The Faculty Mentors' Perceptions through Collaborative Expertise

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The present study employed a quantitative content analysis strategy for examining mentoring to reveal the actual expertise and faculty learning experienced in an intensive three-day workshop. A total of 12 mentors, including supervisory mentors participated in in-depth discussions regarding their experiences as a mentor. The analysis of co-occurrence network revealed the conditions for effective mentoring included mentors' involvement in mentoring, enhancing their knowledge and skills to about mentoring; To elucidate the major characteristics the learning of mentors themselves, the results indicated the following three points: (1) mentor-mentee pairings should take account of mentees' strengths and limitations, and where the mentors and mentees get along with both personally and professionally; (2) mentors were inspired by other mentors' actual expertise and mentoring style which were shared in mentor meetings; and (3) mentors had opportunities to reflect on their own mentorship via participation in group mentoring.

Keywords: Cooperating Faculty, Educational Developer, Faculty Growth, Professional Development, Qualitative Research

Introduction

Mentorship for Professional Development in Higher Education

New, mid-career, and senior academics need differentiated professional development (Fraser, Gosling & Sorcinelli, 2010). It has been suggested that professional faculty development could be enhanced by fostering scholarly teaching through systematic and critical examinations on how learning could be improved in each discipline (Burbank & Kauchak, 2003; Rathgen, 2006; Taylor, 2010). Professional development in the postsecondary landscape is a relatively new field of practice. Educational reform movements had given many faculty greater control over their professional lives; however, this mandated accountability has proven to be a challenge for some (Castle, 2006). Fraser et al. (2010) proposed three professional development models; professional service, counseling, and collegial; with the third collegial model being associated with a "working-together approach" that enables faculty to examine their own practices, reflect on their methods, socialize with mentors (Kato et al., 2018), and be involved in collaborative projects with other faculty to improve their practice through action research, teaching peer reviews, and teaching portfolio development. Therefore, the most effective way optimizes these faculty development practices is peer mentoring founded in real-world practice.

Mentorship has been defined as a developmental relationship in which a more experienced practitioner (mentor) assists and guides a novice or less experienced mentee (Aslan & Öcal, 2012; Huybrecht et al., 2011). Mentorship programs have been introduced in medical and health care education to assist students and novice nurses develop competencies, build (self) confidence, develop networking and socializing skills, and provide career opportunities (Huybrecht et.al, 2011; Kato, 2020). The most important mentorship characteristics are enthusiasm, a positive attitude, experience, and a willingness to spend time with mentees (Huybrecht et al., 2011). It has been commonly accepted in teacher education that mentor teachers lead, guide, and advise other less experienced teachers in work situations that are characterized by mutual trust and belief. As mentoring has often been seen as an essential step to career success, mentors are responsible for improving their mentees' competences in areas such as consulting, mediation, negotiation, intervention, and clinical supervision (Koki, 1997; Ramani et al., 2006).

As well as contributing to the professionalization of education, the formalization of academic mentor roles could add another step on the career ladder for faculty members, (Koki, 1997). Actual outcomes would need to be identified through mentee satisfaction assessments, supervision, and self-reflection based on the mentoring experiences, in-depth discussions, and peer conference feedback (Burbank & Kaucheck, 2003; Koki, 1997). Qualitative studies have identified several benefits of mentoring, such as the personal satisfaction from passing knowledge and skills on to others, exhilaration from the fresh energy of the mentees, improved job performance from the new perspectives gained from the mentees, loyalty and support from the mentees, and organizational recognition (Kram, 1988).

However, not all mentors recognize the value of the mentoring relationship. Mentors and educators in specialized areas rarely receive mentoring training and are therefore often ill equipped to face major mentoring challenges and responsibilities (Ramani et al., 2006). Despite the evidence supporting the positive mentoring outcomes for both the mentor and the mentee, there has been little attention paid to the influencing factors for the initiation of mentoring relationships, namely mentorship (Allen, Poteet, & Burroughs, 1997; Turban & Dougherty, 1994).

Previous Studies on Faculty Mentor Growth in Teaching Portfolio Workshops

Guided by mentor faculty, the Osaka Prefecture University College of Technology has been conducting intensive three-day seminars to develop teaching portfolios since 2009, with the main purpose being to engage mid-career faculty members in teaching and learning theory, practice, and scholarship and to establish a faculty community of practice that provides higher education mentorship and leadership (Kato et al., 2018; Kato, 2019; Kato, 2020). Faculty seminar participants reflect on their own teaching practices by developing their teaching portfolios and the faculty mentors have the opportunity to consult with a supervisor who has significant experience in teaching and mentoring different levels of trainees at peer-support "mentor meetings."

Some previous studies analyzed the final mentor meeting discussions using the Steps for Coding and Theorization method, which is a sequential, thematic, and qualitative data analysis technique (Otani, 2008; Otani, 2011), in which the qualitative data analysis on the small scale data provided by the 11 mentors was integrated into the theoretical coding. The analysis found that the mentors had encountered six main experiences: <reflecting on an immature mentor>; <waiting for a mentee's awareness>; <collecting education data>; <recognizing a mentee's growth>; <leadership skills>; and <the values of the teaching portfolio>.

Another study used a quantitative content analysis design to explore the mentors' perceptions of their mentorship as part of their professional development and their evaluation of their mentoring experiences (Kato, 2019). The discussions at the final meeting were analyzed used a Tiny Text Miner tool, from which several differences were identified between the three mentor groups (novice, experienced, and supervisory). Previous exploratory studies (Kato et al., 2018; Kato, 2019) have yielded significant insights into mentorship, the influence that mentor experiences have, and the difficulties and personal satisfaction experienced while mentoring.

Kato's (2019) analysis found that five words; share, perform, great, this time, impression; appeared less in the novice mentors' reflections than in the experienced mentors and supervisors' reports, but two nouns, mentee and educational philosophy, which were directly related to teaching portfolio development, appeared more in the novices' reports than in the experienced mentors' reports. The experienced mentors' reflections included more nouns such as say, share, impression, and teacher, which indicated the importance of sharing information between mentors to improve their mentoring skills.

Therefore, the study conducted in this paper complements the previous studies that identified the difficulties and personal satisfaction mentors experienced while mentoring (Kato et al., 2018; Kato, 2019; Kato, 2020). Theoretically, the more centrally a topic was processed, the more extensively that topic was discussed, and the higher the frequency of words related to the topic appeared in the reflective discussion transcripts from the final mentor meeting. Given the importance of mentoring to the professional development of both mentors and mentees, the primary purpose of this study was to develop an initial research framework that encompassed

both the individual and situational factors related to the willingness to mentor others and the motivations to be a good mentor. Therefore, this study contributes to mentoring research as it revealed the factors closely related to first-line mentors' willingness to assist and support others.

Research Question

The main aim of this quantitative study was to determine the mentors' perceptions of their mentorship, their growth as professionals and educators, and the degree to which their mentoring experiences had influenced their awareness of good mentorship, which was guided by the following research questions.

> 1) What do mentors believe makes a good mentor?
> 2) What do mentors consider are the advantages and the drawbacks of providing mentorship?

Methods

Participants

Ten mentors (A–J) and two supervisors (K, L) participated in this project. Of the 12 participants, seven mentors (A–D, H–J) and one supervisor (L) taught at the same college of technology, three mentors (E, F, G) were from national colleges of technology, and one supervisory mentor (K) was invited from another university. Eight mentees participated to develop their own teaching portfolios, and two mentees who had completed their teaching portfolios expanded them to create academic portfolios. Table 1 shows the mentor participants' mentoring experiences, academic backgrounds, and affiliations.

Table 1
Mentors' and Mentees' Profiles in Workshop

Mentor	Mentoring experience	Mentors' Academic	Mentors' Affiliation	Mentee	Mentees' Academic	Mentees' Affiliation
A	> ten times	Mechatronics	Technical College	M	Mathematics	Technical College
B	Seven times	Mechatronics	Technical College	N	Nutrition Science	University
C	Five times	Mechatronics	Technical College	O	Architecture	University
D	> ten times	Japanese Literature	Technical College	P	Chemistry	University
E	Twice	Philosophy	Technical College	Q	Mathematics	Technical College
F	Eight times	Mathematics	Technical College	R	English	Technical College
G	Seven times	Chemistry	Technical College	S	Mechatronics	Technical College
H	> ten times	Chemistry	Technical College	T	Nursing	University
I	> ten times	Civil Engineering	Technical College	U	Nutrition Science	University
J	> ten times	Information Science	Technical College	V	Chemistry	Technical College
K*	> ten times	Educational Technology	University			
L*	Six times	Mechanical Engineering	Technical College			

(* supervisor)

Procedure

Over the intensive three-day workshop, the mentors were organized into two groups, each of which were led and supported by the two supervisors (K and L). Each mentor group held six meetings to discuss ways to support the mentees and promote collaborative mentorship for the development of the teaching portfolios. In the final group discussion, the supervisor (K) primarily focused on the mentors' learning perceptions regarding the mentoring process and asked them to describe their processes. To ensure that each mentor commented and reflected on their own mentor experiences, the supervisor (K) gave them three key questions: (1) What did you do in your role as a mentor?; (2) How do you feel about your own development as a professional or a mentor?; and (3) What is your opinion of the peer mentoring meeting?. The questions were intended to elucidate the mentors' thoughts about the tasks involved in their mentoring roles, the advantages gained from the mentoring, and any drawbacks they had faced.

The supervisor K, as the facilitator, asked the mentors to describe the learning they had gained from the mentoring and learning processes. The mentors were told the purpose of this research and the way the data would be treated. Therefore, after gaining the participants' permission, the final meeting of 73.58 minutes was conducted and recorded on September 12, 2019, with the transcripts from the 12 mentors comprising the data to be analyzed.

Preparation for Data Analysis

Qualitative text analysis or text mining is any systematic reduction of a text to a standard set of statistically manipulatable symbols that represent the presence, intensity, and/or frequency of characteristics relevant to social science (Shikano, 2017; Goodman-Delahunty & Wakabayashi, 2012). When a text mining approach is employed, the more centrally a topic is processed, the more extensively that topic is discussed, and the higher the frequency of words related to that topic in the transcripts.

This technique simplifies Japanese language morphological analysis for large text datasets. The transcripts of the 12 mentors were analyzed using Text Mining Studio, a text mining software application for Japanese languages developed by NTT DATA Mathematical Systems. The transcripts were prepared for analysis as follows. First, any synonyms used in the final discussion and reports were identified and substituted with a single word to reduce the number of word categories and ensure more accurate results. Plural nouns were also replaced by singular nouns so that the software recognized them as the same word, and proper nouns were identified by their function and transformed into an appropriate noun with the same meaning. After this preliminary work, the software counted the word frequencies generated by the 12 mentors during the final mentor meetings.

Second, criteria were applied for the inclusion of morphemes or meaningful semantic units. Morphemes belonging to any of the following groups were included in the analysis: adjective-main; adjective; adjectival noun; and noun-verbal (suru-verb), except for commonly used verbs, which was because verbs such as "say," "think," and "feel" that appeared widely in previous studies (Kato 2019; Kato, 2020) did not refer to any specific mentorship or faculty growth concepts or ideas. Using the words that met the criteria, association analysis was then conducted to understand the topics and generate a content map of the final mentor meeting discussions. Similar to principal component analysis, the categorical data displayed and summarized sets of words in a graphical form based on the co-occurrence between the high frequency words (Higuchi, 2016), which permitted inferences to be made about the contribution of each mentor to the major topics discussed in the final meeting. Each figure derived from the association analysis depicted the co-occurrence relationships between each word and the respective discussion topics.

Results

Extracted Words on the Mentoring Experiences

A total of 4,129 words were extracted from the final meeting transcripts (73:58 minutes), with 1,173 different word types relating to the mentoring experience reflections. Table 2 shows the top 60 most frequently used words in the final mentor meeting. A wider variety of words emerged when the mentors were talking about good mentorship and there were 60 words related to the mentees' teaching portfolio development.

Table 2
Most Frequent Words in Rank Order

Rank	Word	Frequency	Rank	Word	Frequency
1	いう(say)	254	**31**	考える(think)	14
2	思う(feel)	108	**32**	役に立つ(useful)	14
3	良い(good)	73	**33**	うまい(good)	13
4	書く(write)	57	**34**	形(style)	11
5	やる(perform)	52	**35**	感じる(feel)	10
6	自分(self)	49	**36**	逆(opposite)	10
7	メンター(mentor)	48	**37**	質問(question)	10
8	スーパーバイザー(supervisor)	44	**38**	非常(very)	10
9	メンティー(mentee)	36	**39**	いく(go)	9
10	メンターミーティング(mentor meeting)	35	**40**	言葉(language)	9
11	人(person)	35	**41**	取る(take)	9
12	分かる(understand)	32	**42**	先生(teacher)	9
13	すごい(great)	30	**43**	スタートアップシート(start-up sheet)	8
14	メンタリング(mentoring)	26	**44**	持つ(have)	8
15	難しい(difficult)	25	**45**	情報(information)	8
16	意味(meaning)	24	**46**	本人(oneself)	8
17	違う(differ)	22	**47**	コメント(comment)	7
18	見る(see)	21	**48**	一回(once)	7
19	話(story)	21	**49**	皆さん(everyone)	7
20	TP(Teaching Portfolio)	20	**50**	次(next)	7
21	聞く(hear)	20	**51**	伝える(inform)	7
22	学ぶ(learn)	17	**52**	部分(part)	7
23	話す(speak)	17	**53**	辺(around)	7
24	ふう(like)	16	**54**	面白い(interesting)	6
25	感じ(impression)	16	**55**	1日目(the first day)	6
26	出る(show)	16	**56**	2日目(the second day)	6
27	理念(philosophy)	16	**57**	AP (Academic Portfolio)	6
28	しれる(can know)	15	**58**	メモ(memo)	6
29	使う(use)	15	**59**	経験(experience)	6
30	来る(come)	15	**60**	いる(be)	6

The text mining analysis identified four areas. First, general verbs such as *say, think, write,* and *perform* were the most frequently counted from the overall discussion by the 12 experienced mentors; however, these common verbs are likely to appear frequently in any story (Higuchi, 2016). Second, distinctive nouns, such as *TP (Teaching portfolio), mentor, mentee, supervisor, mentor, meeting,* and *mentoring* appeared in the mentorship reports on their mentees. Third, during the meeting discussion, the mentors also explained their own feelings toward their mentees and

other mentors using words such as *great, difficult,* and *good.* Fourth, the mentors frequently asked for the supervisors' and the other mentors' opinions and ideas to develop effective questions to promote the mentees' reflections, which could possibly explain the high frequency words *understand, learn, hear,* and *can know.* Therefore, the examination of the reflective transcripts and the word frequencies provided insight into a definition for good mentorship as a part of their career development.

Word Association Analysis on Mentoring Experiences

Word associations have been used in content analysis to statistically express the frequency of word groups that are often used together. To visually depict the frequently repeated words, an analysis was conducted using the text mining tool Text Mining Studio (NTT DATA Mathematical Systems). Common verbs such as *say, feel,* and *write* (Table 1) were excluded as they are likely to appear frequently in any story and did not refer to any specific good mentorship or faculty growth concepts. Therefore, to infer the unique and common reflective concepts in the mentors' discussions on their experiences and concepts of good mentorship, the word association analysis was conducted on the nouns, adjectives, and noun-adjectives that appeared more than three times.

Figure 1 shows the co-occurrence relationships between the high frequency reflection words (nodes) common to the experienced mentors' reflections. Bubble plots are an extension of scatter plots, and are used to look at the relationships between two words. Each dot in a bubble plot corresponds with a single data point, with the frequency of each word indicated by the dot size. Each line (edge) indicates the relationship between the words, with the bold lines showing the co-occurrence relationships between the common high frequency words. However, the word proximities that indicate the distance between two words did not reveal a strong relationship or a high topic frequency occurrence. If the words were not connected with any line, the relationship was considered to be weak.

Figure 1's fifty-six bubble plots show the unique high frequency words (nouns, adjectives, and noun-adjectives) that appeared three or more times, and the 45 lines indicate the relationships between the mentors' reflection concepts.
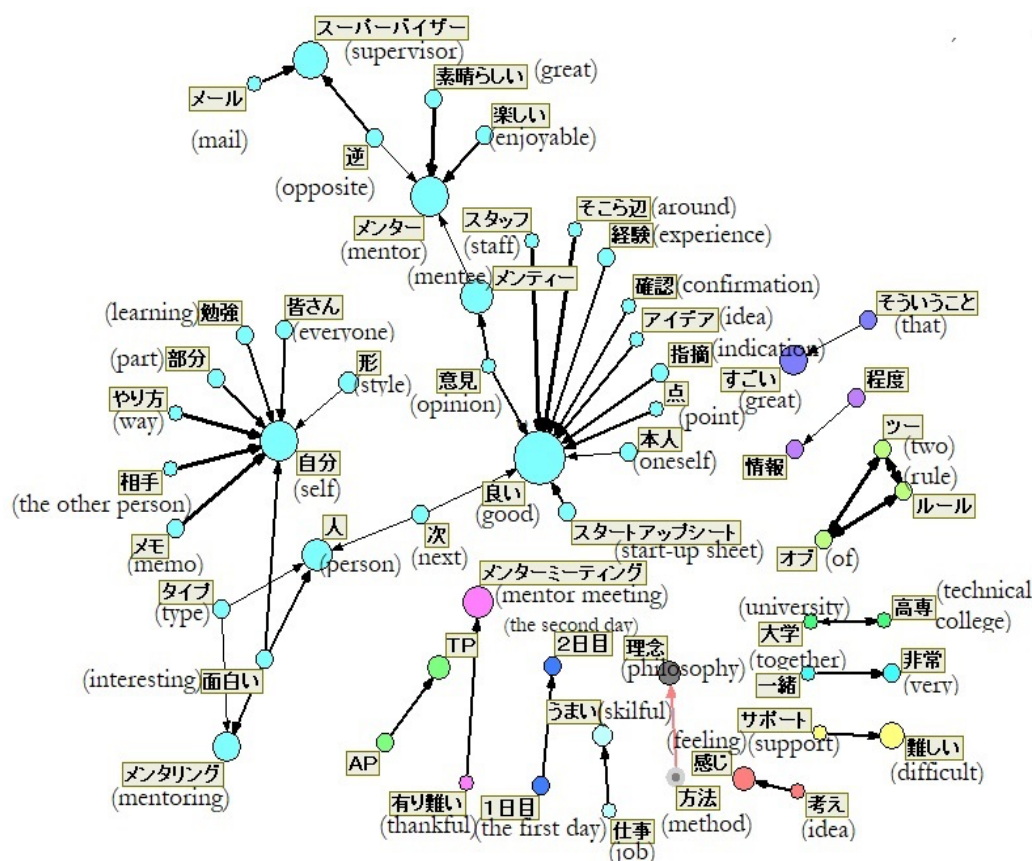
Figure 1. Co-occurrence network of the frequently occurring words

Text Mining Studio was employed to generated a co-occurrence network of major words, which allowed for an exploration of the words that were used together frequently. As shown in Figure 1, several groups of words were automatically detected and displayed using different colors to reveal the different aspects related to the mentoring experiences and the mentors' learning through their self-reflection on their own practice. The analysis revealed four major themes for the mentors' experiences.

1) Peer Mentoring as a Mentor Team

Figure 1 show that the word "mentor" was closely connected to "supervisor" and "mentee." One of the outcomes of the mentors' experiences was "enjoying" the increased collaboration with their supervisor, the other mentors, and gaining "great (ideas)" from their mentees through the one-to-one mentoring. Mentors reported that they learned from their mentees, from their participation in mentor meetings, and more generally from the opportunities to talk to others about their "mentee(s)" or their own mentorship.

2) Conditions for Effective Mentoring

The most frequently used word in the middle Figure 1 was "good," which was related to how the mentors felt about their identity and their increase in self-worth. The words with the strongest centrality were "idea," "opinion," "confirmation," "indication," "experience," and "oneself," which were connected to the mentorship with their mentee. The next central words "around" and "point" were related to the discussion points for "good mentorship," and the words "staff" and "start-up sheet" were important factors related to "good" mentoring conditions. The analysis, therefore, revealed the factors that the mentors felt contributed to effective mentoring.

3) Mentor Learning

The larger circle of "self" in Figure 1 was connected to "everyone" and "the other person," which indicated the other mentors and their mentees. The words "style," "way" and "part" indicated the learning that had been gained from the other mentors, such as how to record the mentoring process as a "memo." These co-occurrence words underpinned the mentor knowledge about good mentoring they had learned from their self-reflections and their participation in this seminar.

4) Benefits of Mentors through Mentor Pairing

An interesting finding in Figure 1 was the word association between "mentoring" and "person" as an important factor for good mentoring conditions. Hobson et al. found that mentoring was more likely to be successful when mentor-mentee pairings accounted for the mentees' strengths and limitations and when the mentors and mentees were both personally and professionally compatible (Hobson et al., 2009). This category included "type" and "interesting," which indicated two of the basic characteristics for good mentorship.

Discussion

This quantitative content analysis study explored experienced mentors' evaluations of their own mentoring experiences and their perceptions of the value of mentorship as part of their professional development. The results concurred with previous qualitative research and the findings enhanced previous insights. The specific characteristics of good mentorship and expertise confirmed the findings in earlier research on the values of collaborative group mentoring in mentor meetings (Kato, 2019; Kato, 2020).

Research question 1 was focused on the quality of good mentorship. Previous research (Kato et al., 2018) found that experienced mentors recognized the importance of assisting mentees to identify their problems. This tendency suggested that experienced mentors would emphasize the importance of information sharing between mentors to improve their mentor skills. This study added more complex and comprehensive images to the concept of effective mentoring, with the word analysis associated with the *Conditions for effective mentoring* finding that the strongest centrality was between "idea," "opinion," "confirmation," "indication," "experience," and "oneself," which revealed that the characteristics of good mentoring were developing skills and strategies to communicate with their mentees. Other central words, such as "around" and "point," were related to the discussion points during mentorship, and the words "staff" and "start-up sheet" were important factors for "good" mentoring conditions. The results described the experienced mentors' involvement in mentoring and the elements that had increased their mentoring knowledge and skills.

Research question 2 was related to the advantages and drawbacks of being a mentor; therefore, the co-occurrence relationships were analyzed to elucidate the benefits to the mentor. The mentors stated that they had learned from their mentees, from their participation in mentor meetings, and from their supervisors, which was closely related to the fourth identified theme, the *Benefits of mentors from mentor pairing* and the first theme, *Peer mentoring as a mentor team*. When discussing the third identified theme, *Mentor learning*, the mentors reported that they had learned from other mentors' effective mentoring styles and methods and had learned how to keep records, such as using a "memo," as an information management method for their mentees. During the mentor meetings, the mentors stated that they had had the opportunity to talk to others about teaching and learning in general, their mentees, and their own teaching in particular, and mentors who had been involved in mentoring in the past reported a greater willingness to mentor others. However, the experienced mentors did not report any mentoring disadvantages for either themselves or their mentees, which was not in agreement with previous research that found that novice mentors often experienced feelings of nervousness, conflict, or inadequacy when mentoring (Kato et al., 2018). Mentor I, however, reported that they had experienced some conflicts and dissatisfaction when their mentee had not accepted their ideas and opinions when developing the TP.

Conclusion

This study sought to determine how experienced mentors perceived their mentorship as part of their growth as professionals and educators and how their mentoring experiences had influenced their awareness of good mentorship. It was found that previous qualitative mentorship studies had only provided approximate classifications of the learning activities for mentors as they had only focused on selected aspects of the mentoring experiences (Kato et al., 2018; Kato, 2019); however, a more recent study enhanced the understanding of mentor growth by identifying the different mentorship perceptions from three different mentor groups (novice, experienced and supervisory (Kato, 2020). By using a quantitative content analysis focused on experienced mentors in this study, it was found that experienced mentors explicitly reflected on their own difficulties and satisfaction while mentoring.

Research question 1 sought to determine the factors of good mentorship, with the results of this study highlighting the complexities in educational development roles. As this study's author had collaborated with colleagues to design and conduct the intensive TP workshops, an intellectual educational development space was provided for the mentors' professional development. Many mentors expressed satisfaction and pride in their mentor roles and their mentees' progress. Some mentors mentioned that they had re-engaged with their profession, had become more committed to teaching, and had a revitalized enthusiasm for teaching. Involvement in mentoring had also aided the experienced mentors' careers by helping them identify their strengths and priorities. These findings suggested that the experienced mentors derived satisfaction and pride from undertaking their mentor role through and from their mentees' TP development progress and success (Kato et al. 2018).

Research question 2 found that the mentors felt that they had received more benefits mentoring others, with the specific benefits being the self and self-satisfaction job-related rewards. One theme that emerged from the mentor's responses was that they often learned as much from their mentees as their mentees learned from them. However, none of the experienced mentors reported that mentoring could be disadvantageous or harmful to the mentees or themselves.

This study extended previous mentoring research by identifying the factors that could influence good mentorship. A number of common themes emerged from the results that could be helpful in designing future qualitative and an alternative model for professional development investigations into effective collaboration. Quantitative research focused on good mentorship and mentor learning. Theoretical and specific research that could be used to guide good mentorship investigations is also needed, and research on effective mentoring processes and mentor learning is critical to designing reciprocal programs for both mentors and mentees to facilitate mentor fulfillment as part of professional development.

Acknowledgments

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