment (Altschuld & Kumar, 2010).

Within the context of this research study, the researcher's role was that of the Needs Assessor. Additionally, members of the High School Recruitment Task Force (HSRTF) also provided input for the research and therefor functioned as the NAC. The researcher for this needs assessment developed the data collection tool, recorded, and analyzed the data collected.

Needs Assessment Phase I: Pre-Assessment

An advisor at CSU in the summer of 2011 observed that few, if any, incoming students stated that their high school counselor directed them towards the CM program. The goal of the pre-assessment was to determine what influences led students to choose CM, and confirm that counselors played a limited role in that decision making process. Once confirmed, the results of the pre-assessment provided justification to continue the study of high school counselors in more detail.

Participants

Data for the pre-assessment was collected through the use of a survey administered to first semester students in the CON 101 classes at CSU. The survey was simple, as it sought to only determine if counselors played a role in directing the current students to the CM program.

Survey Instrument

A hard-copy survey instrument was developed to collect information from first-semester CM students about their influences in choosing CM as a degree option. The 10 question survey took the participant approximately five minutes to complete.

The survey questions were divided into two sections:

Section 1: Influence on your decision to pursue construction management, and

Section 2: Counselor interaction.

The survey consisted of seven questions based on a 4-point Likert-type scale (1=very influential, 2=somewhat influential, 3=not influential, 4=no contact) (Fellows & Liu, 2008). Three additional multiple choice style questions were also included to gain further insight into participants' influences.

No personal information was collected during the survey data collection process. Subjects were not individually identified with their survey or responses. All collected data was aggregated and grouped. There was no known risk associated with participating in this pre-assessment survey. Since the survey was simple, a great deal of data analysis was not required. The results were compiled and distributed in the form of a written report.

Needs Assessment Phase II: Assessment

Based on the data collected and conclusions drawn from Phase I, Phase II surveyed high school counselors' knowledge and perceptions of the construction industry and CM programs at the university level. Furthermore, the study sought to identify the types of resources that counselors find most effective when learning about different career options for their students.

With these resources identified, CM programs can better allocate department funds with the ultimate goal of better serving the prospective students.

Participants

This study was conceived through the researcher's participation on the High School Recruiting Task Force (HSRTF) within the Department of Construction Management at Colorado State University (CSU). The goal of the HSRTF was to explore ways in which the department could reach prospective students for enrollment in the CM program. Through participation in the HSRTF, the researcher recognized the important role played by counselors in a high school student's college decision making process. Furthermore, the researcher hypothesized that counselors did not possess a high level of knowledge about the construction industry as a college degree or a career choice. Discussion among the HSRTF established a desire for counselors to become more knowledgeable about CM, thereby exposing more students to the program. This perceived discrepancy, or gap, between counselor's current knowledge of CM programs and the level of knowledge the HSRTF would like for them to possess provided the basis for this needs assessment.

With the HSRTF taking place within the CM department at CSU, the participants recruited for this research project were high school counselors employed in the state of Colorado. The first task of the data collection procedure was to develop a comprehensive database of high school counselors in the state of Colorado. To accomplish this, a list of schools was downloaded from a website that provided contact information on high schools across the country. For example, High-Schools.com provides a downloadable list of all high schools in the state of Colorado (High-Schools.com, 2011).

The downloaded list of Colorado high schools contained detailed information about each school. This information includes county, district, address, city and phone number, as well as the type of school (public or private). However, the database did not include any information regarding the specific staffing at each school.

To complete a comprehensive list of school counselors, an internet search of each school was conducted and the school's website was recorded in the database. Each school's website was thoroughly examined, and counselor name and contact information was gathered and added to the database.

This portion of the study was limited by several factors. Not all high schools in Colorado maintain an active website. Other schools maintain a website, but do not specifically list staff or contact information. For these reasons, the database of high school counselors was thorough, but not complete.

Survey Instrument

This survey was patterned after an engineering survey developed and validated by Purdue University (Beck et al., 2009). The study titled, "K-12 School Counselors: A Pilot Study of Support Needs for Advising Students about Engineering" was developed for the purpose of determining high school counselors' perceptions of engineering and what was the self-reported need for and support desired by high school counselors to aid their work with academic and career development related to students and engineering (Beck et al., 2009). For this research project, reference to "engineering" in the questions was replaced with "construction."

An online survey instrument was developed to collect information from high school counselors in Colorado regarding their knowledge of construction careers, their barriers to

advising students about construction careers, and their needs to help better advise students on construction careers. The survey questions were divided into five sections:

Section 1: School counselors' knowledge and perceptions of CM,

Section 2: Barriers to advising students about CM careers,

Section 3: Topics school counselors' would like to advise their students about CM,

Section 4: Counselor outreach programs, and

Section 5: School counselors' perceptions about collaborating with other teachers on CM lessons.

The 44 question survey was created using Survey Monkey and should have taken the participant no more than 15 to 20 minutes. It consisted of 44 questions based on a 5-point Likert-type scale (1=strongly disagree, 2=disagree, 3=agree, 4=strongly agree, 5=does not apply) (Fellows & Liu, 2008). Four additional open-ended questions were also be included to gain further insight into participants' knowledge, perception, and desired resources. The full survey can be found in Appendix D.

Data Collection

An email letter was sent to participants inviting them to complete the survey. A link to the survey was provided in the invitation email. The survey was available between January and March 2012. The survey was sent to 694 high school counselors in the state of Colorado.

No personal information was collected during the survey data collection process unless they elected to provide this information for follow-up purposes. Subjects were not individually identified with their survey or responses in either the database or published results of this

study. All collected data was aggregated and grouped. There was no known risk associated with participating in this assessment survey.

Data Analysis Procedures

Data analysis for this research project utilized a simple quantitative approach. For the Likert-type questions, descriptive statistics were used to summarize that data. The percent agreement was reported for each question, along with question's average response value. This allowed the researcher to make observations and draw basic conclusions regarding the counselor's knowledge and perception of construction management.

For open-ended questions, a simple coding structure was developed to group the participants' answers into like groups (Beck et al., 2009). The complete list of responses for each open-ended question was reviewed for reoccurring themes. With these themes identified, the data was reviewed again, this time coding each response with its corresponding theme. These codes were then summarized and their frequency evaluated to draw further conclusions about the counselors knowledge and perception of construction management.

Significance of the Study

This study quantified high school counselors' knowledge and perceptions of CM. It identified the knowledge gap, or need to improve counselors' knowledge of CM, and suggested strategies for closing this gap. These strategies will better allow CM program coordinators to make better resource allocation decisions, focusing them in areas that will generate the greatest opportunity for learning. If these strategies are implemented by CM programs and well accepted by counselors, the result will be counselors who are better prepared to advise

prospective students about construction management programs and careers in construction. The ultimate beneficiaries of this knowledge are the prospective students who will now be better informed about a potential college and career options in construction management.

Chapter 4 – Results

Data and Results from Needs Assessment Phase I: Pre-Assessment – CON 101 Student Survey

Eighty-one surveys were distributed to students in three different sections of CON 101 at Colorado State University during the Fall of 2011. All eighty-one were returned (100% response rate) and the results were compiled per the tables below.

Survey Section 1: Influence on your decision to pursue CM

This section established who was the most influential in steering students towards a degree in CM. The results of questions 1-6 are detailed in Table 3.

Table 3: Breakdown of influence sources to pursue CM

With regard to my decision to pursue a CM degree, the following was:

Question No.	Statement	Very Influential	Somewhat Influential	Not Influential	No Contact	Average
1	Parent/Family Member (n=81)	37.0% (30)	37.0% (30)	18.5% (15)	7.4% (6)	3.03
2	Family Friend (n=81)	16.0% (13)	30.9% (25)	32.1% (26)	21.0% (17)	2.41
3	Peer or Friend in the Program (n=81)	11.1% (9)	24.7% (20)	29.6% (24)	34.6% (28)	2.12
4	High School Counselor (n=81)	1.2% (1)	8.6% (7)	32.1% (26)	58.0% (47)	1.53
5	Television Program (n=81)	1.2% (1)	2.5% (2)	42.0% (34)	54.3% (44)	1.51
6	Construction Industry Representative (n=81)	19.8% (16)	25.9% (21)	19.8% (16)	34.6% (28)	2.31

As expected from the literature, parents/family members play the most significant role in influencing the student's degree pursuit; in this case, 37% responded that they were at least *somewhat influential* with 37% acknowledging that they were *very influential*. Following parents/family members, students also reported that both family friends and construction industry representatives were similarly influential at 46.9% and 45.7% respectively. Having a peer or friend already in the program also provided influence with 35.8% of the students reporting that they played a role in their decision to pursue a degree in CM.

On the opposite end of the spectrum were both high school counselors and television programs. The survey data reveals that high school counselors were much less influential in their decision to pursue CM with only 9.8% providing influence. More strikingly is that 90.8% of the students reported that their high school counselor provided no influence regarding their decision to pursue CM, of which 58% said they had no contact whatsoever.

Survey Section 2: High School Counselor Interaction

Section 2 established if/how often students were meeting with their high school counselors. It also gained the student's perspective of their counselor's knowledge of CM. The results of questions 8 and 10 are detailed in Table 4 and Table 5 respectively.

Table 4: Student meeting frequency with their high school counselor.

How many times did you meet with your counselor to discuss your college degree choices?

Question	Statement	Frequency (n=81)
A	0 Times	19.8% (16)
B	1 Time	27.2% (22)
C	2-5 Times	44.4% (36)
D	More than 5 Times	8.6% (7)

This question established whether or not students are meeting with their high school counselors to discuss college degree choices. The results indicate that 80.2% of students are meeting with their counselors at least once with 53% of them meeting more than once. This is important to the study because it established that students are in fact seeking the advice of their counselors in making college path decisions.

Table 5: Student perception of high school counselor's knowledge of CM.

During those meetings, what was your counselor's knowledge of CM?

Question	Statement	Frequency 1 (n=80)	Frequency 2 (n=39)
A	Very Knowledgeable	5.0% (4)	10% (4)
B	Somewhat Knowledgeable	12.5% (10)	26% (10)
C	Little Knowledge	16.3% (13)	33% (13)
D	No Knowledge	15.0% (12)	31% (12)
E	I did not discuss CM with my counselor	51.3% (41)	n/a

This question obtained the student's perspective of how knowledgeable their high school counselor was about CM. Only 5% reported that their counselor was *very knowledgeable*, with an additional 12.5% reporting they were *somewhat knowledgeable*. Over half (51.3%) of the students responded that they did not discuss CM with their counselor. Perhaps these students already knew that they wanted to pursue a CM degree and a discussion with their counselor was not necessary. With this assumption, frequency 2 was generated to explore only the student responses that actually spoke to their high school counselors about CM. From this group, 36% reported that they perceived their high school counselors were at least *somewhat knowledgeable* about CM, while 64% reported that they perceived them having *little or no knowledge*.

This pre-assessment did not reveal any definitive conclusion as to a counselor's knowledge of CM; it did, however establish two key points with regard to prospective students and their interactions with their high school counselor:

1. Prospective students are in fact talking to their high school counselors about their college career paths.
2. Even though they are talking, high school counselors do not play a particularly influential role in a student's decision to pursue a degree in CM.

These two key points demonstrated a need to further explore the high school counselor's knowledge and perceptions of CM.

Data and Results from Needs Assessment Phase II: Assessment – Survey of High School Counselors

The survey invitation was email to 694 recipients in January of 2012 (735 initial less 41 emails that bounced). A follow-up survey invitation reminder was emailed two weeks later. The survey closed two months later with the last response having been submitted in mid-February. Question 1 asked, "Would you like to take the survey," with 148 answering yes, resulting in a 21.3% response rate. The full survey can be found in Appendix D.

Survey Section 1: School Counselors' Knowledge and Perceptions of Construction Management (CM)

In this section, high school counselors were asked to self-assess their knowledge and perceptions of CM. The results for questions 2-16 are detailed in Table 6, Table 7, and Table 8.

Table 6: School Counselors' Knowledge and Perceptions of CM

Question	Statement	Strongly Disagree	Disagree	Agree	Strongly Agree	Does Not Apply	Average
2 (n=134)	I am knowledgeable about career options in construction.	2.24% (3)	40.30% (54)	44.03% (59)	13.43% (18)	0% (0)	2.69
3 (n=136)	A degree is necessary to work in a construction career.	7.35% (10)	75.00% (102)	14.71% (20)	1.47% (2)	1.47% (2)	2.10

Just over half (57%) of the high school counselors surveyed reported that they are knowledgeable about career options in construction, while over 80% reported that a degree is not necessary to work in construction. These two questions only ask about construction and do not specify Construction Management. In the later questions specific to CM the results were significantly more agreeable. This leads the researcher to conclude that at first mention, most counselors still think of construction from the perspective of the hourly laborer and not the professional manager.

Questions 4-10, and 15 determined the counselor's perception of a typical Construction Manager and the construction industry. Almost all agreed that a typical Construction Manager has good verbal, math, and writing skills (Questions 5-7) and that they like to build or fix things (Question 9). Fewer agreed that they would do well in science (Question 10), but this is likely the result of science encompassing Biology, Chemistry, etc., which may not appeal to the typical Construction Manager. One hundred percent of the counselors surveyed reported that they believed a typical Construction Manager works well with other people and makes good money (Questions 4 and 8) and that construction has positive consequences for society (Question 15).

These responses suggest that high school counselors hold a positive perception of a typical Construction Manager and the construction industry. They acknowledged that verbal,

math, writing, and social skills are necessary to be successful in this industry. They also acknowledged that it's an industry that can provide students with a lucrative career and the opportunity to earn a competitive salary. The challenge then becomes, what demographic of student do counselors view as making good Construction Managers, which are discussed in Questions 12-16.

Table 7: School Counselors' Perceptions of CM Skills

Question	Statement	Strongly Disagree	Disagree	Agree	Strongly Agree	Does Not Apply	Average
4 (n=136)	A typical Construction Manager works well with other people.	0% (0)	0% (0)	30.15% (41)	69.12% (94)	0.74% (1)	3.70
5 (n=136)	A typical Construction Manager has good verbal skills.	0% (0)	1.47% (2)	28.68% (39)	69.85% (95)	0% (0)	3.68
6 (n=135)	A typical Construction Manager has good math skills.	0% (0)	0% (0)	26.67% (36)	73.33% (99)	0% (0)	3.73
7 (n=134)	A typical Construction Manager has good writing skills.	0% (0)	5.22% (7)	41.04% (55)	52.99% (71)	0.75% (1)	3.48
8 (n=136)	A typical Construction Manager earns good money.	0% (0)	0% (0)	47.06% (64)	52.94% (72)	0% (0)	3.53
9 (n=133)	A typical Construction Manager likes to fix (build) things.	0% (0)	8.27% (11)	57.14% (76)	34.59% (46)	0% (0)	3.26
10 (n=135)	A typical Construction Manager does well in science.	0% (0)	15.56% (21)	61.48% (83)	20.74% (28)	2.22% (3)	3.05
15 (n=135)	Construction has positive consequences for society.	0% (0)	0.74% (1)	33.33% (45)	65.93% (89)	0% (0)	3.65

Questions 12-14 asked the counselors to rank their perception of how well most people believe students can do in construction courses. There was almost unanimous agreement that most people believe males students can do well in construction courses (Question 13, only one response of disagree) and ninety percent of the respondents reported that they perceived that most people believe minority students can perform well in construction courses (Question 14).

Table 8: School Counselors' Perceptions of CM Demographics

Question	Statement	Strongly Disagree	Disagree	Agree	Strongly Agree	Does Not Apply	Average
12 (n=133)	Most people feel that female students can do well in construction courses.	3.76% (5)	43.61% (58)	36.09% (48)	15.04% (20)	1.50% (2)	2.63
13 (n=136)	Most people feel that male students can do well in construction courses.	0% (0)	0.74% (1)	52.94% (72)	44.85% (61)	1.47% (2)	3.45
14 (n=136)	Most people feel that minority students (African American, Hispanic/Latino, and Native American) can do well in construction courses.	0.74% (1)	5.88% (8)	64.71% (88)	25.74% (35)	2.94% (4)	3.19
16 (n=136)	Do you think CM might appeal to students who might otherwise not attend college?	0% (0)	2.21% (3)	54.41% (74)	41.91% (57)	1.47% (2)	3.40

There was less agreement, however, on the perception of how well most people believed that women can do. The results of Question 12 show that 51% agree to strongly agree to the perception that most people believe women can do well in construction courses compared to 47% who disagree to strongly disagree, making this the most evenly split response of the section.

It is possible that these responses reflect the counselor's perception of what others believe is socially acceptable for a female student rather than their ability to perform the coursework. It may also reflect the perception of women's ability to perform and interact professionally in construction management. The construction industry tends to be male dominated, so the perception may be that a female would have trouble "fitting in" with their male counterparts. Regardless of reason, the low response of women's perceived ability to do well is construction courses is still cause for concern.

Question 16 asked if the counselors believe CM would appeal to a student who might not otherwise attend college, with the overwhelming majority (96%) responding that they agree or strongly agree. The responses to this question can be interpreted two ways. One, they demonstrate that counselors believe that underserved students can do well in CM. The fear, however, is that counselors may not recommend CM to students that they already deem to be college bound, believing that CM is below their abilities.

Survey Section 2: Barriers to Advising Students about Construction Management (CM) Careers

Section 2 of the survey explored the barriers that prevent the high school counselors from advising student's about CM careers. The results for questions 17-24 are detailed in Table 9.

Questions 17-19 asked the counselors to self-report on their current performance in advising students about CM careers. Fifty-five percent reported that they are prepared to adequately advise their students with regard to CM careers (Question 17) while 50% reported that they adequately advise their students interested in CM (Question 18). Only 38% reported that they are doing all that they should be doing with regard to advising students about CM careers (Question 19).

Questions 20-26 clarified why counselors are not doing an adequate job or all that they can to advise students about CM careers. Seventy-two percent reported that limited time to learn more about CM acts as a barrier (Question 20) while 66% reported that limited contact time with the students also acts as a barrier (Question 21). Sixty-three percent reported that their lack of knowledge and 69% reported that lack of training were also barriers (Questions 22

and 23 respectively). In contrast, well over half of the respondents (69%) indicated that administrative support was not a barrier (Question 24). This is a positive outcome because it demonstrates that if outreach is provided, their administration will support their effort to become better informed about CM.

Table 9: Barriers to advising students about CM careers.

Question	Statement	Strongly Disagree	Disagree	Agree	Strongly Agree	Does Not Apply	Average
17 (n=132)	I am prepared to advise my students in CM careers.	3.03% (4)	41.67% (55)	43.18% (57)	11.36% (15)	0.76% (1)	2.63
18 (n=134)	I adequately advise all my students interested in CM careers.	2.24% (3)	45.52% (61)	43.28% (58)	7.46% (10)	1.49% (2)	2.57
19 (n=134)	I am doing all that I should be in advising my students about CM careers.	2.24% (3)	58.21% (78)	30.60% (41)	7.46% (10)	1.49% (2)	2.44
20 (n=134)	The limited time for counselors to learn about CM careers acts as a barrier for advising students about CM careers.	2.99% (4)	23.88% (32)	57.46% (77)	14.93% (20)	0.75% (1)	2.85
21 (n=133)	The limited time available to advise students about CM careers acts as a barrier for advising students about CM careers.	2.26% (3)	29.32% (39)	53.38% (71)	12.78% (17)	2.26% (3)	2.78
22 (n=133)	My lack of knowledge about CM careers acts as a barrier for advising students about CM careers.	5.26% (7)	29.32% (39)	53.38% (71)	9.77% (13)	2.26% (3)	2.69
23 (n=133)	The lack of available training acts as a barrier for advising students about CM careers.	1.50% (2)	26.32% (35)	59.40% (79)	9.77% (13)	3.01% (4)	2.80
24 (n=133)	The lack of administration support acts as a barrier for advising students about CM careers.	5.26% (7)	63.91% (85)	22.56% (30)	3.76% (5)	4.51% (6)	2.26

Questions 25 and 26 were open ended questions that allowed the high school counselors to further elaborate on barriers that they experience or observe with regard to advising students about CM careers. Question 25 asked, *"What are the barriers you experience*

that prevent you from advising students about CM careers?" The key to this question was that it asked what barriers they personally experience. Question 26 asked, *"What other barriers are there that you know of in advising students about CM careers?"* The key to this question was that it asked what barriers they know of or observe and not necessarily personally experience. Responses were collected from 127 survey participants and the combined results are detailed in Table 10. The full set of responses can be found in Appendix E.

Table 10: Barriers experienced to advising students about CM careers.

Response (n=79)	Frequency
Lack of Knowledge	42.5% (54)
Lack of Time	21.3% (27)
Lack of Student Interest	7.8% (10)
Lack of Available Training	7.1% (9)
Perception/Stereotypes	11.0% (14)

The responses to Questions 25 and 26 further confirm what was established in Questions 20-24, that lack of knowledge of CM and lack of time/training to learn more act as barriers to advising their students about CM careers. This is supported by the literature, which recognized that counselors are often asked to perform many tasks and that their time is at a premium (Johnson et al., 2010). Lack of student interest in CM was also cited as a barrier.

Another response that was reported in Question 26 was the perception/stereotype of a career in construction. Many counselors observed a negative perception of construction among their students. A selection of their responses is provided below:

"…there is no financial or career benefit to CM education."

"There is very little regard for 'blue collar' careers in my upper middle class high school."

"The perception that construction is physical work/manual labor and not brain work."

"Students do not get or believe that math, reading, and writing are just as important in construction as in other careers."

"…perception that students can 'get into construction' without adequate training."

These observations are insightful because they demonstrate that even a well-informed counselor with the time to adequately advise their students may have to overcome preconceived stereotypes about CM that are out of their control. In addition to the student's perceptions, one counselor reported that, *"…our focus is on students who plan to pursue a college education."* This response implies that the school and/or counselor would dismiss CM as a career option because they do not believe a degree is required (supports responses to Question 3).

Survey Section 3: Topics School Counselors Would Like to Advise Their Students about Construction Management (CM)

This section determined if counselors were interested in advising their students about careers in CM. The results for questions 27-30 are detailed in Table 11.

While Questions 17-19 asked counselors if they believed they were doing and adequate job of advising students on CM careers, Questions 27-30 asked them if they would like to be. On average, 99% agree that they would like to be able to advise their students about high school courses that prepare them for a CM career (Question 27), advise them about career options that utilize CM skills (Question 28), advise them on opportunities available to support them through the educational CM pathway (Question 29), and scholarship opportunities for students entering CM studies (Question 30). These responses are significant because they

suggest that counselors are open and willing to learn more about CM and will pass that information on to their students.

Table 11: Counselor intent to advise students on CM careers.

Question	Statement	Strongly Disagree	Disagree	Agree	Strongly Agree	Does Not Apply	Average
27 (n=131)	I would like to be able to advise my students about the high school courses that prepare them for careers in CM?	0% (0)	0.76% (1)	61.07% (80)	33.59% (44)	4.58% (6)	3.34
28 (n=132)	I would like to be able to advise my students about careers options that utilize CM skills?	0% (0)	0% (0)	61.36% (81)	35.61% (47)	3.03% (4)	3.37
29 (n=131)	I would like to be able to advise my students about opportunities available to support them through the educational CM pathway.	0% (0)	0.76% (1)	58.02% (76)	38.17% (50)	3.05% (4)	3.39
30 (n=130)	I would like to be able to advise my students about available scholarships for entering college in CM studies.	0% (0)	1.54% (2)	48.46% (63)	49.23% (64)	0.77% (1)	3.48

Survey Section 4: Counselor Outreach Programs

Section 4 determined which outreach programs would be most desirable to high school counselors to participate in order to learn more about CM. The results for questions 31-37 are detailed in Table 12.

Of the suggested outreach methods, an information package either mailed (Question 34) or e-mailed (Question 35) were the most popular responses. Many would be willing to attend a workshop, but the responses indicate that they would prefer the workshop to be at or within an hour of their school (Questions 33 and 34) as opposed to travel a greater distance (Question 31). There is no clear indication of whether or not hosting either an open house (Question 36) or a campus visit (Question 37) would be well attended. No geographic

information was collected from the respondents, but the results indicate that the closer in proximity the training is to the counselor, the more willing they would be to attend a workshop, open house, or campus visit.

Table 12: Methods for CM Departments to reach high school counselors.

Question	Statement	Strongly Disagree	Disagree	Agree	Strongly Agree	Does Not Apply	Average
31 (n=139)	A workshop at Colorado State University (CSU).	3.88% (5)	41.09% (53)	37.98% (49)	15.50% (20)	1.55% (2)	2.66
32 (n=128)	A workshop at my school.	0.78% (1)	28.91% (37)	42.19% (54)	26.56% (34)	1.56% (2)	2.96
33 (n=130)	A workshop located within an hour's driving distance.	2.31% (3)	20.77% (27)	50.00% (65)	25.38% (33)	1.54% (2)	3.00
34 (n=131)	An information package mailed to me.	3.05% (4)	17.56% (23)	47.33% (62)	32.06% (42)	0% (0)	3.08
35 (n=131)	An information package e-mailed to me.	1.53% (2)	19.85% (26)	48.85% (64)	29.77% (39)	0% (0)	3.07
36 (n=129)	Attending an open house.	2.33% (3)	40.31% (52)	49.61% (64)	6.20% (8)	1.55% (2)	2.61
37 (n=126)	A campus visit.	1.59% (2)	32.54% (41)	57.94% (73)	5.56% (7)	2.38% (3)	2.69

Questions 38 and 39 were open ended questions that allowed the high school counselors to further elaborate on what outreach programs and resources they would like to have available to better help them advise students about CM careers. Questions 38 asked, *"Please note/suggest any other outreach programs not covered above."* Responses were collected from 18 survey participants and the results are detailed in Table 13. The full set of responses can be found in Appendix E.

Table 13: Other suggested outreach programs.

Response (n=18)	Frequency
Presentation to Students	38.89% (7)
Multimedia Presentation	27.78% (5)
Presentation to Counselors	22.22% (4)

Almost 40% of the respondents stated that a presentation delivered to the students would be beneficial. Almost 30% reported that a multimedia presentation like a video or webinar would be a beneficial way for them to learn more about CM. Another 22% reported that a presentation given directly to the counselors would be beneficial as well.

Questions 39 asked, *"What resources do you need, but do not have available to you, to advise students about CM courses."* Responses were collected from 32 survey participants and the results are detailed in Table 14. The full set of responses can be found in Appendix E.

Table 14: Additional resources needed.

Response (n=32)	Frequency
Information	68.75% (22)
Prep Classes	12.50% (4)
Time/Money	9.38% (3)

Almost 70% of those that responded to this question requested additional information. Most stated that they would like printed materials, handouts, or a website that would allow them to personally learn more about CM, or pass directly to their students. Additionally, the counselors wanted specific information on course requirements to complete a CM degree, career paths and employment opportunities, earning potential, the availability of financial aid, and a list of available CM programs.

In addition to information, four counselors reported that they would like specifics on which types of high school courses would better help prepare students to enter a CM program. They also asked for ideas on curriculum integration opportunities, especially in math, science, and English classes. Three counselors reported that both time and money would help them to better advise their students about CM courses.

One response, while not high in frequency, is worth noting since it relates back to questions asked in Section 1. This counselor responded, *"How can I get more female and minority students interested (in CM)."* This demonstrates that even though there was disagreement on the perception of whether females could do well in construction courses (Question 12), counselors are looking for ways to help them enter the CM field.

Summary of Data and Results

The results of the survey support the expectation that high school counselors have a limited knowledge about CM. Counselors do agree on the type of skills that make up a good construction manager (math, writing, communication), but there is less agreement on the perception of whether females can perform well in the construction courses. As expected, counselors cite limited time, as well as limited school resources and training opportunities as barriers to becoming more knowledgeable about CM.

Even having acknowledged the barriers, almost all the counselor's surveyed reported that they would like to be able to better advise their students about CM degree and career opportunities. Most stated that simply having more information about the CM industry would be helpful. Of the seven outreach methods suggested by the survey, an information package either mailed or emailed to the counselors was the most desired, followed by a workshop either at or near their school. Fewer seemed interested in attending a training session that would require them to travel away from their home location. This supports the assumption that a counselor's time is very valuable and any outreach method should make the best use of their time.

Limitations

When analyzing the data, several limitations were discovered that must be recognized. Survey questions 2 and 3 ask the counselors to rate the following statements: *"I am knowledgeable about career options in construction"* and *"A degree is necessary to work in a construction career."* The use of only the word "construction" leaves room for the counselors to broadly interpret the range of careers being asked about in the question when the intent was to focus on Construction Management. Replacing "construction" with "Construction Management" would have more narrowly defined the statements to better align with the remainder of the survey and the focus of this research effort.

Survey questions 12 through 14 use the verbiage *"Most people feel that…"* when collecting the counselor's perceptions of females, males, and minorities ability to perform well construction courses. By structuring the questions this way, the data collected is really a reflection on the counselor's perceptions of existing social norms and not the individual counselors' attitudes and norms. While the resulting data does speak to the perceived social norms, it does not necessarily reflect the perceptions of the counselors themselves. To collect the counselor's own personal opinion, the statements should have been structured to say, *"I feel that…"*

Chapter 5 – Discussion and Conclusions

Construction Management (CM) departments are faced with a challenge when recruiting new and prospective students. Data collected from current CM students indicates that CM seems to be a "family affair," with most students deciding to enter a CM program because they have a family member in the construction industry. When trying to reach students who do not have that family connection, CM departments must rely on the student's other influential figures who often have little to no knowledge of CM. This is problematic because prospective students might not realize that career opportunities exist in CM beyond the perceived hourly labor workforce.

In order to attract more students, CM departments must better market themselves to prospective students and the people that influence them. One such influential figure in a prospective student's life is their high school counselor. The data collected in this survey show that students are meeting with their counselors for assistance with their college decisions (Needs Assessment Phase I, Survey Results), but as expected, the average counselor is not knowledgeable about career opportunities in the construction industry (Needs Assessment Phase II, Survey Section 1). This knowledge gap among high school counselors presents CM departments with the opportunity to develop outreach programs to better inform them about degree options and career opportunities within the construction industry.

Needs Assessment Phase III: Post-Assessment

When developing outreach programs, CM departments must recognize the barriers faced by high school counselors, who were the Level 1 recipients in this needs assessment. The majority of counselors surveyed reported that they were not doing all that they could with regard to advising their students about a career in construction management (Question 19), but that they would like to be (Questions 27-30). The main barriers to advising students about CM cited by the counselors were a general lack of information (Questions 22 & 25), time to learn more about CM (Question 20), time to meet with students (Question 21), and training opportunities (Question 23).

In addition to the barriers noted above, counselors also reported that few, if any students had approached them asking for information about CM careers (Questions 25-26). Some counselors also reported that they observed the perception among students that the construction industry was not a career path for an aspiring professional (Questions 25-26). These observations together led counselors to report an overall low student interest in CM careers.

In order to most effectively serve the high school counselors, these reported barriers and observations must function as the guiding principles when developing an outreach program. These barriers were reported to be (1) lack of information, (2) time, (3) training opportunities, (4) as well as low student interest. The following High School Counselor Outreach Program was developed to specifically address the counselor's knowledge gap, while at the same time addressing their reported barriers.

High School Counselor Outreach Program Development

CM departments often face many of the same limitations as counselors, mainly a shortage of time and fixed resources available to accomplish their objectives. While an outreach program that called for the Department Head to visit every high school campus and meet with every counselor one-on-one may achieve the desired result, it is unlikely that this would be a feasible solution for many departments. With this in mind, the High School Counselor Outreach Program (HSCOP) was developed as a multi-staged process that can be systematically completed as time and funding allow. It is intended for larger state colleges and universities that will implement it on a large scale and target a high number of high school counselors. Table 15 below outlines the program's stages along with the specific counselor reported barriers that it aims to overcome. In light of the resource limitations, CM departments can use this table to focus on the approaches that most closely fit their needs.

Table 15: High School Counselor Outreach Program Outline with Addressed Barriers

Stage / Barrier	Lack of Information	Lack of Time	Lack of Training	Low Student Interest
Stage 1: Knowledge Sharing Stage				
1.1. Student Perception	X	X		X
1.2. Course Expectations	X	X		
1.3. Available Career Paths	X	X		
1.4. Employment Opportunities and Salary Ranges	X	X		X
1.5. Direct Student Outreach	X			X
1.6. Women in CM	X	X		X
Stage 2: Interactive Training Stage				
2.1. Develop Program to Visit School	X	X	X	
2.2. Attend Annual Conference(s)	X	X	X	
2.3. Develop Workshop/Open House	X		X	

Preliminary Stage: Develop Counselor Network

As a first step to addressing the counselor knowledge gap, a list of counselors to contact should be established. This preliminary stage is not derived from the survey results; rather it is a logical first step that should be completed before beginning the outreach program. The following process is based primarily on the methodology and lessons learned while conducting this research.

Develop Counselor Network

This high school counselor network, or contact list, can be derived several different ways. CM departments can contact local counseling associations for a list of members. The American Counseling Association (ACA) is the parent organization with various regional branches and division associations under its guidance. While this method will provide a sufficient list of counselors, only counselors who are association members would be contacted.

Alternatively, counselors may be found by simply searching the website of the high schools in the desired geographic area. Counselor contact information is typically included on faculty/staff pages, however, this task is labor intensive and limited by the fact that only schools with updated websites would make the network. Additionally, some schools have very simple websites which do not provide this information.

Either method, while not 100% inclusive, provides a starting point. Perhaps both methods combined provide the best opportunity for creating a reasonably thorough counselor network within the department's target geographic area. The list of association members could be cross referenced with the schools in the target area.

Stage 1: Knowledge Sharing Stage

The knowledge sharing stage is the first step in addressing the high school counselor's knowledge gap with regard to construction management. It addresses student perception of CM, course expectations, available career paths, employment opportunities, anticipated salary ranges, student outreach, and women in construction (Table 15). Since lack of time to both learn about and meet with students to discuss CM was consistently cited by the counselors as a barrier to learning more about construction, information packages should be created in such a way that they are easily and quickly digested by the counselor. In addition to time, counselors also reported that they generally lacked information to both learn more about CM themselves and to share this information with their students.

The main needs expressed by the high school counselors through the survey were the student's perceptions of construction, course expectations while pursuing a CM degree, the various career paths available to a construction manager, and the employment opportunities and salary ranges. To address these needs, the information packages should be a balance between general construction industry and department specific information. This will allow the departments to address knowledge gaps about the construction industry as a whole while also providing specific information relative to a student's experience and expectations while attending their institution.

In addition to the needs and barriers, the survey also allowed the counselors to rate their preferred outreach method. Survey respondents were nearly equally split with regard to mailed documents and emailed documents, while others stated that a video or webinar would be preferred. Since no one outreach method received overwhelming approval from the

counselors surveyed, departments should be prepared to communicate with counselors via a multiple-outlet approach.

In addition to department developed information packages, the counselors should be made aware of existing web resources that can help educate them about a career in construction management. Organizations like the Association of General Contractors (AGC), Association of Building Contractors (ABC), Construction Managers Association of America (CMAA), Project Management Professional (PMP), and Associated Schools for Construction (ASC) are good sources of information and establish that construction management is a professional career. Local chapters of these organizations may even be able to reach out to the counselors beyond the initiative made by the CM departments.

Regardless of the delivery method, an outreach program that addresses the key issues uncovered by the study, lack of knowledge, lack of time, and lack of training opportunities will help to educate counselors about CM careers. Most counselors stated that they were willing to discuss CM with their students, and the information provided by CM departments will assist them in better advising their students who are interested in a construction management career.

Stage 1.1 – Student Perception of Construction

Numerous high school counselors cited that they observed a negative perception of the construction industry among students (Table 15, 1.1). They reported that many students only associate construction with hourly labor jobs that do not necessarily require a traditional college education, and therefore do not recognize CM as a professional level career opportunity. While the hourly labor workforce is essential to the industry, the information

packages should address these perceptions directly by informing the high school counselors of the variety of professional skills (for example business, engineering, and planning) possessed by a construction manager.

Stage 1.2 – Course Expectations

Another need expressed by the counselors was their lack of knowledge regarding the college course expectations of a student pursuing a CM degree. As expected and given the general hourly labor perception of the construction industry, many of the counselors do not know the depth and breadth of a B.S. in construction. To address this, the program should communicate in a concise manner the coursework required to complete a CM degree (Table 15, 1.2). A simple flowchart demonstrating the progression of courses a student could expect to take while pursuing a CM degree would address this need. The flowchart should also include any milestones (e.g. GPA) that the student must achieve to advance within the program, as well as any requirements outside of the coursework required for graduation (e.g. work experience and/or internship).

Stage 1.3 – Available Career Paths

With coursework addressed, the next part of the information package should be to address specific career paths that a CM graduate could expect when entering the workforce (Table 15, 1.3). The available career paths stage is intended to demonstrate the diversity offered by the construction industry. A list or graphic would be helpful in conveying all the various options a CM graduate may pursue upon graduation. These paths include, but are not limited to the following: project management, project controls, contract administration, project

development, estimating, scheduling, quality assurance/quality control, materials manufacturing/sales, owner's representation, sustainability/green construction, virtual design and construction, renovation, and education. In addition to the specific career paths, it would also be helpful to demonstrate the variety of industry sectors available within the construction industry. At a minimum, these industry sectors include commercial, heavy civil, residential, marine, industrial, and specialty construction.

Stage 1.4 – Employment Opportunities and Salary Ranges

Another concern brought up by the high school counselors was the status of the job market and its variability given the economic climate, as well as salary ranges that a CM graduate might expect when entering the job market. The previous stage addressed the diversity of a CM career; this stage addresses the likelihood of finding a job upon graduation (Table 15, 1.4). While no CM department can guarantee job placement to a student, this concern can be addressed by providing the counselors with some statistical information based on the experiences of former graduates. This statistical information should include graduation rates, job placement percentage, average starting salary, and average starting salary by sector.

Stage 1.5 – Direct Student Outreach

Many counselors state that they have not had any students express interest in a CM career (Table 15, 1.5). Counselors also report that many of their students view CM as only an hourly labor type career with little or no professional opportunities. With this in mind, addressing student interest/perceptions must also be considered as part of the outreach program.

It is not feasible for CM department to expect counselors to "recruit" students to CM; rather they can only give information to the students who are interested. Counselors can only pass information along to the students, so some effort must be made to attract students who might not otherwise recognize CM as a career opportunity. To attract these students, a marketing campaign directed at the students would be beneficial.

CM departments should create an abbreviated student interest information package to be sent to the counselors. This student interest information package should include a poster for the counselor's office/hallway promoting CM as a career path. It should be an "at-a-glance" representation of what a CM degree/career entails with the goal of simply catching the student's attention. It should say, *"Ask your counselor for more information"* so that newly interested students know that their counselor is informed and can supply them with more details about CM. Students will see the poster and the counselors will have the full information package at hand to better advise them.

Stage 1.6 – Women in Construction Management

A high number of counselor survey responses reflect the perceived social norm that women would not perform well in construction courses (Question 12). While the construction industry tends to be male dominated, counselors need to be educated that women have the potential to be successful as well (Table 15, 1.6). In order to directly address this social norm, an information package designed specifically to highlight women in construction management should be developed. This information package should contain short biographies of successful women in construction, as well as offer advice from these women for young females interested

in entering the industry. With counselors better educated on women's potential in the CM, they will be better equipped to respond to this perceived social norm.

Stage 1 Summary

The initial outreach stage aims to address the knowledge gaps reported by the counselors in the survey while acknowledging the barriers they experience. The main needs expressed by the high school counselors through the survey were the student's perceptions of construction, course expectations while pursuing a CM degree, the various career paths available to a construction manager, and the employment opportunities and salary ranges. With these elements of the High School Counselor Outreach Program established, CM departments should move on the interactive training stage.

Stage 2: Interactive Training Stage

With Stage 1 in place, high school counselors have the information at hand to learn more about construction management. Students have also been exposed to what a CM degree/career entails, and know that they can see their counselor for additional information. With this base level of knowledge and exposure in place, CM departments should now begin to focus on creating more training opportunities for the counselors.

The Interactive Training Stage builds on the knowledge base delivered in Stage 1. In order to address the counselor needs uncovered by the survey, Stage 2 aims to provide greater training opportunities to the counselors (Questions 38-39). Department members and/or their appointed representatives should reach out to counselors to provide this training by visiting the

counselor's campus, meeting with them at an annual conference(s), or hosting the counselors at a function at the department's campus.

Stage 2.1 – Develop Program to Visit Schools

Many of the counselors responded that they would be in favor of having a CM department representative visit their campus (Table 15, 2.1). These campus visits could take on a number of different identities, from an info session to attending a career fair. Each department developing this program will have to determine which outreach method best suits their needs and works within the restrictions of their resources.

Keeping in mind that counselors have a limited amount of time to commit to their daily responsibilities, an info session should be limited to around one hour in duration. If it is not possible to hold an info session at every school, the session should be held within a reasonable distance from the school to attract more participants. The info session should cover the highlights of a CM degree and career opportunities as already developed in the information packages. In addition to information sharing, this is also an opportunity for CM departments to meet with counselors, hear their feedback, and develop relationships.

In addition to info sessions, counselors also stated that attending college career fairs would be a good way for CM departments to connect both with the counselors and the students. Attending a college career fair provides a platform for the department to represent themselves in person to the students and spark an interest in construction management. Hopefully the students have already seen the poster delivered in Stage 1 and spoken to their counselor to gain more information. Having a presence at a college career fair will allow those students to further connect with their prospective CM departments while also providing

another opportunity for students not familiar with CM to be exposed to the career. One page information handouts should be provided, and representatives attending the college career fair should be well versed in CM, as well as the department's mission and goals.

One challenge that departments may face when attempting to visit a large number of high school campuses is simply having enough people to feasible make the numerous trips. If the scope of the departments program includes a high volume of schools, it may be necessary to call on the assistance of alumni to represent the department in logical locations. For instance, an alumni living and working in their hometown would make a good candidate for visiting their former high school and representing the department when attending an info session or career fair. If this is the case, a brief training package should be developed to ensure that the information passed to the counselors by the alumni match the department's desired message.

Stage 2.2 – Attend Annual Conference(s)

In addition to holding an info session or attending a college career fair, the counselors reported that they would like for CM department representatives to attend an annual high school counselor conference in their target area (Table 15, 2.2). The American Counselor Association (ACA) supports many local branches that often hold an annual conference. Many of these conferences have days where booths can be setup, allowing the counselors to interact with various organizations. Reserving a booth would be an ideal way for CM departments to interact with counselors. Many conference organizers are also often looking for guest speakers to give a presentation on their topic of interest. Delivering a short presentation on CM degrees and career opportunities would also be a great way to directly reach the counselor audience.

Stage 2.3 – Develop Workshop/Open House

If resources allow, CM departments should plan to hold a workshop or an open house on the department's campus (Table 15, 2.3). Holding an open house is a great way to not only inform counselors about a CM degree and career opportunities, but also show off the facilities which the department has at their disposal to use in educating the students. Open houses should consist of an information session, campus/department tour, and an interesting teambuilding activity that reflects the mission of the department.

While a workshop or open house is one of the best forums for interacting with the counselors, it should be recognized that the attendance will largely be dictated by the proximity of the department's campus to the target counselor's location. As demonstrated in the survey results, the further away the counselor is from campus, the less likely they are to attend. This attendance should be considered when committing time/resources to developing an open house. One method for overcoming this attendance issue could be to partner with other underrepresented departments on campus. Each department would be allotted a certain amount of time during the day to present their program. If a counselor is able to attend multiple presentations during the trip, it could be a better utilization of their time and therefore draw a higher attendance.

Stage 2 Summary

In summary, the aim of Stage 2 is to connect with counselors in person with the goal of further closing their construction management knowledge gap. Campus visits to hold info sessions and attend college career fairs, attending and annual counselor conference, and hosting department open houses are all ways to accomplish the goals of Stage 2. With Stage 2

in place, the department can look ahead to maintaining their High School Counselor Outreach Program into the future.

Conclusions

The purpose of this study was to gauge high school counselors' knowledge and perceptions of construction management (CM). It was a needs assessment that sought to identify the knowledge gap between counselors' current knowledge of CM programs and the level of knowledge that CM program administrators would like for counselors to possess and share with their students. The study also identified strategies which CM Program administrators can implement to better reach high school counselors to effectively close this knowledge gap.

Phase I of the needs assessment sought to validate the need for the study. It was believed that counselors played little role in influencing students to pursue a degree in CM. This belief was confirmed by a short survey administered to first semester students in CON 101 at Colorado State University. Of the 81 students surveyed, less than 10% stated that their high school counselor had any influence on their decision to pursue CM. This low reported percentage of counselor influence justified the continuation of the needs assessment.

Phase II of the needs assessment directly contacted high school counselors in the state of Colorado to determine their knowledge and perceptions of CM, identified barriers that would hinder their ability to advise students about CM, and determined which outreach strategies to improve their knowledge of CM would be most well received. This contact was achieved via an online survey, with 148 counselor responses collected. A high number of

counselors reported that they did not have a high level of knowledge when it came to construction careers, and that they were not doing all that they could be to adequately advise students about a CM degree. The counselors did, however, report almost unanimously that they would like to be able to advise their students with regard to a CM degree and a career in the construction industry.

While counselors were willing to learn more about CM, several barriers were identified that make doing so a challenge. These barriers were (1) a general lack of CM knowledge, (2) lack of time to both learn about CM and to meet with students to discuss CM, (3) lack of CM focused training opportunities, and (4) lack of student interest/negative perceptions of CM. In order to address the overall knowledge gap and overcome these barriers, an outreach program was developed to allow CM departments to better contact and communicate with high school counselors.

Phase III of the needs assessment consists of a set of recommendations which address the needs identified in Phase I and studied in more detail in Phase II. The recommendations took the form of a High School Counselor Outreach Program (HSCOP), which is a set of organized practices that can be implemented by CM departments with the specific purpose of educating them about the opportunities a career in CM offers. The HSCOP is a multi-staged guide that can be implemented over time as department resources allow.

The stages of the HSCOP aim to address the counselor knowledge gap in two ways. Stage 1 provided the counselors with information packages that directly address their needs identified in the survey; student perception of construction, course expectations, available career paths, employment opportunities, student interest, and women in CM. Stage 2 furthers

closes this information gap by meeting with counselors for info sessions at their campus, attending career fairs, providing information at annual counselor conferences, or hosting workshops/open houses on the CM department's campus. These stages address the counselor reported barriers of lacking information, training opportunities, and student interest while aiming to make the best use of their limited time.

Implications/Future Research

This study lends itself to further exploration and future researchers can expand on it in a number of ways. The recommended High School Counselor Outreach Program should be implemented to a focus group of counselors. Once implemented, the researcher should conduct follow-up interviews with the focus group to verify if the strategies for improving construction career knowledge are generating the desired effect. If the program is validated, it can be confidently implemented by CM departments. If the focus group reports that their knowledge gap is not being effectively closed, the program can be reassessed and improved based on the direct feedback from the counselors.

A researcher should survey or interview high school students to measure their knowledge of construction management and discover from the student's prospective what role counselors are playing in advising them about construction management. This researcher should conduct a pre-test/post-test study of a school whose counselor(s) commit to learning more about careers in construction in order to discover if a higher percentage of prospective students develop interest in construction management.

A researcher should explore university wide methods that are already in place for connecting with high school counselors. If these methods exist, the researcher should examine whether or not they are effective at educating prospective students about CM careers. For example, are university employed college counselors attending high school career fairs, and if so, what do these university counselors know about CM? If these methods are demonstrated to be ineffective, then the researcher should determine ways to improve the existing university method. In the example above, an outreach program similar to the one outlined in this research should be targeted at the university counselors. This "teach the teacher" approach would allow CM department to focus their efforts on educating a few university counselors instead of numerous high school counselors.

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Appendix A - IRB Exemption Letter

Colorado State University

Research Integrity & Compliance Review Office
Office of Vice President for Research
Fort Collins, CO 80523-2011
(970) 491-1553
FAX (970) 491-2293

DATE: December 8, 2011

TO: Mary Nobe, Construction Management
Jeff Wilkes, Construction Management

Janell Barker

FROM: Janell Barker, IRB Administrator
Research Integrity & Compliance Review Office

TITLE: Needs Assessment: Strategies for Raising Awareness of Construction Management Programs among High School Counselors

IRB ID: 145-12H **Review Date:** December 8, 2011

The Institutional Review Board (IRB) Administrator has reviewed this project and has declared the study exempt from the requirements of the human subject protections regulations as described in 45 CFR 46.101(b)(2): Research involving the use of educational tests,….survey procedures, interview procedures or observation of public behavior, unless: a) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects.

The IRB determination of exemption means that:

- **You do not need to submit an application for annual continuing review.**
- **You must carry out the research as proposed in the Exempt application**, including obtaining and documenting (signed) informed consent if stated in your application or if required by the IRB.
- **Any modification of this research should be submitted to the IRB through an email to the IRB Administrator, prior to implementing any changes**, to determine if the project still meets the Federal criteria for exemption. If it is determined that exemption is no longer warranted, then an IRB proposal will need to be submitted and approved before proceeding with data collection.
- **Please notify the IRB if any problems or complaints of the research occur.**

Please note that you must submit all research involving human participants for review by the IRB. **Only the IRB may make the determination of exemption**, even if you conduct a similar study in the future.

Appendix B – CON 101 Survey

The following survey will be administered to all students in the CON 101 classes at Colorado State University. It will be administered via a hard-copy given during class.

Section 1: Influence on your decision to pursue Construction Management (CM)

(1=very influential, 2=somewhat influential, 3=not influential, 4=no contact)

With regard to my decision to pursue a CM degree, the following was…

1. Parent/Family Member
2. Family Friend
3. Peer or Friend in the Program
4. Counselor
5. Television Program
6. Construction Industry Representative
7. Other (_____)

Section 2: High School Counselor Interaction

8. How many times did you meet with you counselor to discuss your college degree choices?
    a. 0 times
    b. 1 time
    c. 2-5 times
    d. More than 5 times

9. What majors were you counseled on by your high school counselor?

    Architecture

    Biology

    Business

    Chemistry

    Construction Management

    Education

    Engineering

    Math

    Physics

    Psychology

    Sociology

    Other (List all the apply)

10. During those meetings, what was your counselors' knowledge of CM?

    a. Very Knowledgeable

    b. Some Knowledgeable

    c. Little Knowledge

    d. No Knowledge

    e. I did not discuss CM with my counselor

Appendix C – CON 101 Survey Raw Data

Table 16: CON 101 survey raw data

ID	Q1	Q2	Q3	Q4	Q5	Q6	Q8	Q10
1	1	2	4	4	4	2	c	c
2	3	3	2	3	3	4	a	e
3	2	3	2	4	4	4	c	d
4	2	2	4	4	3	2	d	e
5	2	2	2	4	4	4	c	b
6	2	4	4	4	4	4	b	c
7	2	1	3	4	3	1	a	e
8	1	2	4	3	3	2	b	e
9	2	1	1	2	4	3	d	c
10	4	4	4	4	4	4	a	e
11	4	2	1	4	4	4	d	c
12	3	3	2	4	3	2	c	e
13	1	4	4	4	4	4	c	e
14	3	3	3	3	3	3	c	e
15	1	2	4	4	4	4	b	d
16	1	4	1	4	4	4	c	e
17	1	1	1	4	4	1	c	d
18	3	4	4	4	4	4	b	d
19	2	4	4	4	4	4	b	a
20	1	1	4	4	4	2	b	c
21	3	3	2	3	3	3	c	e
22	3	2	2	3	3	2	c	e
23	1	3	3	2	3	2	b	c
24	3	3	3	3	3	1	b	d
25	2	3	3	2	3	2	c	b
26	3	3	2	4	4	1	c	d
27	3	2	4	4	4	2	c	e
28	2	4	2	4	4	4	d	e
29	3	3	3	3	3	1	b	a
30	1	2	4	4	4	2	b	c
31	1	2	4	4	4	4	c	e
32	2	2	3	3	3	4	c	b
33	2	1	1	4	4	1	d	b
34	2	1	3	2	3	1	b	c
35	2	2	2	3	3	2	c	c
36	1	3	3	3	3	3	b	e
37	1	1	1	4	2	1	c	e
38	1	1	3	3	3	2	c	b
39	2	3	3	3	3	1	c	d
40	2	3	3	3	3	3	d	b

ID	Q1	Q2	Q3	Q4	Q5	Q6	Q8	Q10
41	1	1	3	4	4	2	c	c
42	1	1	1	1	1	1	d	a
43	2	3	2	2	3	3	c	b
44	1	2	3	3	3	2	b	b
45	2	2	3	4	4	1	c	e
46	1	2	4	4	4	3	a	e
47	2	3	2	2	2	3	a	e
48	1	3	3	3	3	2	c	c
49	3	1	3	2	4	2	c	e
50	1	2	4	4	4	4	c	e
51	2	4	3	3	3	2	a	e
52	1	1	4	4	4	4	b	e
53	4	4	2	4	4	4	a	e
54	2	2	1	4	4	1	a	e
55	4	1	4	4	4	4	a	
56	2	2	2	3	3	1	c	d
57	1	2	4	3	3	2	c	b
58	4	4	4	4	4	4	a	e
59	1	3	2	4	4	4	a	e
60	2	2	2	4	4	1	c	e
61	2	3	1	4	3	3	a	e
62	3	3	3	3	4	3	b	e
63	1	4	4	4	4	4	b	e
64	2	4	4	4	4	4	c	d
65	1	2	2	4	3	3	a	e
66	2	3	4	4	4	4	c	e
67	2	2	3	3	3	3	b	c
68	1	2	3	3	4	4	b	e
69	4	4	3	4	4	1	c	d
70	3	3	4	3	3	3	c	e
71	3	3	2	3	3	3	a	e
72	3	3	3	3	3	3	b	c
73	2	2	4	4	4	4	a	e
74	1	3	2	4	3	1	b	a
75	1	4	4	4	4	4	a	e
76	1	4	4	4	4	2	b	d
77	2	4	4	4	4	4	c	e
78	2	3	3	3	3	2	c	e
79	2	4	4	4	4	4	b	b
80	1	2	2	3	3	2	c	d
81	1	3	2	4	4	3	c	e

Appendix D – High School Counselor Survey

The following survey will be sent to all high school counselors in the state of Colorado. It will be sent via the web-based survey software Survey Monkey.

Section 1: School Counselors' Knowledge and Perceptions of Construction Management (CM)

(1=strongly disagree, 2=disagree, 3=agree, 4=strongly agree, 5=does not apply)

2. I am knowledgeable about career options in construction.
3. A degree is necessary to work in a construction career.
4. A typical Construction Manager works well with other people?
5. A typical Construction Manager has good verbal skills?
6. A typical Construction Manager has good math skills?
7. A typical Construction Manager has good writing skills?
8. A typical Construction Manager earns good money?
9. A typical Construction Manager likes to fix (build) things?
10. A typical Construction Manager does well in science?
11. I believe construction should be integrated into K-12 curriculum?
12. Most people feel that female students can do well in construction courses.
13. Most people feel that male students can do well in construction courses.
14. Most people feel that minority students (African American, Hispanic/Latino, and Native American) can do well in construction courses.

15. Construction has positive consequences for society.
16. Do you think CM might appeal to students who might otherwise not attend college?

Section 2: Barriers to Advising Students about Construction Management (CM) Careers

(1=strongly disagree, 2=disagree, 3=agree, 4=strongly agree, 5=does not apply)

17. I am prepared to advise my students in CM careers.
18. I adequately advise all my students interested in CM careers.
19. I am doing all that I should be in advising my students about CM careers.
20. The limited time for counselors to learn about CM careers acts as a barrier for advising students about CM careers.
21. The limited time available to advise students about CM careers acts as a barrier for advising students about CM careers.
22. My lack of knowledge about CM careers acts as a barrier for advising students about CM careers.
23. The lack of available training acts as a barrier for advising students about CM careers.
24. The lack of administration support acts as a barrier for advising students about CM careers.

(Open ended questions)

25. What are the barriers you experience that prevent you from advising students about CM careers?
26. What other barriers are there that you know of in advising students about CM careers?

Section 3: Topics School Counselors Would Like to Advise Their Students about Construction Management (CM)

(1=strongly disagree, 2=disagree, 3=agree, 4=strongly agree, 5=does not apply)

With regard to CM careers, I would like to be able to advise my students about…

27. The high school courses that prepare them for careers in CM?
28. Careers options that utilize CM skills?
29. Opportunities available to support them through the educational CM pathway.
30. Available scholarships for entering college in CM studies.

Section 4: Counselor Outreach Programs

(1=strongly disagree, 2=disagree, 3=agree, 4=strongly agree, 5=does not apply)

I am interested in learning more about CM careers through…

31. A workshop at Colorado State University (CSU).
32. A workshop at my school.
33. A workshop located within an hour's driving distance.
34. An information package mailed to me.
35. An information package e-mailed to me.
36. Attending an open house.

37. A campus visit.

38. Other _____

(Open ended question)

39. What resources do you need, but do now have available to you, to advise students about CM courses?

Section 5: School Counselors' Perceptions about Collaborating with other Teachers on Construction Management (CM) Lessons

(1=strongly disagree, 2=disagree, 3=agree, 4=strongly agree, 5=does not apply)

I am interested in collaboration on a CM career lesson with the following teachers…

40. Science Educators

41. Mathematics Educators

42. Technology Educators

How interested in collaboration on a CM career lesson do you perceive the following teachers to be..?

43. Science Educators

44. Mathematics Educators

45. Technology Educators

Appendix E – High School Counselor Survey Open Ended Questions

Raw Data

Q25 What are the barriers you experience that prevent you from advising students about CM careers?

Answered: 79 Skipped: 69

#	Responses	Date
1	Lack of knowledge of career options, training available, apprenticeship programs, etc.	2/13/2012 9:37 AM
2	Knowledge of the field, no CTE anymore for CM.	2/1/2012 2:43 PM
3	Available formal training. Visits to our CDC are available, but this is informal.	1/28/2012 5:19 AM
4	I need more knowledge of it	1/27/2012 9:47 AM
5	None	1/26/2012 10:31 AM
6	I just don't know enough about the career...training, employment options, compensation.	1/24/2012 8:49 AM
7	First hand knowledge of what is available. I was not even aware that this was a degree program at CSU and I have been counseling for several years in Colorado and I grew up on a farm/ranch where several people are interested in pursuing hands on careers. You need to set up tables at some of our state conferences.	1/23/2012 9:51 PM
8	SInce I have heard the CSU program is only taking 20 students a year I have not heard further updates	1/23/2012 9:04 PM
9	Lack of time to advise students.	1/23/2012 4:16 PM
10	Don't know enough details	1/23/2012 2:10 PM
11	Lack of a program here at this school	1/23/2012 1:35 PM
12	I don't know about this field and would like to know more.	1/23/2012 1:35 PM
13	Not enough of a knowledge base.	1/23/2012 1:23 PM
14	lack of interest from the students	1/23/2012 12:22 PM
15	Lack of knowledge of CM Careers and also lack of knowledge of which colleges offer such programs.	1/23/2012 12:19 PM
16	I just don't know that much about it.	1/23/2012 11:54 AM
17	I have not had the opportunity to learn about CM in any sort of professional development courses, or other training.	1/23/2012 11:53 AM
18	Lack of knowledge about CM careers, degree options, location of schools, aprenticeships	1/23/2012 11:49 AM
19	just would like more knowledge around the various tracks in Construction degrees - what they are called, what is required (2 yr or 4 yr), tuition, etc.	1/23/2012 11:13 AM
20	Lack of knowledge, lack of adequate time to meet with students	1/23/2012 10:52 AM
21	Our school is a 6-12 college preparatory program. The expectation is that all of our students will attend college. Although we address careers from a broad perspective and spead specifically to management programs in some of the technical areas, we may not be covering this as broadly as we might.	1/23/2012 10:43 AM
22	Our high school does not have a vocational component for students interested in the construction field so we work with an organization called The Career Building Academy. This Academy has a 2-year program that educates students in all aspects of construction and construction management. They are our only link currently to the construction trages.	1/23/2012 10:40 AM
23	Basic info about needed education and career paths in the field.	1/23/2012 10:40 AM
24	Time, training	1/23/2012 10:12 AM
25	Students do not have CM exposure in todays curriculum.	1/23/2012 9:56 AM

26	A very significant barrier is that all students are told they must go to 4 year college right out of high school. The construction field is not encouraged with our students. All class that would aid students have been cut because we are "a college going culture".	1/23/2012 9:56 AM
27	Things are in a constant state of change. I don't feel I am updated on all that is included in CM training, requirements, skills required, etc.	1/23/2012 9:54 AM
28	There are so many careers to advise on that it is hard to be an expert in every field.	1/23/2012 9:47 AM
29	not enough time allowed in my work schedule to research new information in CM	1/23/2012 8:04 AM
30	I am in a rigorous college prep school--I have not had one student tell me they are interested in Construction Management, but if they ever do, I will do everything I would for any other career to help them.	1/20/2012 2:18 PM
31	I just have minimal info about the career.	1/20/2012 1:25 PM
32	Thier lack of knowledge about the field in general.	1/20/2012 12:38 PM
33	I haven't had many students express interest in this field.	1/19/2012 10:25 PM
34	time and the perception that a student can 'get into construction' without adequate training.	1/18/2012 11:49 AM
35	not enough time	1/18/2012 11:13 AM
36	time, lack of knowledge, large number of students	1/18/2012 9:27 AM
37	lack of information	1/17/2012 2:00 PM
38	I really can't think of any.	1/17/2012 10:50 AM
39	Not enough time to present to students. We are too test oriented.	1/13/2012 2:54 PM
40	The largest barrier is students' hesitance to ask me about CM careers.	1/12/2012 4:34 PM
41	time	1/12/2012 4:12 PM
42	lack of knowledge	1/12/2012 3:51 PM
43	Personal knowledge . . . the colleges that offer the best programs on all levels: 4 year, 2 year and certificate level coursework.	1/12/2012 3:31 PM
44	With so many fields in for students to decide, it is hard to be an expert in all of them.	1/12/2012 12:29 PM
45	Lack of time and resources	1/12/2012 11:02 AM
46	limited knowledge, limited tme to work with individual students, limited availibity of nearby programs to visit, limited school funding to do training or take students on campus	1/12/2012 10:12 AM
47	my students don't think big picture. They are looking for entry level positions without post secondary training	1/12/2012 9:58 AM
48	The time to focus on the working class in public education when ALL of the focus is on academic testing and state test.	1/12/2012 8:38 AM
49	Time and current information on what is available for careers and training	1/12/2012 8:25 AM
50	don't know enough about it and does not seem to be a field that reaches out to counselors with information	1/12/2012 8:23 AM
51	I could use more training. Also a lack of vocational classes in my school district is a real problem.	1/12/2012 8:09 AM
52	I don't know much about it so I don't put it out there as an option unless a student tells me he/she is interested in that field. Then we look for colleges that offer that as a major.	1/12/2012 8:04 AM
53	Shared knowledge.	1/12/2012 7:50 AM
54	time and place -- like any other career option available to students	1/12/2012 7:38 AM
55	I do not have the knowledge or information or contacts to adequately advise students. If I don't know something I generally have a go to person who I can ask questions of or the student can ask questions. I don't. It would also be important to know what classes/pathway a student should take in order to enter and be competitive in the field--right now many students interested in this field go to Pickens Technical College.	1/12/2012 7:13 AM
56	Keeping up with trends	1/11/2012 10:44 PM

57	not aware of how to learn more about cm careers. we do have a building trades program but my lack of time has held me back from learning more about opportunites for students	1/11/2012 7:26 PM
58	no one has ever asked to educate me about CM careers in order for me to advise my students better.	1/11/2012 5:28 PM
59	Time constraints, very large student load	1/11/2012 4:15 PM
60	Time, all the different programs available	1/11/2012 3:45 PM
61	We do not have a program that supports this Career Pathway at our high school or at our local community college. Also, with everything we hear about the economy and the building industry; we don't have many students exploring this as a career option like we did in the past. Finally, with the exception of Construction Management, I believe there is confusion with construction careers, in particular, regarding whether a certificate or degree (2 year or 4 year) is needed for the various careers within this industry.	1/11/2012 3:29 PM
62	Don't know much about it, or where to get the degrees	1/11/2012 3:10 PM
63	We are a very small school and so far only one students has had interest in CM careers	1/11/2012 2:54 PM
64	Need information about CM careers - Have only had one student interested in this and he graduated from CSU and has done very well.	1/11/2012 2:52 PM
65	I would just like more information to highlight this career to my students-posters, your school participating in our local Career Fair, etc	1/11/2012 2:51 PM
66	Lack of knowledge and resources.	1/11/2012 2:47 PM
67	Lack of resources at the high school level and knowledge.	1/11/2012 2:43 PM
68	Time is the biggest influence on how we advise students regarding any career. We have a Career Development Center in our district that has vocational tracts for our students who are both college and non-college bound. Welding, Building Trades, etc. are part of this program.	1/11/2012 2:37 PM
69	none we have several students interested and we advise them about programs available to them,	1/11/2012 2:35 PM
70	The main barrier, is just lack of information and/or communication of programs/info around the state	1/11/2012 2:35 PM
71	Time to learn about CM careers	1/11/2012 2:30 PM
72	Student interest guides the advising process. I do not guide in the process. I simply follow and help explore with a curious and open mind.	1/11/2012 2:29 PM
73	I only know about one apprenticeship program	1/11/2012 2:29 PM
74	None	1/11/2012 2:25 PM
75	Changes in the coursework	1/11/2012 2:15 PM
76	I advise students who are interested in CM careers. My brother is a graduate of the CM program at CSU. I know there are many different careers in construction.	1/11/2012 2:15 PM
77	Their are a number of other good career fields to discuss with students	1/11/2012 2:15 PM
78	I advise my students the same no matter what their career choice. Any barriers that exist for CM exist for other careers -- time for advising, available resources, etc.	1/11/2012 2:13 PM
79	time and knowledge	1/11/2012 2:09 PM

Q26 What other barriers are there that you know of in advising students about CM careers?

Answered: 48 Skipped: 100

#	Responses	Date
1	Most want to work locally and there is no financial or career benefit to CM education; OJT is believed to be best on eastern plains.	2/13/2012 9:37 AM
2	General knowledge of course work for degrees.	1/28/2012 5:19 AM
3	None	1/26/2012 10:31 AM
4	No prior knowledge of what is required for the profession.	1/23/2012 9:51 PM
5	Little or no opportunity for students to try one of the construction classes.	1/23/2012 4:16 PM
6	I know little and would like to receive more education in this area	1/23/2012 1:35 PM
7	none	1/23/2012 1:23 PM
8	stereotypes	1/23/2012 12:22 PM
9	Lack of degree programs?	1/23/2012 11:53 AM
10	Students' lack of knowledge and/or stereotypes about construction career	1/23/2012 10:52 AM
11	We do not have any CTE programs on our campus.	1/23/2012 10:43 AM
12	As we do classroom guidance it seems that our focus on on those students who plan to pursue a college education. We would like someone to meet with our kids who has a handle on what's going on in the world of construction management today.	1/23/2012 10:40 AM
13	Knowledge base	1/23/2012 10:12 AM
14	Many students are not interested in CM.	1/23/2012 9:56 AM
15	Time	1/23/2012 9:47 AM
16	Student bias against construction.	1/23/2012 9:30 AM
17	No administrative support to allow me time to research new information in CM	1/23/2012 8:04 AM
18	I am not highly knowledgeable about this field	1/19/2012 10:25 PM
19	would like to know more about CM careers. I know a bit, but more would be helpful	1/18/2012 11:13 AM
20	options for post secondary education	1/17/2012 2:00 PM
21	None. I don't have a lot of students interested in CM careers at this time.	1/17/2012 10:50 AM
22	Keeping up with new trends and developments is difficult	1/13/2012 2:54 PM
23	Societal stereotypes about CM careers	1/12/2012 4:34 PM
24	Time in the Industrial Arts Courses	1/12/2012 3:31 PM
25	our students typically know about the work not the management aspect	1/12/2012 10:12 AM
26	Finding strong 2 and 4 year public schools that offer appealing programs to my students.	1/12/2012 9:58 AM
27	Training program that do exist in high school are very limited and if they exist the number of students that are able to be accepted to the program are usually very small. We have a program for juniors and seniors in a school 1250 we are only allowed 10 slots.	1/12/2012 8:38 AM
28	not much interest	1/12/2012 8:23 AM
29	There is very little regard for " blue collar" careers in my upper middle class high school.	1/12/2012 8:09 AM
30	none	1/12/2012 8:04 AM

31	Educational requirements for various jobs within construction.	1/12/2012 7:50 AM
32	The perception that construction is physical work/manual labor not brain work. Lack of understanding about the career by many in education...teachers, counselors, administration and lack of contacts and contact with people in the career field.	1/12/2012 7:13 AM
33	Time	1/11/2012 10:44 PM
34	Some students have a negative view on the construction field. Others are extremely interested but don't seem to think they need additional training because their fathers didn't have to go to school to be successful in the construction field (in their opinion). Students do not get or believe math, reading and writing are just as important in construction as in other careers.	1/11/2012 9:27 PM
35	knowledge of people in the community to contact to speak to high school students about careers	1/11/2012 7:26 PM
36	Counselors are overworked... the days are a blur. I am sure time can be made, but I doubt many think of that.	1/11/2012 5:28 PM
37	Lack of public knowledge of how the building industry will help grow our economy. I believe that we need more people involved in this industry to come into our schools and speak with young people about the benefits of CM careers and the building industry effects on the global economy. Get the word out to the public, as well.	1/11/2012 3:29 PM
38	My lack of knowledge is the biggest reason. Also, just how secure is this career in our current economy?	1/11/2012 2:54 PM
39	Counselors need to get the info out to students. There are so many careers out there it is hard to get advise kids about them all.	1/11/2012 2:52 PM
40	I would love to be able to steer my students into CM careers, but in many ways it seems like a secret society. There is a lack of knowledge about post secondary educational options, internships, and how to find out about the unions who seem to play a large part in controlling training and hiring practices.	1/11/2012 2:47 PM
41	Push for college and lack of vocation programs at the high school level.	1/11/2012 2:43 PM
42	none - we are a small school and we interact and advise our students from day one.	1/11/2012 2:35 PM
43	I am not well-versed on the community college options	1/11/2012 2:29 PM
44	None	1/11/2012 2:25 PM
45	I happen to have brothers, nephew, and nieces in the trade, so I know a lot about it. I think if you don't have someone close to the occupation, it makes it much more difficult to talk with students about it.	1/11/2012 2:15 PM
46	Students are unaware of how much math and English are used on a daily basis.	1/11/2012 2:15 PM
47	There are so many other equally good career fields out there that promoting construction management more than another field is not fair.	1/11/2012 2:15 PM
48	people's prejudices	1/11/2012 2:09 PM

Q38 Please note/suggest any other outreach programs not covered above. If none leave blank.

Answered: 18 Skipped: 130

#	Responses	Date
1	The Northeastern Colorado College Counselors Assn (NECCA) meets biannually for inservice training. Cindy Carey, Northeastern Jr. College (970.521.6676) sets the schedule for our meetings. Northeastern counselors and students also attend the College Fairs at Holyoke and Sterling in the fall.	2/13/2012 9:41 AM
2	Training program for Counselors should be linked to a CM exploration course in conjunction w our CDC(SVVSD) Construction Trades or Pre-Eng. programs.	1/28/2012 5:24 AM
3	Coming to our school and meeting with counselors and college/career staff are very effectiuve. Also, setting up tables at the state counseling conferences is a great way for us to gain knowledge.	1/23/2012 9:54 PM
4	A dvd showing classes, careers, on the job etc. Include pay etc	1/23/2012 9:05 PM
5	I would love to charter a bus and bring my construction minded students to CSU for the day but we have to pay for our own buses and cannot afford to.	1/23/2012 10:42 AM
6	Contacts to give my students so they can follow through . . . if I attended a session on all of the careers I'm supposed to educate my students on, I wouldn't have time for my other school counseling duties.	1/23/2012 9:49 AM
7	A speaker presenting at our District meeting for counselors/	1/20/2012 1:27 PM
8	A workshop provided via Webinar	1/17/2012 10:46 AM
9	although I say agree - I am likely only to have time for reading material or a school visit (to my school) which I often can't do. There are not a lot of kids that are interested in this - but when they state an interest I am well aware of your program.	1/12/2012 4:14 PM
10	Presentation to students in our high schools	1/12/2012 11:04 AM
11	webinar or training video	1/12/2012 9:59 AM
12	The best option for the two high schools in our district is to either have a rep from your program come to each individual school to do a one hour presentation to our vocational students. I realiz that requires a lot scheduling and time for one or two people to go around to all of the high schools, so the next best thing would be to develope a video or a power point presentation that could be emailed to the schools and then the information could be presented to teachers, students and counselors.	1/12/2012 8:50 AM
13	Attend our career fairs. Volunteer to come speak in classrooms or in the evening with parents and students.	1/11/2012 9:33 PM
14	all the suggestions are great	1/11/2012 7:28 PM
15	a webinar	1/11/2012 5:29 PM
16	We have a college fair every year and if this program wanted to come to specifically have a table or meet with students that would be great. Our school is a STEM (Science, Technology, Engineering, Math) school so this program should also be mtg w/ our students who are interested in pursuing STEM in relation to CM.	1/11/2012 2:41 PM
17	Coupling CM with other civil engineering / architecture types of majors may increase visibility and student enrollment.	1/11/2012 2:18 PM
18	Students respond well to current students speaking in classes and sharing their experiences.	1/11/2012 2:17 PM

Q39 What resources do you need, but do not have available to you, to advise students about CM courses?

Answered: 32 Skipped: 116

#	Responses	Date
1	Course, degree, career, earning s- general info.	1/28/2012 5:24 AM
2	Information	1/26/2012 10:40 AM
3	Our staff needs specifics in high school classes that will prepare a student to be ready for your courses. The type of student who is successful in your classes.	1/23/2012 9:54 PM
4	Chance for middle school students to try a quarter in the construction classes we currently offer.	1/23/2012 4:17 PM
5	Materials to hand to students. Collection of careers that are populor after completion of CM Degree.	1/23/2012 12:20 PM
6	Any sort of training	1/23/2012 11:54 AM
7	time, materials	1/23/2012 11:50 AM
8	More materials about CM programs	1/23/2012 10:53 AM
9	Money and time.	1/23/2012 10:42 AM
10	More information in general and introductory classes offered at the high school level.	1/23/2012 9:58 AM
11	The variety of careers and opportunities available	1/23/2012 9:56 AM
12	websites, handouts to give students so they can pursue their own research.	1/23/2012 9:49 AM
13	a list of cousre requirements for degree completion	1/23/2012 8:06 AM
14	printed material	1/18/2012 9:28 AM
15	hard copy of materials. pathways to careers	1/17/2012 2:01 PM
16	handouts, current trend information	1/13/2012 2:55 PM
17	Information about accredited, legitimate programs	1/12/2012 4:36 PM
18	Information period . . . . we lackmaterials.	1/12/2012 3:33 PM
19	money for transportation costs to visit the campus.It is so vital for students to come to the campus, but budgets do not have money.	1/12/2012 11:43 AM
20	Contacts	1/12/2012 11:04 AM
21	anything you could provide would be more than I have now	1/12/2012 10:13 AM
22	Same as above.	1/12/2012 8:50 AM
23	websites	1/12/2012 8:24 AM
24	Anything available.	1/12/2012 8:05 AM
25	All the careers in the construction cluster. Required training for the different fields within construction (ie apprenticeships), the different levels: apprentice, journey men, master). A listing of all the possible employment opportunities for someone with a construction management degree.	1/11/2012 9:33 PM
26	types of courses to take in high school to prepare, job opportunties, how CM relates to sustainable building jobs and opportunties. How I can get more female and minority studnets interested.	1/11/2012 7:28 PM
27	I really haven't checked in to this program much, not because of lack of resources, but because I've not had interested students.	1/11/2012 2:58 PM
28	Flyers, course catalogs, financial aid opportunities. Listing of available programs and locations.	1/11/2012 2:49 PM

29	If we were to have someone come and speak with us, we'd need to do it in under an hour. We just have so little time to meet.	1/11/2012 2:41 PM
30	Ideas for curriculum integration especially in math, science and English fields, that also align with state standards for assessment.	1/11/2012 2:36 PM
31	A list of websites, perhaps?	1/11/2012 2:31 PM
32	It's just not realistic to attend trainings on all of the careers out there.	1/11/2012 2:15 PM

Q46 Comments

Answered: 19 Skipped: 129

#	Responses	Date
1	None	1/26/2012 10:41 AM
2	Make sure that the CSU Naviance information page includes Construction Management so our students who complete personality profiles and career surveys can receive accurate information about colleges who offer this program.	1/23/2012 9:56 PM
3	I was confused on the first set of questions "A typical Construction Manager IS good at..." I treated them as saying they "should" be good at. Hope I didn't mess it up for you.	1/23/2012 1:07 PM
4	In this economy I am wodering what the cuurent job market is in this field and if this is a good time for students to be entering the CM program/field.	1/23/2012 10:54 AM
5	Having info about the field is helpful to me as I try to guide interested students. I do not know if our teachers would have time or interested in a lesson in the class on the topic.	1/23/2012 10:47 AM
6	As a teenager and young adult I worked at a lumber yard and worked closely with CM and general contractors. I have been on site at hundreds of jobs. I know and understand what it takes to be a CM. Unfortunantly, at Fairivew High School, I have zero students this year interested in pursuing a degree in this area. Students are not exposed to any type of Construction anything in their day to day curriculum. I feel as though I can advise anyone in what it takes to be a CM. But, have not had any interst thus far.	1/23/2012 10:01 AM
7	At my previous school, we allowed students to attend Warren Tech, which has a great Construction Management/Science program. At my current school, students are not allowed to leave school due to the closed campus policy and the need for them to be here for all 6 classes of the day.	1/20/2012 2:21 PM
8	I am concerned about advising/recommending a career in construction management when I do not know what the future projections are for the career. career projections would be helpful in any literature or information.	1/18/2012 9:33 AM
9	I am in a unique position in that I have an undergrad degree in civil engineering and worked in the CM field prior to becoming a counselor. I think general school counselor knowledge base is limited with regard to CM and engineering fields. I find the best tools to educate the counselors and the students are guest presentations to 6-10th graders about the career field. Good Luck!	1/12/2012 7:21 PM
10	current school funding and the numbers of students assigned to a single counselor are prohibative small rural school counselor have many roles - career and college couseling are just a small portion	1/12/2012 10:15 AM
11	The reason that I responded that I would not want to be included with the CM or academic or voc teachers to do lessons is because of TIME. I know academic teachers will not give up that time and I know counselors do not have the time or interest to get involved with the preperations of lessons with voc teachers, besides the voc teachers are the experts in that area so if any coordinating would be set up, it would be with them if they had the time and interset.	1/12/2012 8:56 AM
12	In the past 3 years, my case load has almost doubled due to budget cut backs. I have no time to a lesson on CM... You might consider contacting school districts to see about presenting something at district counseling meeting (offer to bring food).	1/12/2012 8:13 AM
13	it was really hard to answer the questions without knowing what you meant by "typical" My husband is in the construction field so I have more knowledge and awareness than most of my colleagues. I also have a vocation education background prior to my role as a counselor.	1/11/2012 9:37 PM
14	I have many students who are interested in this area, but typically have lower gpa, test scores but have a passion for construction, building and creating.. would like to know options for them or how to get them motivated or connected with someone to help them learn how to be successful in school	1/11/2012 7:31 PM
15	Survey seemed slanted when using terms like "most". I can tell you my opinion but to say "most" is still my opinion and probably less accurate. I welcome any information that will help students and their interest in the CM career!	1/11/2012 3:24 PM

16	As mentioned before, CSU's CM program should meet with our STEM coordinators to meet interested students. Additionally, attending our college fair in the fall would help you meet a lot of students of various backgrounds.	1/11/2012 2:53 PM
17	I would like the collaboration opportunity to exist between my teachers in those content areas and your educators!	1/11/2012 2:53 PM
18	Wanted to explain why I disagree that CM belongs in K12. We are losing music teachers and librarians in my district. If / when we get them back, I would agree to incorporating other elective ideas.	1/11/2012 2:32 PM
19	Good Luck!!!	1/11/2012 2:17 PM

List of Abbreviations

American Counselor Association (ACA)

American Society of Civil Engineers (ASCE)

Associated Schools for Construction (ASC)

Association of Building Contractors (ABC)

Association of General Contractors (AGC)

Bachelor of Science (B.S.)

Colorado State University (CSU)

Construction Management (CM)

Construction Managers Association of America (CMAA)

High School Counselor Outreach Program (HSCOP)

National Science Foundation (NSF)

Needs Assessment Committee (NAC)

Project Management Professional (PMP)

Science, Technology, Engineering, and Mathematics (STEM)

Teaching Engineering to Counselors and Teachers (TECT)