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Examination of an Emerging Community of Practice for Instructional Designers: A Descriptive Case Study in a Midwestern University

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Disciplines

Curriculum and Instruction | Educational Assessment, Evaluation, and Research | Educational Leadership | Educational Methods | Higher Education | Higher Education and Teaching | Teacher Education and Professional Development

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Abstract

This study examined the functioning of a group of instructional designers (IDs) in higher education through the lens of Communities of Practice (CoPs). The study particularly focused on whether and how the grouping of experienced and novice IDs operated as an effective CoP from the perspective of novices. The findings indicated that a group of IDs working in a midwestern university was able to cultivate a CoP within a clearly defined domain, a well-established community, and the shared practice with a specific body of knowledge. Particularly from the perspectives of novices, they highlighted the positive impact while participating in the CoP by contributing to their shared domain and defining who they are, developing expertise by interacting with experienced designers, and learning through different trajectories of participation. The rich description of this case study would further inform educators and practitioners in their efforts to improve the professional preparation and development for novice IDs in the higher education contexts.

Introduction

Research on instructional designers (IDs) has revealed common activities designers do and specific knowledge and skills they need to acquire (Tracey & Boling, 2013; Villachica, Marker, & Taylor, 2010). To prepare competent IDs, much attention has been paid to the formal training of IDs and professional development of expertise (Ertmer et al., 2008; Ertmer, York, & Gedik, 2009; Visscher-Voerman, Kuiper, & Verhagen, 2007). Among most Instructional Design and Technology (IDT) programs in the United States, it has become popular and conventional to immerse students in real-world authentic projects (Cennamo & Holmes, 2001; Knowles & Suh, 2005). The situated learning approach of infusing authentic projects within IDT programs has been recognized by many scholars as important in the efforts of preparing students for future practice (Tracey, Chatervert, Lake, & Wilson, 2008; Leigh & Tracey, 2010). However, other scholars pointed out the gap between what IDT students learn in the classroom and how professional IDs approach design in reality (Kirschner, Carr, van Merrienboer, & Sloep, 2002; Leigh & Tracey, 2010; Visscher-Voerman et al. 2007). Instead of applying systematic models learned in academic programs, most designers in the real world conduct their work in a context-driven manner, which means they typically use different routes instead of strictly following a single model in the design and development phase (Visscher-Voerman & Gustafsonm, 2004). Therefore, scholars have argued that formal training is not sufficient for preparing novice IDs with the knowledge base and essential skills for professional instructional design (Tracey et al., 2008; Tracey & Boling, 2013; Yanchar & Hawkley, 2014).

The importance of informal learning in the context of professional development has been increasingly acknowledged (Barton & Tusting, 2005; Yanchar & Hawkley, 2014). Such learning involves no formal curriculum or academic training but the "common, unstructured ways in which professionals become capable of performing their duties in the midst of professional practice itself" (Yanchar & Hawkley, 2014, p. 272). Communities of practice (COP) are a form of informal learning and its effectiveness has been established through research for various professional groups (Barry, Kuijer-Siebelink, Nieuwenhuis, & Scherpbier-de Haan, 2017), including higher education, business schools, and coaching (Amin & Roberts, 2008; Barton & Tusting, 2005; French, 2011; Shams, 2013). Particularly in higher education contexts, the concept of CoPs has been widely applied in science research groups (Creplet, Dupouet, & Vaast, 2003; Feldman, Divoll, & Rogan-Klyve, 2009; Maritz, Visagie, & Johnson, 2013) and teacher education programs (Jimenez-Silva & Olson, 2012; Kaschak & Letwinsky, 2015; Sim, 2006).

Most studies showed promising results in terms of better preparing novice scientists and preservice teachers for developing professional expertise.

Inspired by the positive impact of CoPs in higher education, this study explored how the grouping of experienced and novice IDs in a midwestern university cultivated a CoP; and in what ways this group of IDs operated as an effective CoP from the perspectives of novices. The implications of this study would help educators and researchers better understand how novice IDs navigate through the school-to-profession transition period as they become competent professional IDs.

Literature Review

The theoretical underpinning for this study resides in the literature of communities of practices (Wenger, 1998; Wenger, McDermott, & Snyder, 2002), which refers to "groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis" (Wenger et al., 2002, p. 4). In this section, we review the research literature on CoPs in science research groups and teacher education.

Overview of CoPs

The concept of CoPs is grounded in the sociocultural theories of learning and draws from the theory of situated learning proposed by Lave and Wenger (1991). The situated learning theory offers a holistic view of how learning takes place in the meaningful and authentic activities of a social group (Lave & Wenger, 1991). Lave and Wenger (1991) use the term "legitimate peripheral participation" to describe how individual learners gradually change their participation level in a community of practice based on their depth of experience. Ideally, as newcomers increase their engagement and become members of a community, the nature of their participation changes as do their identities in relation to other participants (Lave & Wenger, 1991).

To associate practice and community and define a special type of community, Wenger (1998) described three dimensions of the relation by which practice is the property of a community: 1) mutual engagement (how and what things members do together and build relationships); 2) a joint enterprise (a set of problems and topics that members care about), and 3) shared repertoire (shared tools, artifacts, and resources that members create or share together to enact practice). Based upon their earlier work, Wenger, McDermott, and Snyder (2002) also developed a structural and practical model to guide community development. According to Wenger, McDermott, and Snyder (2002), a community of practice is a combination of three fundamental elements: a *domain* of knowledge, a *community* of people who are about this domain, and the shared *practice* that they are developing to be effective in their domain. In distinguishing COPs from other types of social structures, Wenger et al., (2002) defined COPs as "a very specific type of social structure with a very specific purpose" (p. 41). When all the three elements function well together, it makes a CoP an ideal *knowledge structure* that assumes responsibility for developing and sharing knowledge (Wenger et al., 2002).

CoPs in Science Research Groups

In higher education contexts, scholars have been examining how undergraduate and graduate students develop their research skills in the informal setting of research groups (Creplet et al., 2003; Feldman et al., 2009; Maritz et al., 2013). Feldman et al. (2009) examined how graduate and undergraduate students learn to do science by participating in research groups. They focused on the professors' view of graduate education and coded the interviews with pre-conceived categories derived from the literature on graduate education, apprenticeships, and CoPs. Some of their results showed that: students' learning was significantly influenced by the type of research group they joined (e.g. a tightly organized group would ensure students with more connections and interaction with several mentors); students could move along a continuum from "Novice Researcher" to "Proficient Technician" to "Knowledge Producer" if they received appropriate experience and guidance from their research groups operating like CoPs (Feldman et al., 2009).

In an extended study, Feldman, Divoll, Rogan-Klyve (2013) focused more on the ways in which science and engineering students experienced their research education while participating in a research group. Their findings indicated that students participating in the research groups were not fully aware how others in the group were proactively teaching them to do research, and they gained both methodological and intellectual proficiency as novice scientists (Feldman et al., 2013). As their proficiency increased, their roles in the groups also changed from novice researcher to proficient technician to knowledge producer. Most importantly, each research group manifested the

characteristics of a CoP, which served as a site for students to take the role of apprentices by engaging in "legitimate peripheral participation" (Lave & Wenger, 1991). As Feldman et al., (2013) conceptualized, student learning in research groups is a set of learning trajectories that start with entering the group, then going through different levels of participation, and finally leaving as a novice researcher, proficient technician, or knowledge producer depending on their personal engagement.

Examination of students' learning experiences in research groups showed profound implications for the personal and professional growth of students (Feldman et al., 2009, 2013; Maritz et al., 2013). Especially in a tightly organized group, newcomers continuously received support from advanced students, developed greater cognitive and practical skills, and increased their engagement level along with knowledge growth, which becomes an essential part of professional socialization into their future professional practice (Davies, 2016; Hunter, Laursen, & Seymour, 2007).

CoPs in Teacher Education

Much has been written in recent decades about the importance of facilitating genuine community and organizing learning in teacher education (Beck & Kosnick, 2001; Grossman, Wineburg, & Woolworth, 2001; Lee, Chen, Chang, & Yoneda, 2017). At the broader context of the program level, Lee et al. (2017) focused on how the sociocultural context of a graduate program influenced students' perceptions of working with diverse students through the CoPs framework. Guided by the three dimensions of practice as the property of a community (Wenger, 1998), they coded and analyzed their graduates' perspectives about the program and organized their findings based on the three dimensions. They found that participants positively responded to how the program infused the goals and practices of multicultural education, and they indicated that their learning about multicultural education was influenced by the shared practices of the overall program instead of a particular course (Lee et al., 2017). They highlighted the usefulness of applying the CoPs concept for analyzing students' perceptions of the program and noted that Wenger's conceptualization helped them explain how the shared goals of the program were connected to their graduates' perceptions (Lee et al., 2017).

In addition to research examining CoPs at the program level, other scholars paid more attention to how CoPs were cultivated at the individual course level (Jimenez-Silva & Olson, 2012; Kaschak & Letwinsky, 2015). Multiple benefits were identified at both the level of undergraduate and graduate courses within the teacher education context. Kaschak and Letwinsky (2015) investigated how a CoP emerged unexpectedly in a middle-level mathematics and science methods course. As they found, project-based, service learning may act as "a pedagogy uniquely situated to develop communities of practice" (Kaschak & Letwinsky, 2015, p. 153). Moreover, they highlighted the importance of creating a sense of community in teacher education because CoPs may contribute to the means by which preservice teachers create new understanding about their practice (Jimenez-Silva & Olson, 2012). Some researchers also paid attention to the teaching practicum as an important transition experience for preservice-teachers to acquire real-life teaching practice and form their professional identity as teachers (Sim, 2006; Sutherland et al., 2005).

Overall, researchers agreed that creating a sense of community in the teacher education context is critical because it often leads to multiple positive outcomes on preservice teachers' self-efficacy, which would potentially influence their future teaching practice (Beck & Kosnick, 2001; Grossman, Wineburg, & Woolworth, 2001; Kaschak & Letwinsky, 2015). The CoPs concept contributed to the ways that various institutions organized their teacher preparation programs or courses with a community emphasis. Such programs or courses designed around the CoPs concept helped encourage preservice teachers to build a culture of trust, acquire a sense of belonging that supports self-efficacy and contributes to effective instructional practice among preservice teachers (Jimenez-Silva & Olson 2012; Rauch et al. 2014).

CoPs in Instructional Design

As described above, CoPs has been effectively used in science research groups and teacher education. Preservice teachers, participating in a course or program designed around the concept of COPs, reported a better understanding of professional knowledge, practice, and identity as teachers, which could potentially enhance their instructional practice (Kaschak & Letwinsky, 2015; Lee et al., 2017; Sutherland et al., 2005). Similarly, science students participating in research groups operating as CoPs were able to improve their methodological and intellectual proficiency as novice scientists and gain professional socialization before entering into the real world (Davies, 2016; Feldman et al., 2009, 2013; Hunter et al., 2007).

The formal training of IDs has been organized in ways similar to that of teacher education programs. Both programs focus on educating students with fundamental theories and models that are essential to the field. However, most IDT programs in the United States do not provide real-world placements (e.g. teaching practicums in teacher education) or mentoring programs (e.g. research groups in science disciplines) that immerse students in authentic experience and apprenticeship learning before entering into the real world of professional instructional design. The results of the effectiveness of COPs in teacher education and science research groups suggest that COPs may be an effective method of preparing instructional designers.

In the field of instructional design, little attention has been paid to the community and informal learning of IDs. Using grounded theory, Schwier, Campbell, and Kenny (2004) examined the professional identity of instructional designers via CoPs. Five full-time IDs with at least three years' experience were interviewed. Their results indicated that: all participants indicated that their communities were born of convenience in an informal way; most of the participants learned about new theories, trends, and strategies more often from the interactions with their peers compared to any other means; most participants needed to mediate their own positions in the community from peripheral to experienced members; and they constantly shared solutions to design problems and built repositories of tacit knowledge through developing a community of practice (Schwier et al., 2004). Their study suggested the need to further investigate on how IDs interact and learn from each other by participating in a CoP.

Purpose of the Study & Research Questions

Traditional training in formal learning settings has been found to be insufficient for preparing IDs with essential knowledge or skills (Tracey et al., 2008; Tracey & Boling, 2013; Yanchar & Hawkley, 2014). There is a gap in the knowledge students gain via formal training in IDT courses and the knowledge and skills they need to be professional designers (Kirschner et al., 2002; Leigh & Tracey, 2010; Visscher-Voerman et al. 2007). To address the knowledge gap in IDs between formal training and professional practice, the potential of informal learning through CoPs warrants investigation. As the application of CoPs demonstrated promising results in preparing novice scientists and preservice teachers in higher education (Jimenez-Silva & Olson, 2012; Feldman et al., 2009), this study sought to further explore the functioning of a group of IDs in higher education through the lens of CoPs and expect to shed light on the professional preparation and development of novice IDs.

This study focused on an online learning center at a large midwestern university that was comprised of professional full-time designers and part-time graduate students with varying levels of instructional design experience. The purpose of this study was to use this group as an intrinsic case to investigate how this group cultivates and operates as an effective CoP from the perspective of novices. The researchers believe this study is significant because it presents an alternative approach for preparing IDs by participating in a CoP. The research questions to be addressed in this study are: 1) Does this grouping of experienced and novice IDs, engaged in a higher education context for instructional design practice, cultivate a CoP? 2) In what ways, does this grouping of experienced and novice IDs operate as an effective CoP from the perspective of novice IDs?

Methodology

This study employed a descriptive case study approach that allowed the researchers to capture the complexity of real-life events and gain an in-depth understanding of a real-life case with multiple sources of evidence (Yin, 2014). As this study intends to provide a rich description of how a group of IDs operates like a CoP from the perspectives of novice IDs, a descriptive case study approach was identified as an appropriate mode of inquiry in this context to generate an overall picture of this group and then particularly focus on the experiences of selected individuals.

Context of the Study

A bounded system was selected as an intrinsic case in this study due to the unique nature of this case that might potentially manifest key characteristics of CoPs and help answer the research questions. This case is situated within a bounded time (one academic semester) and a restricted place – the Online Learning Center (OLC) at a large midwestern university which supports online and blended courses offered by the College of Engineering (CoE) and College of Liberal Arts and Science (LAS). As a support center primarily for online learning, OLC also provided a variety of services to faculty, staff, and students (e.g. technical support on educational technologies, consulting services on online pedagogies, and best practice resources).

This study focused on the Design and Delivery (D&D) unit consisting of three teams. Each team has a combination of full-time staff members and part-time Graduate Assistants (GAs). The number of hired GAs varies per semester depending on the workload of D&D unit. The main services provide by the D&D unit include: 1) supporting the development of the pedagogic design online and/or blended courses, 2) providing recording and/or hosting videos options, 3) providing information on making courses accessible to diverse learners, 4) troubleshooting technical issues in the courses, and 5) training instructors and/or teaching assistants to manage the day-to-day operations of courses.

Participants

As the second research question focused on the perspectives of novice IDs, a purposeful sampling strategy was used to select typical cases that might best answer the proposed research question (Creswell, 2013). Participants were recruited by e-mail from a pool of IDs employed at OLC at the time of conducting this study. The four participants cover a variety of backgrounds and experience as novice IDs: two of them are entry-level full-time staff members with 2-3 years' experience, and another two are part-time Graduate Assistants (GAs) as newcomers with very limited professional experience in instructional design.

Data Collection

Three main data sources were collected in this study to generate a holistic picture of this unique COP for IDs, which included written reflections, individual interviews, and observations.

Written Reflections. The participants' reflections were collected through an online survey tool (Qualtrics.com) twice during the semester of Fall 2017. Each survey contained a similar set of four open-ended questions to collect participants' self-reported information including a description of their practice, collaboration experience with colleagues, perceived level of participation, and other reflective thoughts.

Individual Interviews. One semi-structured, individual interview was conducted with each participant at the end of the fall semester. Each interview was conducted in a private conference room on campus and lasted approximately 30-40 minutes. The interviews were used to explore their perceptions of and experience as novice designers. A set of questions was designed and asked in regard to their level of participation, sense of belonging, and collaboration experience. All the interviews were audio recorded and submitted to an outside service provider for the first-round transcription, and the researchers reviewed and revised in the second round for accuracy.

Observations. The researchers observed the weekly group meetings of OLC's D&D unit (around 1-1.5 hour) and reviewed their previous meeting notes archived in Canvas. The focus of the observation was on gathering data about how the group functioned in general and how the participants interacted with others. Specifically, the observations intended to explore the nature of group interaction in general and examine the level of participation of each participant during the meeting. An observation protocol was developed to track individual participation level such as their frequency of speaking up, major topics discussed, how they responded to those topics, and how they interacted with other colleagues during the meeting.

Data Analysis

The data analysis followed theoretical propositions (Yin, 2014) framed by the theoretical framework (i.e. CoPs in this study). Specifically, the coding and analytic process were divided into two rounds and all codes were examined in the light of the study's research questions. For the first round of coding, the researchers independently read the aggregated transcripts, generated explicit themes inductively, and constantly compare for similarities and differences, which allowed the researchers to reflect deeply on the contexts and keep open to multiple directions (Saldaña, 2016). For the second round, the researchers conducted an axial coding to group similar codes into each category (Saldaña, 2016), relabeled certain categories based on the CoP framework, and specified the data source and major codes for each category. To ensure the trustworthiness of the data, the researchers collected multiple sources of data for triangulation, used member checking for transparency, and provided a rich description of data collection and analysis procedures. The researchers employed two types of self-reporting data including reflection journals and individual interviews in order to minimize the bias from one single source. Particularly for the triangulation process, the coding process started from the individual interviews first, and then move to reflections with corresponding questions, and finally cross-checked with the observation notes.

<div align="center">**Findings**</div>

The findings are presented based on the order of the research questions. The initial research question was: Does this grouping of experienced and novice IDs, engaged in a higher education context for instructional design practice, cultivate a CoP?

Observations of Researchers: Recognizing a CoP Cultivated by IDs

According to the structural model of cultivating CoPs (Wenger et al., 2002), a community of practice is a combination of three fundamental elements: domain, community, and practice. The findings indicated the grouping of experienced and novice IDs was able to cultivate a CoP in an informal way. They have successfully established a specific domain comprised of instructional design theories and models, built a community for sharing information and learning together, and developed share practice with a specific body of knowledge.

Domain. The data revealed that this group of IDs had a well-defined domain that creates a common ground that legitimizes the community by affirming the purpose and setting up the boundaries. Even though all the participants have different educational and professional backgrounds, they were all from educational disciplines and well prepared with a knowledge base that is essential for professional IDs. Their specific domain in instruction design created a common ground that not only brought them together but also facilitated knowledge building through contributing to the shared domain.

Community. As one of the fast-growing fields, professionals in instructional design are expected to perform many roles and keep updating their knowledge and skills (Ritzhaupt & Kumar, 2015). This grouping of experienced and novice IDs helped to create the social fabric of learning that encouraged all members to update knowledge, share ideas, and foster interactions in collaborative efforts. Other than managing their primary business goal (i.e. supporting the online learning of two colleges), one of their ongoing activity was to keep updating their resource repository and studying their own practice. This secondary goal helped reinforce the significance of this group as a CoP and distinguish that from other social structures.

Practice. As a well-established community with sustained interactions, the grouping of experienced and novice IDs also helped to develop a specific body of knowledge including a set of ideas, information, workflows, and frameworks that kept evolving with the community. the researchers also identified different trajectories of participation among the participants. As they came from a variety of experience level, they purposely chose a comfortable way of participation, which allowed a respective involvement for novices based on individual needs.

Perspectives of Novices: Examining the Operation of an Effective CoP for IDs

Next, the researchers will address the second research question: In what ways, does this grouping of experienced and novice IDs operate like an effective CoP from the perspective of novice IDs?

Contributing to a shared domain and defining who they are. As the domain is essential to a community of practice (Wenger et al., 2002), participants indicated that their CoP has a well-developed domain that consists of key topics and issues that most IDs commonly care about. Based on the observations, most topics discussed in their online group chat and weekly group meetings were consistent. All the agenda items were proposed by group members instead of decided by their supervisor. Among those agenda items, most of them were very context-specific and solution-driven that encouraged everyone to share information and suggestions regarding their daily practice, including design challenges for a particular course/project, personal concerns for working and communicating with faculty, useful tips and tricks related to the LMS or other tools, plus any administrative issues.

A divided contribution among the four participants has been noticed: both newcomers rarely proposed agenda items and passively participated in the discussion as they were still struggled to know the context and learn the convention; while two entry-level IDs contributed more actively in the meetings and felt more comfortable to provide others with insights and suggestions. While participating in those conversations centered on design challenges and solutions, participants found they got a better understanding of key topics and issues concerned the group and further extended their knowledge essential to the field.

However, becoming an ID is more than being a skilled practitioner with sufficient knowledge but developing a sense of identity that belongs (or not belongs) to the professional community. While participating in the negotiation process of developing shared understandings of the domain, novice IDs also got the opportunity of defining or re-defining who they are, particularly in this case, referring to their perceived role and responsibilities of being an ID.

All the participants indicated that their perceptions changed over time as they became more familiar with their job and working context. Both entry-level designers identified themselves as a "supporting" role. Amy highlighted the technical aspect of her job and identified her role more as "instructional support". Similarly, David also viewed himself as "more of a support role" but also highlighted other dimensions of the ID position such as "providing customer service" and "being diplomatic". As described before in the context of the study, the Design team at OLC provided different types of grants for faculty to develop or improve online courses. David pointed out a specific situation for some grant courses that required IDs to be diplomatic while working with resistant faculty.

For both newcomers, they also experienced a certain degree of perception change about being an ID. Beth as a former teacher originally identified the role of ID very similar to a teaching position but later realized another aspect of being a "project manager", which was inspired by her supervisor in one of their weekly group meetings. Charles previously imagined that IDs mostly focus on "content development and production" but later felt overwhelmed by unexpected duties and then started to question his career aspiration and plan to look for opportunities in other fields. Even though all participants had slightly different understandings regarding their role and responsibilities as IDs, this group had a sense of collective image as David elaborated,

> *I feel like we have a strong sense of our department who we are and we're kind of a badge of honor where we go on campus we just say we're with such and such. And most people understand who we are and where we are from. I think we all can identify as that and where it can get uniform (David, individual interview, 11/06/2017).*

Overall, participants appreciated the involvement of a CoP with a well-defined domain consisting of key topics and issues in the field of instructional design. As they involved in more conversations about design challenges and solutions, they got the opportunity to further their knowledge by contributing to the shared domain. Furthermore, they also started to change their perceptions or rethink the role and responsibility of IDs as they became more familiar and competent with their job.

Developing expertise by interacting with experienced designers. According to Wenger (1998), practice defines community in three dimensions: mutual engagement, joint enterprise, and shared repertoire. This section particularly explored how participants improved their professional expertise through each dimension above.

Through mutual engagement, a CoP could become a tightly knit network of interpersonal relationships that could help novices get socialized into the group through close relationships and collaborations with long-standing members (1998). Both Amy and David as entry-level IDs identified the benefits of collaborating and interacting with colleagues as an essential part of the community. David believed that on a daily basis they "bounced ideas off each other", which really helped him "think differently" and "have different perspectives". And Amy addressed the collaboration part as a consistent part of her daily practice,

> *Collaboration with my fellow instructional support person is a consistent part of my day. We discuss processes, meetings, follow-ups, tasks that need to be done. Almost everything we do is a collaborative effort. It allows us to stay consistent (Amy, individual interview, 11/14/2017).*

Another two newcomers also addressed the benefits of personal learning and growth by interacting or collaborating with more experienced colleagues, particularly referring to senior-level instructional designers in this study. Both of them highlighted the lessons learned from senior-level colleagues: As Beth mentioned in her first written reflection, she could always receive instant replies from other senior designers either in person or virtually (referring to emails and online group chat) whenever she needs some help; Charles pointed out in both of his reflections, it was "eye-opening" for him to "look at the forest instead of trees" and learn to design for "sustainability" as he worked with senior IDs. Below is one example Charles described,

> *I was training with another senior instructional designer yesterday regarding one of my courses. Since she is more experienced than me and she recently worked on a similar task, she helped me a lot to consider bolts and nuts of the transition... I found that it turned out to be more effective training because I got to realize what I know and do not know more clearly (Charles, written reflection, 10/25/2017).*

A joint enterprise is the results of "a collective process of negotiation and efforts that reflects the full complexity of mutual agreement", which creates relations of mutual accountability among members (Wenger, 1998, p. 77). Through participating in the negotiation process responding to their specific situations, participants identified themselves become more committed to their job by holding each accountable. As Amy described, their standard workflow has been frequently adapted by each designer based on their personal references, but they "constantly took the responsibility of discussing best practices and tried to figure out a better workflow and guideline" (Amy, Individual Interview, 11/14/2017).

Shared repertoire as the third dimension refers to a set of "routines, words, tools, ways of doing things… that the community has produced or adopted in the course of its existence, and which have become part of its practice" (Wenger, 1998, p. 82). Based on our observations, this CoP for IDs has been using various strategies to

develop a shared repertoire including 1) a new hire guide that includes all must-know working process for newcomers, 2) an online resource repository that listed best practice and how-to documents for educational technologies, 3) an online group chat (Slack) that allows either individual or group chat for asking questions and sharing resources, and 4) ongoing research projects that investigated their design practices. Most participants appreciated the collective efforts on developing a shared repertoire, because it helped novices further expand their understanding of the job and develop their expertise as instructional designers. Especially for Beth and Charles who were new to the field, they had multiple sources of reference whenever they were looking for some tutorials, guidelines, and best practices. As Charles elaborated in his interview, he was looking for more direct supervision and support beyond the new hire guide created for internal training. Through observations, the researchers also recognized the usefulness of having a shared repertoire that served as a reference collection and helped new members catch up the history of the unit. However, the lack of additional support with direct contact has been identified as a shortcoming from the perspectives of novices.

    Learning through different trajectories of participation. The trajectory of participation is a phrase describing the direction that members in CoPs are moving, which is mediated by the amount of time getting involved and could be divided into five different types: peripheral, inbound, insider, boundary, and outbound (Wenger, 1998). New members will be naturally on the periphery given their struggles to learn the cultural conventions, which also suggested that CoPs are highly contextual and localized. Wenger, McDermott, and Snyder (2002) argued that the level of participation for each member within a CoP is voluntary with some tending to be more involved whereas others prefer remaining on the periphery. Members' relations to a CoP could involve both participation and non-participation, and the mix of these two could shape their identities and impact their practice within a community (Wenger, 1998). As part of the learning process, participants presented different types of trajectories while participating in the CoP.

    For Amy and David who already worked in this group for 2-3 years, they identified themselves more as an "insider" and felt well connected to other members at the time of conducting this research. Both of them were following the type of insider trajectories that means their involvement does not end with full membership but may keep evolving with the community.

    For the two newcomers, they perceived their level of participation in different ways. As Beth also participated in other teams' projects, she collaborated more frequently with other senior-level colleagues and identified herself as an "insider" who felt well supported and connected within the group. If Beth's path was more likely following the inbound trajectories, Charles seemed to go for the outbound trajectories. As expressed in the interview, Charles saw himself more like an "outsider", as he identified himself with insufficient knowledge and experience for participating in the conversations or offering recommendations to other. As Charles elaborated,

> *If I think I have much knowledge and expertise in such area, then I will be insider. But I don't feel like it, then I'm okay with staying as an outsider. And I just think that is the right place at that stage. So right now, I think I'm kind of an outsider, which I'm okay with that (Individual Interview, 11/16/2017).*

    It was important to notice that both newcomers experienced different trajectories of participation. Beth seemed to be moving into the inner circles of the community while Charles purposely chose to remain on the periphery. As Charles recognized the learning opportunity of being an "outsider", he felt comfortable of staying on the periphery and identified this position as a strategy or a cover before moving forward.

Discussion

    Many researchers argue that formal training is not sufficient for preparing IDs with the necessary knowledge base and essential skills for professional practice (Tracey et al., 2008; Tracey & Boling, 2013; Yanchar & Hawkley, 2014). The findings of this study revealed the potential of CoPs as an alternative approach for preparing novice IDs in an informal learning setting. By grouping with experienced IDs and participating in a well-established CoP, novice IDs experienced a smooth transition by quickly getting familiar with key issues and learning through different trajectories of participation.

    It is important to point out that informal learning will not automatically happen by grouping novices with experienced professionals together but requires some additional efforts. As indicated by prior research in science research groups, novice researchers could benefit most from tightly organized research groups as they could get frequent contact with and receive continuous support from proficient researchers (Feldman et al., 2009, 2013). This study also found that novice IDs gained considerable benefits for participating in a well-organized group operating like a CoP. The function of this ID group manifested key characteristics of CoPs, which could provide profound implications for other ID groups in similar working contexts. The first part of the findings already specified how this ID group working at OLC defined their specific domain in instructional design, built a community encouraging

learning and sharing, and developed shared practice consisting of specific knowledge and resources. For other ID groups in higher education institutions considering an organizational change for promoting informal learning, we would highly recommend further explore the concept of CoPs (Wenger, 1998) and its practical model (Wenger et al., 2002) as a guidance while re-organizing their groups for better preparing novices.

As we probed further on the specific ways this grouping of experienced and novice IDs operated as an effective CoP from the novices' perspectives, we identified three major themes regarding how participants perceived their experience. First of all, participants expressed clearly how they contributed to the domain of the CoP which consisted of key topics and issues concerned most IDs. It highlighted the importance of involving novices in either informal and formal conversations on essential topics during their transition stage. As novice designers typically have limited practical experience before getting into the professional field, their participation in a CoP with a well-defined domain could allow them to involve in the negotiation process of developing sharing understating and better relate theoretical knowledge to the practical realities (Sim, 2006; Sutherland et al., 2005).

Moreover, as novices were exposed more to the domain of their CoP and involved in shared practice, the way they defined or re-defined themselves changed as well. It was evident that this ID CoP had a sense of group image. Only those who accepted the proposed group image would claim the membership of the CoP, while some (by choice or by necessity) failed to align with that may choose to leave the community. No matter which path they decided to go, we found each participant developed a better understanding of their job and their role as IDs. As revealed in prior studies, preservice teachers participating in a class or program designed around the COPs framework also reported a better understanding of professional knowledge and identity as teachers (Jimenez-Silva & Olson, 2012; Kaschak & Letwinsky, 2015; Lee et al., 2017). This finding pointed out the importance of further exploring the identity formation of novice IDs and examining how their professional identity would impact their design practice and performance.

As novice IDs highlighted their growth of expertise by interacting and collaborating with experienced designers, this finding suggested the importance of grouping IDs with different levels of experience together and then pair them individually through a mentoring approach. Similar to how some novice researchers participated in science research groups operating as CoPs, they were found to gain both methodological and intellectual proficiency if received appropriate support and guidance within the group (Feldman et al., 2009, 2013). As one of the participants also indicated the need of acquiring more direct supervision and guidance, it pointed out the importance of providing more individualized support for novice IDs and shed a light on future research directions on peer support and individual mentoring for professional preparation. The last key theme also revealed that novice IDs could learn from different trajectories of participation. Similar to prior studies in science research groups, some trajectories may never lead to full participation while others could help a novice moving from a peripheral position of uncertainty to one of mutual engagement (Davies, 2016; Maritz et al., 2013). Through the lens of CoPs, it is important to recognize various types of trajectories that novices may experience and thus provide support and resources accordingly to accommodate individual needs.

Conclusion

This study particularly focused on whether and how a grouping of experienced and novice IDs in a midwestern university operated as an effective CoP from the perspectives of novices. All participants highlighted the positive impact while participating in the CoP by contributing to a shared domain and defining who they are, developing expertise by interacting with experienced designers, and learning from different trajectories of participation. The key findings recognized the cultivation of a CoP among a group of IDs and provided significant implications on how to better prepare novice IDs in similar contexts. For future studies, the researchers would recommend further exploration on how IDs interact and collaborate in an informal learning environment and how novice IDs formed their professional identity through different trajectories. By conceptualizing the nature of how novices learn from others and form their identity, it would reveal more insights and provide implications on how to better prepare novices for the professional fields.

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