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Methodological Foundations of Design Pedagogy: The Scholarship of Teaching and Learning in Design

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Abstract: Design as a discipline has been discussing its body of knowledge from different perspectives. An area that will bring new insights to such discussion is a better understanding of how the knowledge in teaching has been constructed and expanded. Using Maryellen Weimer's perspective and classification scheme on the scholarship of teaching and learning (SoTL), this study aims to descriptively analyze the disciplinary pedagogy in design. The content of 174 pedagogical articles published from 1999 to 2010 in three design journals were analyzed. Findings show that in design, experience-based and research-based approaches to SoTL have almost equal significance. The plurality in SoTL approaches suggests that the definition of credible and high-quality SoTL studies in design as a discipline is yet to be discovered.

Keywords: scholarship of teaching and learning, design education, design knowledge.

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Pedagogical Knowledge in Design

Design scholars and practitioners have debated what design knowledge is and how it is generated or discovered for more than twenty years in efforts to codify design as a discipline (Carvalho, Dong, and Maton 2009; Friedman 2000; Love 2002; Poggenpohl 2009; Wang and Ilhan 2009). While some advocate practice-based knowledge development in design, others focus on scientific methods. This pluralistic approach to venues of design knowledge shows similarities to Boyer's (1997) theory of knowledge generation. According to Boyer (1997), within the context of American colleges and universities, knowledge development and exchange happens through four types of scholarship: scholarship of discovery, scholarship of integration, scholarship of application, and scholarship of teaching. This broad understanding of scholarship moves beyond an exclusive focus on traditional and narrowly defined *research* as the only legitimate avenue to new knowledge (Boyer 1997; Glassick, Huber, and Maeroff 1997). Boyer suggests that each type has unique characteristics that merit special analysis.

All four of Boyer's scholarship types — discovery, integration, application, and teaching — are included in the discussions about design knowledge. However, scholarship of teaching is one of the least studied areas of collective knowledge construction in design as a discipline. According to Boyer, "... teaching, at its best, shapes both research and practice" (Boyer 1997, p. 16) and thus, the scholarship of teaching and learning is significant for understanding the knowledge base of design.

The purpose of this study is to explore *the methods used in the construction and advancement of pedagogical knowledge in design*. A content analysis of pedagogical articles published from 1999 to 2010 in three principle design journals: Design Studies (DS), Journal of Architectural Education (JAE), and Journal of Interior Design (JID) offers preliminary clues. In this analysis, the contextual framework was built upon current literature in the Scholarship of Teaching and Learning (SoTL) — particularly that of Weimer (2006) — as well as the editorial approaches of the three design journals. The analysis of SoTL specific to design not only informs the disciplinary pedagogy but it also explains how design as a discipline is structured within educational settings. In what follows, we first share a brief overview of the literature on design as a discipline and SoTL that informed this study. The description of method, contextual framework, and our database is followed by research findings. Finally, we address the implications of these findings for design pedagogy and design as a discipline to define the nature of knowledge construction in SoTL specific to design.

Learning from the scholarship of teaching and learning

In the nearly twenty years that have passed since Boyer's (1997) initial report on higher education in the United States, the constructs of four scholarship types has been thoughtfully pursued, debated and expanded in most disciplines and forums of higher education. Scholars maintain that the construct of the scholarship of teaching was the least defined by Boyer and point out that it is not yet complete, clear or agreed upon (Braxton, Luckey, and Helland 2002; Huber and Hutchings 2005; Paulsen and Feldman 2006). Settling on or agreeing to a construct that integrates multiple perspectives of what Boyer called the archipelagos of academia may be impossible. Many believe that what constitutes scholarly teaching or scholarship of teaching is highly dependent on the characteristics of the disciplinary field of study (Healy 2000; Huber and Morreale 2002) and for the most part, any interest in scholarly work on teaching and learning has

been firmly tied in disciplinary focus. Others (e.g., Weimer 2006) challenge the idea of placing a disciplinary box around SoTL. There is much to be learned between disciplines about SoTL. Positioning SoTL only within a discipline narrows the potential audience; good work that transcends discipline specific considerations is not widely read and it follows that a good deal of time and effort is spent to discover basic method that has already been created or optimized by others (Weimer 2006).

Whether discipline specific or interdisciplinary, teaching as scholarship is about "...making a larger claim: that the scholarship of teaching and learning builds knowledge that others can use" (Huber and Hutchings 2005, p. 93). Publicly sharing the findings and rigorously reviewing the work is the responsibility of the academy. Others' use of the work for the further development of the subject, that is, knowledge generation, defines the roots of academic scholarship (Shulman 1999). It should be a priority of a discipline.

In *Enhancing Scholarly Work on Teaching and Learning*, Maryellen Weimer (2006) takes a comprehensive look at knowledge construction in pedagogical literature as it has been handled within and among diverse disciplines. Weimer posits that a number of key questions about the development of pedagogical literature can be explored by looking back at its history: Can such a survey inform us about the collective value of pedagogical scholarship in our disciplines? How have others approached it? Are some articles of higher quality than others? What are the gaps? Does this work shape the discipline and what does it tell us about how we move forward?

In her study, Weimer (2006) answers these questions from an interdisciplinary perspective. However, she also challenges others to undertake the retrospective analysis of disciplinary SoTL for the development of a pedagogical agenda to advance teaching. This is the impetus of this study.

In last thirty years, various design domains transformed from an occupation into a profession (Friedman 2000; Giard 1990). At the same time, codification of the body of knowledge that informs and guides these professions has resulted in a discipline that can be understood and studied on its own terms (Cross 2001). It is generally agreed that within this discipline, there are numerous design domains that are characterized by the act of creation through abductive reasoning (Blanco 1985; Cross 1990). While most scholars agree on the presence of this "creative act" as the core of design domains (Archer 1984; Wang and Ilhan 2009), other issues related to the construct of design as a discipline are still under debate; including the *knowledge* governing the discipline and its domains.¹

Dinham (1989), Eastman, Newstetter, and McCracken (1999), Friedman (1997, 2000, 2003), Giard (1990), and Lee (2009) suggest that the difficulty in defining the knowledge base of design is rooted in educational traditions. Furthermore, compared to the fast-paced changes in the new century, design pedagogy does not keep up with the knowledge revolution (Eastman, Newstetter, and McCracken 1999; Friedman 2000). The education of new designers has long depended on trial and error or intuition rather than construction of a collective and shared knowledge of design pedagogy (Eastman, Newstetter, and McCracken 1999).

¹ In this paper, discipline is used as an umbrella term that covers multiple design domains (e.g. architecture, industrial design, or interior design).

Methodology

Looking at the journal articles is a widespread way of studying the developments within a discipline (e.g., Buboltz, Deemer, and Hoffmann 2010; Eby et al. 2005). To approach our study, we took a similar approach and used content analysis to take a look back at pedagogical articles published in three principle design journals; Design Studies (DS), Journal of Architectural Education (JAE), and Journal of Interior Design (JID).

Our approach was built on Krippendorff's (2004) model where content analysis of text is undertaken within a contextual framework. The contextual framework serves as a lens through which the data is analyzed, constructed and research questions are explored.

Contextual framework

Informed by Boyer's (1997) theory on the scholarship of teaching, the contextual framework for this research is built upon 1) Weimer's (2006) classification scheme for analyzing SOTL based studies, and 2) the editorial approaches of the three scholarly design journals reviewed in this study.

WEIMER'S TAXONOMY

Weimer (2006) is one of the first scholars² to make an extensive review of SoTL from a wide range of disciplines. Her aim was to understand the quality standards of SoTL studies based on the governing modes of knowledge construction. She reviewed articles, with pedagogical content, that were published in around a hundred discipline-based and cross-disciplinary journals and magazines for two years (the only design journal included in her study was the Journal of Architectural Education). Her reading of SoTL literature led her to suggest a taxonomy of methodological approaches to pedagogical scholarship, those most often seen in the broad view. Weimer's proposition for disciplinary review of SOTL provides a model for a collective review of pedagogical scholarship (Jones 2008; Powell 2006; Terosky 2007) and she challenges scholars to analyze their disciplines with the same critical eye.

According to Weimer (2006), pedagogical studies can be grouped under two main categories, wisdom-of-practice scholarship and research scholarship, and a third least applied but growing category, promising possibilities. Under each category, there are several types that further define the characteristics of the work.

The wisdom-of-practice category is associated with *experience*. It is characterized by intuition, practicality, and trial and error. While "knowledge in action" as defined by Schön (1995) is central to this category, it is also different from good teaching or scholarly teaching. Wisdom-of-practice requires "systematic review and reflective analysis" in order for one's experience to "... be made explicit and beneficially shared with others" (Weimer 2006, p. 40). Based on the content of her sample, the wisdom-of-practice category is subdivided into four types: personal accounts of change, recommended-practices reports, recommended-content reports, and personal narratives.

Different from the wisdom-of-practice, the research scholarship is defined by *objectivity* that is achieved through rigorous and systematic research protocols within

² Nelson (2003) made a similar analysis before but his review was not as broad as Weimer's and his taxonomy was not focused on knowledge construction.

the classroom. Here the researcher is the practitioner, the instructor. "... the empirical questions addressed are mostly pragmatic, applied, and often related directly to the instructional practice of the person asking the question" (Weimer 2006, p. 42). Based on the research method applied, there are three types of research scholarship: quantitative investigations, qualitative studies, and descriptive research.

The last category, promising possibilities, is a look into the future of SoTL based studies. While they are not widespread yet, Weimer observed an increased attention to this category that is defined by three types: hybrids (combining any of the previously reviewed types), innovative approaches (using a method that is creative), and unique formats (reporting the work in an uncommon form).

EDITORIAL APPROACHES

Generally, the dissemination of pedagogical scholarship is limited despite its potential value (Nelson 2003; Weimer 2006). In the fields of design, the dissemination narrows dramatically. As in many disciplines, there are few journals devoted solely to the literature of pedagogy. The available texts for this study were chosen as a convenience sample of well-known academic design journals published in English: *Design Studies* (DS), *Journal of Architectural Education* (JAE), and *Journal of Interior Design* (JID). Each of these journals targets a different disciplinary audience and scholarly approach. Therefore, the variety of work in these three journals is sufficient to frame initial questions on the state of design pedagogy.

Design Studies is the only journal among the three that has a true interdisciplinary approach. This journal includes the highest percentage of co-authored papers in our database.³ DS welcomes studies from all around the world on every design domain including architecture, interior design, industrial design, engineering design, and systems design. The main focus of this journal is not design education or pedagogy; it is listed as one of the areas that they include: "The journal publishes new research and scholarship concerned with the process of designing, and in principles, procedures and techniques relevant to the practice and pedagogy of design" (DS 2012). DS is an important venue that informs the contemporary design research, practice and education.

The *Journal of Architectural Education* is the primary venue for research and commentary on architectural education. This journal is the oldest of the three and until very recently was published as a quarterly.⁴ There is a wide variety in "type" of articles published in JAE. JAE welcomes articles on "Scholarship of Design, Design as Scholarship, Op Arch, Translations, Transactions, Interviews, and several form of review, from buildings + projects to books and symposia" (JAE 2012). Not all the articles published in this journal follow the conventional article format of DS and JID.

The *Journal of Interior Design*⁵ was the first journal dedicated to issues related to the design of the interior environment from a scholarly perspective. Inquiry representing the entire spectrum of interior design theory, research, education, and practice is included in its contents. Interdisciplinary submissions are also encouraged from others interested in interior design.

³ 65.4% of studies in DS are co-authored, whereas the percentage in JAE is 37.9% and in JID is 48.6%.

⁴ In the autumn of 2009, JAE transitioned to a biannual publication.

⁵ JID was previously published as Journal of Interior Design Education and Research.

Guiding research questions

While our main aim is to discuss “how pedagogical knowledge is constructed in design as a discipline,” in order to answer this question, our analysis draws inferences in response to three questions:

- what can the theoretical framework set forth by SoTL tell us about design?
- what approaches to SoTL are found in design?
- what can the pedagogical articles tell us about the discipline of design?

The intent is not to extend the theory of learning or pedagogy but rather to consider what an analysis of these writings can suggest or contribute to the discussion of disciplinary pedagogy and design as a discipline. There are two types of data analysis that inform this discussion. The first, descriptive statistics, adds to the context of the study. While Weimer’s (2006) analysis is qualitative without numeric conclusions, in this study the results from frequency and percentage distributions offer insight into emerging patterns of SoTL approaches that are found in design. Second a closer qualitative look at types of scholarship and pedagogical delivery contributes to the question of collective value of pedagogical scholarship in design.

Database

The research sample (n=174 articles) was drawn from possible 936 articles published from 1999 to 2010 by the three journals. Only pedagogical articles within each journal were considered for analysis. These articles were identified through a search for keywords in the body of each article: *educat**, *teach**, *learn**, *student*, *pedagog**, *university*, *class** and *course*. An article had at least two of these keywords to meet the study criterion. Next all the articles were read in entirety to determine if their subject actually related to SoTL or not. The research team discussed perplexing articles in order to develop a consensus. The team was very inclusive in terms of the definition of SoTL. The main subject of the article is either on instructor’s teaching or student’s learning to be included in the database. Articles that meet keyword criteria but deal with tangential subjects, such as design education at K-12 level or current professional practices, were excluded from the sample. For instance, an article by Carvalho, Dong, and Maton (2009) included five of the searched keywords. The authors drew some conclusions that are applicable in design classrooms, for instance, “design pedagogy should allow students to reconfigure existing traditions and practices which take account of and build upon their profession’s knowledge base whilst at the same time integrating their own positions” (Carvalho, Dong, and Maton 2009, p. 501). A closer reading of the article revealed that while there are limited pedagogical recommendations they do not contribute to the intent of the article. Therefore it was excluded from the database.

A codebook and code-sheet were developed prior to the in-depth coding of each article. A sample year — prior to 1999 — from each journal was selected and coded as a pilot study to test the validity of the codebook and to make the necessary changes in the coding scheme. As the analysis progressed Weimer’s (2006) categories were refined to reflect the evidence emerging in the sample data. This customized Weimer’s classification scheme to the disciplinary focus of the sample. There were three main changes to Weimer’s taxonomy (Table 1). Because of the limited number of recommended-contents reports, we merged this type with recommended-practices reports and renamed it as *recommended instruction reports*. Within design literature, descriptive studies were limited; most of the time, the descriptions were supported by

other analysis methods. Therefore, we eliminated the descriptive studies type from the research scholarship category. Lastly, as the analysis progressed, we realized that the promising possibilities category is a main category in design. In this category, the studies are limited to mixed methods studies that Weimer (2006) calls hybrids. To reflect this character of pedagogical studies in design, the promising possibilities category was relabeled as *integrated approaches*. This category includes articles either blending the wisdom-of-practice scholarship and research scholarship or using both quantitative investigations and qualitative studies within a single study.

Table 1. The classification of pedagogical articles in design for this study.

Categories	Types	Definitions
Wisdom-of-practice	Personal Accounts of Change	Faculty reports their experience about a change in teaching, program, curriculum or policy.
	Recommended Instruction Reports	Faculty gives advice on instruction or pedagogical content.
	Personal Narrative	Faculty shares ideas, thoughts, experience related to teaching and/or learning.
Research scholarship	Quantitative Investigations	Articles that report research involving quantitative methods and/or statistical analysis.
	Qualitative Studies	Articles that share results from a qualitative study.
Integrated Approaches	Hybrid	Articles that either combine wisdom-of-practice and research scholarship categories or use mixed methods as their research approach.

The final code-sheet includes 11 variables, as reported in the findings section. Each article was coded twice, each time by a different coder. Disagreements between the coders were reviewed by a third person and discussed as a team.

Limitations

The current study is limited related to the sample size and the content of the database. Three journals yielding 174 articles are insufficient to holistically frame the SoTL specific to design. The current research needs to be understood as a preliminary study. The goal was to explore the potential of such studies. In order to frame a more precise picture of the field, further studies investigating a wider range of scholarly design journals is necessary.

Journals were viewed as data resources and not as design domains. However, as each editorial perspective represents a specific domain of design, the findings must not be misinterpreted as representing these domains. Different journals from the same domain might have different editorial approaches. Looking at one journal is not enough to understand that domain fully. Therefore, we only claim to make inferences about the journals included in our study.

Further, all three journals and all design domains are not equally represented in this study. The number of articles published each year in each journal is not equal. Two of the several design domains, architecture and interior design, include a larger proportion in our database. In order to address this limitation, we calculated weighted percentages whenever necessary in our descriptive statistics.

Findings

In order to analyze the collective value of pedagogical scholarship in design, the distribution of pedagogical articles among the journals is important. The numbers of pedagogical articles representing each journal in our database are consistent with the total number of articles published by the same journal (Table 2). More articles were published in JAE than the other two journals. Consequently, articles from JAE constitute the largest portion, 50% of the database. Articles from DS are 30% and articles from JID are 20% of the database. JID allocates more space for pedagogical articles (29% of the articles published are pedagogical) compared to the other two journals.

Table 2. Distribution of articles by journals.

Journal	Number of Pedagogical Articles (1999-2010)	Total Number of Articles Reviewed (1999-2010)	Percentage of Pedagogical Articles (1999-2010)
DS	52	362	14%
JAE	87	454	19%
JID	35	120	29%
	174	936	19%

The distribution of the articles on pedagogy published by the three journals as a whole does not significantly change within the time frame of the study. The trend line defines only a very slight increase from 1999 to 2010 in the total amount of pedagogical articles published (Figure 1). The largest number of pedagogical articles was published in year 2006, followed by a sharp decrease in 2008. There are not any overlapping trends between the changes in the number of pedagogical articles published by three journals. While the number of articles in DS and JID showed a very slight decrease, the number of articles from JAE has a slight increase within the past 12 years.

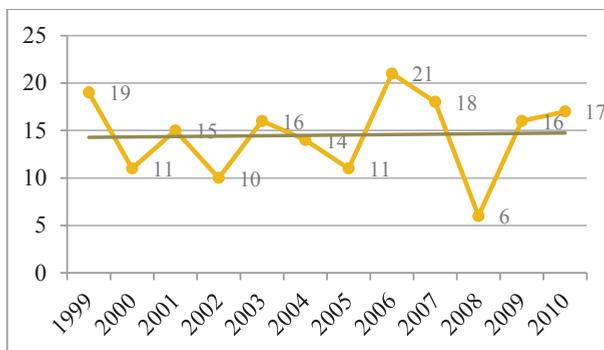


Figure 1. Trend line showing the change over time in the number of pedagogical articles published.

Grouping the articles into scholarship categories is helpful to look closely at the approach design scholars have taken in SoTL (Table 3). Nearly half of the articles reviewed (n=95) were devoted to wisdom-of-practice. This category was followed by research scholarship (34%) and integrated approaches (18%). The most subscribed type of scholarship within this sample of design literature is qualitative studies (n=38, 23%).

Table 3. Distribution of articles by the scholarship category and type.

Scholarship Category	Type of Scholarship	Frequency	Weighted Percentage (based on journals)	Frequency	Weighted Percentage (based on journals)
Wisdom-of-Practice	Personal Accounts of Change	49	22%	95	48%
	Recommended Instruction Reports	33	19%		
	Personal Narratives	13	7%		
Research Scholarship	Quantitative Investigations	16	11%	54	34%
	Qualitative Studies	38	23%		
Integrated Approaches	Hybrid	25	18%	25	18%

One of the most informative results from the database came out of the distribution of the scholarship category and type by journal (Figure 2). In DS, research scholarship constituted the largest proportion (n=31, 59%) of articles. In JAE and JID, research scholarship is replaced by wisdom-of-practice. Eighty percent (n=70) of the articles in JAE and 49% (n=17) articles in JID are from wisdom-of-practice scholarship category.

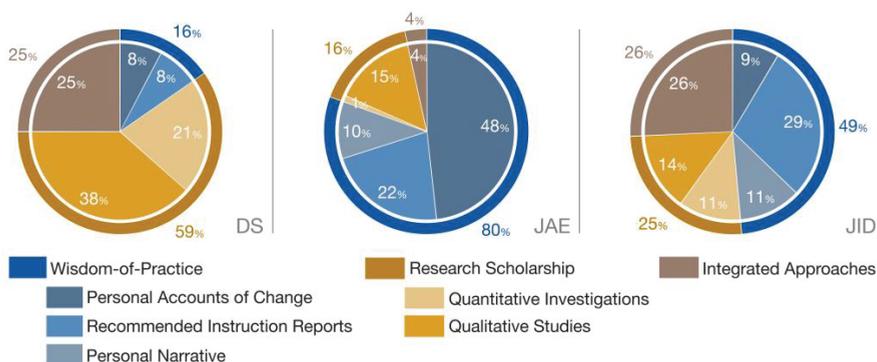


Figure 2. Distribution of scholarship categories and types by journal (outer rim represents scholarship categories, inner circles stand for types of scholarships).

The pie charts representing the types of scholarships in Figure 2 show a different character for each journal. In DS, qualitative studies has the largest proportion (n=20, 38%), whereas for JAE, articles based on personal accounts of change constitute 48% (n=42) of the total. The distribution of the type of scholarship for articles from JID has a more even character compared to DS and JAE. Recommended instruction reports ranked the most in JID with 29% (n=10).

At the next level of analysis, it is possible to draw inferences about the context of SoTL in design literature. Articles dealing with pedagogical issues in the studio represent the largest distribution (n=134, 74%) when the sample is analyzed by class type⁶ (Table 4). 17% (n=26) of the articles do not focus on any specific class type. These

⁶ Articles that involved any type of skill-based application were coded with the studio value.

articles discuss or narrate a general pedagogical issue. For example, Watson, Guerin, and Ginthner (2003) explain the importance of staying current on design practices for interior design educators. Design educators need to have a relationship with firms and practitioners in order to be informed about contemporary design practice. Watson, Guerin, and Ginthner's (2003) research enabled them to develop a handbook including information on how to research and analyze practitioners design process for design educators. While this article shares valuable information on how to develop curriculum in interior design, it does not focus on any specific class type or level.⁷

Table 4. Distribution of articles by class type.

Class Type	Frequency	Percentage	Weighted Percentage (based on journal)
Studio	134	77%	74%
Theory	14	8%	9%
General	26	15%	17%

In terms of articles' topics, 55% of the articles are SoTL specific; meaning, their main goal is to share either experience or research results on teaching or student learning. The rest of the articles (45%) do not seek pedagogical advancement as their main objective. Instead, these articles share findings about research with educational conclusions that have the potential to inform design pedagogy. Casakin and Goldschmidt's (1999) research on the impact of visual analogy on design process and Guerin and Thompson's (2004) critique about the interior design education are examples for the second group of SoTL based studies.

The content of articles show variety. Some scholars focus on a project, course, or an educational program and narrate their experience. In some cases, this narration is limited to the class schedule, description or the presentation of the course outcomes, e.g. student projects. In others, the experience is presented together with research conducted on the same subject within the classroom or studio. However, not all pedagogical studies in design occur in the classroom or studio. Scholars conduct studies on teaching and learning outside the classroom using methods such as protocol studies and surveys. These studies are conducted with or without students. There are also narrations of thoughts without any references to specific courses. There are studies reporting a non-pedagogical research conducted in a classroom or studio. Because of its context and research subjects, these studies include discussions and conclusions on design pedagogy.

The articles also vary in terms of the number of citations that are included in their bibliographies. The range is 0-74. Table 5 lists the average number of citations by journal and scholarship category/type. 174 articles included an average of 19 citations. While the average number of citations in the articles from DS and JID exceeds 19, the average number of citations in the articles from JAE is below the average. Boyer's (1997) study on American higher education was cited in three articles. Another study

⁷ In addition to class type, the research team also coded level of delivery. Fifty-five percent (n=85) of the articles were involved with pedagogical issues at the undergraduate level. Forty-nine articles (25%) do not specify the level of delivery that the authors addressed. Eleven percent of articles (n=21) report an educational environment in which undergraduate and graduate students attended the same studio/course.

from Boyer and Mitgang (1996) that analyzes architectural education was referred 12 times.

Table 5. Distribution of the average number of citations by scholarship categories and types.

Scholarship Category	Type of Scholarship	DS	JAE	JID	Total	
Wisdom-of-Practice	Personal Accounts of Change	21	6	29	9	11
	Recommended Instruction Reports	27	13	19	16	
	Personal Narratives	-	1	13	5	
Research Scholarship	Quantitative Investigations	32	6	30	30	30
	Qualitative Studies	31	28	32	30	
Integrated Approaches	Hybrid	24	13	36	27	27
All Scholarship Categories		29	11	27	19	

Discussion

The data suggests that the theoretical framework set forth by SoTL can be used to explore design as a discipline as well as challenge our thinking about design. The analysis of 12 years of pedagogical articles shows that while SoTL based studies do exist within design, the percentage of pedagogical articles is low. If the assumption is that all four scholarship types defined by Boyer contribute to knowledge generation, an expectation that 25% of scholarship within a discipline is devoted to teaching and learning is reasonable. In this study, only 19% of all the articles published were devoted to design pedagogy. While it is generally acknowledged that SoTL is not widely pursued, neglected no matter what the discipline is (Boyer 1997; Huber and Hutchings 2005; Shulman 1999; Weimer 2006), this can be revealing in light of our understanding of the teaching of design knowledge.

When one reflects on design as predominantly studio-based curriculums, teaching lends itself well to the pursuit of scholarship. If the hours devoted by design faculty to teaching are considered, either in the preparation and delivery of lectures or in the review and critique of studio projects, pedagogy remains relatively untapped among the contributors to DS, JAE, and JID. Further, if one presumes that a large number of current faculty were trained in the tradition of doing rather than knowing, reporting on teaching rather than empirical research seems natural. Is it possible that because SoTL is typically viewed suspiciously in the academy, design scholars overlook it?

In the academic environment contribution to scholarship is a key to success (Boyer 1997; Glassick, Huber, and Maeroff 1997; Huber and Hutchings 2005). While this is often measured in terms of numbers of publications, it is not necessarily true that all academic writings in design disseminate new knowledge. To the contrary, within this sample, the scholars who share new knowledge through SoTL work are not extensive. 49% of the articles' authors narrated their course/studio experience or rendered their general ideas on pedagogy without sharing new knowledge on the topic. While these articles have been deemed of interest to the respective journals, there is an important point to highlight in this respect. Studies from other disciplines, which have a longer appreciation to SoTL, prove that SoTL work can produce new knowledge and extend the disciplinary body of knowledge (Healy 2000, Huber and Hutchings 2005; Huber and

Morreale 2002). Does this approach of reporting only what we do again reflect the trade traditions of our domains? How much greater is the potential for this reporting, if it is held in an analytical light to search for new ideas?

A closer reading of these experience-based articles, reveals some key points. Most experience-based articles in this sample do not adhere to a systematic method of reporting nor situate their study in an existing body of literature. Further, these articles often fail to offer a reflection or analysis on the experience, i.e. they report “this is what I did” rather than “this is what I discovered.” Experience-based articles include an average of 11 citations, whereas this number is 28.5 for research-based (the combination of research scholarship and integrated approaches) articles. In the whole database, only three citations are given to Boyer’s (1997) study. Even these three do not use the extensive SoTL literature as a resource to guide their pedagogical research. Instead, 45% share a study that is based on other issues — such as analogy and design thinking — and report on pedagogy as a secondary issue. In overall, the citations are mostly on design education.

A closer look at the distribution among categories and types of scholarships published in design journals reveals information about what is viewed as reasonable or important scholarship by each journal in this study. The analysis of the same variables in each journal also shows that the discipline of design does not have agreed upon sense of credibility and quality for articles in SOTL. Figure 3 depicts the differences of the editorial approaches of each journal with another way of categorizing the scholarship categories. Here, the types of scholarships under wisdom-of-practice category are named with experience-based studies as these articles always share an experience or an idea. On the other hand, both the research scholarship and integrated approaches categories include some type of empirical investigation and can be grouped under research-based studies. From this perspective, in DS, research-based articles were published more frequently, whereas in JAE, experience-based articles appear more often. In JID, the two approaches are balanced. Furthermore, the expectations for the same category differ from journal to journal. For example, the average number of citations in the experience-based articles from DS and JID (the average number of citations are 24 and 20, respectively) is higher than the ones from JAE (the average number of citation is 7). The distribution of the types of scholarships (Figure 2) also illustrates difference in research traditions among the authors of each journal. These findings highlight that there is need to strengthen criteria for credibility and quality of pedagogical studies in general and within each represented design domain. This challenges the scholars to debate the body of knowledge within design from a slightly different perspective. While there is potential for further discussion about the perception of *credibility* and *quality* in SoTL based studies in general, the distribution of scholarship categories in this sample points to credibility and quality issues in design pedagogical articles as well. The variety of SoTL research in this sample follows Weimer’s (2006) thinking that there is no evidence of definitive assessment criteria for credible pedagogical scholarship at large.

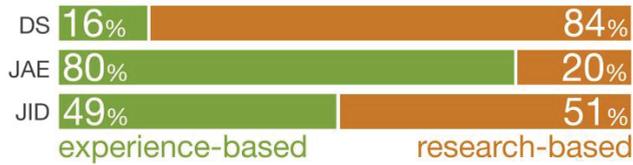


Figure 3. The distribution of experience-based and research-based articles in each journal.

Our findings also show that craft versus knowledge is a tension point in the pedagogical scholarship (Figure 4). While 52% of the studies are research-based in design; an almost equally important percentage is experience-based. This distribution does begin to frame a picture of how we approach pedagogical scholarship in design. In design pedagogy at large ‘what we do’ and ‘what we know’ appears to have equal value.

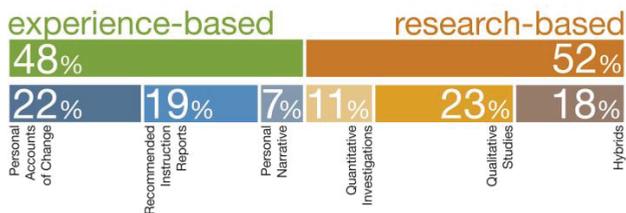


Figure 4. The distribution of experience-based and research-based articles.

In addition to the distribution of articles among experience-based and research-based approaches, the distributions of the class type and level of delivery support this claim. The development of design as a discipline requires attention to design theory and knowledge (Friedman 2003; Poggenpohl 2009). One might expect to see an equal focus on teaching and theory courses as there is on studio in design education. However, among 174 articles, 74% focuses on the studio. Only 9% of the articles deal with a pedagogical issue on theory. Further, 55% percent of the articles focus on undergraduate coursework. While this demonstrates a response to Boyer’s challenge to improve undergraduate education, the attention to graduate education is limited to 20%.

These findings suggest that SoTL does not shape the discipline but instead that traditions of the field shape SoTL of design. This is worth a second look. Boyer (1997, p. 16) suggested that “teaching at its best, shapes both research and practice.” What is the impact on a profession if it’s traditions shape teaching? This question resonates as well in the broader discussion as the field at large seeks to codify and generate knowledge. Are we a field of craft or knowledge? How does this situate the profession in the knowledge driven world economy? Acknowledging the limitations of this preliminary study, the findings nevertheless suggest that careful thought should be turned toward both the way we teach and what we teach. Further, questions should be pursued in relation to current practice in the 21st century.

Finally, the study revealed one unique characteristic of design. That is the equal appreciation of experience and research in our current literature. A high number of extant articles report an integrated approach in pursuing the studies reported among

the three journals. Weimer (2006) did not include this category in her broader study of multiple disciplines. Our findings suggest that in the discipline of design, a significant percentage of articles use an integrated method in pursuing research questions related to SoTL. This finding should be pursued further in future studies. An integrative approach to research studies is consistent with the notion of the iterative design process and design thinking.

Conclusions

The aim of this study was to test Dr. Weimer's taxonomy in the context of design. It demonstrates that this sample of SoTL literature could be tested as Weimer suggests. This study is important because it is the first to review published pedagogical scholarship in design seriously. It offers a foundation for the ongoing development of thinking in this area. The timing of this survey is significant as well. As the debates on design knowledge and the development of design as a discipline has been heating up so should the debates about the way we educate of new generations of design practitioners. Such a subject requires us to first look back in order to plan the future. The retrospective analysis showed that there is no agreed way of knowledge construction in design pedagogy. Experience-based and research-based studies are almost equally significant. This is a starting point for conceptualizing questions that could enhance the credibility, quality, and the viability of SoTL for scholars and professors of design. As such it offers two contributions. The first is to contribute to the discourse on teaching as credible scholarship for design educators. The second is to suggest a way to expand debate of design as a discipline.

We offer a framework that begins to respond to the nuances of the disciplinary pedagogy, although we acknowledge that further refinement is in order. As well, there are clues that further study of the SoTL of design as a discipline and of each design domain will yield valuable information. For example, the qualities of wisdom-of-practice writings, which incorporate personal narratives, do not represent a fully accepted methodology among the academic community (Weimer 2006). Nevertheless, these writings are a significant part of the findings in this study. Are there questions about quality and utility that can be posed to enhance or advance this approach? On the other hand, can the normative view that pedagogical research should embrace normative methods be challenged, particularly in the discipline of design? Or should we take the interdisciplinary discussions around design as the basis and concentrate on generating pedagogical knowledge through integrated approaches to define our disciplinary boundaries? At the end, we have more work to do in order to answer the important questions located within the intersection of SoTL and design as a discipline.

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