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Learning from within: a longitudinal case study of an education research group

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Abstract

Purpose – Professionals in higher education are expected to be informed consumers of knowledge who seek out scholarship, critical evaluators of the applicability of extant knowledge, and contributors who build new knowledge for higher education practice. Despite the understood importance of developing research competencies, many have limited opportunities to develop these skills. This study aims to explore one way individuals develop research competencies: through participation in team-based research experiences.

Design/methodology/approach – A longitudinal case study approach was used to investigate what participants in an education research group learn, and how their participation in the group changes the ways in which they think about themselves as researchers and scholars. Four group members participated in two focus group interviews (at the end of the fall 2015 and spring 2016 academic semesters). Interviews were analyzed using thematic analysis.

Findings – Study participants report gaining knowledge about research, developing an identity as a researcher, and learning about faculty roles. Particular group practices and activities (e.g. full group meetings, subgroup meetings, professional development moments) helped mediate members' learning and identity development. **Originality/value** – Research groups should be considered valuable contexts where teaching and learning take place. By learning – and integrating what we learn – from research group participation, the higher education and student affairs fields may become better able to generate innovative practices and activities that provide students and professionals with opportunities to develop important research competencies.

Keywords

Case study, Graduate education, Learning theory, Longitudinal, Research group, Research supervision

Disciplines

Curriculum and Instruction | Educational Assessment, Evaluation, and Research | Educational Leadership | Higher Education

Comments

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ABSTRACT

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Learning from Within: A Longitudinal Case Study of an Education Research Group

Practitioners working on college campuses are expected to be informed consumers of knowledge who seek out scholarship, critical evaluators of the applicability of extant knowledge, and contributors who build new knowledge for higher education practice. Being informed consumers of and contributors to higher education assists practitioners with translating theory into practice.

Despite the understood importance of developing research competencies (Burt, 2017; Evans, 2011; Feldon, Shukla, and Maher, 2016; Urquhart, Maher, Feldon, and Gilmore, 2016), many have limited opportunities to develop these skills (Bray and Boon, 2011; Turner and McAlpine, 2011; Raddon, 2011). For example, it may be assumed that graduate students will take courses on research methods where they will strengthen their research competencies. But not all graduate programs include research method course requirements in their curricula. If students do not develop research competencies from their graduate curriculum, when and where might they gain these skills as practitioners post-graduation?

This article explores one way individuals develop research competencies: through participation in team-based research experiences. This exploratory study aimed to understand what individuals who had not previously engaged in research experiences (independent or team-based) *learned* from participating in team-based research group experiences, and how their participation influenced their *professional identities*. Participants in this longitudinal case study gained knowledge about research (e.g., identifying and critiquing literature, submitting conference proposals, publishing), developed an identity as a researcher, and learned more deeply about the roles of faculty members through participation in their research group. The findings illustrate that the research group served as a valuable teaching and learning environment

where graduate students and professionals alike strengthened their research competencies and were exposed to research careers (e.g., the professoriate). The article concludes with implications for research and practice, specifically geared towards faculty members and scholars who supervise research groups.

Literature and Theory

Doctoral education provides socializing experiences in which doctoral students undergo a transition from novice to advanced researchers, and become independent scholars (Baker, Pifer, and Flemion, 2013; Golde, 2005; Lovitts, 2005). Becoming an independent scholar signals that students have demonstrated their ability to identify novel areas of research, create innovative research designs to address research questions, and share new knowledge with a broad audience (Burt, 2017, 2014; Gardner, 2008; Lovitts, 2008). Further, the extent to which a doctoral student exhibits competence in the practices required of an independent scholar demonstrates that student's potential for success in scholarly research (Bieber and Worley, 2006). While this body of scholarship is useful in explaining how doctoral students develop research competence, less is understood about how – if at all – other individuals (e.g., master's students, full-time professional staff) develop research competence.

In some fields, students' research group experiences help them learn about career opportunities that utilize research backgrounds (e.g., faculty, national research laboratories) (Crede and Borrego, 2012; Saddler and Creamer, 2009; Stubb, Pyhalto, and Lonka, 2012). Scholarship also suggests that intensive research experiences shape students' research abilities and professional identities (Burt, 2014; Bhattacharyya and Bodner, 2014; Villa et al., 2013). Villa et al. (2013) describe how [professional] identity development occurs through research group participation:

Learning the practices and discourse of a particular group informs an individual's identity development, while individuals inform the practices and discourse of the group. Identity is developed in largely tacit and unconscious ways as an individual is either recruited or seeks entry into a specific group and learns and embodies the practices, language, and discourse of others in that group. (p. 446)

This area of research extends the existing knowledge base, which tends to conceptualize professional identity development as primarily occurring within classrooms and departments, or between students and their faculty advisors (Anthony and Taylor, 2001; Austin, 2002; Barnes and Austin, 2009; Felder, 2010; Mena, Diefes-Dux, and Capobianco, 2013). When students participate in hands-on practices and activities outside of the classroom, they become increasingly able to apply abstract and theoretical concepts to professional practice (Lucas, et al., 2013). Thus, hands-on research experiences create both a social context for students' learning and a site where students' learning and identities (scholarly and professional) merge.

This emphasis on research group experiences suggests that learning takes place within groups, where knowledge is co-constructed through the interactions of individuals within a community of practice. While there is literature on research group experiences, this scholarship tends to focus on students in science, technology, engineering and mathematics (STEM) and psychology disciplines (see for example Burt, 2017; Hollingsworth and Fassinger, 2002; Phillips, and Russell, 1994; Villa et al., 2013). Less is known about the research and professional identity development of education students and practitioners (Felder, 2010). This study helps fill this gap.

To more fully understand how individuals learn – and how their professional identities develop – through interactions with others, we draw on sociocultural perspectives on learning as a theoretical framework. Sociocultural learning perspectives suggest that who individuals are –

and who they come to be – is related to their surrounding contexts, mediation, and participation (Wertsch, del Rio, and Alvarez, 1995). “Contexts” refer to the various systems and structures that shape an individual. In this article, “contexts” will refer to a research group and the university where the research group is situated. “Mediation” describes how an individual learns to become a member of a community through gaining tools to interact with more knowledgeable community members. In this article, “mediation” will refer to the various practices and activities of the research group, *and* the interactions needed from group members to perform these practices and activities. Finally, once individuals acquire the tools of the community, they actively “participate” in the practices of the community. Through participation, an individual is able to think, speak, and act like a full member of the community. After participating in the practices of their community, individuals can then determine whether or not they want to further associate with the community or not, which is a form of “identity.” Taken together, individuals’ learning experiences and interactions with others shape who they become.

Research Questions

In this article we apply the theoretical framework of sociocultural perspectives on learning to a research group in higher education. The research group serves as a “community of practice” where learning occurs through the co-construction of knowledge and interactions with others within the community (Lave and Wenger, 1991; Panadero et al., 2015; Raddon, 2011). Thus, to improve our understanding of participation in research group experiences, this study aims to address the following research questions: (1) What learning results from participating in a research group? (2) How does participating in a research group influence participants’ professional identities?

Methods

Case study was selected as the appropriate methodological approach to accomplish these goals. “Case study” refers to the in-depth analysis of a “bounded system” that characterizes a particular type of phenomenon; the case is a smaller unit of analysis, typifying a phenomenon within a larger context (Merriam & Tisdell, 2016). Because the phenomenon is a product of a larger context, case study methodology is useful to discuss the phenomenon (i.e., learning and professional identity development) and the context (i.e., the research group), through the example of the case (i.e., a cohort of students). Therefore, this article explores the phenomenon of student learning and professional identity development through participation of a cohort within a research group. Centering the experiences of participants from one cohort, and bounding their experiences, makes them the case of study.

The institutional context for the research group is a “very-high research activity” university in the United States. This institution has over 36,000 students, including approximately 5,000 graduate students in 100 graduate programs (both master’s and doctoral), employees approximately 13,000 faculty and staff members, and receives approximately \$250M in external research funding per year. This context is important because it denotes the size and scope of the institution and the significance of research activity there. The institution’s focus on research productivity (e.g., producing publications and securing extramural funding) has implications for faculty members. For example, this study’s research supervisor (RS)’s primary responsibility, in addition to teaching, is research productivity (as expressed in Raddon, 2011). Having a research group helps the RS to be more productive in pursuing a program of research.

The research group is diverse in terms of gender, race, and educational status. Specifically, the group included seven members: four females and three males; two Black individuals, four White individuals, and one Latinx individual; three Ph.D. students, three

master's students, and one full-time professional; the RS, not included in the group total, is Black and male. All student members were 1st year students, with the exception of one 2nd year doctoral student. One member was a full-time professional who worked at the institution. See Table 1 for demographics of the research group. All group members took a graduate course with the RS; the one exception was the full-time professional who did not take a course with the RS, but engaged the RS about participating in research. Through these scholarly interactions, the RS identified prospective group members and individually invited them to join. Finally, all members reported not having previous research experience prior to joining the research group.

Table 1: Research Group Demographics

Pseudonym	Gender	Race	Description	Year	Hours+	Current Status
Research Supervisor (RS)	M	B	Assistant Professor	N/A	N/A	N/A
Allie	F	W	Master's Student	1 st	3	Alumni, Spring 2016
*Davis	M	W	Master's Student	1 st	3	Alumni, Spring 2016
Hannah	F	W	Ph.D. Student	2 nd	3	Active Participant
*Talia	F	W	Master's Student	1 st	3	Alumni, Spring 2016
Thomas	M	L	Ph.D. Student	1 st	3	Left Group, Fall 2015
*Zoey	F	B	Professional Staff	N/A	3	Active Participant
*Tristan	M	B	Ph.D. Student	1 st	20	Active Participant

* Denotes that group member participated in Time 1 & Time 2 Focus Group Interviews.

+ Hours – refers to the estimated number of hours a week group member contributes.

Subsequent cohorts were added to the research group. However, the cohort studied here started in Fall 2015, and its members participated in two focus group interviews, providing two longitudinal points of data (interviews after the fall 2015 and spring 2016 academic semesters). Because of the exploratory nature of this study we decided that limiting the number of potential

explanatory factors (e.g., start date within the group, varying group practices and activities by semester) by focusing exclusively on the inaugural cohort would help us gain an initial understanding of the role of group participation in members' learning and professional identity development.

All members of the first cohort were invited to participate in this study upon joining the research group. The invitation was communicated via email and through conversations during group meetings, per human subjects (IRB) approval. Participation was voluntary, and not required in order to be a member of the research group; not participating did not preclude members from being in the group itself. Further, members were told that participating would be an additional activity, beyond engaging in the regular research activity of the group; that is, the study was secondary to the group's primary research activities.

Participating in the study included taking part in a voluntary focus group at the end of each semester (Creswell, 2013; Merriam and Tisdell, 2016). Focus group interviews were selected as the data collection method for a number of reasons. First, focus groups enhance the capacity to capture multiple perspectives. Thus, the method aligns with the constructivist nature of this study, informed by sociocultural theory, which is particularly important because group members interact with and learn from each other. Second, focus groups allow participants to build on each other's comments, providing richer and more nuanced data. Finally, the focus group method was logistically convenient to gather participants and capture data.

Of the seven members who joined the research group in fall 2015, four voluntarily participated in the focus group interviews both in fall 2015 (Time 1) and spring 2016 (Time 2). The RS created the focus group protocol. However, two researchers from outside of the group whose methodological expertise was in qualitative research facilitated the focus groups (one

researcher led the fall 2015 focus group, and another led the spring 2016 focus group).

Facilitators were instructed to encourage *conversations* across participants and when necessary to probe for deeper understandings of members' experiences. Sample questions included: What – if any at all – were your previous experiences with doing independent or collaborative research? Reflecting on the last semester, how were your experiences in the research group, relative to what you expected they might be? What are some of the challenges of participating in a research group? What are some things you have learned about research since you began working in the research group? What are some things you have learned about yourself as a result of working in the research group? What do you think about the work of faculty and faculty careers? The focus group interviews lasted approximately 45 minutes, and were transcribed verbatim by a professional transcription company.

Data analysis was conducted by the RS and two additional researchers from the subsequent cohort. Thematic analysis was used to identify patterns in the focus group interview data that addressed our two central research questions (Braun and Clarke, 2006; Fereday and Muir-Cochrane, 2006). The researchers read through the transcripts, highlighting and noting text that addressed our questions regarding what students learned from participating in the research group and how that participation was influencing their professional identities. After highlighting potential areas that addressed the research questions, we met as a team to discuss what we were finding. We considered how our interpretations of highlighted areas were similar and different, and where different, we discussed the reasons for these differences. Additionally, where our interpretations differed, we revisited the transcript data using our agreed upon codes. Upon consensus, we identified patterns in the emergent ideas and organized these patterns into themes.

Our study had limitations. First, although there were seven participants in the inaugural cohort, our findings are based on four participants. The three remaining either had scheduling conflicts or were uninterested in participating (recall that group members were not required to participate in this study). Second, although outside researchers conducted the focus groups, it is possible that group members still provided positive responses regarding their experiences knowing that the RS would have access to the transcripts. Additionally, because some student members are connected to the RS through other institutional relationships (i.e., teacher-student; advisor-advisee), some may have also felt compelled to provide positive reflections of their learning and research group experiences. Further, it is possible that participants felt the need to confirm and validate each other's experiences. Other forms of data collection (e.g., journal entries that capture individual members' learning and professional identity development over time) might provide additional data from which to triangulate findings. Third, this article's analysis draws on two focus group interviews. We do not definitively report participants' professional identities as fixed outcomes. Rather, we acknowledge that our data are snapshots in time, and that students' professional identities continue to develop. Finally, because research groups differ on a number of dimensions (e.g., size and composition of groups, research supervisors' leadership styles, research supervisors' orientation and approach to research, fields of study, funded or voluntary research assistants) (Burt, 2014; Crede and Borrego, 2012; Louis et al., 2007; National Research Council, 2015), our findings should not be generalized to other research groups without considering this group's specific contexts (i.e., institutional type, field of education, composition of research group members).

Despite these limitations, we took several steps to ensure the quality of the findings. First, after transcription, we checked the audio against the transcript to verify the accuracy of the

data. Second, to mitigate potential conscious and unconscious bias, we engaged in several discussions to acknowledge our positionalities and subjectivities. Prompts that helped guide our discussions included: What are your positionalities relative to this study? In what ways do your positionalities offer unique insights to this study? What are your subjectivities relative to this study? How might you control your potential biases during data analysis? These prompts were revisited numerous times throughout data analysis and the writing of this manuscript, which allowed us to routinely check our individual and collective subjectivities, and how they may have influenced our interpretations of the data. Finally, the longitudinal nature of this case study lends itself to more trustworthy data. Specifically, using the same focus group protocol across time made us more confident in our ability to compare data across time. Finally, though the protocols were the same, during analysis we stayed open to new understandings of and insights into our research questions.

Findings

To illustrate the influences of research group participation on students' learning and professional identity development, we present two themes: *Learning in the Research Group* and *Professional Identity Development within the Research Group*. Within each theme, we present findings from times one and two. But first, we describe the context of the research group and the practices and activities that mediated participants' learning and professional identity development.

Context of the Research Group

The RS implemented *consistent* practices and activities within the group to help mediate members' learning of research. "Consistent" is highlighted to emphasize the continuity of the practices across Times 1 & 2. At weekly full-group meetings, the RS shared broad group goals

for the week, group members provided project updates and received feedback from the RS, the RS-led mini-workshops (e.g., reading and synthesizing literature, performing audio transcript checking, identifying journals and understanding submission guidelines), and the group publicly celebrated members' accomplishments (e.g., acceptance to present at conferences, being selected to receive university travel grants, submissions of conference proposals and journal manuscripts). The RS arranged subgroups based on members' strengths, areas where members needed improvement, and the general needs of the research group. The subgroup structure was implemented to increase collaboration, provide research support, develop expertise on separate projects, and foster peer-to-peer accountability. Subgroups met bi-weekly unless impending deadlines required more frequent interactions. During subgroup meetings, members worked on the research tasks assigned to their group; the RS attended some – but not all – subgroup meetings. A number of additional practices and activities were implemented to further enhance students' learning about research and the work of researchers. For example, “professional development moments” (PDMs) were short discussions at the conclusion of each full group meeting. PDMs included topics such as building and managing an online presence (e.g., using LinkedIn and Facebook); do's and don't's of conference attendance; the publication process (e.g., writing, submitting, and understanding reviewers' feedback), and the life of a professor.

The RS also implemented a practice within the group to help mediate members' professional identity development. At the start of members' participation in the group, the RS presented each member with a nametag that read, “Dr. [First name] [Last name].” While the nametag itself was a small gesture, the practice established the expectation that members would view themselves and each other as researchers and scholars. Additionally, the nametag with the prefix of “Dr.” was intentionally aimed to provide motivation for those aspiring to a doctorate.

The group's practices and activities evolved over time (with the exceptions of the full group meetings and subgroup meetings which remained consistent). In part, they evolved as participants became more familiar with involvement in the group and engaging in research. As new members joined (i.e., Cohort B), the more veteran members (i.e., Cohort A, the inaugural cohort) were able to guide them. The changing composition of the group allowed the RS to establish new goals and introduce (i.e., scaffold) more complicated research tasks (e.g., analyzing data; writing conference proposals and manuscripts), thus shaping the nature of the group's work. For instance, during Time 1, members were expected to become grounded in the extant literature germane to the group's work, and to learn about different journals and their requirements for publication. During Time 2, however, the group primarily focused on completing conference proposals and manuscripts. To accomplish these tasks, subgroup members had to collaboratively complete data analyses, write conference proposals, and draft manuscripts.

Learning in the Research Group

Time 1

After participating in the research group for one semester, most members mentioned what they were learning during their focus group interviews. Davis, a first-year master's student said:

I've learned more about IRB and... the steps to conducting research – that's the kind of stuff that I don't think a lot of people really think about when they're reading a research article or they're reading journal [articles].

Davis not only identified learning about the IRB process, and its role in conducting ethical research, but also connected what he was learning in his courses with his experience in the group. Specifically, he appeared to juxtapose the articles he read for class with his new

knowledge of the publishing process. Davis indicated an understanding that behind each journal article is a series of steps that scholars perform before an article is published. Talia, a first-year master's student, offered additional comments:

I guess [I am] just learning what the process actually is to completing a research [project]. For example, you'll send it in and they'll send it back and require revisions, or accept it no revisions, or whatever. I think just learning really how much work goes into that and what the process actually looks like.

Talia appeared to be describing the publishing process, including the multiple revisions required before an article is in press. But she also conflated – and perhaps oversimplified – the publishing process with “completing a research project.” Tristan, a first-year doctoral student, stated, “[I learned] requirements for different journals and what a work-in-progress looks like, what a proposal looks like, how to prepare for a presentation, applying for grants, etc.” Tristan identified many other components of the research process (e.g., grants, conference proposals, presentations) in his attempt to make sense of the steps that lead to published journal articles.

In addition to learning more about components of the research process, participants indicated a growing awareness of faculty and faculty careers. Talia remarked:

I always knew that faculty members did a lot of writing, but just seeing [the RS] – one day he put up all of his projects on the board, and I was like “okay, I don't know how you're sleeping at all.”

Davis also indicated that participating in the group provided him with a first-hand view of faculty work:

I kind of wanted to see what the life of a faculty member was like outside of just instructing. I know that particularly at research institutions, that there's so much more

that goes into it. This has... given me the opportunity to see what that's like as a full-time job.

Tristan similarly noted:

Just seeing how that [research] process goes and throughout the [research] process, and how you contribute to that. It was a lot, to say the least. [I'm] just learning how to be more organized...how can I be efficient in the group and still be a good student.

In the examples above, seeing and interacting with the group's faculty supervisor afforded members an opportunity to observe some of the tasks involved in a tenure-track faculty position (i.e., balancing teaching with research and service), at least at their institution. In Tristan's case in particular, he seems to juxtapose his current responsibilities as a graduate student with eventually managing more complicated research tasks. On the whole, participation in the research group provided a window into faculty activity the students may not have seen otherwise.

Time 2

After two full semesters of participating in the research group, including an increased emphasis on completing conference proposals and manuscripts, members were more confident in their ability to participate in research. Zoey, a full-time professional staff member in the group, stated:

[Reflecting back] the challenge for me was really being confident in the work that I was doing with the research with [the RS]. And just understanding that I, too, could contribute to the group in a positive way, and just being confident in that.

Zoey's comment acknowledged that her participation was somewhat stalled until she felt more confident in her ability to conduct research. This finding suggests that self-confidence and

recognizing one's contributions to the group are important components of members' ability to fully participate.

Writing improvement emerged as the most frequently mentioned type of learning during the time 2 focus group. After a year, Talia was now more knowledgeable about – and confident in her abilities to engage in – the research process. Nonetheless, she reflected on the challenge of scholarly writing:

I don't have a ton of experience with academic writing. So writing something that was suitable for an academic journal was something I had to just give a shot at and see, knowing that [the RS] and the other people in the group would be looking at that and making sure things that we have contributed [were] good and suitable for the journals that he [the RS] was writing for.

Here, Talia showed a willingness to engage in writing, but with trepidation due to not knowing how to write for a scholarly audience. Although Talia was gaining more experience in scholarly writing, her fear of being perceived as wrong was visible. However, she appeared to feel more comfortable knowing that the RS and her peers would check her contributions for accuracy.

Improving one's writing appeared to be related to improving one's critical thinking skills. Talia described how her writing became more critical as a result of working in the research group. She noted:

I think I learned how to be more critical of academic writing because when we would do that for course assignments and our master's program, I think what I thought really didn't matter. I could say that in class and that would be the end of it. But for [the RS], I think I really tried and learned to be more critical because if I didn't comment on something then maybe the person reviewing it at the journal would, and that would be a reason for them

to reject it. So just like how critical you really have to be about all the writing that you submit.

Similarly, Zoey described learning how to more critically examine data by considering a sample population's multiple contexts, the existing literature on a topic, and how research relates to professional practice. She shared, "For me, good research just mak[es] sense to me, and how I can use it in my role in working with students." As highlighted by Zoey, learning how to become a better writer included identifying what students liked and disliked in existing scholarship. Group members like Zoey learned that an important component of writing for scholarly audiences included ensuring that the writing was relevant and applicable to professional practice.

Tristan also acknowledged that writing for academic audiences was a new experience for him. This, to him, was especially illuminated by the differences between group projects for class and the scholarly writing done within the research group. When specifically identifying the difficulties groups face when writing together, he mentioned, "It was a challenge in terms of meshing two worlds, multiple perspectives, together in[to] one, to have a concise paper. It wasn't like we were separating particular sections of a paper. We all contributed throughout the work." Tristan's sentiments highlighted the collaborative nature of the group, where all members contributed throughout a manuscript rather than writing individual sections. While he described the benefits of multiple perspectives in the group's writing, he simultaneously acknowledged the challenge of consolidating different ideas into concise prose. Despite the challenges, both in terms of research self-efficacy (e.g., confidence in one's ability to write for a scholarly audience) and the logistics of group writing, members indicated that these formative experiences were direct results of their participation in the research group.

Professional Identity Development within the Research Group

Time 1

Participating in the group and interacting with the RS facilitated students' ability to imagine potential research careers. Part of thinking of oneself in a professional role relates to understanding the tasks involved and determining one's suitability to perform them (Burt, 2014; Ibarra, 1999). Group members discussed their current abilities related to research and how those translated to research-related careers. For example, Talia discussed how being involved in the group helped increase her personal confidence and ability to "contribute to the research process." She further reflected, "I think above all, I've just learned that I'm capable of engaging in the process [of research]...that I have something to contribute to the group." Talia's realization that she actively contributed to the group influenced her sense of self and belief that she could do research, and that she was becoming a researcher. Tristan similarly described the effect of working with the group's RS as "kind of shaping the way I look at myself as a faculty member."

Although members described expanding their career options to include the professoriate, this did not mean that they wanted careers that completely emulated the RS's. Tristan noted that he might make different choices as a faculty member:

There's a lot of things that I would have changed, or things that I don't necessarily see that could be beneficial for a faculty member to engage in. I'm learning a lot about faculty life. But then again, it's about how I want to see myself in that position, and do I want to take on the same role and responsibilities?

This and other sentiments expressed by group members illustrate how participation in the research group, at least in part, provided them with a starting point to consider the work of faculty. Members explained that through participating they gained a better understanding of the work of faculty, at least those teaching at institutions similar to their own. Additionally,

participating in research and interacting with the group's supervisor helped facilitate the development of their scholarly and professional identities as potential researchers or faculty members.

Time 2

In the Time 1 focus group interview, group members discussed their observations of faculty roles. After a full academic year of working in the group and being exposed to the RS, members indicated an increased awareness of a faculty member and his career, which continued to influence their emerging identities as researchers. When discussing the work that faculty members do, Davis demonstrated his understanding that there are different faculty ranks, and that faculty roles may differ by rank:

I understand that a lot of the work you do is kind of thankless. I guess when it comes to rank and tenure, and you can reach full professor, then I guess it doesn't go unnoticed. But I think by just the general population, there's not going to be a whole lot of people who understand exactly how demanding a faculty role is.

Although one of Davis' points relates to his perception that the public does not fully understand what professors do, his central argument relates to the volume of work that faculty members do. The issue of the volume of work continued to surface within the focus group. Tristan remarked that his access to the RS provided him with a clearer view of a faculty career: "I guess it's a good space to be, but this also puts us into a different mindset in terms of how we see faculty life."

During the discussion, Talia extended Tristan's point:

I think it has reiterated the fact to me that it's just a crazy amount of work. If I were to ever pursue that career, I would have to change my mindset and get to a whole different place for me to really then consider that [a faculty career].

Tristan and Talia both acknowledged that they had learned about faculty life by interacting with the group's supervisor. But based on their discussions of needing to adjust their "mindsets" around the volume of work needed to be successful in a faculty role, it appeared that what they were observing and how they made sense of what they were learning were at odds. For instance, their concerns were not just about the volume of the work, but also the nature of it. They appeared to reflect on an often unseen aspect of the faculty role: rejection. Davis shared:

I think the one thing that I really learned is that in many cases the research and submission process is a lot of back and forth, as opposed to just being the research done and the paper written and submitted. It's more so revise and resubmit, or being rejected from one journal and then revising a paper into how it can maybe better fit a different journal...I see that there's a lot more give and take as opposed to it's either pass/fail, the paper is good or it's not. I think there's a lot more of a revision process that I knew existed but didn't know what it looked like until I actually got to see it happen.

Followed by Zoey:

As Davis just mentioned about the submission phases and being rejected and having to revise it and then submit it again, those are things that I really didn't think about in my master's program. So being a part of the research group has really taught me about, "Okay. These are things that I might have to do in the future. If I... pursue being in the professoriate."

Their ideas about needing a new mindset came as a result of understanding that with writing comes rejection. The new mindset, then, seemed to be related to the motivation faculty must possess to keep going despite rejection.

As in Time 1, group members indicated whether or not they viewed themselves as researchers and scholars. Both Talia and Davis noted that they believed they were now researchers. Talia stated, “I think I would call myself researcher... because we have a series of steps that we are going through to try and uncover new information about interdisciplinary research.” Davis followed up: “I would consider myself a researcher but I don't feel like I have enough of a background to consider myself a scholar.” In both cases, they were able to not only identify themselves as “researchers,” but also articulate what made them researchers. For Davis, defining what a researcher was included distinguishing being a researcher from being a scholar. Similarly, in attempts to make sense of his own professional identity, Tristan also offered distinctions between researchers and scholars:

I don't consider myself a researcher or a scholar for a number of reasons. I think I have the potential to be a researcher and a scholar. But for me, it's just, I think there's some kind of independence that comes with those titles, and...I'm still struggling with that now.

Even though Tristan did not identify as a researcher in either Time 1 or Time 2, he did indicate that he had the potential to be a researcher. His quotation also highlighted a piece that was missing for him: the need for greater independence. This suggests that identifying as a researcher and scholar is related to one's ability to work independently. In his case, it was not clear if he was asking for more independent tasks, or if he was reflecting on his current ability to independently engage in the research process, or a combination of the two.

Discussion and Implications

The purpose of this longitudinal case study was to begin understanding *what* members in an education research group learned, and *how* they learned it. The study also sought to better

understand how participation in this research group influenced members' evolving professional identities. Because the goals of this study emphasized students' learning and professional identity development, a sociocultural perspective on learning was used as the theoretical frame. The appropriateness of the framework was demonstrated by viewing group members' experiences through the key theoretical concepts of context, mediation (e.g., interactions), and participation. Specifically, the research group – as a community of practice – served as an important *context* that facilitated students' learning and professional identity development.

As indicated in the findings, interactions among members in the group, facilitated by the group's practices and activities (e.g., group meetings, discussions of literature, data analysis, writing), *mediated* members' development. Merely being in a research group did not guarantee members' development. Rather, intentional practices and activities that encouraged member interactions mediated students' learning and professional identity development. Additionally, the RS's scaffolded practices and activities appeared to leverage members' prior skills. Asking members to build on their previous research experiences (e.g., becoming grounded in literature during Time 1, writing conference proposals and manuscripts during Time 2), the RS incrementally increased expectations regarding the research-related tasks undertaken, while simultaneously providing encouragement and support.

From a sociocultural perspective, *participation* and *identity* can be challenging to identify from one-time interviews with participants. Thus, one benefit of this study is its longitudinal research design. In Time 1, members described the challenges of participating in the practices of the group. By juxtaposing Times 1 and 2, we can see how over time members were able to participate more in the research tasks of the group. Similarly, the data revealed that as members

learned more about research and the work of faculty, they more regularly thought about whether they could or could not see themselves in such a role.

Each group member demonstrated a basic understanding of the logistics of doing research, and the behind-the-scenes work required to publish manuscripts. From a contextual perspective, recall that participating in the research group was members' first experience with research, and that all student members but one were new to graduate school. Given where students were in their academic journeys, it is not surprising that their primary learning was about research and the research process.

Implications for Future Exploration

It is clear from our data that the process of becoming an independent scholar is challenging and complex. The findings from this study suggest that identifying as a researcher and scholar is related, at least in part, to some members' concern about their capacity to independently engage in research. This finding relates to Burt (2014) who similarly found that some engineering graduate students in a research group struggled with developing what they perceived to be the competencies necessary for independent scholars. To better understand the relationship between research group participation and transition to independent scholar, future research needs to determine the practices and activities that facilitate members' transitions to independence. It should also identify the characteristics (e.g., group composition, diversity, size) and other conditions needed to assist members' development.

Second, while group members indicated that their knowledge about and perhaps interest for research careers increased as a result of participating in the group, future investigations should explore the specific practices and activities that influence members' interests. Future analyses of all data sources (i.e., focus group interviews across cohorts), including new forms of

data (i.e., members' individual weekly journals), will seek to determine the origins of group members' interests for research. Additionally, longitudinal research designs that track members' evolving understandings of and interest in research careers will provide additional depth to this inquiry. Further, the extended examination of members' professional identity development will provide useful information regarding *how* their interest in research is maintained or diminished.

Third, participants' current status (e.g., master's, doctoral, full-time professional) could be related to the extent to which group members engage in research experiences and thus develop identities consistent with research. For example, Tristan's experiences with research are likely to be more robust than those of other members because he is a doctoral student and unlike other members who contribute an estimated three hours per week, Tristan is required to contribute 20 hours each week due to his research assistantship with the RS. Thus, because he spends more time engaging in hands-on research, and interacts more with the RS, he is able to reflect on more research experiences than other group members. An examination of this type would extend existing research that suggests students' development differs based on their stage in the doctoral continuum (Baker and Lattuca, 2010; Baker and Pifer, 2011; Baker, Pifer, and Flemion, 2013).

Finally, the diversity of group members (e.g., gender and ethnicity) should not be ignored (Ferreira, 2002). Crede and Borrego's (2013) study showed that size (i.e., quantity of members) and compositional make-up (e.g., postdoctoral, doctoral, master's, undergraduate) influence research group and member outcomes. Less consideration was given to other metrics of group diversity. In terms of this study's group diversity, the group had nearly equal numbers of females and males, the group's RS identifies as Black, and four out of seven group members are White. Because of the limited scholarship on research groups in the field of education, it remains

unclear whether or not this diversity is typical. Taking these demographics into consideration, future analyses should consider how – if at all – the diversity of group members plays a role in members' learning and professional identity development.

Implications for Professional Practice

The findings from this study also offer implications for professional practice. First, through the process of working as a group and taking part in research, participants increasingly came to consider themselves capable researchers. Despite this, members also questioned their capabilities at times. The findings suggest that – at least in part – members' perceptions of being valuable contributors to the group influenced what they thought they were learning and the extent to which they identified with research careers. Thus, faculty members who supervise research groups should be intentional about affirming members' contributions and helping members understand how their contributions fit into the group's larger research agenda.

Second, the findings from this longitudinal study highlighted that members' learning and professional identity development were ongoing. Similarly, as time passed, the group's composition evolved, as did the practices and activities necessary to make it function. To this end, faculty members who supervise research groups should be patient with group members and with themselves; there is a learning curve for all individuals involved in the research enterprise. Additionally, research supervisors should be comfortable testing out different practices and activities that may yield desired outcomes. For instance, we not only wanted a group that produces scholarship but also one that is mutually supportive (i.e., a community where members actively retain one another). To accomplish this, the RS designed practices that were strongly interactional to promote collaboration. Additionally, the group regularly gathered to celebrate

victories both large and small, and to nurture community building. Research supervisors should align the practices and activities of a group with its goals.

Third, it appears that students' professional identities evolve in part based on their interactions with and observations of the faculty research supervisor. It is not yet clear how group members form perceptions of research careers based on models of research success (i.e., "faculty prototype") (Burt, 2014; Blackburn and Lawrence, 1995), nor what the optimal learning environmental characteristics that influence members' learning and professional identity development are. However, helping students understand that their supervisor represents only one model of a research career might help them remain open to the wide range of possibilities for pursuing research careers (e.g., working at think-tanks, policy centers, and colleges and universities of varying institutional types).

Finally, implementing research groups in education may address multiple concerns about faculty work. Academic careers in education fields may function – and be perceived by students – as insular enterprises where scholars independently research and write toward publication. However, when students participate in research groups, they gain a more expansive view of an academic career, a career that can be collaborative rather than isolating. Additionally, not only can students understand *that* faculty careers can be collaborative, but participating in a group can show students *how* to be collaborative in academic work. Some may be concerned that developing a research group may be too time intensive. While it does take time to design infrastructure and practices for a research group, incorporating a research group into one's research operation may enable faculty to increase research productivity by sharing the workload across group members, strengthening the quality of work by having more input and checks and balances of the work among group members, and experiencing a greater sense of fulfillment

from engaging in collaborative work. A final concern about research groups is the cost of hiring students. Unlike science and engineering fields where graduate students tend to be funded by large research grants, in other fields such as education, there may be fewer resources to fund graduate research assistants. In the current study, the majority of group members were volunteers (the exception being Tristan, who was paid a graduate student stipend). Based on our findings, the group members in this study wanted to be a part of the research group to develop skills that they might not have otherwise learned. Thus, limited resources and concerns regarding faculty workload should not be deterrents from establishing a research group. Implementing research groups in education offers benefits to both students and faculty, and the potential benefits of research group participation often outweigh the concerns involved in creating such groups.

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