AC 2011-1187: AN EXAMINATION OF MENTORING FUNCTIONS IN THE CAPSTONE COURSE

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An Examination of Mentoring Functions in the Capstone Course

Abstract

Throughout the literature detailing projects in engineering capstone courses, researchers frequently refer to the faculty role as that of a mentor. As such studies make clear, the role of mentoring in capstone projects is critical to support students in the progression of the course. Yet the concept itself remains relatively ill-defined in the engineering education literature, making it more challenging for researchers and educators alike to identify patterns and best practices across contexts. Using a framework developed by Kram to characterize a variety of mentoring functions, this paper describes the key functions and roles associated with mentoring in the capstone course as well as a factors that can influence these mentoring environments. The results provide the engineering education community with a more complete understanding of the nature of design teaching in a way that can be used not only for professional development of current design faculty, but also in the training of new design educators.

Introduction

The capstone course in engineering emerged as a result of the perceived lack of practical skills in graduates that resulted from a strong focus on theoretical knowledge in the curriculum in the cold war era [1, 2]. Among the strategies for addressing that imbalance, ABET, Inc. now required that programs incorporate a capstone design experience as a way for students to integrate their experiences in their curriculum while simultaneously developing technical and non-technical skills [3]. As such, capstone courses have been recognized as one of the most common implementations of project-based learning in engineering education [4]. Students in the capstone course are involved in realistic projects that provide them with the opportunity to apply knowledge from prior science and engineering coursework to analyze and solve engineering problems, while emphasizing professional skills such as written and oral communication and teamwork [5-7].

Importantly, the wide variety of professional and technical learning outcomes in capstone courses, combined with the experiential project-based structure, require a different pedagogical approach than typically seen in the engineering courses focused on knowledge acquisition. Within these project-based learning environments, faculty serve a variety of functions, including advising, consulting, coaching, managing, and motivating students to facilitate learning [8-11]. Faculty teaching in project-based environments also have a strong role in classroom management and procedural facilitation throughout the project [9]. Across the literature on capstone courses, these functions typically fall into three structural categories (with many instructors operating in multiple categories): instructors that lead class meetings, course coordinators that are responsible for class management as the assignment of grades, and project advisors who provide technical guidance, and industry representatives that support and guide the project problem [5-7]. In each of these position, faculty members engage in activities that fall under the general heading of “mentoring.” Data from a national survey demonstrated that regardless of their position in the course, faculty consistently perceived their role as guiding the scope of the project, aiding students with identifying necessary technical information, assisting students in the development of their deliverables, and maintaining student motivation and involvement in the course [12]. These types of activities have typically been classified as "mentoring" in the capstone literature, though the term has also been used interchangeably with coaching, supervising, and managing. The terms, however, typically remain ill-defined and and subject to tacit rather than explicity understanding [5-7, 13]. The tacit nature of design teaching knowledge makes it difficult both to assess the impact of specific practices on student learning and to provide appropriate faculty development support for new design educators.

To bridge this gap and provide a step towards identifying best practices and developing means to better support both new and experience faculty, this paper draws on an established framework for mentoring to analyze the results of a national survey and describe the nature of mentoring as it is currently enacted by capstone faculty.

Mentoring

Outside engineering education, mentoring has been studied in a wide variety of situations that include the mentoring of youth by adults in community and social environments, students by faculty in academia, and new employees by senior colleagues in the workplace [14]. Each of these contexts presents variations in approaches that greatly change the mentoring relationship. Despite these variations, however, Eby et al. [14] have identified five characteristics of mentoring that are common across their review of mentoring literature:

1) mentoring is a relationship between individuals,
2) mentoring is a learning partnership,
3) mentoring is a process of a mentor supporting a protégé,
4) the relationship is reciprocal, with both the mentor and protégé benefitting from the relationship, and
5) mentoring relationships change over time.

Several studies have developed theoretical models that examine these aspects of the mentoring relationship. One such model is Kram's mentoring functions [15] which focuses on the process of the mentor supporting the protégé. From this study, Kram identified the mentoring process into two major functions: career development and psychosocial development [15]. Each major function has a series of associated subfunctions.

The **career development function** consists of subfunctions targeted at preparing or promoting protégés in their careers [16]. The related subfunctions include providing sponsorship, exposure and visibility, coaching, challenging assignments, and protection to the protégé [15]. *Sponsorship* has been identified by the public support of a protégé by a mentor. Within education, such opportunities would include nominating students for scholarships, writing of letters of recommendation for future jobs, allowing the student to build a reputation[15]. *Exposure and visibility* are similar to sponsorship in that they aid in the development of the reputation, but rather than the reputation being based on the words of the mentor, the protégé is given the opportunity to highlight their competence and performance through a variety of opportunities with other senior members of the community[15]. *Coaching* is directly related to the advancement of the protégé's knowledge through the sharing of ideas and the supplying of feedback at critical events [15]. This function is closely tied to providing *challenging assignments*. These challenging assignments allow for the protégé increasing their current skills and developing new ones through the support, training and feedback of those more experienced [15]. Within these challenging assignments, *protection* is key to the reputation of the protégé. Protection is given to the protégé in situations where it is not appropriate to expose the protégé to the larger community [15]. Frequently these situations occur when the protégé's tasks were not accomplished as expected or if the protégé is new to a field or experience. In these situations, it is the mentor's responsibility to intervene and mediate a difficult situation when the protégé is ill equipped to handle the challenge.

The mentoring associated with **psychosocial development** focuses on supporting the protégé's personal and emotional self, including their sense of competence, identity, and effectiveness in their professional role [16]. The related subfunctions are characterized by role modeling, acceptance and confirmation, counseling, and friendship by the mentor to the protégé [15]. Rol*e modeling* is one of the most commonly reported of the mentoring functions, in which the mentor exhibits the attitudes, values, and behaviors that the protégé seeks to emulate [15]. *Acceptance* and *confirmation* are offered to the protégé through the support and encouragement of the protégé allowing them to experiment with new behaviors that continue their acceptance. This function is key to the basic trust and respect between the mentor and protégé [15]. Often times throughout a career, or academia, a protégé may experience situations that cause them to have internal conflicts with their own capabilities or the community and will require the mentoring function of *counseling* [15]. In these situations, the mentor seeks to solve the problems by providing counseling in the form of feedback and alternative perspectives on the issue. As with many of the psychosocial functions, mutual trust and respect are a critical component for their success. Through the development of this relationship, frequent positive interactions begin to develop a *friendship* that cultivates informal exchanges about work and non-work related experiences allowing them to interact more comfortably with those in authority positions [15].

It is important to note that this model was original developed by Kram following her study of career development of young managers at a manufacturing organization. Since then, however, several studies have used the model as a means to describe mentoring in the collegiate setting. Tenebaum et al. [17] has proven through a factor analysis that the model can be used to measure mentoring in graduate school [16]. Other studies similar to Wolfe et al. [18] have shown how the model can be applied in undergraduate education. In the case of capstone design, we argue, Kram's model is particularly appropriate because the capstone experience operates in the borderland between school and work and faculty often seek to replicate workplace contexts, even as they maintain the relative safety of an academic course. The capstone course introduces a unique scenario where students are frequently situated in the context of an industrial design project, either simulated or actual, while remaining within the expectations of an academic setting, and thus both academic and workplace mentoring functions may be at work. The common difference between workplace mentoring and that seen in academia is that the mentoring relationship in academia is characterized by the mentoring of a student in a discipline by a faculty member. Additionally, the career functions are less focused on promotion through a career, as they are on the preparation of future careers. The wide application of Kram's model across contexts makes it well-suited to capturing this spectrum.

Factors Affecting Mentoring Relationships
While Kram's model of mentoring has been frequently used and empirically assessed in a variety of settings, other mentoring models, while not frequently used or validated, draw attention to the variables that can influence the mentoring relationship. These variables, or mentoring factors, include the institutional contexts, mentor characteristics, protégé characteristics, duration of the mentoring relationship and development of the mentoring relationship [16, 19, 20]. Johnson et al. [16] note that greater attention needs to given to the variables that account for and control mentoring relationships and their outcomes as mentoring is context specific. Such factors are particularly important in the capstone experience because the structure and configurations of these courses can vary significantly from discipline to discipline and institution to institutions [12].

Research Questions
Given the importance of mentoring in supporting the integration of engineering theory and practice and the comprehension of the open-endedness of problems [21], an understanding of the function and roles of this mentorship can help faculty more effectively support student learning. Consequently, using the theoretical frameworks Kram's mentoring functions; this paper addresses the following research questions:

1. How is mentoring enacted in engineering capstone design courses (ECDC)?
2. What are the factors associated with mentoring functions in ECDC?

Addressing these questions can lay the foundation for more robust analyses of capstone teaching by helping researchers and practitioners alike make tacit practices explicit through a common language.

Methodology

During the Fall of 2009, a survey was distributed to 1258 capstone design faculty, with 491 responses. The survey was a first stage of a larger study exploring teaching in capstone courses (ExCDE project). This survey included a measure of teacher expertise, developed using models of expertise from K-12 literature, and was validated using a three stage process that evaluated its content and construct validity [12, 22]. While the survey was not developed to explore Kram's mentoring functions in particular, it was designed to explore faculty teaching practices broadly, and 24 of the survey items can be classified in terms of Kram's functions (Table 2).

These items were located in the ExCDE faculty survey in the section labeled "faculty beliefs". The items were Likert style, allowing the respondents to rate their perception of the importance of the given statements, ranging on a five-point scale from "unimportant" to "very important". A reliability examination revealed that all 24 items indicated an internal consistency of $\alpha = .846$. Validation of the items was conducted through a content validation, which was achieved through expert review of the items, to ensure that they were representative of the mentoring framework. Additional validation was conducted using a confirmatory factor analysis.

Using these items and their responses, a confirmatory factor analysis (CFA) was conducted in order to sort the items into their related mentoring function categories. A confirmatory factor analysis determines the loading of measured variable on a given set of factors. In this instance, those factors are the 9 mentoring functions described earlier. This approach was used instead of an exploratory factor analysis (EFA), which explores the structure of the data set, the CFA allowed for the structure of the mentoring model to be tested using the items in the survey. The results of this analysis and the items weighting in each of the mentoring functions can be seen in Appendix A.

Through this process, the questions seen in Table 1were broken into their individual mentoring functions, noted by an “X”. As can be seen, only “sponsorship” was not readily identified, but could be addressed through the mentoring function of “exposure and visibility” which will be elaborated in the reporting of the findings.

Table 2. Classification of item surveys to mentoring functions

Question	Career Functions					Psychosocial Functions			
	Sponsorship	Exposure/ Visibility	Coaching	Protection	Challenging Assignment	Role Modeling	Acceptance/ Confirmation	Counseling	Friendship
1. How important do you consider the following purpose of capstone design									
Enable students to synthesize & apply prior work	-	-	-	-	-	-	-	-	-
Teach design considerations	-	-	-	-	-	-	-	-	-
Teach new technical content	-	-	-	-	-	-	-	-	-
Introduce students to new experiences	-	-	-	-	-	-	X	-	-
Enable students to publish work	-	X	-	-	-	-	-	-	-
Enable students to get involved with professional societies	-	X	-	-	-	-	-	-	-
Enable students to network	-	X	-	-	-	-	-	-	-
2. How important do you consider the following student learning outcomes in the capstone course?									
Grow as individuals	-	-	-	-	-	-	X	-	-
Grow as professionals	-	-	-	-	-	-	X	-	-
4. With respect to your primary role in the course, how important are the following responsibilities?									
Provide general topic knowledge	-	-	-	-	-	X	-	-	-
Provide technical expertise	-	-	-	-	-	X	-	-	-
Troubleshoot/Solve problems	-	-	-	-	-	X	-	-	-
Mediate team interactions	-	-	X	-	-	-	-	-	-
Provide guided questions	-	-	X	-	-	-	-	-	-
Provide suggestions & ideas	-	-	X	-	-	-	-	-	-
Provide solutions	-	-	-	-	-	-	-	X	-
Tell students what to do	-	-	-	-	-	-	-	X	-
5. Based on your experience, how important do you consider the following qualities in defining a "good" capstone instructor?									
Allow students to interpret data & make decisions on their own	-	-	-	-	X	-	-	-	-
Allow students to make mistakes	-	-	-	-	X	-	-	-	-
Know students work habits & personalities	-	-	-	-	-	-	-	-	X
Keep up with projects	-	-	-	X	-	-	-	-	-
6. Please rate your agreement with the following issues									
I keep up with the status and progress of all projects in my course	-	-	-	X	-	-	-	-	-
I keep up with how well each team is functioning throughout the term	-	-	-	X	-	-	-	-	-
I put a lot of effort into getting to know my students personally	-	-	-	-	-	-	-	-	X

Sample

The findings of this study represent the responses of a national survey of engineering capstone faculty; the response rate was 39% (n=491), representing 53% of all ABET accredited engineering programs in the United States. These respondents span five primary engineering fields: chemical, civil/environmental, electrical/computer, industrial/manufacturing, and mechanical/aerospace engineering (Figure 1) [12]. The 36% of participants that identified themselves as Other either taught in multiple capstone courses, like electrical and computer, or taught in more specialized disciplines such as nuclear engineering. Respondents included full professors (36%), associate professors (23%), assistant professors (10.2%), and instructors (16%). The majority of respondents were also teaching other courses in addition to the capstone course (85%), were advising at least one graduate student (62%), and held a doctoral degree (86.5%). They also had 8 or more years experience teaching in general (77%), more than 8 years experience teaching the capstone course (51%), and had over 6 years experience working outside of academia (55%). Additional reporting of the development of the survey and its respondents can be found in publications by Pembridge and Paretti [12, 22]

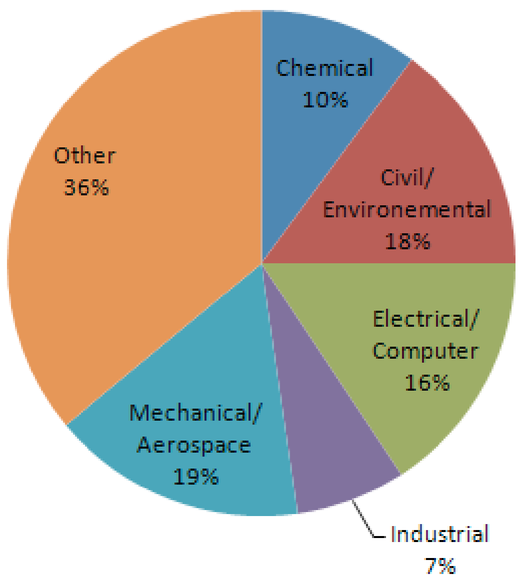

Figure 1: Distribution of departmental responses

Data Analysis

The quantitative analysis for the faculty survey include both a descriptive statistics of the items in Table 1 and a correlation analyses between those items and the mentoring factors previously addressed. This analysis and the confirmatory factor analysis was conducted using the statistical software PASW statistics v. 18.0.3.

The correlation analyses was used to examine the relationship between mentoring functions and demographic characteristics such as faculty rank, workload, level of education, experience, length of mentoring relationship, and institutional profile (Table 3). Such an analysis is critical to understanding if and how mentoring may vary by context such that any best practices subsequently identified can be contextualized appropriately.

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Table 4. Factors that can influence mentoring practices represented in capstone survey

Faculty Background	Teaching Practices / Course Management	Institutional & Department Demographics
• Faculty rank • Highest degree achieved • # of courses currently being taught • # of students being advised • Amount of teaching experience • Faculty preparation • Amount of scholarly reading	• Frequency of faculty interactions in class, labs, and studio settings • Frequency of lecture • Size of teams	• Highest degree awarded by Institution • Public / Private • % of students enrolled in engineering • % of undergraduate students • # of undergrads enrolled • # of Bachelor's degrees awarded by department • % of faculty involved in capstone course

The correlation between mentoring function items and demographic characteristics information was conducted using the non-parametric correlation test, Spearman Rank-order test. The Spearman rank-order test is bivariate measure of association between two variables where

$$\rho_S = \frac{Cov(rank(M_{funct}), rank(M_{factor}))}{\sqrt{Var(rank(M_{funct}))}\sqrt{VAR(rank(M_{factor}))}}$$

where that null hypothesis states that that there is no correlation between the given mentoring function item response and the mentoring factor. The alternative, states that there is a correlation:

$$H_O: \rho_S = 0$$
$$H_A: \rho_S \neq 0$$

Findings

Descriptive Statistics: Career Functions

The career functions identified in Kram's mentoring model are composed of sponsorship, exposure and visibility, coaching, protection, and challenging assignments. These functions enable the student to gain knowledge that will allow them to understand and operate in their future careers as engineers. Many of Kram's career functions emerged as dominant practices in capstone teaching, as seen in Figure 2.

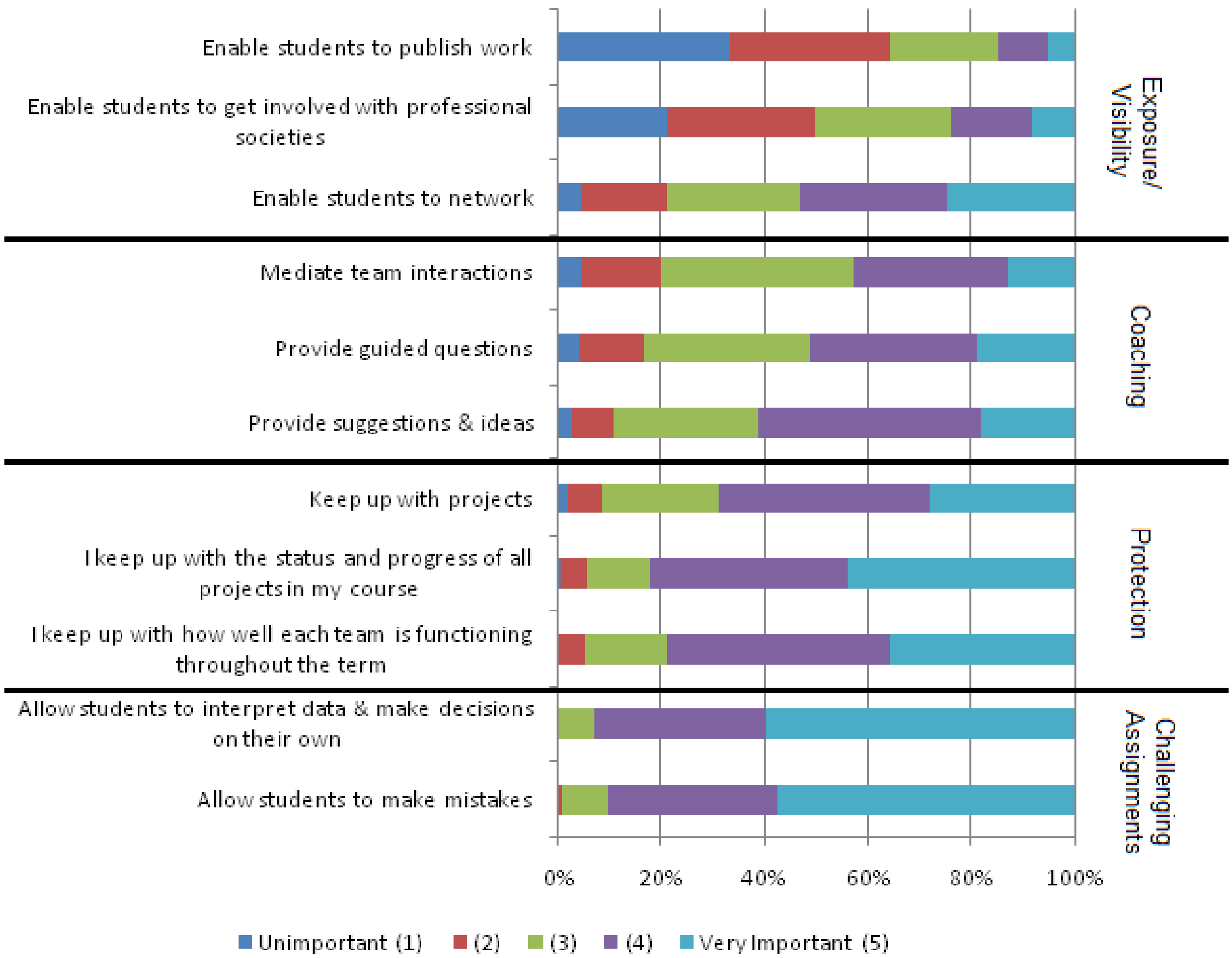

Figure 2: Distribution of survey responses for mentoring functions that support career development

When examining the importance of faculty roles in supporting career development of their students throughout the capstone course, faculty deem it critical to ensure the success of the project and support the student learning throughout the course. The function of coaching was well aligned with the descriptions of the capstone course; about 42% of the faculty felt that it was important to mediate team interactions. More emphasis was placed on asking guided questions (51%) and offering suggestions and ideas (61%) that would allow students to succeed. These coaching functions also aligned with the function of challenging assignments as faculty felt it was very important to allowing students to work on their own without much interference from the faculty, where they can work with the data and make their own decisions (60%) and allow the students to make mistakes (57%). As supported by Kram's model, these challenging assignments can tend to reinforce the knowledge that the student has, but the opportunity for mistakes also provides a teachable moments where feedback is necessary to their career development. Within these challenging assignments, faculty also pursue an approach to protection in a proactive manner by feeling it important to know what is going on with the projects (69%), especially knowing the status and progress (82%), as well as knowing how the teams working on the project are functioning (79%).

Faculty were varied in their approach to providing the mentoring function of exposure and visibility. Over half of the respondents found that it was important to enable the students in the capstone course to network (53%). In contrast, about half also felt that it was not the role of the capstone course or the faculty in it to enable students to get involved with professional societies (50%) and even fewer enabled their students to publish the work from the course (34%), though visibility could also be experienced through students' exposure to industry partners. From the faculty responses, it appears that the interaction with future colleagues and professionals in the field is more important than developing interests in further academic pursuits. Therefore, faculty may be promoting the industry jobs rather than the route towards graduate studies.

Descriptive Statistics: Psychosocial Functions

The mentoring functions associated with psychosocial development are aimed at promoting the students competence, identity, and effectiveness in their professional role. As part of Kram's model, this has been achieved by providing role modeling, acceptance and confirmation, counseling, and friendship. Figure 3 shows how faculty view the importance of functions that describe these roles in the capstone course.

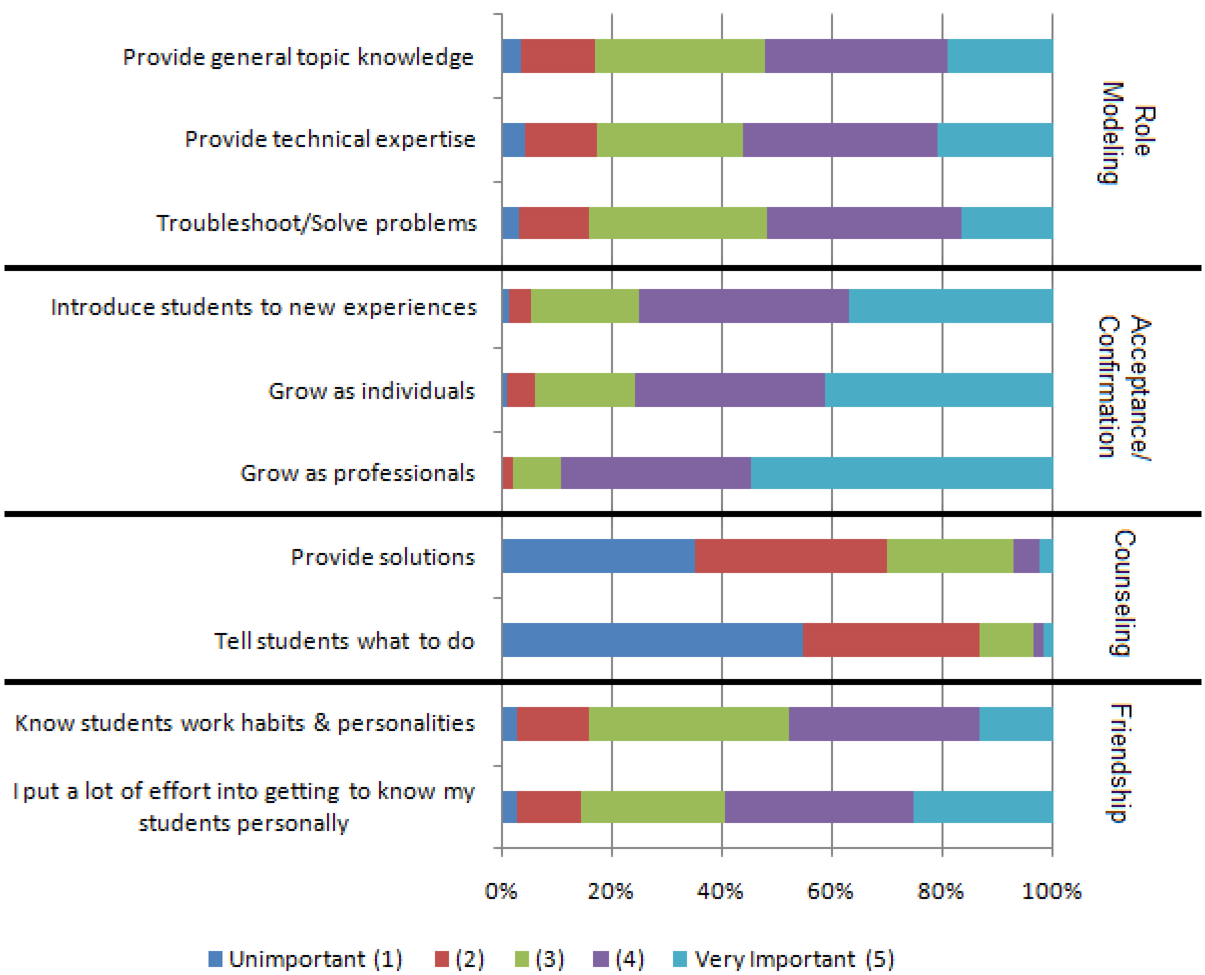

Figure 3: Distribution of survey responses for mentoring functions that support psychosocial development

Throughout mentoring research literature, modeling has been recognized as one of the most common forms of supporting the development of the protégé. In the capstone course, a little over half the faculty perceive that it is important to provide general topic knowledge (52%) and technical expertise (56%) to the students as well as assisting the students by troubleshooting and solving problems for them (52%). Each of these functions require the faculty to show the students how they are applying their own knowledge and skills in meeting the project requirements. While not seen in the survey results directly, we note that these functions can also provide the students with a model of the values and beliefs in their field provided the faculty are accurately describing their approach to solving the problem and relaying the knowledge.

Additional, psychosocial development can be seen through the function of acceptance and confirmation as faculty feel that it is very important for their students to grow as professionals (55%) and individuals (41%). While the survey did not explore what types of situations the students would experience that would require acceptance and confirmation, faculty feel that the capstone course is a key place for this type of psychosocial development. This mentoring function is closely followed by the mentoring function of friendship. In the action of this function, faculty feel that it is important to know the work habits and personalities of their students (48%) and put a lot of effort to get to know their students personally (59%). Within the workplace environment, Kram noted that young managers that had been supported by mentors through friendship frequently had informal exchanges with their mentors. Similarly, related results from this capstone survey [12] have shown that the interactions between capstone faculty and their students are frequent and often times occur outside of the classroom. This indicates that within the capstone course faculty go beyond the simple lecturer role and actively seek to build relationships with their students in an effort to advance their career and psychosocial development.

One area that was not as well described by the survey was the psychosocial function of counseling. The function was represented by the faculties belief that is was their role to provide solutions to the students and tell them what to do. In these situations faculty were strongly opposed to this with over 75% feeling that this was unimportant to their role. This does not mean that faculty do not provide counseling, but it may be seen in formats other than providing direct instruction to the students.

Correlation Analysis: Factors associated with mentoring practices

The examination of the correlation between the items related to mentoring functions and variables such as contextual and personal demographics of the mentoring relationship identified little to no correlations with the possible factors identified in table 2. There were only 3 occurrences where one of the factors listed in Table 2 had a low correlation ($\rho > .20$), but significant ($p < .01$) with any of the mentoring function descriptions seen in Table 1. Although the survey data provides no insight into the sources of these correlations, we offer possibilities for future researchers to consider.

1. The more frequently that faculty read materials about design or capstone education, the more they tend to feel that keeping up with status and progress of projects is more important ($r=.205$, $p<.01$).

The mentoring function of protection ensures that the students are not placed in situations that could hinder their progression to a career in engineering. One possible explanation for the link between this practice and familiarity with design education literature is that faculty who have a wider exposure to current advancements, practices, and opportunities in design education may be more aware of the types of situations in which students may experience the difficulty, and thus may more actively seek to monitor team activities. Alternately, faculty who are more alert to the kinds of challenges and problems students confront may be more likely to seek out professional resources (including education-related literature) to provide teaching strategies for addressing these problems.

2, The more frequently faculty interact with their students in a lab space, the more they tend to enable their students to publish their work ($r=.208$, $p<.01$).
One possible explanation for this correlation is that students who are working in a designated lab space and being encourage to publish may be working on projects directly related to the faculty work, or to work that has been sponsored by outside funding and requires documentation beyond final written report. These contexts tend to increases students' exposure and visibility vis-á-vis their future careers. This correlation may also be related to the sponsorship subfunction; faculty who apply for grants are then sponsoring their students to complete the project, thus identifying them as capable of achieving the desired outcomes.

3. Frequency of interaction in large studio has a positive correlation with faculty troubleshooting and solve problems ($r=.221$, $p<.01$).
The openness of the studio environment may allow faculty to become more engaged with the projects as they observe the students at work on the project more frequently. In this environment, faculty have the opportunity to see a wide variety of areas to troubleshoot, can observe students "at work" rather than only at meetings in which the students "report out," and can model the appropriate action when dealing with complex problems.

While some behavioral correlations did exist, as noted above, in general the correlation analysis indicated that for the survey respondents, the factors associated with the individual, institutional, and departmental demographics do not affect faculty mentoring activities associated with career and psychosocial development. Instead, the workspace itself and faculty's own engagement in the community of practice surrounding design education - factors that themselves could be associated with best practices - are the only factors that demonstrate significant effects. Therefore, while this data may not be generalizable to all capstone courses we can assume that these variables have a limited impact on the mentoring of students in the capstone course. Such findings are critical as we advance our understanding of design education because they imply that mentoring practices can have broad applicability across contexts.

Conclusions

Using data from prior studies on capstone faculty beliefs and teaching practices, we can see that specific approaches to their course can be aligned with those representative of mentoring rather than teaching. Based on Kram's model of mentoring functions as a framework for examining this aspect of the capstone pedagogy, faculty seek to promote the career and psychosocial development of the students in their course through activities that align well with Kram's subfunctions. These functions and subfunctions provide an important first step in identifying explicit mentoring practices that currently dominate capstone education. This identification can then serve a useful role in framing discussions of capstone teaching, identifying best practices, and developing a more concrete and complex understanding of faculty student interactions that can be used to help develop the next generation of design educators. Toward this end, future studies can begin to examine the student learning outcomes directly related to specific mentoring functions.

Future Work

This paper presents an initial examination of mentoring in the capstone courses. Additional examinations of relevant data, including faculty interviews and student surveys will seek to elaborate on the findings presented here. The additional analyses will also explore mentoring in each of the 5 major disciplines represented by the survey respondents as the contextual variables of the mentoring process can influence specific mentoring functions.

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Appendix A: Item loading from an oblique rotation in a confirmatory factor analysis of mentoring functions in capstone courses

Rotated Component Matrix[a]

	Component								
	1	2	3	4	5	6	7	8	9
TB1b - Purpose	.134	-.005	-.136	-.021	.054	.022	-.078	.667	.391
TB1c - Purpose	.001	.065	-.010	.178	.093	.203	.017	.073	.807
TB1d - Purpose	.460	.030	.450	.191	.068	-.189	.101	-.040	.480
TB1e - Purpose	.014	-.039	.277	.626	.187	-.008	.060	-.060	.166
TB1h - Purpose	.168	.074	.411	.066	.680	-.005	.138	.023	-.009
TB1i - Purpose	.119	.048	.185	.134	.776	.068	.005	.134	.149
TB1j - Purpose	.011	.062	-.133	.215	.798	.113	.025	-.020	.002
TB2m - Learning	.057	.037	.036	.831	.127	.040	.129	.200	.039
TB2n - Learning	.099	.143	-.139	.801	.117	.161	.100	.072	.058
TB4j - Role	.839	.061	.102	.103	.143	.169	.028	-.003	.031
TB4k - Role	.862	.044	.149	.024	.086	.104	-.018	.109	-.006
TB4l - Role	.535	-.003	.276	-.003	-.006	.370	.060	.260	.083
TB4m - Role	.029	.092	.048	.017	.152	.696	.063	.200	.153
TB4n - Role	.198	.085	.137	.088	.025	.704	.166	-.126	.109
TB4o - Role	.311	.036	.337	.171	.005	.588	-.018	.063	-.187
TB4p - Role	.280	.039	.747	-.008	.135	.228	-.120	.106	-.040
TB4q - Role	.126	.085	.800	.058	.100	.189	-.111	.045	.026
TB5g - Good	-.016	.138	-.078	.136	.124	.081	.841	.035	.087
TB5h - Good	.052	.053	-.082	.103	-.013	.105	.882	.077	-.049
TB5i - Good	.069	.194	.175	.165	.136	.040	.263	.653	-.096
TB5j - Good	.119	.534	.101	.067	-.034	.089	.083	.493	.028
TB6e - Issues	.056	.913	.028	-.010	.067	.027	.068	.062	.035
TB6f - Issues	-.001	.860	.018	.070	.107	.090	.109	.084	.059
TB6g - Issues	-.007	.415	.165	.224	-.025	.119	-.046	.482	-.190

* Oblique rotation