Qualitative Case Study of Women Leaders and Administrators in Construction Education Programs

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Abstract—Construction industry is growing very fast in various aspects. However, the population of women in construction workforce is very low. This qualitative research aims at exploring the experience of women leaders and administrators in construction program, empower them in the decision-making process, and find ways to create safe and encouraging work environments for them. This is believed to be possible through creating platform to educate men and women in shared leadership context, providing education and career development for women in the construction industry, and facilitating access to training and retraining programs for future leaders of the industry. The populations of the research are women who are in administrative positions in a research-intensive Midwestern University. First, previous trends of women’s presence in construction industry was investigated. Next, women who are currently active in leadership roles were interviewed. The findings from the research describes in detail the case study of experience of women leaders in construction programs in creating change, empowering young leaders for the future of construction workforce, gaining an understanding of ways to sustain and improve their existence in the workforce.

Index terms—women studies, educational leadership, construction education, case study

INTRODUCTION

Construction is one of America’s most important industries that help other enterprises to succeed in a globally competitive market. The United States Bureau of Labor Statistics (BLS) reports that slightly less than 10 million Americans are employed in some sector with the construction industry (Russell, 2007). According to the BLS data (BLS 2008, 2009, 2010, 2011), women have consistently constituted less than 10% of the workforce in the construction industry, which shows the under representation of women in this field (Issa, 2014).

As literature demonstrates, female construction students as well as female construction engineers exposed traditional attitudes towards male and female roles, abilities, objectives which result in women being directed away from construction even if they showed interest earlier (Enshassia A., 2008). While women often do not want a traditional female career, a lot of non-traditional positions for them do not provide a suitable environment to work. The presence of women who took the step to enter this program is valuable to the researcher because they must face many different barriers toward training and employment while they decided to work in a non-traditional field. There is plenty of both quantitative and qualitative research about the challenges women face in the male-dominant industries such as construction and manufacturing (David Arditi, 2009), (Cindy L. Menches, 2007), (Andrew R. J. Dainty, 2006). However, there is a vast need of qualitative research to find out how to empower and support women to survive and thrive in the existing condition since they have already made the decision to enter the important part of workforce of construction. This qualitative case study of female leaders at a Midwestern research-intensive institute in
construction and civil engineering department, aims at filling the gap in the literature how to train, retrain, sustain, and increase workforce. Endeavors are necessary to change attitudes, promote involvement by women, accommodate women, and improve their working conditions. The study is designed to conduct interviews with female leaders and administrators which informs ways for having sustainable workforce pipelines through continuous education and mentoring women to step up as leaders.

Research Questions and Purpose Statement
This qualitative study seeks to explore the experience of women leaders and administrators in construction and civil engineering programs to gain an understanding of ways to sustain and improve their existence in the leadership roles to further support other women stay in this field. The central research question of the study is: What are the experiences of the women in construction and being a part of the workforce? Cambridge Dictionary Press defines construction as “the work of building or making something, especially buildings, bridges, etc.: the particular type of structure, materials, etc. that something has.” (Press, 2019). Creswell (2013) suggests five to seven sub-questions in a qualitative study (Creswell, 2013). The following sub-questions have been developed from the general research question:

- RQ1: What perceptions do women in construction have regarding their work environment?
- RQ2: How do women describe their success or failure in the construction leadership positions?
- RQ3: How are women encouraged to stay in the construction leadership roles?
- RQ4: What are some of the strategies to educate and nurture future women leaders in construction departments?

Rationale for Qualitative Design
Creswell (2013) reports that qualitative research is appropriate when an issue requires in-depth exploration and the researcher desires a complex understanding of a problem (Creswell, 2013). As the purpose of this study is to understand the experience of women leaders in construction departments and uncover their perspectives on the workplace they deal with, as well as factors that contribute to their success and progress in the field, a qualitative study is deemed appropriate. Lyn (2013) suggests qualitative research is appropriate in these situations:

“1. If the purpose is to understand an area where little is known or where previously offered understanding appears inadequate (thin, biased, or partial), 2. If the purpose is to make sense of the complex situations, multi-context data, and changing and shifting phenomena, 3. If the purpose is to learn from the participant in a setting or a process the way they experience it, 4. If the purpose is to construct a theory or theoretical framework that reflects reality rather than your own perspective.”(Lyn, 2013, page 27)

The researcher wants to discover the central themes and analysis of success of women in construction programs beyond what has previously offered and learn from the participants who lead construction and civil engineering programs. Babchuk (2010) mentioned the use of qualitative research to learn about participants’ cultural scenes, deep life experiences and their world, to help empower individuals to share their stories and for the purpose of social change (Wayne A. Babchuk, 2010). This research study seeks to help individuals, understand women’s experience in construction culture and context and increase awareness in general for the workforce in construction.

LITERATURE REVIEW

A through data base search has been done to find the related literature. Total number of 63 articles were founded in the searched sources including ASCE, Google scholar, Scopus, science links according to the systematic literature review procedure (Robinson & Lowe, 2015). Figure 1 shows the review of the literature process flowchart. The literature review was limited to articles available to the researcher using search terms restricted to women in engineering, women in construction, women in STEM, STEM for women. As a result, the gap in the literature was identified and linked to the research significance and contribution of this research to the body of literature was magnified. The literature as early as 2003 was reviewed to provide the foundational studies that has been conducted; however, the review of literature is derived mostly from the existing sources starting from 2009 to 2018.
Figure 1: systematic approach to the review of the literature for women studies in engineering

Different agencies had various approaches to cover the shortages of construction industry workforce. They developed programs with the goal of training new and untapped labor sources for high-skill positions in the industry (Cindy L. Menches, 2007). Women constitute 9% in 2012 and 9.1% in 2013 of the workforce construction occupations (BLS reports, 2014). Physiological, psychological, and sociological phenomena about women in construction industry have been addressed through the literature that includes equality, attitudes, work-life balance, work environment, and differences between men and women (Wesley Scott, 1996), (Isaacs, 2001), (S. Dabke & Daraiseh, 2008), (Martin Loosemore, 2004). Many reasons have been identified in the literature which hinders women from progress in construction industry including difficult work-family balancing act, slow career progression within the industry and its culture, attitude barriers caused by male dominance, and blatantly masculine culture that consists of conflicts and hostility (Cindy L. Menches, 2007), (D. Amaratunga, 2003), (Fiori, 2003). Some studies has been published which looks at the under-representation of women in other engineering fields such as architecture, manufacturing, and civil engineering (Allen C. Estes, 2011), (Leonard, 2010). Similar qualitative studies about empowering women in construction industry have been done around the world which address the issues in countries such as Nigeria, Australia, and India (Annette Barnabas, 2009), (K.J. Adogbo, 2015), (Jane English, 2012), (Helen Lingard, 2010). Some part of the existing literature focuses on women in leadership positions in construction industry which to some extent experience similar challenges that students face in the educational environment (David Ardi, 2009), (GIRALDO, 2010). Lyn in the integrity of the qualitative research states that exploring the literature and spending time in the setting will help the researcher focus on a clearer research question (Lyn, 2013). The researcher perspective and position affect the analysis of research and design of it. Merriam (2009) suggests to use case study when researcher is asking “how” and “why” questions, or if the variables are so embedded in the situation as to be impossible to identify ahead of time, and when the researcher has less control has over “a contemporary set of events” (Merriam, 2009). All the three reasons mentioned above qualified the research as a case study. The conducted literature review and familiarity of the researcher directed her to describe the research questions in detail in the next section.

METHODS

Researcher Positioning and Reflexivity

A researcher’s background and position affect what they choose to research, the angle of investigation, the most appropriate methods, the most fitting findings, and the framing and statement of conclusions. The researcher experienced leadership roles in construction engineering programs. The researcher experienced women in leadership contexts through various programs for women in STEM education in U.S. As Berger discusses the relevant researcher’s positioning include personal demographic background, like gender, race, affiliation, age, sexual orientation, immigration status, personal experiences, language, beliefs, biases, preferences, theoretical, political and ideological positioning, and emotional feedbacks to participant (Berger, 2013). The researcher identifies with the group under study from the standpoint that a key aspect of this study is to sustain and to succeed as a woman in the engineering programs and entering the workforce.

Qualitative Case Study Design

It is important to get detailed and rich descriptions of the case that is selected. Lichtman discussed when you have a specific entity, program, individual, or project you are studying and your question involved with asking what happened when the program was developed, or how did an individual behave, then you probably can do a case study (Lichtman, 2013). This
research is about women administrators in a Midwestern Research Institute in construction related programs. The time frame in which study was conducted is one semester. The case study is limited to the number of the individual female leaders in the program.

As Lichtman states when researchers say they are doing case study research, they are most likely identifying a single entity to study. A case can be limited to a characteristic, trait, or behavior (Lichtman, 2013). Couples of themes are identified in the study of women in construction programs such as students as the most important focus of women leaders, importance of face to face communication instead of technology, finding support in leadership related and women related programs to be able to be successful and creating change through flexibility. This case study is limited to 4 women leaders. The study is special in the way that investigates the success stories and positive aspect of being a women leader in the construction industry unlike all the other literature which talked about barriers and constraints women experience. Also, an informed consent letter was prepared to be signed by all the participants in the study. Participation in the study was voluntary. To ensure the qualitative study is ethically justified, the researcher chose to remove identifying information from the records and seek permission from the participants. The researcher accepts responsibility to make sure that participants are informed, to the extent possible, about the nature of the study, and are informed about the possible risk that are imposed on them (Lichtman, 2013). Opportunistic sampling was used in this case study.

In qualitative research Creswell (2015) suggests the following for the data collection process:

- The participants and sites are identified on purposeful sampling based on the places and people that can best help the researcher understand the central phenomena.
- Research relies on interviews and documents so that researcher does not restrict the views of participants while gathering data with a few open-ended questions.
- It is needed to record the information that is provided by the participants. The researcher recorded information on self-designed protocols that helped organize information reported by participants to each question.
- Existing sensitivity of challenges that occur during the face-to-face data collection (Creswell, Collecting qualitative data, 2015).

This study purposefully selected four individuals and the interview site which helped understand the themes. One-on-One, semi-structured interviews were conducted, in which a list of general issue-oriented questions was asked of each participant. Each participant was given a list of the questions prior to the interview so they understand there was an agenda to the discussion. However, the interviewer allowed the participant to guide the flow of the conversation as much as possible. The interviews were scheduled for one hour and were held at the participants’ office. The interviews were audio-recorded, and the interviewer took notes and transcribed them.

Data Analysis
Data analysis involves organizing the data, conducting a preliminary scan of the database, coding
and organizing themes, illustrating the data, and creating the interpretations of them. This research followed the guidelines of Creswell for the data analysis section which include: organizing the data, reducing the data into themes through a coding process, and representing the data in a table or discussion. The interviews were transcribed into written computer documents. Following the organization of data, the researcher continued analysis, by getting a sense of the whole database, by reading them multiple times and writing notes or memos.

The next step was describing, classifying, and interpreting data into codes and themes. The researcher needs to develop themes or dimensions, and provide an interpretation based on her view. Since the researcher studied more than one case, a table was created to display the data from individual cases according to some uniform framework. Then it was easier to look for the similarities and differences among the cases. The facts about the case should be described.

**FINDINGS**

In terms of data analysis in case study research Yin explains multiple aspects including computer-assisted tools, theoretical prepositions, developing a case description, and examining plausible rival explanation. In this study, two analytical techniques have been articulated including: pattern matching and explanation building. Some common themes were derived from the interviews which are shown in Table 1.

<table>
<thead>
<tr>
<th>Theme</th>
<th>Definition</th>
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<tr>
<td>Importance of face to face communication over online communication</td>
<td>This defines the comments of interviewees about the face to face communication in comparison to online forms of communication such as email, Facebook, and social media among students, staff, and administrators</td>
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<tr>
<td>Finding support in leadership-related and women-related programs to be able to be successful</td>
<td>This theme implies the existence of programs which promotes women in leadership roles. These programs exist in college level, department level and nation-wide</td>
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Table 1: Themes identified from the interviews

Creating change through flexibility and understanding the team members

Pseudonyms been given to each respondent to secure their identity. A range of participants have contributed to the data and the quotes are from all the interviewees. The person's emotion, tone, nonverbal communication, has been considered in analyzing the data as suggested by Creswell. Table 2 shows the quotes from interviews that are correlated to themes based on each interview question.

<table>
<thead>
<tr>
<th>Study/Subject</th>
<th>Question</th>
<th>Mary: It helped me to figure out problems and how to solve them; it helped in developing people skills. Also, research and class work helped me to progress on my career</th>
</tr>
</thead>
<tbody>
<tr>
<td>How did your education and trainings help you for administrative positions in this industry?</td>
<td>Mary: It helped me to figure out problems and how to solve them; it helped in developing people skills. Also, research and class work helped me to progress on my career</td>
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<td>What is a typical day like for you?</td>
<td>Mary: There is no typical day</td>
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<tr>
<td>Kathy: I feel like there is no typical day and they all are different</td>
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Table 2: Selected quotes from interview that are correlated to themes

<table>
<thead>
<tr>
<th>Study Subject/Question</th>
<th>Mary: What do you most enjoy about your work? Kathy: People, aha moments” Caroline: the freedom it provides and the ability to think about interesting problems, I enjoy working with students</th>
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<tr>
<td>What do you enjoy most about your work? Kathy: the freedom it provides and the ability to think about interesting problems, I enjoy working with students</td>
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<td>Kathy: Being responsive. Building on strength of those people who enjoy change. Face to face time. Not pigeon-holing people into boxes. Healthy competition? Bringing fun into work place, having them engage as part of the process and as a part of decision making, graduate student you don’t necessarily get a lot of training for a lot of parts of the job that you have.</td>
<td></td>
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| Kathy: I enjoy working with students a lot | Kathy: People, aha moments” Caroline: the freedom it provides and the ability to think about interesting problems, I enjoy working with students |
An issue that reputedly mentioned in the interviews is that most of the leaders of construction departments did not receive any leadership training prior to their role. After accepting their administrative positions, they are invited to leadership conferences and networking events. Another interviewee mentioned she has exercised leadership as a part of the graduate student assembly during her PhD program. Kathy said: “when I was in graduate school we had graduate student organization and I worked with our graduate chair that was a good exercise”

All the interviewees focused on the students as the integral part of their leadership role. One of the leaders, Linda mentioned: “I really like graduate students, I wanna do graduate programs and faculty and so that is kinda how it worked. I never dreamed to be a faculty member but it turned out I really liked it and it was fun working with students”.

The interviewees were asked about the type of the communication with their students, colleagues and followers and how they feel about it. All the subjects of the study mentioned the importance of face-to-face communication contrary to online communication. As Caroline said: “relationships are built, they don’t happen through email or Facebook”. Or Kathy said: “chat, FB, those devices are only devices, they help but they can also hurt, and when you focus too much on that device, what should I do differently to connect.” Linda mentioned: “when you are sitting in a room I think an administrator can be much more successful at trying to maintain mutual respect”

In preparing future women leaders interviewees had various comments. Mary emphasized giving people a lot of flexibility, promoting leaders of team but recognize everyone’s contribution, providing support, problem solving, strategically thinking how to make processes better are a part of preparing leaders for future. “So, you need to understand the pressure that people are working under and giving them information so they can evaluate things.” Also, it is repeated over during interviews that everyone has some leadership capability. It is the responsibility of the leader and administrator to be responsive to people and guide them. As Caroline said: “We don’t teach our students how to negotiate many things in faculty positions, there is a lot of situations that deal with negotiation”

As Kathy mentioned: “I think the other aspect of academic work is that we are trained to be very critical you know we are supposed to be looking critically, working with data but I think sometimes people are not necessary being very accepting which is not a bad thing but it is not as relaxed and calm as an environment, you have to make it a pleasant place so you need to understand the pressure that people are working under and giving them information so they can evaluate things.”

To involve students in the organization efforts and prepare them for future leadership positions Caroline suggested: “I try to figure out what their strength are, what they are good at, and even the weaknesses and how they can improve those, my followers are students”. Caroline emphasized the importance of being vulnerable as leaders so followers can move forward in the learning process by learning from both perfections and imperfections. She said: “there is nothing wrong with letting people know this is your first time, be vulnerable, be honest, when you are vulnerable people get it. They know you are cool, you are not gonna learn unless you fail, the only failure is not learning anything from it. If you didn’t get what you wanted, try again trying second time, doing something different”. Mary was asked to talk about the differences between good leaders and great leaders. Her answer shed some light on how to support and sustain women and great leaders. She said: “Great leaders are continuously developing, looking for opportunity; good leaders are ok with status quo. Great leader challenges to go above and beyond, inspire, never ask somebody to do something they can’t, honest, trustworthy. Good leaders have some of these but not all”.

One of the major questions of the study is how to encourage women to work in construction workforce was answered by the interviewees. Kathy said: “Well I think you have to recognize people, you should not only promote leaders of team but recognize everyone contribution to make sure teams are not, and the work is equally distributed over some time. And you have to have some common goals that the team is working toward and then anybody can buy into those then usually team works more effectively”. Caroline emphasized the importance of celebrating success with the students to promote growth and sustaining women in the workforce. She said: “In the process of create more school activities, celebrate little things and accomplishments.” Or Kathy said: “promote
long day workshop, everybody is a leader in some sort of way. Put that in action, leverage that, support that.”

DISCUSSION

In the interview themes were emerged to successfully answer the research question. I have provided a description of findings regarding each sub-research question.

Answer to research question 1: Women are focused on providing support and insight for others at work and help the community to move further with their goals. They are aware of the opportunities that are provided for women in the work place to move their careers further.

Answer to research question 2: Women describe their success by looking at how successful their followers are in achieving their goals. Also, they feel successful when they can create an environment where everybody is able to communicate and connect. The importance of face-to-face communication has been brought up in the interviews many times. Also, success is achieved when people have a lot of aha moments and be cognizant of change.

Answer to research question 3: An important team that repeatedly mentioned is the importance of working in teams, being more united, and having a culture versus separation, being honest and upfront about the changes that are happening in the workplace. Also, another solution is to build on the strength of everyone in the team to move forward with the goals of the organization. Bringing fun and joy in the workplace was brought up in two interviews. At the same time, it is important to recognize the process of encouraging women to stay and thrive in the workforce is a slow process. Small steps need to be taken to build on what is being done right. Success should be celebrated in the process.

Answer to research question 4: Creating programs in all levels for freshman to senior students to prepare them for leadership positions is one of the common themes found by the study. Also, it is important to create a fun and joyful environment for women to grow together. There are initiatives that encourage young women to acquire education and training to enter construction workforce. These initiatives should be promoted widely. The cooperative efforts among colleges and allocation of right resources for women will do much to increase sustainability of women leaders and employers in construction industry.

CONCLUSION

Preliminary findings indicate the importance of community and togetherness in sustaining women in construction workforce. Women are retained in the field of construction when they experience support from their peers and leaders. Also, they are willing to go above and beyond when they can create improvements and solve problems. The author believes even though the number of women in construction workforce is very low, it is possible to make changes by taking small steps and engage women and men in supporting each other to thrive.

REFERENCES


