Faculty Learning Matters: Organizational Conditions and Contexts that Shape Faculty Learning

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Abstract This study explored the relationships between faculty scholarly learning, faculty teaching learning, institutional support, faculty demographics, disciplinary groups, working conditions, and career outcomes such as retention, productivity, satisfaction, and career agency. We found that the stronger the scholarly learning faculty members reported, the more institutional and unit support they perceived for learning, the more satisfied they were, the less likely they were to intend to leave their institution, and the more career agency they reported. Similarly, we found that faculty members who reported more learning related to teaching reported a decreased intent to leave the institution and increased career agency. We

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draw implications for the development of work environments that support scholarly and teaching learning.

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The academic workplace is becoming more complex in many ways. Increased pressures for productivity, shrinking funding for public institutions, and fewer new faculty appointments have increased work hours and stress for tenure track faculty (Eagan and Garvey 2015; O'Meara 2015b). Faculties are becoming more diverse, but women and underrepresented minority faculty members are still less likely to be retained than their male white peers (Griffin et al. 2011; Jayakumar et al. 2009). As a result, many studies of faculty work-life have focused on satisfaction with resources, the fairness of the tenure process, climate for diversity, workload, and relationships with colleagues. Although important areas of study, they perhaps overshadow the equally salient topic of faculty scholarly learning.

Building on the work of Lattuca (2001) and Neumann (2009, 2014), we define *faculty scholarly learning as occurring when faculty members increase subject matter knowledge and skills.* Faculty scholarly learning can be interdisciplinary (e.g., a sociologist reading the work of an anthropologist or learning a research method more often used in other fields) (Gonzales and Rincones 2012; Lattuca 2001). However, by definition faculty scholarly learning adds to faculty members' ability to study and understand the content areas in which they were trained and conduct research (Hermanowicz 2009; Neumann 2009); it emerges from a professor's personal and professional interests (Gonzales and Rincones 2012; Hermanowicz 1998; Neumann 2006, 2009). This category of learning is widely considered part of being a professional but is generally neither assessed (Gappa et al. 2007; Neumann et al. 2006; Sullivan 1995) nor discussed as something that institutional leaders can study, shape, or influence. Yet, it is closely connected to the environment (Jarvis 1987) and is influenced by institutional structures, processes, and cultures (Blackburn and Lawrence 1995; Gappa et al. 2007; Neumann 2009). Just as working conditions in a department have been found to influence faculty productivity (Bland et al. 2006), organizational commitment and intent to leave (Creamer 1998; Daly and Dee 2006; Fox and Mohapatra 2007; Rosser 2004), workload (Carrigan et al. 2011; Johnsrud and Rosser 2002), ability to manage work and family (Campbell and O'Meara 2013; O'Meara 2015b), and career agency (Campbell and O'Meara 2013; O'Meara 2015a), so, too, does work environment influence scholarly learning. Supportive work environments offer strong intellectual relationships with colleagues; resources to attend conferences and access to equipment; and time set aside for learning, thinking and scholarly conversations (Hermanowicz 1998, 2009; Neumann 2009). Faculty members can also be shut out of learning opportunities if certain aspects of the work environment make access to such opportunities difficult (Neumann et al. 2006).

Faculty scholarly learning and support for it is understudied, but it is critical to faculty careers and the future of higher education for three reasons. First, a desire to continue learning and growing as a scholar in one's field is a primary reason why most faculty members pursued advanced degrees and became faculty members (Gappa et al. 2007; Gonzales and Rincones 2012; Hermanowicz 1998; Lindholm 2003; Neumann 2009; Trower 2012). Thus, any effort to recruit, retain, and advance faculty members will at some point involve support of this element. Second, faculty members are workers in a knowledge industry (Blau 1973; Gappa et al. 2007; Hermanowicz 2011). The ability of higher education institutions and programs to compete for students, resources, and public support

depends on how much and how quickly faculty members are learning and are able to adapt as new knowledge, methods, contexts, and settings emerge in and across their fields (Gappa et al. 2007; Hermanowicz 1998, 2009; Lattuca 2001; Neumann 2009). Third, faculty learning is also a public good. It shapes knowledge creation and the dissemination of ideas through such areas as technology, the performing arts, the strengthening of social systems, and improvements in public policy (Neumann 2009; Sullivan 1995).

The purpose of this study was to explore the individual contexts and organizational conditions that support scholarly learning and the outcomes associated with it. As a secondary focus, we also considered the contexts and conditions that shape teaching learning, which we define as *the degree to which faculty members gain knowledge and skills that help them improve as teachers*. This kind of learning has been studied to a greater degree than scholarly learning (see Cox 2004; Eddy and Mitchell 2012; Loucks-Horsley et al. 2003; O'Meara 2007).

Guiding Research and Perspectives

This study was guided by research on faculty scholarly learning as a form of professional growth (Gappa et al. 2007; Lattuca 2001; Neumann 2009; O'Meara et al. 2008); research on organizing practices that influence scholarly learning (Boden and Borrego 2011; Gonzales and Rincones 2012; Hermanowicz 1998, 2009); and research on how social identities, career stage, and disciplinary differences shape organizational contexts and faculty experiences (Baldwin et al. 2005; Blackburn and Lawrence 1995; Blau 1973; Bozeman and Gaughan 2011; Campbell and O'Meara 2013; Carrigan et al. 2011). Scholarly learning is a key aspect of professional growth (Gappa et al. 2007; Lattuca 2001; Neumann 2009; O'Meara et al. 2008). What faculty members learn as scholars varies based on their interests; work roles; the groups with which they interact; and, most relevant to this study, organizational contexts (Creamer 1998; Hermanowicz 2009; Neumann 2009).

Three characteristics of faculty scholarly learning emerged in the literature as particularly important. First, it is content specific (Hermanowicz 1998; Neumann 2009). For example, faculty members can increase knowledge in a field, networking skills, or mentoring skills. Second, scholarly learning emerges from within the individual but is deeply affected by interactions within one's environment (Hermanowicz 2009; Jarvis 1987). Although learning is "at its core an individual matter, an institution can create structures that promote and prioritize learning" (O'Meara and Terosky 2010, p. 46). Available resources influence effectiveness in activating scholarly learning (Marshall 2000), even if those resources differ across different contexts (Carrigan et al. 2011; Hermanowicz 1998, 2009; Neumann 2009, 2014). Third, scholarly learning is personal, best understood from the individual perspective (Hermanowicz 1998, 2009; Neumann 2009, 2014). By the time individuals join the faculty, they have had many years as experienced learners and have reflected on whether they are learning and how much, how well, and in what contexts (Lattuca 2001; Neumann 2009). Some might argue that publication productivity, newly funded research grants, or the development of new courses or interdisciplinary partnerships are objective indicators of scholarly learning. Yet, such an accounting diminishes the agency of learners to assess and comment on their own learning process (Neumann et al. 2006). Also, these learning outcomes could be based on old knowledge or skills rather than reflective of new insights. Thus, the best examination of scholarly learning will include at least some measure of self-reporting.

In our review of the literature, three specific working conditions emerged as most relevant and important (Hermanowicz 2009; Lindholm 2003; Neumann 2009; Ponjuan et al. 2011). First, the research suggests that connections with colleagues build social capital and enhance creativity (Kezar 2014; Nahapiet and Ghoshal 1998; Niehaus and O'Meara 2015; Perry-Smith 2006), both of which are important to scholarly learning. For example, discussion with others about research can help generate new research interests, develop ideas, and reinforce research capacity (Fox 2010). Conversely, faculty members excluded from such scholarly discussions are at a distinct disadvantage (Blau 1973; Fox 1991, 2010; Fox and Mohapatra 2007). Support for cross-disciplinary collaboration in teaching, research, service, and outreach is another important working condition (Lattuca 2001; Neumann 2009). Research on interdisciplinary scholarship has shown that scholarly learning is activated by having to translate aspects of one's field to scholars in other fields (Creamer and Lattuca 2005; Lattuca 2001). Thus, when institutions support interdisciplinary activity, they are creating another platform for scholarly learning (Boden and Borrego 2011; Gonzales and Rincones 2012; Hermanowicz 2009). A third critical working condition is time. Winslow (2010) observed that time is the most important resource faculty members need to accomplish career goals. Additional responsibilities unrelated to learning often disrupt and constrain post-tenure scholarly learning (Neumann 2009; Neumann and Terosky 2007; Terosky et al. 2008). Likewise, several studies have found that faculty members are likely to be more productive and more satisfied in their careers and with their institutions when they spend more time on research (one part of their learning) (Bozeman and Gaughan 2011; Winslow 2010). Given the proven relationship between publications and time spent on research (Bozeman and Gaughan 2011; Creamer 1998), it is reasonable to assume that time set aside for scholarly learning will facilitate its growth.

Our review of the literature on faculty teaching learning likewise suggests that it will be influenced by having strong intellectual colleagueship wherein one can learn new skills, try out new ideas or strategies, and obtain feedback (Cox 2004; Eddy and Mitchell 2012; Loucks-Horsley et al. 2003; O'Meara 2007). Research suggests that women faculty members spend more time preparing for teaching and using high impact practices then do men (Eagan and Garvey 2015), so it is possible women could be more likely to seek growth as teachers although we could not find significant evidence suggesting this later point.

It is important to note that research on work environments suggests that faculty experiences often differ significantly by gender, race, and rank (Rosser 2004; Sagaria and Dickens 1997; Tierney and Bensimon 1996; Trower 2012). For example, newly tenured faculty members may find that they are required to do more administrative work, thus possibly taking time away from their learning (Neumann and Terosky 2003, 2007). Meanwhile, women are more likely than their male peers to be dissatisfied with relationships with senior colleagues (August and Waltman 2004; Ponjuan et al. 2011; Seifert and Umbach 2008) and with recognition for their research (Gardner 2012), and they are more likely to feel isolated in their departments and to be excluded from informal scholarly networks (Fox 2010; Gardner 2013). Finally faculty members of color have reported increased scrutiny of their research when it touches on racial or ethnic issues (Cuadraz 1998; De la Luz Reyes and Halcon 1991; Tack and Patitu 1992). Thus, demographics should be considered in trying to understand the relationship between scholarly learning, teaching learning, and organizational environments.

Research on professional growth in academic environments also suggests that opportunities to learn and grow in one's field or in teaching will likely influence retention, productivity, satisfaction, and career agency (Campbell and O'Meara 2013; Neumann 2009; O'Meara et al.

2008; Terosky et al. 2014). By career agency we refer to strategic perspectives and actions taken to achieve career goals (O'Meara 2015a).

Building upon the assumption that scholarly learning and teaching learning are critical aspects of professional growth (Gappa et al. 2007; Neumann 2009; O'Meara et al. 2008) and that institutional support is a critical element (Boden and Borrego 2011; Hermanowicz 2009; Lattuca 2001; Neumann 2009), we sought to understand the relationship between scholarly learning and institutional support for it and (a) faculty demographics and academic locations; (b) local working conditions; and (c) key outcomes related to faculty careers including satisfaction, productivity, career agency, and intent to leave. We also examined the relationship between teaching learning and these three factors.

The Study

Research Questions

This study sought to answer the following research questions:

- Was strong faculty scholarly learning and the perception of institutional support for it predicted by gender, race, rank, time at the university?
- Was strong faculty teaching learning predicted by gender, race, rank, time at the university?
- Did either faculty scholarly learning or faculty teaching learning predict satisfaction with the following working conditions: (a) strong local intellectual colleagueship, (b) perceived support for interdisciplinary work, and/or (c) time spent on research versus teaching and service?
- Did either faculty scholarly learning or faculty teaching learning predict the following outcomes: (a) satisfaction with the university or with their unit, (b) intent to leave the university or the academic profession, (c) perceived productivity, and/or (d) career agency?

Research Design

We used quantitative, cross-sectional, survey methods (Groves et al. 2004) to explore these research questions. The site of the study was Learning University (LU), a pseudonym for a large, public, research-extensive institution in the United States. An advantage of focusing on one institution was that we could hold key institutional characteristics, which are likely to influence faculty scholarly learning or teaching learning such as resources and prestige, constant (Blackburn and Lawrence 1995; Creamer 1998). Multi-institutional studies can overwhelm departmental contexts, which vary across institutions. Moreover, single institution studies produce a more focused analysis of organizational influences on scholarly learning and teaching learning because they provide a complete picture of the institution, thereby allowing departmental factors to be contextualized by broader institutional trends (Niehaus and O'Meara 2015). Consequently the findings of this study can provide insights into the practical applications of this research, which is also intended as an exploratory study testing key constructs that will be expanded in the future.

Instrument and Data Collection

We collected the data for this study as a part of the LU Faculty Work Environment Survey (FWES). We based the FWES design on an extensive review of the literature on faculty careers and professional growth, including faculty learning (Neumann 2009; O'Meara et al. 2008). The goal of the FWES was to assess to what extent faculty perceived that LU was investing in faculty members' professional growth and providing a work environment conducive to their success. We conceptualized scholarly learning and institutional support for it as well as teaching learning as critical aspects of faculty professional growth, and they were the foci of the survey. It also addressed other aspects of work environment such as climate for diversity, work-life climate, leadership, and intent to leave. Thus, the first author designed the survey with the dual purpose of (a) contributing to the literature on faculty professional growth and scholarly and teaching learning and (b) providing a way for LU to diagnose and benchmark the current status of faculty professional growth so that it can be strengthened in the future.

A panel of eleven experts on faculty careers, learning, agency, and organizational studies reviewed the survey for content and construct validity; and a steering committee reviewed it to ensure clarity of the survey items. The first author then piloted the survey with a small group of faculty members external to LU and also asked these faculty members to provide qualitative descriptions of how they answered survey items so as to ensure the validity of key constructs. The LU Institutional Review Board approved the survey, and the 2015 FWES was its third administration as part of an NSF-funded ADVANCE project at LU. The first author made additional edits prior to the 2015 administration so to strengthen its validity and to shorten the instrument (see Appendix A for items).

We invited all full-time tenured and tenure-track faculty members at LU to participate in the online survey during the spring of 2015; a total of 854 faculty members (53%) responded (see Table 1), which is a high response rate for faculty surveys (Hurtado et al. 2012). Women, White faculty members, and assistant professors were slightly overrepresented in the sample compared to the overall faculty population at LU, while full professors were slightly under-represented. To address this issue, we weighted the data.

Variables

Faculty Learning and Support Based upon our literature review, we operationalized strong scholarly learning as the extent to which faculty members reported having learned

Table 1 Respondent demographics

Gender	Male	58.7%
	Female	41.3%
Race	White	80.1%
	Faculty of Color	19.9%
Rank	Assistant	23.5%
	Associate	32.4%
	Full	44.0%
Time at university	0–10	49.3%
	11–20	23.0%
	21–above	27.8%

knowledge or skills that contributed to their research and/or scholarly agenda in the last 12 months and set aside time to advance their scholarly learning. We operationalized strong teaching learning as the extent to which faculty members reported having gained knowledge or skills in the last 12 months that made them a better teacher.

We conceptualized perception of institutional support at university and department levels. We asked about the extent to which LU provides an environment at these levels that stimulates faculty learning, provides support for learning external to campus, helps faculty members to make time for learning among their other responsibilities, and has financially supported learning in their field or discipline.

We measured each item using a 5-point Likert-type response scale (1-strongly disagree, 2-disagree, 3-neutral, 4-agree, 5-strongly disagree) and used the mean of the items as the overall measure of the constructs. The higher the mean scores across the items, the stronger we assessed faculty scholarly learning and perceived institutional support for scholarly learning or teaching learning to be.

Faculty Demographics, Characteristics, and Institutional Locations (colleges) We analyzed these elements as gender (male = 0, female = 1), race (White = 0, Faculty of Color = 1), time spent at the institution, rank (dummy coded with full professors as the referent group), and academic college (of which there were 12 at LU).

Working Conditions Based upon our literature review, we developed survey items to test satisfaction with three working conditions likely to influence faculty scholarly learning. We developed single items to measure the perception of support for interdisciplinary work and time spent on research. We operationalized strong local, intellectual colleagueship using a five-item scale inquiring about experiences in one's unit, specifically satisfaction with collegiality, with the support of colleagues, with transparency of decision making, as well as feeling isolated (reverse coded) and feeling like faculty members care about one's well-being.

Key Outcomes Related to Faculty Careers We measured satisfaction with unit and institution, intent to leave, and perceived productivity using single items that appear in many national surveys. For example, we measured intent to leave by asking the extent to which faculty members were likely to leave the institution in the next 2 years and satisfaction by asking the extent of faculty members' overall satisfaction with working in their unit and university. We measured perceived productivity by asking participants to note their overall research/scholarly productivity compared to scholars in the same field and at their rank nationwide. We operationalized faculty career agency using a six-item scale (Campbell and O'Meara 2013; Niehaus and O'Meara 2015) reflecting the extent to which faculty members feel stuck in their ability to advance (reverse coded), feel that they have control over whether they advance in their career, feel that they are in charge of the direction of their research agendas, report being strategic in achieving their career goals, seize opportunities when they are presented to advance in their careers, and have intentionally made choices to focus their careers in ways that are personally meaningful. Confirmatory Factor Analysis performed on these agency items in prior studies had shown high loadings and robust statistics (Campbell and O'Meara 2013). We also ran this analysis on all other key constructs noted above. All standardized loadings ranged from 0.665 to 0.890, proving construct validity.

Data Analysis

We conducted one-way ANOVA analyses to determine whether there were significant differences in (1) strong faculty scholarly learning and (2) the perception of institutional support based on gender, race, rank, or time at the institution and whether there were significant differences in strong faculty teaching learning based on these same variables. Due to the overrepresentation of females in the respondents we weighted the data by gender. Next, we ran separate regression models for working conditions and key outcomes related to faculty careers (See Tables 2, 3, 4 and 5).

Limitations

This study was exploratory and involved data from one institution. Given the relative importance of resources to faculty scholarly learning and professional development, it would have been helpful to know the nature of professional development resources that were available to each faculty member and to compare faculty assessment of institutional support to satisfaction with these resources. Also, because of the small number of faculty members of color in this study, we were unable to break down responses into subgroups. Research has found that faculty members of color have different experiences by subgroup, and thus we suggest that future research explore these categories. In addition, prestige and status can differ considerably within a single institution. It would have been helpful to consider differences in scholarly learning and perceived support for it between faculty members in top-ranked academic programs and those in lower ranked programs. Although we studied local colleague support, it would have been helpful to assess scholarly learning and strong external disciplinary colleague support, which we will examine in subsequent research. Finally, we used a single data source in drawing on self-reported survey data, and faculty members might have over- or under-reported their learning. It would have been beneficial to triangulate this source with other measures such as publications, funding, interdisciplinary projects or improved peer reviews of teaching.

Findings

Faculty Learning, Support, and Academic College

Agriculture faculty members (mean = 3.59) and Public Health faculty members (mean = 3.51) were less likely than Computer, Mathematical, and Natural Sciences faculty members (mean = 4.07) to report strong scholarly learning. Strong scholarly learning, however, did not vary based on gender ($F = 2.135$, $df = 1$, $p = .144$), race ($F = 1.935$, $df = 1$, $p = .165$), rank ($F = 1.952$, $df = 2$, $p = .143$), or time at university ($F = 2.924$, $df = 2$, $p = .054$).

Faculty members of color (mean = 3.58) were less likely than White faculty members (mean = 3.78) to report having gained knowledge or skills that have made them a better teacher ($F = 5.857$, $df = 1$, $p = .016$). Agriculture faculty members (mean = 3.53) were less likely than Computer, Mathematical, and Natural Sciences faculty members (mean = 3,93) and Public Health faculty members (mean = 3.44) less likely than Journalism faculty members (man = 4.59) to report strong faculty teaching learning ($F = 2.876$, $df = 11$, $p = .001$). Strong teaching learning, however, did not vary based on gender ($F = 2.123$, $df = 1$, $p = .122$), rank ($F = 2.820$, $df = 2$, $p = .060$), or time at university ($F = 2.322$, $df = 2$, $p = .099$).

Table 2 Strong faculty scholarly learning

	Strong local intellectual colleague-ship	Perceived support for interdisciplinary work	Satisfaction at university	Satisfaction with unit	Intent to leave university	Intent to leave academic profession	Perceived productivity	Time spent on research vs Teaching and service	Career agency
Gender	-.045	.030	-.003	-.037	.052	.077*	-.060	-.167***	.006
Faculty of Color	-.012	-.028	.020	.003	.050	-.047	.091**	.020	.006
Assistant	.050	.019	.063	.043	-.026	-.020	-.199***	-.054	-.053
Associate	-.098**	-.109**	-.095**	-.131***	.041	-.007	-.255***	-.127***	-.233***
Strong faculty scholarly learning	.155***	.158***	.266***	.179***	-.149***	-.185***	.290***	.321***	.418***
Adjusted	.040	.037	.087	.055	.028	.037	.161	.155	.228

Standardized regression coefficients

***$p<.001$, **$p<.01$, *$p<.05$

Table 3 Strong faculty teaching learning

	Strong local intellectual colleague-ship	Perceived support for interdisciplinary work	Satisfaction at university	Satisfaction with unit	Intent to leave university	Intent to leave academic profession	Perceived productivity	Time spent on research vs Teaching and service	Career agency
Gender	-.044	.031	-.004	-.037	.049	.080*	-.068*	-.176***	.001
Faculty of Color	-.005	-.023	.030	.008	.044	-.049	.087*	.021	.007
Assistant	.042	.011	.052	.036	-.020	-.016	-.201***	-.060	-.064
Associate	-.111**	-.121**	-.112**	-.145***	.050	.006	-.268***	-.148***	-.258***
Strong faculty teaching learning	.126***	.126***	.198***	.133***	-.117**	-.073*	.086*	.167***	.226***
Adjusted	.032	.028	.055	.041	.018	.008	.084	.080	.104

Standardized regression coefficients

***$p < .001$, **$p < .01$, *$p < .05$

Table 4 Perception of university support for scholarly learning

	Strong local intellectual colleague-ship	Perceived support for interdisciplinary work	Satisfaction at university	Satisfaction with unit	Intent to leave university	Intent to leave academic profession	Perceived productivity	Time Spent on research vs Teaching and service	Career agency
Gender	−.027	.041	.015	−.018	.041	.076*	−.070*	−.166***	.010
Faculty of Color	−.032	−.046	−.003	−.015	.052	−.037	.075*	.000	−.021
Assistant	.029	.008	.036	.019	−.014	−.014	−.193***	−.058	−.060
Associate	−.057	−.070	−.041	−.091**	.008	−.009	−.255***	−.095**	−.208***
Perception of university support for scholarly learning	.490***	.374***	.639***	.491***	−.297***	−.119**	.117**	.394***	.413***
Adjusted	.253	.149	.419	.261	.090	.016	.090	.203	.221

Standardized regression coefficients

$***p < .001$, $**p < .01$, $*p < .05$

Table 5 Perception of unit support for scholarly learning

	Strong local intellectual colleague-ship	Perceived support for interdisciplinary work	Satisfaction at university	Satisfaction with unit	Intent to leave university	Intent to leave academic profession	Perceived productivity	Time Spent on research vs Teaching and service	Career agency
Gender	–046	.022	–.016	–.043	.062	.087*	–.073*	–.182***	–.006
Faculty of Color	–.026	–.044	.008	–.011	.051	–.036	.079*	.012	–.011
Assistant	.005	–.004	.032	.001	–.016	–.013	–.201***	–.072*	–.074*
Associate	–.048	–.062	–.057	–.081**	.009	–.018	–.254***	–.103**	–.213***
Perception of unit support for scholarly learning	.622***	.482***	.526***	.611***	–.282***	–.167***	.120***	.358***	.405***
Adjusted	.398	.241	.290	.393	.083	.030	.092	.177	.216

Standardized regression coefficients

***$p < .001$, **$p < .01$, *$p < .05$

Associate professors (mean = 3.18) were less likely than assistant (mean = 3.57) and full professors (mean = 3.45) to perceive strong university support for scholarly learning ($F = 8.199$, $df = 2$, $p. > 001$). Arts and Humanities faculty members (mean = 3.18) were less likely than Computer, Mathematical, and Natural Sciences faculty members (mean = 3.56) to perceive strong university support ($F = 2.178$, $df = 11$, $p = 014$). The perception of university support for scholarly learning, however, did not vary based on race ($F = 0.051$, $df = 1$, $p = .821$), gender ($F = 1.36$, $df = 1$, $p = .243$), or time at university ($F = 2.496$, $df = 2$, $p = .083$).

Perception of unit support for scholarly learning also varied based on rank ($F = 9.387$, $df = 2$, $p < .001$), college ($F = 3.568$, $df = 11$, $p < .001$), and time at university ($F = 3.296$, $df = 2$, $p = .038$). Associate professors (mean = 3.24) were less likely than assistant (mean = 3.62) and full professors (mean = 3.45) to perceive strong unit support for scholarly learning. Echoing these findings, faculty members of 11–20 years (mean = 3.29) were less likely than faculty members of 1–10 years (mean = 3.50) to perceive strong unit support for scholarly learning. Agriculture faculty members (mean = 3.12) were less likely than Arts and Humanities faculty members (mean = 3.55), Business and Management faculty members (mean = 3.74), and Behavioral and Social Sciences faculty members (mean = 3.57) to perceive strong unit support for scholarly learning. Architecture faculty members (mean = 2.71) were less likely than Arts and Humanities faculty members (mean = 3.55), Business and Management faculty members (mean = 3.74), Behavioral and Social Sciences faculty members (mean = 3.57), and Information Studies faculty members (mean = 3.79) to perceive strong unit support for scholarly learning. However, the perception of unit support for scholarly learning did not vary based on gender ($F = .026$, $df = 1$, $p = .871$) or race ($F = .041$, $df = 1$, $p = .840$).

In order to explore the impact of institutional locations (e.g., academic college) on scholarly learning and perceived support thereof more deeply, we looked into what else might be true about the participants in Computer, Mathematical, and Natural Sciences (CMNS) and Information Studies (ISCH), the two colleges where faculty members self-reported the strongest scholarly learning and level of institutional support. Results from our analyses suggested that at least one of these colleges was distinct in other ways, as well.

Using ANOVA, we found that CMNS, the college with the highest self-reported faculty scholarly learning and perceived level of support, reported above average levels of satisfaction with the overall experience in their unit (mean = 3.85) and with the amount of time they spend on research versus teaching and service (mean = 3.34). They also had a low level of intention to leave the university (mean = 2.04). Likewise, using ANOVA, we found that compared to all other colleges ISCH faculty members, who had the highest rating of unit support for scholarly learning, reported a high level of satisfaction with the overall experience in their unit (mean = 4.36), below average level of intention to leave the university (mean = 2.11), and the highest level of perceived support for interdisciplinary research (mean = 4.64).

Faculty Learning, Working Conditions, and Outcomes

In the overall regression models, strong scholarly learning and strong teaching learning were significant, positive predictors of all selected dependent variables, controlling for gender, race, and rank. As scores for scholarly and teaching learning rose, so did scores for perception of local, intellectual colleagueship; support for interdisciplinary work; and levels of satisfaction with time spent on research versus teaching and service. Likewise, as the scores for scholarly learning and teaching rose, so did levels of satisfaction with where faculty members were with their careers at the university and levels of satisfaction with their unit. As scores for scholarly

teaching and learning rose and intent to leave the institution and the academic profession decreased, faculty members felt more productive and agentic about their careers. Strong scholarly learning models predicted 16.1% of the variance (adjusted R^2) in perceived productivity, 15.5% in time spent on research versus teaching and service, and 22.8% in career agency. Strong teaching learning models predicted 8.4% of the variance (adjusted R^2) in perceived productivity, 8.0% in time spent on research versus teaching and service, and 10.4% in career agency.

The perception of university support for scholarly learning was also a significant, positive predictor of all dependent variables, controlling for gender, race, and rank. The stronger the perception of institutional support, the more satisfied faculty members were with the identified constructs. The models predicted 25.3% of the variance in strong, local, intellectual colleagueship; 20.3% in time spent on research versus teaching and service; 41.9% in satisfaction with the university; 26.1% in satisfaction with their unit; and 22.1% in career agency.

Regression models of perception of unit support for scholarly learning were the strongest among other predictors in explaining the variability of the response data. Perception of unit support was a significant, positive predictor of all dependent variables, controlling for gender, race, and rank. The stronger the participants perceived unit support for scholarly learning to be, the more satisfied they were with the identified constructs. The models predicted 39.8% of the variance in strong, local, intellectual colleagueship; 24.1% in perceived support for interdisciplinary work; and 17.7% in time spent on research versus teaching and service. The models predicted 29.0% in satisfaction at the university, 39.3% in satisfaction with their unit, and 21.6% in career agency.

Discussion and Implications

We believe that this exploratory study makes a distinct contribution to the literature by showing a relationship between faculty members' perceptions of their own scholarly learning and institutional support for that learning and particular working conditions (e.g. local intellectual colleagueship, support for interdisciplinary work, time spent on research), which are elements identified in previous qualitative research (Lattuca 2001; Neumann 2009). We found clear links between the perceptions of scholarly learning and teaching learning and outcomes such as degree of faculty satisfaction. Furthermore, the findings suggest that supporting scholarly learning is important regardless of gender or race, which is good news from the perspective of crafting policies to support all faculty members. Current practice emphasizes satisfaction in most work environment surveys. However, our findings suggest that limited resources might be better spent assessing and supporting faculty scholarly learning and teaching learning, factors closely related to institutional and faculty goals. In this section we consider key findings and the implications for future research, educational policy, and faculty development.

The institutional location of faculty members, specifically their college, was far more predictive of the self-reported perception of scholarly learning and institutional and departmental support than were faculty demographics and characteristics – with the exception of rank. It was interesting that the perceptions of scholarly learning and teaching learning showed no difference by gender. Other studies have found that the perceptions of procedural and distributive justice and ratings of professional relationships differed by gender, with women less satisfied in both cases (Lawrence et al. 2014; Ponjuan et al. 2011; Trower 2012).

Interestingly, race was also not a significant predictor of scholarly learning; but it was predictive of teaching learning with faculty members of color less likely to report teaching learning than White faculty members. Although these findings may suggest that LU is doing a better job supporting scholarly learning for faculty members of color than teaching learning, we note that it was a small sample of this faculty group. Future research should test such a conclusion. It may be that different kinds of networks and supports are engaged in supporting these two distinct but sometimes overlapping kinds of faculty professional growth.

The finding relating to rank as a variable and associates reporting the lowest perception of support is consistent with many studies showing a more negative career experience for associate professors. For example, national surveys conducted by Harvard's Collaborative on Academic Careers in Higher Education have found that associate professors are less satisfied than assistant and full professors in overall satisfaction, time spent on research, and institutional support for balancing service work and other responsibilities (Collaborative on Academic Careers in Higher Education 2008; Jaschik 2012; Trower 2011; Wilson 2012). Likewise, surveys conducted by TIAA-CREF (Trower 2011) and the Higher Education Research Institute (DeAngelo et al. 2009) found that associate professors are the most likely of all three career stages to feel "stuck" in terms of their career advancement (Baldwin et al. 2005; Buch et al. 2011; Easterly and Pemberton 2008; Trower 2011).

Given what previous studies have shown about the relationship between resources and faculty satisfaction, research productivity, and career agency (Bland et al. 2006; Campbell and O'Meara 2013), it was perhaps not surprising to find that LU's oldest STEM college, which brings in a disproportionate amount of external funding for research, was the college where faculty members reported more scholarly learning. Similarly, several studies have found that faculty members involved in interdisciplinary research collaborations report meaningful intellectual engagement because they are pushed and challenged to reconsider their field from new vantage points (Lattuca 2001; Neumann 2009). Yet, institutions and departments matter to the creation of such interactions. The College of Information Studies, a newer LU college, which combines interdisciplinary fields, was the college with the highest mean for faculty perception of unit support for scholarly learning. This suggests an interaction between organizational structures and scholarly learning as well as a connection with resources.

Although this is an exploratory study, we identify two potential implications to be examined in future research. First, the emphasis upon and trend toward academic capitalism in research universities, which rewards faculty members who bring in external revenues, may interact with opportunities for scholarly and teaching learning (Rhoades 1998; Slaughter and Leslie 1999). Indeed, academic capitalism builds upon a foundation of emphasis on STEM fields within most research universities since the cold war when the federal government began funding faculty STEM research to a greater degree (Geiger 2004; Hermanowicz 2011; Slaughter and Leslie 1999). Building upon our findings and previous research, it seems reasonable to assume that several working conditions enhance scholarly learning: resources, time, and the presence of local colleagues engaged in related research. STEM fields often have more research funding than non-STEM departments. This funding can support course buy-outs, which allow faculty members to spend more time on research; facilitate the hiring of postdocs and graduate students; and provide resources for attending conferences, buying equipment, and learning new research methods. Thus, further research should examine faculty scholarly learning across academic colleges and fields from the perspective of available time, resources, and opportunities for intellectual engagement. In a similar vein, the National Science Foundation has funded a significant amount of curriculum development and STEM faculty teaching learning

in the last 20 years (Geiger 2004; Loucks-Horsley et al. 2003; O'Meara 2007); and thus there may have been benefits to certain disciplines over others.

Moreover, we do not think it was a coincidence that faculty members from an interdisciplinary, relatively young LU college reported the highest rating of institutional and unit support for scholarly learning. In older colleges cross-college interdisciplinary collaborations are generally harder to arrange and not well-rewarded (Boden and Borrego 2011; Holley 2009). Even research universities that have countered this organizational barrier by creating interdisciplinary, cross-college centers to stimulate collaboration still run into problems within the reward system (Boden and Borrego 2011; Holley 2009). Future research might explore the relationship between the nature of disciplines and fields, the structure of their organizational homes, and faculty perceptions of their own scholarly learning and institutional support for scholarly learning.

In regards to policies, structures, and working conditions that support scholarly learning and teaching learning, there are many options. Our findings suggest that the best ones have the following characteristics: (a) opportunities for faculty members to interact with colleagues from across campus; (b) opportunities that intentionally set faculty time aside each week for thinking, writing, reading, and exchange; and (c) resources and policies to support scholarly learning. For example, some NSF-funded ADVANCE programs have created learning communities of women from different colleges and disciplines that meet monthly to discuss topics related to careers (O'Meara and Stromquist 2015; Terosky et al. 2014). In addition, sabbaticals and support for faculty members to attend conferences are arguably the two most well-established programs supporting scholarly learning. Such efforts are especially important in supporting what Neumann (2009) calls externalized (off-campus) opportunities to connect with others. However, it is equally as important for institutions to promote on-campus, local connections. For example, on-campus writing circles of faculty members from different disciplines sharing work with due dates and writing retreats away from email help faculty members find time for learning (Elbow and Sorcinelli 2006; Steinert et al. 2008).

Department chairs are also critical supporters of scholarly learning and teaching learning, and they can seek to reduce service workloads and chunk meetings in single days so other days can be set aside for writing. They can work to implement policies that give faculty members the same credit for team-teaching as solo teaching in order to facilitate learning from peers, and they can invite faculty members to share their research and receive feedback in monthly colloquia and facilitate mentoring for the submission of papers and grant proposals. Finally, seed grants that fund 3 or 4 faculty members from the same campus to work together on interdisciplinary research projects provide resources for work that is often difficult to fund and create colleagueship. Institutions that prioritize recruitment of associate professors into such programs may make the greatest strides because they can be a catalyst for scholarly learning at a time when faculty members are most vulnerable to being pulled away from subject matter learning (Gardner 2012; MLA 2009; Neumann 2009; Stout et al. 2007; Terosky et al. 2008).

Analyzing organizational and cultural constraints to scholarly learning and the implementation of policy and organizational solutions is also very important (Neumann et al. 2006; O'Meara 2011). For example, if department rhetoric espouses the benefits of interdisciplinary work but department merit, promotion, and tenure policy criteria reward contributions to journals and disciplinary associations in only one field, faculty efforts to engage in interdisciplinary work will be thwarted. Also, department norms for individual contributions and working from home can thwart the development of intellectual colleagueship if not offset with other organizing norms or practices that create chances for faculty members to connect. In

studies of faculty departure, faculty members often express disillusionment about the lack of opportunities for research collaboration, feedback on ideas, and mutual exchange with other faculty members (O'Meara 2014; O'Meara et al. 2014). However, departing faculty members often do not question their own attempts to facilitate intellectual community; rather they blame the lack of intellectual engagement on the way their department, college, or institution was organized. The creation of such connections is a two-way street requiring both organizational efforts and individual agency (Niehaus and O'Meara 2015). Regardless, it is important for departments that have strong norms for individual scholarship (e.g., a single authored book culture) or working from home to foster other opportunities for collaboration, such as department colloquia, team-teaching, co-chaired dissertations, writing groups, or collaborative grant-writing. Also, promotion and tenure policy guidelines need to be examined and revised to acknowledge interdisciplinary and collaborative research and teaching (Boden and Borrego 2011; Lawrence et al. 2014; O'Meara 2011).

Conclusion

In conclusion, much research has focused on faculty satisfaction, but an important motivational force in faculty lives, the desire to continue learning, is less often examined. We found faculty members' perception that they were continuing to learn as scholars and teachers and perceived support for their learning to be predictive of satisfaction, retention, productivity and career agency. Given that faculty members have a passion for their subjects and a desire to learn that pulls them toward academic careers (Gappa et al. 2007; Neumann 2009), institutional attention to the working conditions that facilitate scholarly and teaching learning should be central to any attempts to retain and support faculty members and advance institutions.

Appendix A. Survey Items

Faculty Scholarly Learning

In the last twelve months, I have learned a great deal that contributes to my research and/or scholarly agenda.
In the last twelve months, I set aside time to advance my scholarly learning.

Faculty Teaching Learning

In the last twelve months, I have gained knowledge or skills that have made me a better teacher.

Unit Support for Learning

My unit supports my learning external to campus.

My unit has helped me to make room among my responsibilities for immersing myself in my academic learning.

My unit provides an environment that stimulates my academic learning.

My unit has financially supported my learning in my field or discipline.

University Support for Learning

The University provides an environment that stimulates my academic learning.

Strong Local Intellectual Colleagueship

I am satisfied with the collegiality in my unit.

I feel isolated in my department.

I am satisfied with the transparency of decision-making within my unit.

I am satisfied with the support of colleagues here.

Faculty in my unit care about my personal well-being.

Faculty Career Agency

I have been strategic in achieving my career goals.

I feel stuck in my ability to advance in my career.

In general, I feel that I have little control over whether I advance in my career.

I seize opportunities when they are presented to me to advance in my career.

I have intentionally made choices to focus my career in ways that are personally meaningful to me.

My research agenda is largely under my control.

Intent to Leave University

To what extent are you likely to leave the University in the next two years?

Intent to Leave Academic Profession

To what extent are you likely to leave the academic profession in the next two years?

Perceived Support for Interdisciplinary Work

Interdisciplinary scholarship (i.e., where perspectives from multiple fields/disciplines are integrated) is rewarded in my unit.

Time Spent on Research vs Teaching and Service

The amount of time I spend on research versus teaching and service.

Satisfaction with Unit

My overall experience working in my unit.

Satisfaction at University

My overall experience working at LU.

Perceived Productivity

How would you rate your overall research/scholarly productivity compared to scholars of your rank nationwide?

All items used a likert scale such as: 1-Strongly Disagree, 2-Disagree, 3-Neutral, 4-Agree, 5-Strongly Agree; Very Unsatisfied to Very Satisfied, Much Less Productive to Much More Productive.

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