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Teaching expertise, Knowledge sharing, Faculty development, Tacit knowledge

Expert Teaching Professors: Sharing Their Expertise

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Abstract

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Introduction

A variety of workplaces contain workers whose levels of expertise range from novice to expert. Universities are such places and professors develop their expertise over a lengthy period of time – especially their teaching expertise. Whereas K-12 teachers must complete formal training programs to prepare for their roles and refine their teaching skills, most university professors are responsible for the evolution of their own teaching skills and abilities. Through informal processes, and in some cases formal processes, professors share their expertise about teaching. These sharing processes are a part of the continuing professional development of novice professors. For many new faculty members, they begin their university work roles inadequately prepared for the rigors of teaching (Wentzell, Richlin, & Cox, 2007).

The continuing professional development of novice professors involves interactions and relationships with their more experienced colleagues (Kreber, 2006). Novice professors have much to gain from conversations with and observations of experienced professors who are willing to share their ideas about teaching. Some novice professors have traits or skills, such as an outgoing personality, that allow them to strike up relationships with experienced teaching professors. In other cases, experienced teaching professors may go out of there way to assist struggling novice professors with their teaching. However, in many cases, the relationships and the helpful exchanges are left to chance, and these interactions are not part of a university-wide strategy for continuing professional development of novice

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professors (Weber, Gabbert, Kropp, & Pynes, 2007). Brawly (2008) notes the challenges that academics face with their goals of improving teaching when they work in systems that are more focused on peer reviews of research.

The processes that expert teaching professors use to share information about teaching with their mentees have not been fully examined in research studies. Research is needed that examines the nature of teaching expertise and how it is shared by experienced professors. Therefore, the purpose of this study is to delve into the practice of expert teaching professors and examine their processes for sharing information about teaching. The central research question of this study is: How do expert teaching professors share their expertise with mentees?

Sharing Expertise as a Component of Continuing Professional Development

Formal continuing professional education programs are commonly made up of conferences, seminars, and lectures in which formal, abstract and general knowledge is transferred from experts to the professional workers. Local, specific and practical knowledge can be devalued in these formal sessions (Cervero, 1992). These formal programs may not be aligned with the interests of practicing professionals who think "knowledge from practice is far more useful than what they acquire from the more formal forms of education" (Cervero, p. 91). This misalignment between formal continuing professional education programs and the interests of practicing professionals raises questions: How do professionals learn and what kinds of knowledge should be learned in continuing professional development?

Houle explains that professionals learn through "study, apprenticeship, and experience, both by expanding their comprehension of formal disciplines and by finding new ways to use them to achieve specific ends, constantly moving forward and backward from theory to practice so that each enriches the others" (as cited in Mott, 2000, p. 26-27). He suggests three modes of continuing professional education: instruction mode, inquiry mode, and performance mode (cited in Mott, p. 27). In the instruction mode, learning is passive and the content of learning is formal knowledge. Learning in the inquiry mode is exploratory and cooperative, which produces a "synthesis or creation of new techniques or concepts" (p. 27). In the performance mode, learning is "more active and involves practice in the actual work setting" (p. 27). Houle's continuing professional education model encompasses theoretical knowledge and practical knowledge.

Schon (1983), however, argues the emphasis should be skewed to practical knowledge, asserting that systematic knowledge—formal, abstract and general knowledge—based upon technical rationality is "specialized, firmly bounded, scientific and standardized" (p. 23). The technical rationality model fails to account for how professionals work in practice to accomplish their goals. Thus, the systematic knowledge has limitations in solving critical problems at real practical settings. Schon searches for an epistemology that can explain "practice implicit in the artistic, intuitive processes which some practitioners do bring to situations of uncertainty, instability, uniqueness, and value conflict" (p. 49). The practice implicit in the artistic processes is the core character of tacit knowledge – that is, the knowledge that expert workers possess but are unable to articulate. The uniqueness and uncertainty of problems are the place where tacit knowledge is used.

Dreyfus and Dreyfus (1986) explain how experts grasp situations with deep tacit understanding with their model of skills acquisition. The authors present five levels of skills

acquisition: novice, advanced beginner, competent, proficient, and expert. They describe experts as those who no longer rely on rules, guidelines, or maxims; intuitively grasp situations based on deep tacit understanding; use analytic approaches only in novel situation or when problems occur; and have vision of what is possible (Eraut, 1994, p. 124). They suggest that experts understand situations as integrated wholes rather than as discrete parts.

Consistent with Schon and Dreyfus and Dreyfus, Eraut (1994) asserts that "professional knowledge is constructed through experience and its nature depends on the cumulative acquisition, selection and interpretation of that experience" (p. 19-20). He argues that contexts are important for continuing professional education. A practice context is more problematic than an academic or organizational context because it "integrates complex understandings and skills into a partly routinized performance" (p. 20). Thus, Eraut argues that continuing professional education needs to give strong emphasis to process knowledge that is related to practice contexts. But, according to Eraut, it needs to create general professional knowledge from context-specific knowledge by providing time to reflect on the significance of the context.

Daley (2000) views the positions of Schon, Dreyfus and Dreyfus, and Eraut as more of an intuitive approach to professional development which encompasses the ideas of artistry, reflection, and alternative ways of knowing in professional development. She notes than an intuitive approach differs from professional development that is characterized by rational processes of information processing, problem solving, decision making, and clinical reasoning, and judgment. She also expresses the need for a new continuing professional education model that incorporates the "Professional, the work environment, and the practice itself into education endeavors" (p. 40).

The distinctive trend above is that the emphasis on knowledge and expertise in continuing professional education moves from prepositional knowledge to practical knowledge or context-related knowledge. And, the tacit aspect of practical knowledge is emphasized in the trend because the tacit element of knowledge cannot be detached from practical knowledge in its nature. This study involves expert teaching professors who have developed deep knowledge about their craft of teaching. The study garners the perspectives of expert teaching professors and their mentees regarding the processes used to share teaching expertise. It is this type of sharing of expertise that Daley envisioned in her plea for a new model of continuing professional education (2000). This type of model can be positioned with several scholars who have advocated for collaboration and knowledge sharing about teaching in higher education (Cox, 2003); Cowan & Westwood, 2006; Stevenson, Duran, Barrett, & Corarulli, 2005; Quinlan, 1996).

Methods

The central research question of this study is **"How do expert teaching professors share their expertise with mentees?"** Given that this central question is focused on process and social experience, a qualitative method with semi-structured interview questions was selected for this study. The qualitative research approach is often used when interests are high on the processes that take place within a context (Denzin & Lincoln, 2000). Qualitative research allows the investigator to explore how social experiences are created and given meaning. On the other hand, quantitative methods involve measurement and analysis of causal relationships between variables (Denzin & Lincoln, 2000).

Qualitative research permits the examination of a phenomenon within a contextual setting. The examination of how expert teaching professors shared their expertise in this study occurred in their real-life context. Eraut (1994) explains that the nature of professional knowledge is context-specific. The intent of this study was to allow expert teaching professors and their mentees to describe the processes of knowledge sharing specific to university teaching. The following section describes the contextual boundaries for this qualitative study.

Selection and Demographics of Participants

This study took place at a large Midwestern USA state-sponsored university. Each year a systematic process is used to identify up to three recipients of a Presidential Teaching Award. Applicants for this award must be tenured full professors with at least six years of service to this university. Past and present Presidential Teaching Professors (PTPs) are the units of analysis of this study. They have been officially recognized for their teaching expertise through a rigorous selection process conducted by the university. Nominees are acknowledged to be among the most notable teachers at the university. They have demonstrated continuous excellence in teaching undergraduate and/or graduate students.

Thirty-four PTPs were contacted and thirteen of them volunteered to participate in this study. The participants were comprised of eight men and five women, all of whom held a doctorate degree and were at least 50 years old. Each of the participants had taught in higher education contexts for at least twenty years. Each PTP was asked to recommend one of his or her mentees with whom he or she had interacted and shared teaching expertise, and ten out of the thirteen PTPs recommended interviewees for the study.

Data Collection and Analysis

Semi-structured interviews were conducted with each participant. The average time for the face-to-face interviews was approximately one hour. Interviews were held in a comfortable setting, and the interviewees freely expressed their beliefs and opinions. Interviews were recorded and transcribed with permission of all of the participants.

Using the central research question as a focal point, data were analyzed simultaneously with data collection. Using a process described by Merriam (1998), data were compressed and linked together to form a narrative. This narrative conveyed the meaning that was generated from this thorough examination of how expert teaching professors share their teaching expertise. In addition to the descriptive analysis, the constant comparison method was used to develop categories. These categories provided interpretation and depicted persisting patterns that occurred in the data.

Although this study was not a grounded theory research project, open coding and axial coding were borrowed from this method to provide a systematic process for coding the data. The data were fractured into concepts and categories through open coding. The process of open coding involves unearthing meanings embedded in the text, and exposing concepts. The initial concepts were named and compared through an analytic process, and similar incidents were grouped together and given the same conceptual label such as “formal ways of sharing”, “informal ways of sharing”, “initiation by PTPs”, “initiation by mentees”, “physical barriers”, “cultural barriers” and so on, following processes described by Strauss and Corbin (1990). Through axial coding, connections between concepts and categories were developed. Strauss and Corbin describe axial coding as a means of integrating and relating categories based on process and structure. Constant comparisons were made

among the concepts and categories that emerged from the data, and relationships were examined.

Internal Validity, External Validity, and Reliability

Several strategies were used to strengthen internal validity: triangulation, member checks, and peer examination (Merriam, 1998). Three sources of data were used for the purposes of triangulation. Two sources were from interviews: The PTPs themselves, and the mentees or novice professors who received knowledge from the PTPs. A third source of data was various websites at the university that contained documents regarding the PTPs. Member checks involved reviews of and feedback on the transcripts from the interviewees. Peer reviews were conducted by two doctoral students who reviewed and discussed the interpretation of data and emergent themes with the lead author.

External validity pertains to how the results of a study are generalizable (Merriam, 1998). Merriam suggests three strategies to be used for external validity in a qualitative study: rich, thick description; typicality or modal category; and multi-site design. The authors of this study have attempted to provide ample description of the phenomenon under examination and the boundaries of the case so readers may be able to judge the degree of similarity between this case and their own situation. Descriptions of the participants and the processes of sharing teaching expertise were offered as a basis of comparison to other university contexts in which expert teaching occurs. For the multi-site design, the interviewees were selected across all the colleges of this large Midwestern USA university.

Some authors question the utility of the concept of reliability in qualitative research, given the importance of context of qualitative research and the interpretations that take place by qualitative researchers. However, Lincoln and Guba (1985) do not reject the relevance of the reliability concept in qualitative research and suggest that demonstration of validity is sufficient to establish reliability in qualitative research (p. 316). They also suggest maintaining an audit trail as a strategy to enhance reliability (cited in Merriam, 1998, p. 207). For the purposes of this study, the audit trail was established by aptly describing how data were collected, how categories were derived, and how decisions were made during the study (Merriam, 1998).

Findings

Study participants described processes for sharing information about teaching within the university setting. A variety of processes were described, such as co-teaching, observation, modeling, informal conversation, and workshops. The following section describes personal and environmental issues related to sharing teaching expertise between expert teaching professors and their mentees.

The Phenomenon of Sharing Teaching Expertise

Some PTPs shared their teaching expertise with others, even though there were barriers. Sometimes they formally presented their teaching expertise in workshops. The university provided the PTPs with opportunities to share their teaching expertise at workshops for novice teachers and other professors. But, the workshops were limited in time and frequency. They shared their expertise more in informal ways than in formal ways. They shared expertise with their mentees, novice professors, and their graduate students who were teaching in classes or prospective teachers. The PTPs shared their knowledge in

several ways: co-teaching, conversations, invitations to their classes, sitting in novices' classes, learning by doing, and so on.

Ways of Sharing

PTPs were invited to share their experience and expertise with other professors in formal ways such as workshops, presentations, and a personal essay on teaching philosophy that was published in a university journal. But the opportunities of formal sharing were not enough. As is the case at many universities, the formal structures for sharing expertise were inadequate according to the participants of this study.

The Limits of Formal Formal Ways of Sharing

Some PTPs participated in formal ways of sharing expertise only after they became a PTP. Opportunities for formal ways of sharing included workshops and publishing their teaching philosophy in a university journal.

> When I became a presidential teaching professor, we were supposed to share our philosophy of education. They wrote it up in the *Bulletin*. That's the only time that anyone asked me to share what I think about teaching. PTP6

> We, as presidential teaching professors, each of us had to do a presentation where we talked about how to become a better teacher. We're always called upon, for example, the opening of the fall semester, we hire a lot of new faculty every year, so time to time they invite us over to share our ideas. PTP4

They thought that these ways of sharing expertise could not enable them to share real practices of their teaching because of limited time, even though they enjoyed the process. A PTP explained the formal way of sharing his expertise.

> A couple of times I've done some workshops for my colleagues, and every year I'm asked to do workshops on campus. We have a whole program that has to do with teacher effectiveness and programs for new teachers, so every year I'm asked to do something with that. But it's a very short time, you only get an hour, two hours maximum, to try to go in and compress into an hour to two hours what you've been working on for decades. I enjoy doing it, but it's not the same as teaching in a classroom with students and I would really prefer doing it with students, but I do share with colleagues. PTP9

In cases in which PTPs were officially invited to share their teaching expertise, they did not have to worry about being perceived by others as boastful because PTPs were officially asked to discuss their knowledge about teaching. And, their teaching expertise was not a personal matter at the official presentation. When this type of sharing occurred, participants were not as concerned about how they would be perceived by others given that they were expounding upon their own skills and abilities.

Informal Sharing Built on Relationships

In informal sharing situations, the PTPs were concerned that others might perceive them to be egotistical or have inflated views of themselves. They did not want to be considered to be trespassing on other professors' personal territories by showing their interests in sharing their teaching expertise. So, some PTPs did not try to intentionally share their teaching expertise. In cases in which PTPs had a willingness to share, the people with whom the PTPs shared their teaching expertise were limited to their mentees, graduate students, or novice professors who expressed their interest about the PTPs' expertise. The PTPs felt that their mentees, graduate students, and the novice professors were more comfortable to share with than other professors because of cultural barriers. So, they waited until they were asked to share their expertise, even though they were willing to share. Exceptions to this general stance were the cases in which they had mentoring relationships or advisor-advisee relationships with graduate students. The sharing in mentoring relationship or advisor-advisee relationships was more comfortable to PTPs, because there was trust between them. A PTP expressed the feeling.

> Often times the graduate students are required to teach the same class that I'm teaching so I sit down with them a lot and we'll do it over a period of time—maybe two or three times during a semester or even more. We will talk about what we're doing in these classes and how we're teaching the classes. I'll share the activities. I'll say I tried this and they'll have a "go at it". It's a little different when you're working with your own doctoral students than with just a colleague that's just been hired. They trust you more, you know. And they know you. They have the opportunity to see you in operation in the classroom. PTP4

Outside of the relationship based upon trust, a person who wanted to share, for example, a novice professor or a graduate student, initiated the process of sharing. A PTP explained a case of sharing his teaching expertise, which was initiated by a new professor in his department who personally came to him with the request.

> In other words, through her own self-directedness, she took this on so that she could try to explore ways that she might improve her own teaching. So it was not required by the university; I don't believe it was a suggestion that anyone gave her. I think she just decided to do it herself. PTP1

Another PTP described how sharing started with a graduate student. It was an instance that was initiated and was proposed by the graduate student.

> When I taught this lesson, she said, "Oh, whenever you do this, I want to come in and see it." I said, "Ok, you come in and see it." Well, she did, and I taught it and she got it. PTP4

Initiating Informal Sharing

Most PTPs expressed that they were willing to share their teaching expertise when they were asked by others. But, it had to be initiated by others who wanted to learn the PTPs' expertise. For example, the PTP5 mentioned that she shared her expertise with anyone who asked her. Another PTP had expressed that she was willing to share, but only when she was invited to do so.

> When we get new faculty to my department, I am always willing if somebody wants help, to work with them. So I have had people come to me, graduate

> students who are teaching a course, other faculty, who'll actually come to me and say, "I've heard about you. Would you mind if you came to my class and gave me some pointers?" Whenever I'm invited by someone else that's exactly what I do. PTP13

The initiation of the sharing process by novice professors needed the novices' openness to new ideas. Novice professors had their own teaching styles, preferences, and personalities that might be different from those of the PTPs. To overcome the differences, novices had to be open to new ideas and suggestions. A PTP explained that a professor who observed his classes already had her teaching style and preference, but she was so open to new ideas that she could initiate the sharing.

> But someone who is open to suggestions, or open to ideas. So for example when Kathy came into my classroom, she knows that her teaching style is greatly different from mine. She didn't come to my classroom thinking, "Okay, I'm going to be like you." She came with the openness to observe and to look for things that she thought were effective…that she could do. PTP1

Openness to a problem or new ideas was not easy to achieve for some mentees because teaching usually occurred in isolated classrooms and thus there was no expert who could direct the problem of a novice professor. Therefore, sometimes the decision making to seek expert teachers' help totally depended on a novice teacher.

> I don't think you can tell them what to do. It's like friends who smoke and you say, "That's not good for you." Everybody says it's not good for you, but until they say to themselves, "You know, this is not good for me." Until we acknowledge our weaknesses, then we're not going to be accepting of any outside help, so that's the problem we have. PTP4

When a sharing relationship was initiated, an expert teacher's confidence on his or her competence in teaching was needed. With the confidence, an expert teacher could actively participate in sharing his or her expertise with others. Most PTPs were confident about their teaching. Thus, when they were requested to share their teaching expertise, they confidently accepted the proposal unless their perspective about sharing teaching expertise was negative.

> Well, I think I'm very confident in my role, in particular, with that class, I'm very competent. I mean I have years of feedback from my students, and they say it's great. And so, I had a high level of confidence as a professor, and I believed that it [observation] would be a beneficial experience for her. Not that she will teach like me, but she will…she can make observations and maybe borrow some strategies that she can use. PTP1

The PTP explained her initiation of help-seeking as self-directedness, because it was not required by the university or suggested by other people. Based upon his experience with her, the PTP made an assumption that that the novice professor had to have good self-directedness in wanting to improve and had skills at seeking and gaining knowledge from others.

Situations and Strategies for Informally Sharing Expertise

When initiation of the sharing was accomplished, sharing teaching expertise occurred in various ways. The ways used were sharing resources for teaching, conversation, observing PTPs' teaching practices, observing novices' teaching, and co-teaching. The resources shared for teaching were class syllabi, references for classes, written assignments for classes, and academic articles about teaching. Most cases of sharing those resources were one-to-one; that is to say, a PTP gave the resources to mentees, graduate students, or novice professors. But, in a few cases, PTPs posted their teaching resources in open places, for example, internet web pages to share their teaching practices with a broader audience.

Conversation was a one-to-one way of sharing teaching expertise. The conversation for sharing teaching expertise could occur without the initiation described above, because sometimes, informal conversations with other professors could instill an idea or a tip for teaching. A PTP told a story about how she acquired a tip through an informal conversation when she was a novice professor. And, she suggested that if a novice teacher had a keen attention for teaching, the novice teacher could learn more about teaching through informal conversation with other professors.

> For example, we have very few conversations, to be honest with you, that were dealing with teaching per se even though his office was right next to mine. But, he shared with me, "Do you know what I do with essay tests? I hand them back. I have the students who had full points read their response and then I get fewer questions from the other students why they had points taken off because they had that as a model." I thought that was a really neat technique, and I've used it ever since. I think you can always pick up little strategies/techniques, smoothing ways of teaching; and so if you're always looking for those, I think that makes you a better teacher. PTP4

A mentee of a PTP explained an episode in which her mentor shared his teaching expertise through an informal conversation when they met for coffee. The sharing of expertise was not intended when they met. But, when she expressed her concern about her teaching that was not as successful as she had planned, her mentor analyzed her problem and suggested a new approach. And, she adopted the new approach, thus improving her class.

> When I first began teaching at a state university I would get very upset when things didn't work out the way I had planned them in class. I would internalize a lot of that as "I don't know if I'm cut out for this, I just don't know, I don't think I'm talented in this, I don't, you know, and I'm working so many hours." And John would say, "Debora, who's in control? You're telling me that it's learner centered, but it seems to me as if you're trying to take control. You want to assume all of the responsibility and, and if it's truly learner centered let them share in the whole experience, let them share in it, so something isn't quite right let them develop what's right." . . . . So, my classes have become more conversational with the students; it's that kind of an approach. . . . . So I'm not worried about my own image being perfect and you know I'm finding the students' response so much better with it. So he's not articulating it, telling me look you must do this or you must do that, but in our conversations we meet for coffee -- we meet informally. We meet for coffee at least once every month or two. It's personal, it's a blend, personal, it's research, it's volunteer, it's how's your job going, how are you navigating the politics, what do you need to know, it's that kind of a thing, it just evolves

> and in those conversations that's where teaching and transferring happens. M5

Another mentee also experienced knowledge sharing through one-to-one conversation when she worked for her mentor. The conversation in this case was more focused on teaching than the preceding cases about conversation. The mentee asked her mentor direct questions about her teaching problems. And her mentor suggested ideas about the problems.

> That would be more one-on-one with me, not so much in the classroom. A lot of our one-on-one conversations, like when I was doing work and I'd ask her a question, that's where a lot of my learning was with her, more say than her being my teacher. Do you know what I mean? So, I would present a situation to her and we would talk about it, and that's how I'd learn. I'd say, "I observed so-and-so do this in her class and not that she did something bad, but I'm not so sure that that was the right way to handle it, how should it be handled?" She explained, "Well, yeah, that teacher did do right" or "Maybe she could have done this." M6

A mentee of a PTP had focused conversations about teaching with his mentor. His mentor handed over all course materials that the mentor had used. The mentee probed the material with questions to his mentor. Through probes, the mentee learned about the teaching expertise of his mentor.

> If I need help, first he'd provide me with all of the course materials, if I'm teaching this course 439 and he will send me all the materials that he uses for 439, so that's how he helped me first of all. Second, I would look at those course materials and if I have any questions, I would ask him. Now, during this kind of Q & A session, I somehow learned how he teaches those courses, so that's how I learn from his teaching. M10

It seemed to the mentee that his mentor analyzed his questions and itemized the possible options for the mentee. It was systematic conversation.

> For example he would analyze my question- I would guess, I'm not him, but I would guess that he would analyze my question and that once he analyzed my question, he would kind of lay the solutions or suggestions in an item list. Say for example, first he would do this, second he would do that, third he would do that. So, I would say it's very systematic, the way he explained the teaching concept to me. M10

As the proverb says, "To see for oneself is worth all the books of travel." Likewise, observing PTPs' practices in classrooms was used frequently when PTPs were asked to share their teaching expertise. Usually after a novice's observation, conversation followed as a means of reflecting upon the practices of the expert. A PTP regarded live observation as a better way to share teaching expertise than video-taped practices, because she believed that the live practices could deliver the spontaneity of teaching and situational context of the live practices.

> I've never videotaped myself for people to see or anything like that. We used to do that years and years ago. But, basically I think it's better for them to see me live because of the spontaneity of teaching. Sometimes somebody

> asks a question, "You could do a two-minute little snippet of a lesson, just explain something." "Oh, yeah! I understand what you're talking about." So they can see that firsthand and appreciate it more. PTP4

However, observation was not always a conscious process. A mentee believed that absorbing her mentor's expertise was subconscious learning. She learned through observation of her mentors' teaching although she did not have the intention to learn the expertise. She found out that she was using the teaching techniques of her mentor.

> I followed pretty much the same way of coaching that John did with me on that. That in terms of coaching, writing, and towards publication and everything I've learned a lot from John, almost exclusively from him. And I find that I mimic that with my mentees. Now that is something and it was not conscious. It's just that I found that it worked for me because I thought of John. M5

Sometimes, PTPs shared their teaching expertise by involving others actively in classroom teaching. A way for the more active participation was team-teaching. A team was composed of an expert teacher and a novice teacher. A novice teacher could participate in the whole process of teaching: planning classes, preparing teaching materials, teaching, and evaluation. A novice teacher had more contacts and interactions in the experience than sharing through just observation. The two parties of the sharing experience could have regular contacts and conversations. Of course, in the process of team-teaching, a novice professor had opportunities to observe an expert teacher's practices from the perspective of a teacher. Team-teaching provided a deeper understanding of an expert teacher's practices. Both parties participated in the planning process and more easily captured the purpose of an expert's practices, thus a novice could have cues about what to focus on when he/she observed an expert's practices. The relationship between the two parties was more horizontal, because a novice teacher took responsibility in teaching. A PTP explained how she used team-teaching to share her teaching expertise.

> I've team-taught with a couple of our newer faculty, and one of my more established colleagues as well, to show how I do it and have me see how they do it. I met with that person on a real regular basis. If it's an off-campus class, you can always talk about it while you drive home. How did we think it went? How could we have improved it, what do we want to do differently next time? We sort of learn from each other. This group that you saw me working with is new faculty members who are teaching a class for the first time that I taught before, sharing our discussions, our worries, our woes. How can we solve this problem together? Again, as a collaborator though, I'm not the expert and they are the learners, we take each other's good idea. PTP10

Team-teaching was viewed as a safer way for sharing between a professor and a professor, because it did not explicitly expose the process of sharing as giver-and-taker of teaching expertise. A PTP who recognized team-teaching as her method of sharing her teaching expertise said that nobody explicitly expressed that he or she wanted to learn the PTP's teaching expertise. But, through the process of team-teaching, they actually shared their teaching expertise with frequent contacts, conversation, and reflection on their practices.

> The people that I have team-taught with have seemed to appreciate the experience and then we spend a lot of time together talking about the class, and every class is different, that's another laboratory-teaching experience

> that they do some presentations, I do some presentations, we work on grading and such things together. But I haven't had anybody say, "I want to learn your expertise." PTP5

However, even though team-teaching was a more horizontal way for sharing expertise, there was still a leader-follower relationship between the two parties who were sharing. The expert teacher acted as a guider who gave more suggestions and set up structure of classes. So, there should be clear understanding in the process who is a leader and who is a follower. Thus, a PTP preferred her doctoral students to professors in using team-teaching, because she could have a little more influence over the doctoral students than professors.

> Well, with the people that I have a little bit more influence over, I can do that. With the doctoral students that I work with in team-teaching, I usually set the structure of the class, if we have time enough, if I know they'll teach with me long enough in advance, we'll select the textbook together. I can guide them by making suggestions and usually they follow my suggestions as best as they can, so I can guide them by making suggestions that will eliminate many of the errors. PTP5

The team-teaching occurred between professors when the leader-follower relationship was accepted between the two parties. The relationship of leader and follower in team-teaching was revealed clearly when a mentee of a PTP, who was a novice professor when she and her mentor team-taught, explained her experience. Through the team-teaching, she could have fun, conversation, and observation of the teaching. Thus, she gained more understanding about teaching.

> Actually, I think initially we thought it was a really good tag-team, because she would guide those kinds of activities and I would often do a lot of the procedural things, which had to be very organized and well-documented and supported with other materials like job aides. But, I think by participating with her and observing, I guess it was mostly through observing, but also even those hours in the car we would often laugh about later, we don't get a chance to do that anymore, we did a lot of relationship building. She taught me a lot about how to plan a class, but we would also plan a lot of things like some of our writing projects or some of our research together, so we miss spending that time together, but it was through that conversation. She was teaching me through conversation, through discussion. M2

Team-teaching required responsibility from novice teachers that was more than merely sharing teaching resources, conversations over teaching, and observation. One of these responsibilities for novice teachers was being observed by an expert teacher. When novice teachers independently taught a class and wanted to learn about their teaching problems, they invited an expert teacher to classes and their teaching was observed. A PTP described her experience of when her mentor had observed her teaching when she had been a novice teacher. The procedure consisted of being observed and reflection on her teaching with the mentor.

> He came every Saturday that I taught that course, he sat through my course, never said a word, and sat in the back of the room. Then after I finished teaching, we went up in his office and he proceeded for one hour to tell me what I did wrong. So, we debriefed for one hour, and sometimes the things I did right. PTP6

This way of sharing expertise promoted learning by doing, and helped develop a novice's own style of teaching with the expert teacher's feedback.

> They want to do their own thing and then it comes around the end of the semester and they wish they had done it the way we said to do it. We give them the opportunity, all through the semester they had the opportunity to discuss with their colleagues and get feedback from me about what they're doing in their class. Really, it's kind of a laboratory learning experience, they are learning by trail-and-error also just like I learned, except they're getting a lot more support for it, they're getting a lot more structure for it in curriculum and in observation. I go in their classroom twice a semester and give them feedback on their teaching and suggestions that they might improve on. PTP5

But, the process needed to be conducted cautiously so as not to be intrusive when an expert teacher observed the teaching of a novice professor. Other professors' excessive engagement in the teaching of a novice professor could be an obstacle or nuisance for the novice teacher. So the degree of an expert's involvement should be negotiated with the novice teacher in advance.

> I have worked with several young new faculty members over the years. Generally, it's a fine line between trying to be helpful and becoming intrusive in what they are doing. Since it is not a formalized program where perhaps the person would be told that you must have someone in your classroom once a week or once a month, you know that kind of thing, it has to be negotiated with that individual, we can't impose that kind of thing. It becomes a matter of mutual respect. PTP2

Reflecting on Action and Developing Style

Conversation, observing experts' practices, team-teaching, and being observed by experts had a common element. It was reflection on action. Without reflection, conversation, observing experts' practices, team-teaching, and being observed by an expert could have been transient activities. With reflection on actions, a novice could have opportunities to project their practices to expert practices, and capture strengths and weaknesses of their practices, and seek better ways of teaching. But, the reflection of a novice was not sufficient in sharing expertise of the PTPs, although it could help improve the novice's teaching. The PTPs' teaching expertise sometimes seemed too natural or spontaneous for a novice to capture or to discern the intention or meaning or nuance of the expert practices. In those cases, a novice needed an explanation from the expert about the practices. Because of this inquiry, the expert would need to draw attention to practices that had heretofore not been the focus of personal reflection. The practices that were questioned by a novice were situational. Questions about situational practices did not have a constant answer, because every situation had unique aspects upon which experts would reflect. Therefore, the reflection process became mutual reflection. Sometimes personal reflection by the expert would occur over time as he/she sought to answer a question raised by a novice, and to create knowledge that was situational and unique.

> Once again it's situational. But, some things just take time. So, what I mean is, you may ask me a question, and I don't have an answer to it. But, if I reflect on it over time, maybe I'm able to draw together….bring together some ideas and eventually formulate the knowledge. PTP1

For the novice, reflection was a process of asking questions on practices. An expert needed stimulation to reflect upon a practice. A novice should stimulate an expert to reflect on their practices by asking questions. When a question had an accurate target, the reflection of an expert could be facilitated. Therefore, novices needed a certain level of content and situational knowledge in order to target their questions and probe in the appropriate the areas.

> So someone who could ask probing questions that would force me to think about what I do. Targeted questions, specific questions that would get at my behaviors. It would need to be a person who would know enough about the topic, to identify targets for the questions and to probe deeply. PTP1

Reflection skills were also needed when a novice teacher tried to acquire expertise through trial and error after observing an expert's teaching practices. Through reflection on the novice's own practices, a novice teacher could construct personal knowledge through reflections. Thus, sharing expertise through mutual reflections became a process of creating individual knowledge. A PTP explained how a teacher could share teaching expertise through modeling with reflection skills.

> How did you feel? What did you do? How did you learn? Where did you have problems? What didn't work for you? Reflect on it critically and the next step is to think about how you would employ this thing I just modeled, whatever it is, the internet as a resource, how you would do that in your own classroom. What would you do? Because you just reflected on what worked and what didn't, what trouble you had and how you resolved it, what resources you found as the most helpful. Now, go back and rethink it and plan how you would do it, not how I did it, how you would do it, because you're going to be a third-grade teacher and I'm not one. I think that modeling, experiencing, reflecting, planning, is what we all have to do. PTP10

Therefore, the process of sharing expertise became a process of creating a novice's own teaching style. PTPs tried to help a novice teacher to develop one's own teaching expertise through sharing their teaching expertise instead of copying the PTPs' teaching, because they recognized that teaching was related to individual personality, preference, and experience. A PTP explained the process by making an analogy to dancing.

> I think it's like an artist, not that I'm a great artist by any means, but any artist takes somebody else's technique and then adapts it to themselves. So, you might learn the style of somebody else, but it really has to become yours, you have to put it into yourself and say, "Well, I'm not comfortable with all of that, I will know where I'm comfortable." So, you learn to dance with the material. . . . . As a kid when you're learning to dance you learn the steps and it's very artificial. After awhile you stop thinking about the steps and you start just smoothly blending into the steps and pretty soon you're creating your own rhythm for it. You've taken something from another teacher and you've made it your own and now you're doing your own dancing. PTP9

A novice teacher needed to have various options for teaching in order to develop an authentic teaching style. A mentee said that she could develop her style by having more models for teaching.

> I think it's something that can be learned, because I think I am getting better at it, and especially I watch myself interact on dissertation committees, so

> very early again it was something that I approached in a different way. I approached it based on my own mentoring when I was going through my own dissertation process, so I only had one model, and now that I have seen many different models and many different mentors, I have been able to create my own style. M2

Sharing teaching expertise by PTPs was a process that contributed to the authentic teaching style of a novice teacher, through formal and informal ways. Informal ways were used more than formal ways, because of cultural and environmental reasons. Informal ways of sharing teaching expertise was based upon trust between the two partners of sharing and the PTP's confidence of teaching.

Sharing Expertise: Summary Comments

PTPs who were willing to share their teaching expertise faced limitations in sharing knowledge, because they had to be cautious not to trespass cultural codes of professionalism and individualism in the higher education setting, and because they could not personally overcome the environmental barriers, such as working schedules and physical settings. With the limitations, they found safe ways to share their teaching expertise. The sharing relationships were initiated by PTPs or by novice teachers. For the initiation, PTPs needed confidence in their expertise; and novice teachers needed to be open to new ideas. The novice teachers who were sharing partners to the PTPs were mentees, graduate assistants, and co-teachers. They used conversations and observations in formal and informal situations with ways such as invitations to their classes, sitting in novices' classes, and co-teaching. Using those ways, PTPs enabled novice teachers to develop their own authentic teaching styles.

Discussion and Directions for Further Study

Several connections may be made between findings of this study and existing literature. For example, Germain (2005) explains that the sharing of job expertise is influenced by several factors in the workplace. In the case of universities, findings from this study confirm that expert teaching professors need opportunities to interact with and be observed by novice professors. However, as Weber, Gabbert, Kropp, and Pynes (2007) note, universities typically do not have formal programs to establish these types of interactions between novice and expert teaching professors. This study used the participants' own words to describe the initiation of these interactions. Unfortunately, the work lives of professors are not structured in ways that foster reflective discussions about and purposeful observations of their teaching (Davis, 2003). What purposeful changes could be made to these work settings and the working lives of professors to encourage these types of interactions? Findings from this study substantiate the need for universities to systematize the ways in which novices contact, observe, and collaborate with expert professors. The sharing of expertise between expert workers and their mentees should not be left to chance encounters. Furthermore, findings from this study build on the foundational work of Schon (1983), who stresses that models of knowledge sharing should emphasize the uniqueness and uncertainty of problems that are embedded in the work context. This study fills an important gap in the literature by focusing on the sharing of teaching expertise in the university context, and providing description of what Schon would explain as the artistic processes and the tacit knowledge of expert teaching.

Findings from this study are aligned with existing literature that calls for a reexamination of the preparation and training of new professors (Ramsden, 2003; Cox, 2003). Common

practices of orienting new professors to the university involve workshops and institutes. These orientation sessions fall short in helping novice professors understand what expert teaching professors have already determined – that is, their focus should be on the learner and not on their teaching (Ramsden, 2003). Many new professors do not receive formal training that targets their teaching methods. New professors are often left to their own devices for interpreting their teaching contexts and developing their teaching strategies. This study contributes to existing literature by providing the participant's own words that depict the challenges of gleaning tacit knowledge from expert teaching professors. The participants noted the contextual peculiarities of their work contexts that affected the sharing of expertise about teaching. Additional research is needed that develops and tests new models of sharing teaching expertise in universities. Cox (2003) asserts that formal training programs for new professors that are limited to workshops and institutes can be ineffective, and they do little to help novices observe and adopt expertise of expert teaching professors. Systemic approaches should be developed that allow novice teachers to observe the practices of expert teachers and to interact with expert teachers. Safe environments for sharing can be created through informal mentoring relationships. Participants of this study described how long-term relationships were formed with mentors who offered a variety of types of advice related to their teaching and academic careers.

Findings of this study are aligned with assertions by Cervero (1992) and Schon (1983) who explain that the sharing of expertise is deeply influenced by the culture and work setting. Comments from the participants of this study indicate that universities need to provide professors with ways to overcome cultural and physical barriers for sharing teaching expertise. Unfortunately, university cultures remain dominated by structures that reward the individual achievements of faculty members (Hubball & Albon, 2007). Several authors encourage the formation of faculty learning communities as a means to systemically address collaboration among novice and experienced faculty members (Cox, 2003; Hubball & Albon, 2007; Stevenson, Duran, & Barrett, 2005). These approaches include targeted and highly structured programs that are intended to improve teaching and learning. In such programs expert teaching professors and novice professors can develop collaborative learning skills and be catalyzed to learn new things about teaching – it can be a mutually beneficial journey. Through these exchanges expert teaching professors can share their expertise officially without risk of criticism; and a novice professor can construct a social relationship or mentoring relationship and thus observe and learn the expertise of expert teachers. Davis (2003) suggests that to overcome work-setting barriers that prevent contact with professors, time and space need to be structured to allow professors to meet, chat, and work in an atmosphere that encourages free and open exchanges. Findings of this study are consistent with Davis' assertion, in that organizational culture affects the sharing of teaching expertise. Similar to other large and comprehensive universities, a culture of individualism and professional authenticity highly influenced the manner in which expert teaching professors of this study interacted and shared knowledge with mentees.

This study provided new knowledge about the challenges of sharing teaching expertise in the university context. The PTPs of this study noted caveats regarding attempts to share their teaching expertise because of cultural codes of professionalism and individualism in their work roles. They voiced concerns about being perceived as know-it-alls or treading on others' turf. Additional research is needed to flesh out the nature of these codes in context and how they restrict the interactions of expert teaching professors with novice professors. This study shed new light on environmental barriers within universities, such as working schedules and physical settings that restrict the sharing of knowledge about teaching among professors. The participants of this study delineated how interactions occurred between expert teaching professors and their mentees in spite of those barriers. Additional research

is needed that addresses processes for initiating interactions and establishing relationships between novice professors and expert teaching professors. New models are needed for the socialization of novice professors that can help them gain skills at interacting with expert teaching professors. Assumptions should not be made that new professors are able to interpret the cultural cues of university departments and colleges. New research is needed that can help both expert teaching professors and novice professors better understand how to mutually benefit from their relationships once they are formed. Research is needed that can help expert teaching professors better understand how to enhance their abilities in mentoring roles. Research is needed that can help novice professors develop strategies for prying tacit knowledge from expert teaching professors. Additional research is needed that can help novice professors use this tacit knowledge to inform their own authentic teaching styles.

The focus of this article is on the sharing of expertise about teaching, and the preceding paragraphs offer several directions for future study. Kreber (2006) recommends that the healthy skepticism that guides research in general should also be used to guide scholarship about teaching. Thus, the assumptions and beliefs that expert teaching professors have formulated over the years need to be shared with their colleagues. These beliefs should be open to critique and be the basis for dialogue in the university community. It is this type of healthy skepticism that should reside in faculty learning communities and it should function as a conduit for sharing and testing hypotheses about teaching. Chism (2004) explains the importance of open dialogue about teaching in universities:

> Faculty conversations about effective practice can reinforce a culture of professionalism in teaching, one in which it is desirable to seek to understand practice; admirable to be thorough and intentional in making judgments about teaching; and possible to learn from others about the behaviors, assumptions, and attitudes that have been found to be most productive in facilitating student learning. (p. 20)

Professional inquiry that is related to teaching is needed that can establish clear links between research and teaching effectiveness (Adams, 2009). Findings of this study provide insights about the practices of expert teaching professors and their processes for sharing information about teaching. Additional research is needed that can lead to enhanced knowledge sharing about university teaching.

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