International Journal for Educational Media and Technology
2020, Vol.14, No. 1, pp.46-54

Different Features of Mentorship between Novice and Experienced Mentors

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The present study aims to reveal the communication skills and reviewing strategies adopted by developing mentors who attended six consecutive meetings in an intensive three-day workshop. Data were collected from the discussions and reports of 11 mentors (3 novice, 4 experienced, and 4 supervisory) and analyzed through quantitative content analyses method using the Tiny Text Miner (TTM) tool. To elucidate the major characteristics of good mentorship, the statistical analysis revealed the following three points: (1) the experienced mentors explicitly reflected on and explained their difficulties and satisfaction in mentoring; (2) novice mentors often expressed their worries and difficulties about their mentoring styles and communication skills; (3) regardless of their mentoring experience, several mentors often referred to their mentees' progress during teaching portfolio creation and consulted the mentoring process to determine the mentees' educational philosophy.

Keywords: Professional Development, Quantitative Research, Cooperating Faculty Mentors, Mentor Growth

Introduction

Mentoring for Professional Development

Professional Development as a field of practice is a relatively new phenomenon within the postsecondary landscape. In Japan, professional development programs were mandated to enhance the quality of university teaching and train faculty for their teaching responsibility by the government in 2007. As interest in educational reform movements increases, faculty members are gaining more control over their professional lives, although mandated accountability has proved a challenge for some (Castle, 2006). The field of professional development must support scholarly and institutional development of academics by providing differentiated support for new, midcareer, and senior academics (Fraser, Gosling, & Sorcinelli, 2010).

The literature suggests that the professional development for faculty can be enhanced though fostering scholarly teaching, that is, systematic and critical examinations of how learning can be improved in each discipline (Burbank & Kauchak, 2003, Rathgen, 2006; Taylor, 2010). Fraser, Gosling, and Sorcinelli (2010) proposed three models of professional development: professional service, counseling, and collegial. First, the professional service model is associated with providing academic support services such as computer-assisted learning, instructional design, and diversifying assessment. Second, the counseling model involves working with individual teachers to assist them in, adjusting to change in their institution, or to challenge they face in their teaching. The third model focuses on collaboration with academics in joint projects to improve their practice through action research, peer review of teaching, and teaching portfolio creation.

This third one is associated with "working-together approach", to enable faculty to examine their own practices, reflect on their methods, and socialize with mentors (Kato, 2018). This working-together approach enables faculty to take on a truly collaborative role instead of a passive one. To encourage professional collaboration of this type, participants can use alternative forms of inquiry, such as conducting peer observation, reporting on their own practices, and collaboratively reflecting in the development of teaching portfolios. Peer mentoring has been implemented as a way to broaden faculty's ability to take control of their professional lives and create opportunities to publicize their views of educational expectations (Clarke & Hollingsworth, 2002; Zwart, Wubbels, Bolhuis, & Bergen, 2008). Therefore, the

most effective method to optimize faculty development practices is peer mentoring founded in real-world practices, which may enable faculty to examine their own practices, reflect on their methods, and socialize with mentors.

In teacher education, it is commonly accepted that a mentor teacher leads, guides, and advises another teacher who is less experienced in a work situation characterized by mutual trust and belief. Indeed, mentoring is often identified as an essential step in achieving career success. Therefore, mentors must work toward improving their mentees' competence in areas such as consulting, mediation, negotiation, intervention, and clinical supervision (Koki, 1997; Ramani, Gruppen, & Kachur, 2006).

Especially, in medical and health care education, mentoring is also considered as a key strategy. Mentoring has been introduced as a mean to help students and novice nurses to develop competencies, (self) confidence, networking, socializing and career opportunities for mentees (Huybrecht, Loeckx, Quaeyheagens, Tobel, & Mistiaen, 2011).

Researchers are of the opinion that mentoring may be a valuable tool in educational reform for both novice teachers and experienced professionals. Formalizing the mentor role creates another niche in the career ladder of experienced professional faculty members and enhances the professionalism of education (Koki, 1997). Empirical evidence on peer mentoring has revealed that professional development for faculties can be improved through experimentation, observation, reflection, exchange of professional ideas, and shared problem-solving (Zwart et al., 2008; Chan et al., 2001). However, not all mentors recognize the value of a mentoring relationship. Since mentors and specialized educators are rarely trained on the mentoring process, they are often ill-equipped to face challenges when taking on a major mentoring responsibility (Ramani et al., 2006). In addition, the actual learning processes of individual faculty members that result from peer mentoring have not been thoroughly explored (Castle, 2006; Clarke & Hollingsworth, 2002; Zwart et al., 2008).

Mentor's Growth through Intensive Workshop for Teaching Portfolio

In the research field of professional development, one area that has started to receive greater attention is the study of professional developers themselves, the matter by which they learn about, enter into, and progress with the field (McDonald, 2010). Fraser et al. (2010) suggested that the field of professional development should learn more about adult professional theory, professional socialization of academics, and how their careers are structured to support academics in their personal and professional development. There has also been a shift in the role of professional developers, moving from support for teaching needs of individual faculty to a broad range of services, programs, and initiatives at institutional levels within post-secondary education (McDonald, 2010).

Since 2009, the Osaka Prefecture University College of Technology has conducted an intensive three-day seminar guided by mentor faculty to create teaching portfolios. It is designed to engage mid-career faculty members in teaching and learning theory, practice, and scholarship and establish and support a faculty community of practice that provides mentorship and leadership in higher education (Kato, 2013; Kato, 2014; Kato et al., 2018; Kato, 2019). Faculty participants enrolled in this seminar reflect on their own teaching practices through the creation of a teaching portfolio. At the same time, faculty mentors get opportunities to consult with a supervisor with a vast experience in teaching and mentoring different levels of trainees at peer-support "mentor meetings."

Previous studies have analyzed discussions at the final mentor meeting by employing the Steps for Coding and Theorization (SCAT) method, which is a sequential, thematic, and qualitative data analysis technique (Otani, 2008; Otani, 2011). With SCAT, the authors anecdotally reported the following six types of experiences that the mentors encounter: 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 Teaching Portfolio. In unbalanced mentee–mentor relationships, novice mentors particularly feel anxious and hence refrain from asking questions or advising older mentees; they are rather content with merely listening to their mentees' stories (Kato et al., 2018).

Data on learning from one's mentoring experience were divided into two categories and seven subcategories. Category 1 (reflecting on an immature mentor) included the following four subcategories: difficulties with human relations, the inductive approach, self-awareness of immaturity, and no sense of accomplishment (Kato et al., 2018).

The other study, with a quantitative content analysis design, intended to explore how mentors perceive mentorship as part of their professional development and how they evaluate their own mentoring experiences (Kato, 2019). The author analyzed the discussions at the final meeting using the Tiny Text Miner (TTM) tool. Differences among the three mentor groups (novice, experienced, and supervisory) were identified.

Previous exploratory studies (Kato et al. 2018; Kato, 2019) have yielded significant insights into individual mentors' awareness toward mentorship and have raised concerns that mentor experiences may influence the difficulties and personal satisfactions they experience while mentoring.

The research report here is conducted in the context of the "faculty mentor's growth". This study focuses on the professional growth and change of mentor faculty through the experiences at the intensive workshops conducted in the Osaka Prefecture University College of Technology since 2009.

The current study examined the process of "mentors' growth" by comparing three different group (novice, experienced, and supervisory) in the final mentor meeting. In accordance with previous findings, this study also investigated whether the same findings would be revealed by employing quantitative content analysis as those found in qualitative data analysis using SCAT (Kato et al., 2018), which proved efficient and valid as theorization from the relatively small-scale data.

Research Question

The present study seeks to investigate differences in what constitutes good mentorship among the novice, experienced, and supervisory mentors by comparing the results of the author's previous qualitative research (Kato et al. 2018; Kato, 2019). Within the scope of this primary aim, this study also investigates how mentoring experiences influence the awareness of good mentorship by comparing the images among them.

This study defined how mentors perceived mentorship as their growth of professionals and educators and how mentoring experiences influence their awareness of good mentorship. Under the heading of this main aim, the following research questions were addressed.

1. Were there differences in perception of mentorship among three groups: novice, experienced, and supervisory mentors?
2. Were there the same findings revealed by the previous qualitative and quantitative research?

Research Designs and Methods

Participants

Nine mentors and two supervisors participated in this project and were assigned to two groups, namely, Group A and Group B. Table 1 presents the distribution of the participants according to their mentoring experience, academic background, and affiliation. The 11 mentors included three novice mentors (D, E, and K) who had never worked with mentees before; four experienced mentors (C, H, I, and J); and four supervisory mentors and coordinators (A, B, F, and G) who were largely responsible for designing the workshop and leading peer-mentor meetings. Among the 11 mentors, two mentors were faculty developers working at universities, and nine mentors were faculty at technical colleges. Then, 11 mentors were categorized into three groups: novice, experienced, and supervisory mentors based on their mentoring experience.

Table 1
Mentors' Profiles

Group	Mentor	Age	Mentoring Experience	Academic Background	Affiliation
A	A*	Fifties	More than five times	Chemistry	Technical College
	B**	Forties	More than five times	Chemistry	Technical College
	C	Forties	Four times	Mechatronics	Technical College
	D	Forties	First time	Mechanical engineering	Technical College
	E	Thirties	First time	Education	University

B	F*	Fifties	More than five times	Educational technology	University
	G**	Fifties	More than five times	Mechatronics	Technical College
	H	Fifties	More than five times	Mathematics	Technical College
	I	Forties	More than five times	Information Science	Technical College
	J	Forties	Three times	Chemistry	Technical College
	K	Thirties	First time	Chemistry	Technical College

(* supervisor, ** coordinator)

Data Collection

Since 2009, the Osaka Prefecture University College of Technology has conducted an intensive three-day seminar guided by mentor teachers to create teaching portfolios. During the three-day workshop, each mentor group held six mentor meetings separately and discussed how to support mentees and promote collaborative mentorship in relation to the creation of teaching portfolios. Two group discussions were conducted and recorded with the participants' permission. Although Group A recorded discussions and reports at all six peer- mentor conferences, Group B only recorded their discussions during the final meeting on August 10, 2016.

In the group discussions, a supervisor served as a facilitator, encouraging the participants to reflect on their mentoring process as well as the changes they became aware of before and after the mentoring experience. The questions were intended to elicit the mentors' awareness of what their roles entailed and what problems and difficulties they experienced during mentoring. The supervisors, as interviewers, primarily addressed the mentors' learning perceptions from the mentoring process and asked them to describe such a process. The mentors were informed of the purposes of the research and how data would be treated. The author transcribed audio-recorded data after the meetings.

In addition to investigating how perceptions differ among mentors, understanding why perceptions differ is also important to formulate strategies to improve program for TPWS in higher education. Therefore, based on results from the group-produced mental models and questions asked in previous studies (Kato et al., 2018; Kato, 2019) , the author investigated the difference among mentors by examining the discussion transcripts and the frequency of words related to mentorship and teaching portfolio creation.

Data Analysis

Qualitative text analysis or text mining may be defined as any systematic reduction of a text to a standard set of statistically manipulatable symbols representing the presence, intensity, and/or frequency of some characteristics that are relevant to social science (Shikano, 2017; Goodman-Delahunty & Wakabayashi, 2012). When employing a text-mining approach, the more centrally a topic is processed, the more extensively that topic will be discussed, thus, yielding a high-frequency of words of collected data in transcripts that are related to the topic. Thus, an examination of discussion transcripts and the frequency of words related to mentorship and teaching portfolio creation can provide insight into the varying awareness among novice, experienced, and supervisory mentors toward mentorship.

With regard to developing mentors' skills and reviewing strategies during the workshop, the final discussion and report data were analyzed using TTM, a free text–mining tool for the English and Japanese languages (Matsumura & Miura, 2014). This technique simplifies Japanese language morphological analysis for a large text dataset. The transcripts were prepared for analysis as follows: First, 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 recognizes them as the same word. In addition, a proper noun was identified by its function and transformed into an appropriate noun with the same meaning. After this preliminary work, the software counted word frequencies generated by mentors in each discussion during the mentor meetings.

The TTM, a widely-used tool for text mining tool, segments sentences, lists frequently used words, and develops a hierarchical diagram showing relationships among words with their corresponding frequencies (Shikano, 2017) . This text mining technique is a computerized process of extracting information from collected information and has received attention as a way to improve the consistency of qualitative analysis during the coding stage. Then, this study investigated whether the same findings would be revealed by employing TTM as those found in qualitative data analysis using SCAT (Kato et al., 2018), which proved efficient and valid as theorization from the relatively small-scale data.

Results

Extracted Words on Mentoring Experiences

Table 2 shows the number of extracted words. A total of 2,434 words were extracted from the Group A data (40:58 min) and 2,493 words from that of Group B (63:25 min). In total, 5,027 words were extracted from the transcripts of the two final meetings, and 1,484 different types of words were found in their reflections on their consultation. The novice mentors referred to the reflective mentoring process discussion fewer times than the experienced and supervisory mentors. Table 2 summarizes the basic statistics of the mentoring reports at the final meetings of both groups.

Table 2
Number of Extracted Words

Group	Number	Total num. of words	Different num. of words
Novice	3	767 (15.3)	292 (19.7)
Experienced	4	2434 (48.4)	649 (43.7)
Supervisory	4	1826 (36.3)	543 (36.6)
Total	11	5027 (100.0)	1484 (100.0)

*The counted frequencies with percentages given in parentheses.

Cluster Analysis for Mentoring Experience Category

To elucidate the major features of good mentorship, the co-occurrence relation among the words underwent cluster analysis. First, morphological analysis was performed using TTM, and the dataset for further multivariable analysis was then created with frequency-used (more than once) nouns, adverbs, and verbs. Second, 49 most frequently used words among the three different groups are displayed in Table 3. The list of extracted 49 words in table 3 were analyzed to discern prominent topic discussed in the final mentor meeting. As displayed in Table 3, almost high frequency words (56.65%) were prevent across the three different groups (novice, experienced, supervisory mentors), reflecting the common focus on the mentorship at this intensive TP Workshop.

The author then conducted a correspondence to visually depict frequently repeated words by a cluster analysis, which was performed on the created dataset. The statistical distance between the variables was calculated as a Euclidean distance, and the Ward method was used for clustering. Figure 1 presents the dendrogram of mentoring experiences. The dendrogram can be roughly classified into four clusters typically associated with the mentor–mentee relationship during the workshop.

Table 3
The List of Extracted Words and Counted frequencies

Cluster 1(3 words)		Cluster 2(12 words)		Cluster 3(6 words)		Cluster 4 (28 words)			
する(do)	28	いい(good)	88	思う(feel)	147	ﾒﾝﾀﾘﾝｸﾞ	42	先生	31
ある(be)	0	聞ける(can	77	時期	107	(mentoring)	42	(teacher)	30
言う(say)	22	hear)	87	(timing)	98	今回(this time)	32	学ぶ(learn)	24
	4	やる(perform)	70	自分(self)	94	違う(differ)	29	変わる	28
	22	何(what)	52	それ(it)	91	考える(think)	25	(change)	26
	3	すごい(great)	72	私(I)	92	教育方法		そこ(there)	18
		なる(become)	63	共有		(educational	20	意味	
		ない(nothing)	49	(share)		method)		(meaning)	
		感じ				対話(dialogue)		ここ(here)	
		(impression)							

		人(person)	47			メンティー(mentee)	39	ほか(other)	24
		書く(write)	47			教育理念	31	いる(be)	20
		できる(can do)	43			(educational		教える	23
		メンター(mentor)	79			philosophy)	31	(teach)	22
						ほんとう(true)	28	場合(case)	19
						これ(this)	24	アドバイス	
						チーム(team)	18	(advice)	18
						難しい(difficult)	23	見る(see)	17
						出る(appear)	18	あと(after)	16
						非常(very)		学生	
								(student)	

Cluster 1 [Basic Activities] consists of basic verbs describing human activities such as "say," "do," and "be." Cluster 2 [Mentor Excellence] constitutes words that refer to the characteristics of excellent mentors such as "great," "can listen to [mentee's voice]," and "do what is possible to." Cluster 3 [Effective Mentoring] includes words pertaining to effective mentoring techniques such as "timing" and "share." Cluster 4 [Challenging Process] seems to consist of four sub clusters, including 28 words. Statistical analysis on the four clusters indicated that mentoring experiences influenced participants' awareness of the characteristics of excellent mentors (cluster 2), what mentor excellence means (cluster 3), and the challenging process (cluster 4).

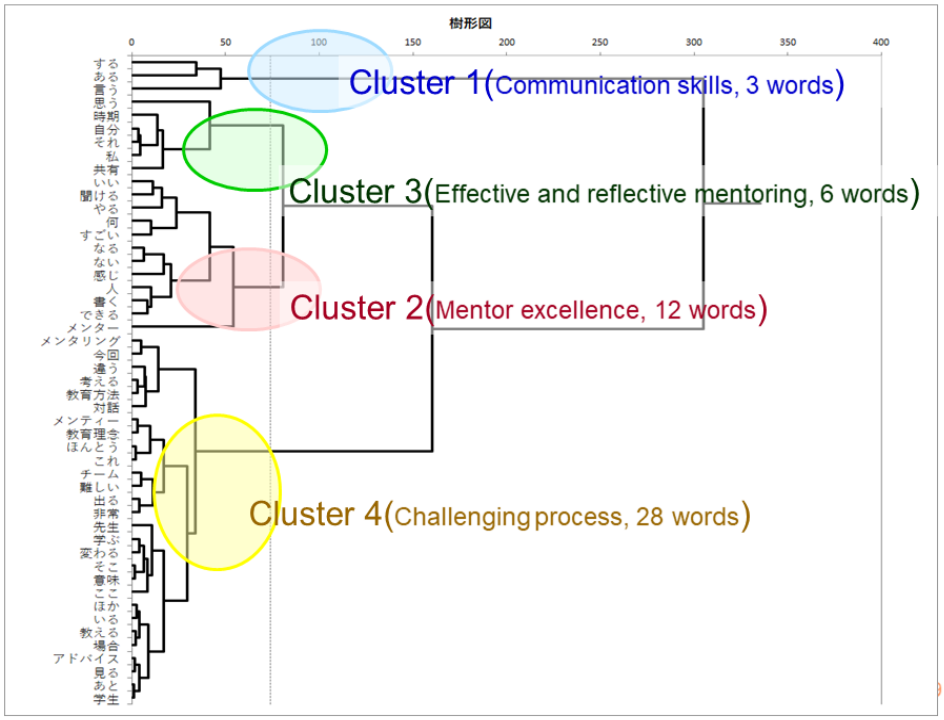

Figure 1. The Dendrogram

Differences in Frequency by Three Mentor Groups

The author conducted chi-squared tests and Fisher's exact tests for independence on the frequency of common words between the three conditions (novice, experienced, and supervisory) by employing the web statistical software js-STAR. Table 4 shows the estimated values of counted frequencies in parentheses, which were calculated based on the total number of words for each group in Table 2: novice (767 words), experienced (2434 words), and supervisory (1826 words).

Both the chi-squared tests and Fisher's exact tests revealed statistically significant differences in the frequency of reflections on mentoring in relation to the four clusters ($\chi 2(6) = 26.864$). This indicates that the observed cell counts

are significantly different from the expected cell counts and that a statistical relationship exists between the categorical variables, as shown in Table 4.

The residual analysis indicated different awareness of mentoring experiences among the novice, experienced, and supervisory mentor groups (Table 5). The novice mentors' reports primarily showed their reflections on their mentoring process with their mentees and did not mention effective mentoring skills. This tendency means that the novice mentors reflected on teaching portfolio creations with their mentees, which was the main concern of mentorship in the intensive workshop.

On the contrary, experienced mentors reported effective mentoring skills and role of mentor than novice and supervisory mentors. The nature and quality of the social interactions that experienced mentors reported in the reflections varied with those of the novices and supervisors. Relative to the third cluster [effective mentoring], mentors recognized the importance of helping mentees identify their problems. The third cluster [effective mentoring] showed that asking questions in a timely fashion and taking an accepting attitude toward their mentee were effective. This tendency indicated that experienced mentors emphasized the importance of information sharing between mentors for improving their mentor skills.

Additionally, supervisory mentors, including supervisors and coordinators, frequently asked other mentors to reflect on their mentorship in intensive three-day workshop. They especially valued [mentor excellence], to support professional growth and development of both novices and experienced mentors participated in the workshop. Therefore, supervisory mentors showed more interests toward mentoring process than mentoring skills. This difference was statistically significant only in comparison with novice mentors and not experienced mentors.

Table 4
Differences in the Frequency of the Mentoring Experiences by Three Groups

	Novice	**Experienced**	**Supervisory**
Cluster 1 Basic Activities (3 words)	113 (114.4)	372 (365.8)	242 (246.8)
Cluster 2 Mentor Excellence (12 words)	96 (121.8)	382 (389.4)	296 (262.8)
Cluster 3 Effective Mentoring (6 words)	99 (98.9)	348 (316.5)	182 (213.6)
Cluster 4 Challenging Process (28 words)	140 (112.9)	331 (361.3)	247 (243.8)

Table 5
Residual Analysis

	Novice	**Experienced**	**Supervisory**
Cluster 1 Basic Activities (3 words)	-0.160 ns	0.533 ns	-0.440 ns
Cluster 2 Mentor Excellence (12 words)	-2.979 **	-0.627 ns	2.953 **
Cluster 3 Effective Mentoring (6 words)	0.007 ns	2.847 **	-3.011 **
Cluster 4 Challenging Process (28 words)	3.207 **	-2.612 **	-0.293 ns

This study, designed as a quantitative content analysis, intended to explore how mentors perceive mentorship as part of professional development and how they evaluate their own mentoring experiences. The author integrated qualitative data analysis with theoretical coding and quantitative content analysis using TTM, which proved efficient and valid as theorization from the relatively small-scale data of the 11 mentors whose data the authors analyzed in previous research (Kato et al., 2018; Kato, 2019).

The author focused on how mentoring experiences affect mentors' awareness of effective consultation skills. Differences among three groups of mentors, namely, novice, experienced, and supervisory were identified.

Discussion

In this study, the author focused on how mentoring experiences affect mentors' images of effective mentoring skills and investigated differences among three groups of mentors, namely, novice, experienced, and supervisory were identified. To cross-validate the previous finding on mentorship and teaching portfolio creation in TPWS, the content of 11mentors' discussion was reviewed and thematically coded: [Basic Activities], [Mentor Excellence], [Effective Mentoring], and [Challenging Process].

Related to the first research question, Kato (2019) indicated that the experienced mentors could explicitly reflect on and explain their difficulties and satisfaction as mentors, by counting the words frequency during their consultation. Additionally, she also found that experienced mentors frequently asked for supervisors' and other mentors' opinions and ideas to create effective questions to promote mentees' reflections, which suggested an explanation for the high-frequency word share.

First, in accordance with previous findings (Kato et al., 2018), this study also indicated that experienced mentors recognized the importance of helping mentees identify their problems related to the third cluster [effective mentoring]. This tendency indicated that experienced mentors emphasized the importance of information sharing between mentors for improving their mentor skills.

Second, novice mentors were apt to hesitate to explain their experience to other mentors and supervisors. They often confessed their worries and troubles about their mentoring styles and communication skills (Kato, 2019). This tendency indicated that novice mentors reflected on teaching portfolio creations with their mentees, which was the main concern of mentorship, the fourth cluster [Challenging Process] and the second cluster [Mentor Excellence] in the intensive workshop.

With regard to the novice mentors' reports on their mentorship, novice mentors mainly reflected on their mentoring process with their mentees and did not mention effective mentoring skills. This tendency indicated that novice mentors reflected on teaching portfolio creations with their mentees, which was the main concern of mentorship in the intensive workshop. It was clear that novice mentors mainly reflected on their own mentoring process with their mentees and did not mention effective mentoring skills.

Concerning the second research question, the author analyzed the same discussions at the final meeting at the Osaka Prefecture University College of Technology. She conducted the quantitative content analysis using TTM and found co-occurrence relation among the words based on a cluster analysis to elucidate the major different images of good mentorship among three groups of mentors, namely, novice, experienced, and supervisory.

The cluster analysis with text-mining of word frequencies was compatible with quantitative and qualitative analysis as a means to add rigor in evaluating subtle differences between novice, experienced, and supervisory mentors. The results of this study provided some empirical support for these differences between mentor groups to promote communication between mentors and exchange their ideas and opinions in the mentor meetings.

Conclusion

This study was designed as qualitative and exploratory, intended to define how mentors perceived mentorship as their growth of professionals and educators and how mentoring experiences influence their awareness of good mentorship. It was observed that the previous qualitative study of mentorship provided only approximate classifications of the learning activities of mentors because it focused on selected aspects of mentor experiences (Kato et al., 2018). The results of the present study confirm that the co-occurrence relation among the words underwent cluster analysis is compatible with previous quantitative and qualitative analysis as a means to add rigor to evaluate subtle differences between novice, experienced, and supervisory mentors. An enhanced understanding of the perceptions of mentorship may help develop the professional development that will foster diversity among future academic educators in higher educational institutions.

However, it may be difficult to determine exactly where and when a particular insight occurred. Reflections also varied in the way in which cooperating mentors and supervisors are involved in discussions during mentor meetings. Reporting about one's mentoring process appears to be a complex endeavor. It is imperative that future studies continue to employ both qualitative and quantitative analysis to learn more about the nature and quality of mentorship that emerges under different conditions.

Acknowledgements

This work has been partly supported by Grant-in-Aid for Scientific Research(C) (No. K17K01156). Information about this study can be found online at http://www.katoyukari.net

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