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以證據為本的教育發展實務促進教與學的研究

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摘要

Boyer於1990年發表了〈學術的再思考〉一文，迄今邁入第30年，該文帶動了高等教育教與學的研究（Scholarship of Teaching and Learning，簡稱SoTL）之興起。為提升高等教育的教學品質，教育部自2017年起推動教學實踐研究計畫，鼓勵教師從事SoTL。本文以一所研究型大學為例，分析該校教師2020年之教學實踐研究計畫書，探究教師在撰寫計畫時遇到的困難。本文也訪談了教師與教育發展（Educational Development, ED）專業人員，探討教育發展實務該如何協助教師解決困難。結果顯示，SoTL跨領域的特性使得教師在計畫撰寫階段即面臨了界定研究問題、選擇教育文獻、規劃教學設計與確立評量規準等困難。為因應上述困難，教育發展專業人員需具備研究能力，從事「教育發展的研究」（Scholarship of Educational Development, SoED），此一證據為本的新興研究領域，有助於確立教育發展實務應聚焦的重點，同時策略性地與大學願景結合，以提升教育發展實務的效能並促進SoTL之發展。

關鍵詞：高等教育、教育發展、教育發展的研究、教與學的研究、教學實踐研究計畫

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Scholarship of Educational Development: Scaffolding SoTL through Evidence-based Educational Development

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Abstract

The year 2020 marks the 30th anniversary of the publication of Boyer's (1990) seminal work- Scholarship Reconsidered Priorities of the Professoriate which has stimulated a burgeoning literature on the scholarship of teaching and learning (SoTL) in higher education. In Taiwan, the Ministry of Education has implemented Teaching Practice Research Program (TPRP) since 2017 to engage academics in SoTL. Carried out in a research-intensive university, this study analyzed the proposals submitted for the 2020 TPRP to uncover challenges that academics encountered when embarking on SoTL. Academics and professionals of educational development (ED) were interviewed to explore possible solutions to the challenges. The results suggest that academics' attempts to undertake SoTL would involve a steep learning curve regarding identification of a research question, review of literature, instructional design, and

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criteria for assessment, as a result of the transdisciplinary characteristic of SoTL. These challenges emerged in the early stage of proposal preparations. To help academics sail through the challenges, ED professionals need to develop research skills to integrate scholarship of educational development (SoED) into ED. This emerging evidence-based research field would inform prioritization of ED programs in response to academics' needs and align ED agendas with institutional goals to enhance the capacity of ED to facilitate SoTL development.

Keywords: higher education, educational development, scholarship of educational development, scholarship of teaching and learning, teaching practice research program

I. Introduction

The year 2020 marks the 30th anniversary of the publication of Boyer's (1990) seminal work "Scholarship Reconsidered: Priorities of the Professoriate". Boyer's reconceptualization of scholarship in higher education has given rise to a burgeoning literature on the scholarship of teaching and learning (SoTL), that has led to increasing demand for educational development (ED). Professional support from ED is essential especially for academics who are not acquainted with educational research methods. ED is expected to play a bridging role in introducing pedagogical knowledge to academics to facilitate the implementation of SoTL (Kenny et al., 2017; Richlin, 2001). The close relationship between ED and SoTL calls for an emerging form of scholarship, namely scholarship of educational development (SoED) (Cruz, Cunningham, Smentkowski, & Steiner, 2019). SoED is an evidence-based approach that is aimed at enhancing ED's capacity to facilitate SoTL and its impact on academic development (Felten, Kalish, Pingree, & Plank, 2007; Kenny et al., 2017). Similar to SoTL that aims to transform teaching into a scholarship, SoED is characterized by a scholarly inquiry undertaken by ED professionals to explore possible solutions to pressing issues regarding SoTL.

In Taiwan, congruent with the increasing attention to the quality of university teaching, the Ministry of Education (MOE) has implemented a series of policies on instructional innovations in higher education. Launched in 2006, the program of Promoting University Teaching Excellence led to the prevalence of centers for teaching and learning development (CTLDs) in universities nationwide, responsible for ED programs and academic development. Since 2017, the MOE has further implemented the Teaching Practice Research Program (TPRP) that calls for research proposals annually to higher education institutions nationwide. The TPRP is aimed at engaging academics in undertaking classroom-based research to address pressing issues they observed in classrooms. The program also expects academics to disseminate their research findings to academic communities. The official statistics have revealed a

steady rise in applications. There were 2,174 applications in the first cohort in 2018 and 2,831 applications in 2019, with a funding rate of 48% and 46% respectively (Ministry of Education, 2020; Pan, 2020). The recently released government document indicated a total of 3020 applications for the latest 2020 cohort with a slightly decreasing funding rate of 44.67%.

The MOE has been setting out the fourth round of TPRP application. Despite the official attempts to organize share fairs and workshops to bring together academics nationwide to present their TPRP projects and share experiences, empirical studies that explored the status quo of TPRP from the perspectives of university academics or ED professionals are scant with the exception of Chang, Fwu, Tsuei, and Hwang (2019). Given that ED professionals and academics are both key stakeholders of SoTL, it is necessary to engage them in the discourse. Through the lens of TPRP applications, this study aims to investigate the challenges that academics would encounter when engaging in SoTL and to offer possible solutions to the challenges from the perspectives of ED and SoED. It is expected that the study would provide an empirical example showing how SoED could contribute to evidence-based ED to better facilitate the development of SoTL in higher education.

II. Literature Review

2.1 The Development of SoTL

SoTL emerged as a research field in response to an enduring overemphasis on research productivity at the cost of teaching quality in higher education particularly in research-intensive universities. Boyer (1990) called for "a more inclusive view of what it means to be a scholar" and gave due prominence to scholarship of teaching in line with the scholarship of discovery, integration, and application. Apart from knowledge advancement, it is also at the heart of the mission of university teachers to educate and entice future scholars (Boyer, 1990). Hutchings and Shulman (1999) further indicated

that the notion of scholarship of teaching differs from that of excellent teaching in that the former requires academics to engage in a systematic classroom-based inquiry that can contribute to quality teaching. The scholars from the Carnegie Academy have led to SoTL movement worldwide.

Writing on the 25th anniversary of the publication of Boyer's (1990) report, Kern, Mettetal, Dixson, and Morgan (2015) proposed a model of Dimensions of Activities Related to Teaching (DART). The horizontal axis denotes the public-private dimension, and the vertical represents informal-systematic dimension. The DART model not only echoes the call of SoTL scholars for recognizing teaching as a form of scholarship (Boyer, 1990; Hutchings & Shulman, 1999) but also takes a step further to distinguish SoTL from private and informal teaching activities with academic rigor and the peer-review practice, both of which are the key elements underpinning research in all disciplines.

2.2 Scaffolding SoTL through Educational Development

Despite the increasing growth in SoTL studies, researchers have noted that many of the studies were lacking in sound theoretical underpinnings, making it difficult for other researchers to evaluate the effectiveness of SoTL projects (Bass, 1999; Felten, 2013; Shulman, 1998). Bass (1999) emphasized that making SoTL scholarly work requires a paradigm shift from merely dealing with problems within individual classrooms to enhancing the visibility and viability of the problems through methodologically sound approaches that are communicable to wider academic communities. Transforming teaching into a scholarship has leveled up the demand of pedagogical and methodological literacy on academics and has engendered a steep learning curve especially for those who are unacquainted with the field of pedagogical research (Harland, Raja Hussain, & Bakar, 2014; Healey, Matthews, & Cook-Sather, 2019; Louie, Drevdahl, Purdy, & Stackman, 2003). Concluding a dozen years' observations as a SoTL consultant, Richlin (2001) identified four major difficulty areas that were reflected in SoTL projects, including identification of research questions,

establishment of a baseline, review of literature, and openness to different interventions. A recent study carried out in Taiwan by Chang et al. (2019) has also found that reports of SoTL studies are of varying, inconsistent quality, suggesting the necessity of professional support for academics' engagement in SoTL.

Synthesizing existing literature and practice, Cruz et al. (2019) proposed a framework that depicts six stages of SoTL development, including spark, educate, practice, study, collaborate, and lead. The role of ED professionals evolves along the six developmental stages. The researchers referred to the framework as "SoTL scaffold", meaning that the development of SoTL requires structural and constant support from ED professionals. Based on the scope of SoTL and the corresponding role of ED professionals, we categorized the six stages into micro, meso, and macro levels as tabulated in Table 1.

Table 1
SoTL Development and the Evolving Roles of ED Professionals

Scope	Stage of SoTL development	Primary role of ED professionals
Micro (individual classrooms)	Stage 1: Spark Stage 2: Educate	Advocates of SoTL
Meso (individual institutions)	Stage 3: Practice Stage 4: Study Stage 5: Collaborate	Researchers of SoTL
Macro (within/across institutions)	Stage 6: Lead	Thought leaders of SoTL

The micro level involves the first two stages of the framework, i.e., spark and educate stages. At the micro level, the focus of SoTL is on individual classrooms, and the primary role of ED is to market the notion of SoTL. In addition, ED professionals play a significant role in bridging the knowledge gap between disciplines through organizing internal workshops and training programs. These activities are aimed at introducing academics to the principles and methods of SoTL to get more academics, especially those who are unfamiliar with pedagogical research on board.

The meso level involves stages 3 to 5, including the practice, study, and collaborate stages. It marks significant role-changing in ED from SoTL advocate to SoTL researcher. At the meso level, ED professionals are expected to examine the status quo of SoTL within an institution through analyses of findings of SoTL projects and evaluation of their effectiveness. The data collected would form a knowledge base that can be disseminated to wider communities on campus to enhance academics' pedagogical literacy and cross-disciplinary collaboration. Integrating research into ED helps move SoTL from self-evident work toward an evidence-based scholarship. The further penetration of SoTL depends on the alignment between SoTL agendas and institutional goals. To this end, ED professionals are expected to assume a role in policy planning and development. The alignment of SoTL agendas with institutional goals is an essential approach to catalyzing an institutional culture that is conducive to instructional innovations.

The macro level aims to scale SoTL up to the institutional level, within and across institutions. ED professionals are expected to play an active role in thought leadership that involves synthesis of the achievements of the previous stages to initiate institutional signature pedagogy. The ultimate goal of the SoTL scaffold is to contribute to cross-institutional collaboration. Engagement of ED professionals in regional and international societies as well as scholarly journals is essential to the ongoing development of SoTL.

2.3 Enhancing the Capacity of ED through SoED

The scaffold proposed by Cruz et al. (2019) suggests a close relationship between ED and SoTL. The evolving roles of ED along the scaffold called for an emerging form of scholarship, SoED. Similar to SoTL that aims to transform teaching into a scholarly act, SoED involves a systematic, evidence-based approach undertaken by ED professionals to examine prevailing ED practices, identify areas for improvement, implement interventions, and evaluate the effects of interventions (Felten et al., 2007; Kenny et al., 2017), all of which are entailed in all forms of scholarship.

Proponents of SoED have argued that the diversity of ED programs that range from individual consultation, seminars, workshops, to training programs, has resulted in the ambiguity of the mission of ED, the competencies required for the profession, the professional identity of people working in the field, and the criteria for measuring effectiveness (Kreber & Brook, 2001; Timmermans, 2014). Chalmers and Gardiner (2015) contend that ED professionals need to "go beyond the typical collection of participant numbers and satisfaction and to interrogate if the intended outcomes of their teacher development programs have been achieved" (p. 82). Researchers have also questioned the validity of participant satisfaction ratings in that they offer not much more than "happiness index", and hence comparisons of pre- and post-workshop ratings could be misleading (Levinson-Rose & Menges, 1981). To examine the effects of ED programs, a wider range of indicators related to teaching, learning, and institutional goals should be included (Kreber & Brook, 2001; Leibowitz & Bozalek, 2018). Hoessler, Britnell, and Stockley (2010) have suggested ED professionals embedding "continuous scholarship as a key facet of educational development" (p. 81) and utilizing SoTL as a critical lens through which they can reflect on the impact of their work on academic development.

Previous studies have associated SoTL with ED and SoED. The evolving roles of ED illustrated in the SoTL scaffold (Cruz et al., 2019) demonstrate that the ongoing development of SoTL requires concurrent scaling-up of ED capacity that is underpinned by SoED. Researchers have also noted that university academics' attempts to undertake SoTL would involve a learning curve because of the transdisciplinary nature of SoTL. Building positive partnerships between academics and ED professionals would be necessary that can help academics rise to the challenges. SoED, as an emerging scholarship, is the key to achieving the partnerships. The very first step of SoED would be an examination of academics' needs in SoTL. Data collected from needs analysis will inform the decision-making of ED professionals when planning SoTL-related programs.

In view of the prevalence of SoTL in the global and local context and the

increasing attention to evidence-based ED, this study was carried out in a research-intensive university in Taiwan to explore necessary conditions for SoED in the university from the perspectives of academics and ED professionals. The study first examined the challenges faced by academics in their attempts to embark on SoTL through analyses of the proposals they submitted for the 2020 TPRP fund. In addition, four academics and three ED professionals from the CTLD of the case university were interviewed to explore possible solutions to the challenges reflected in the proposals. This study would provide an empirical example showing how SoED can be integrated into ED to map a better way forward for the development of SoTL. The present study was guided by two research questions:

RQ1. What are the challenges that were faced by academics when writing TPRP proposals?

RQ2. What kinds of support were deemed essential by academics and ED professionals to facilitate the development of SoTL?

III. Method

3.1 Context of the Study

The present study was carried out in a research-intensive university under the pseudonym of X University. We chose X University for two primary reasons. First, SoTL emerged as a research field in response to the long-standing research versus teaching debate in higher education. The research-intensive orientation of the X University made it a suitable case for the present study because academics often face tough challenges of achieving a balance between research and teaching. Meanwhile, the X-CTLD has been promoting the TPRP application since its first implementation in 2017 to encourage more academics to embark on SoTL. An exploration of the challenges that academics encountered and professional support they deemed essential

when preparing for a TPRP proposal would offer an empirical basis that helps identify the necessary conditions for integrating SoED into ED.

Practical implications drawn from the findings will benefit not only the case university but also universities have similar profiles in terms of building positive partnerships between academics and ED professionals in SoTL.

To answer the two research questions, the study consisted of two parts. The first part involved analyses of TPRP proposals that were retrieved from the database of the CTLD at the X University (hereafter X-CTLD). The proposals were collected by X-CTLD during the application period of the 2020 TPRP. The second part of the study included individual interviews with four academics from the X University, who, at that time, were preparing for their proposals for the 2020 TPRP fund. Apart from university teachers, we also carried out a focus group discussion that involved three ED professionals who are currently working at X-CTLD to respond to the findings emerged from the analyses of the TPRP proposals. The procedures for data collection and analysis will be explained in detail below.

3.2 Data Collection

3.2.1 TPRP Proposals

To answer RQ1, we analyzed the proposals that were collected by X-CTLD amid the application period of the 2020 TPRP fund. The original database comprised 43 proposals submitted by academics from various academic fields. Informed consent was obtained from 36 academics, that formed a sample covering 83.72% of the original applications. Among the 36 applicants, 47.22% were from the fields of humanities and social sciences, followed by the fields of medicine, health, and life sciences (around 41.67%), and then the fields of sciences and engineering (11.11%). Distribution in academic ranks also varied in the sample. Around 47.22% of the applicants were associate professors, 30.56% were full professors, and 22.22% were assistant professors (see Table 2). More than 77% of the academics were in the rank of associate professor and above, meaning that the majority of the applicants had passed at least one hurdle of

promotion at the time when they applied for the 2020 TPRP fund.

Table 2
Details about the SoTL Applicants

Academic fields	Academic ranks				
	Assistant professor	Associate professor	Full professor	Total	Percentage
Humanities and social sciences	5	9	3	**17**	47.22%
Science and engineering	0	1	3	**4**	11.11%
Medicine, health, and life sciences	3	7	5	**15**	41.67%
Total	**8**	**17**	**11**	**36**	100%
Percentage	22.22%	47.22%	30.56%	100%	

3.2.2 Interviews and Focus Group Discussion

To answer RQ2, we sent an interview invitation to 17 academics who intended to apply for the 2020 TPRP, and four academics agreed to participate. Informed consent was obtained from all interviewees. The interviews were carried out after a consultation session held at the X-CTLD amid the 2020 TPRP application period. In each case, the consultation session took approximately one hour. Immediately after the one-hour consultation, the academics were interviewed individually by the two authors. All the interviews were audio recorded and conducted in Mandarin. Verbatim transcription was undertaken by a research assistant, and the quotations selected were translated and checked by the authors. The four academics had varied academic backgrounds and ranks. Two of them were associate professors coming from the fields of humanities and social sciences, and the other two were assistant professors from the fields of medicine, health, and life sciences. Among the four interviewees, three of them completed the 2020 TPRP applications eventually, and one did not. Given that the interviews were conducted immediately after the consultations, which had already taken about one hour, the follow-up interviews had to be focused and concise to accommodate each participant's schedule. Each interview lasted approximately 30 minutes. The teachers

were asked to explain the challenges they had encountered when writing their proposals and professional support they deemed essential from the X-CTLD.

In addition to university teachers, a focus group discussion was held to engage ED professionals in the discourse of SoTL. An interview invitation was sent to three ED professionals whose job scope included academic development. All the three ED professionals agreed to participate in the focus group discussion. Informed consent was obtained from all of them. The interviewees took part in the discussion under the pseudonym of Professional A, B, and C. The three ED professionals were working at the X-CTLD when the interview took place. All of them had first-hand experience of handling the annual TPRP application. The professional backgrounds and work experience varied across the interviewees. The sample included a faculty member in the field of applied sciences who joined the X-CTLD in 2019 and had undertaken a TPRP project. It also included an experienced ED professional who had seven years of experience working at the X-CTLD and had a bachelor's degree in science, as well as an executive officer who had a master's degree in liberal arts and joined the X-CTLD earlier than the commencement of the 2020 TPRP application.

The discussion was moderated by the two authors and lasted more than an hour. The three ED professionals were first presented the analysis results of the 36 TPRP proposals, and then they were asked to respond to the findings emerging from the analyses. The discussion also prompted them to examine their current ED practices and propose possible ways to integrate SoED with ED to advance the development of SoTL in the X University. The interview was audio recorded and conducted in Mandarin. Verbatim transcription was undertaken by the first author, and the quotations selected were translated and checked by the authors.

3.3 Data Analysis

To answer RQ1, the 36 TPRP proposals were analyzed using an inductive and recursive approach, meaning that the formulation of a coding scheme requires extensive exploration of the data and constant modifications when new codes emerge during

application. This process repeated several times until data saturation was achieved (Corbin & Strauss, 2008; Gibson & Brown, 2009). We referred to the difficulty areas Richlin (2001) identified as well as the official evaluation criteria set by the MOE and then decided to focus the initial coding scheme on four major themes, including questions under investigation, review of literature, instructional design and assessment design. The initial thematic analysis was carried out by the second author who reviewed the proposals and identified sub-categories on each theme. The two authors then met and discussed to make sure that they had mutual understanding on the themes and that the subcategories identified were noteworthy. An initial coding scheme was drafted after discussion. The first author then used the initial coding scheme to analyze all the 36 proposals. Remarks about the appropriateness of each sub-category were made in the process. The two authors then met again to discuss and reach consensus on the initial coding results. Different codes arising from in each category were compared and contrasted, leading to the final coding scheme. The first author used the modified scheme to code the proposals again. The coding results were finalized after intensive discussions between the authors.

To answer RQ2, a similar thematical analysis approach was adopted. In terms of the individual interviews with the four academics, the data were coded in accordance with the interview protocol that consisted of three parts, including motivation for doing SoTL, challenges encountered, and essential support from the X-CTLD. The analyses of the data from the focus group discussion focused on the ED professionals' responses to the findings emerging from the TPRP proposals and possible solutions to the challenges the academics reported in the interviews. The analyses were also focused on their views of integrating SoED into ED and ways of enhancing the capacity of the X-CTLD to facilitate SoTL development.

IV. Results

4.1 TPRP Proposals

Analyses of the 36 proposals revealed two primary questions of interest, namely translating theory into practice and enhancing learner motivation/autonomy (see Table 3). The other two categories were concerned with technology-assisted instruction, and learning of a specific course topic, such as communication skills, ethics, and physical fitness.

Table 3
Topics of the 36 Proposals

Category	Count	Percentage
Theory in practice	14	38.89%
Motivation/autonomy	9	25.00%
Technology-assisted	7	19.44%
Course topic	6	16.67%
Total	36	100%

Table 4 to Table 7 display the results of in-depth analyses of the four major areas. The tables were arranged by the four criteria and their sub-categories. It was found that academics' attempts to carry out SoTL might come across a steep learning curve and hence, professional support would be necessary in the initial process of writing a proposal. Among the four criteria, Criterion 2 that concerns review of literature and Criterion 3 instructional design were the two most noticeable areas with over 80% of the proposals coded as improvement required, followed by Criterion 4 (assessment design) and Criterion 1 (questions under investigation).

Feature 1: Unclear Questions under Ivestigation

Category 1c was concerned with unclear research question and constituted the

Table 4

Criterion 1: Questions under Investigation

Sub-category	Count	Subtotal (a+b+c) & d	Percentage
1.a not measurable	4	25	69.44%
1.b non-SoTL	6		
1.c unclear	15		
1.d Not coded	11	11	30.56%
Total	36	36	100%

Note. The sub-category of not coded refers to a proposal not falling into any of the sub-categories, that is it was considered unproblematic by the authors. This applied to Tables 4 to 7.

Table 4

Criterion 2: Review of Literature

Sub-category	Count	Subtotal (a+b+c+d) & e	Percentage
2.a irrelevant	4	32	88.89%
2.b discipline-focused	10		
2.c insufficient review	8		
2.d lack of critical review	10		
2.e Not coded	4	4	11.11%
Total	36	36	100%

Table 6

Criterion 3: Instructional Design

Sub-category	Count	Subtotal (a+b+c) & d	Percentage
3.a disconnected with the questions	3	30	83.33%
3.b list of tasks	17		
3.c list of strategies	10		
3.d Not coded	6	6	16.67%
Total	36	36	100%

Table 7
Criterion 4: Assessment Design

Sub-category	Count	Subtotal (a+b+c) & d	Percentage
4.a lack of criteria	23	27	75.00%
4.b self-report only	3		
4.c irrelevant	1		
4.d Not coded	9	9	25.00%
Total	36	36	100%

largest proportion of Criterion 1. The salient feature of Category1c is that instead of bringing up a problem related to teaching and learning, the teachers tended to state what they intended to do or achieve in a study, as a quotation from Proposal-20 illustrates.

> The focus of this study is to enhance autonomous learning curriculum (the subject was omitted for privacy). It aims to increase the extent of student autonomous learning, develop higher order learning and cognitive abilities. The curriculum will be student-centered to construct innovative curriculum plans, explore instructional methods and improve assessment of learning so as to improve the quality of teaching and learning effectiveness. (Cr1-c-p20)[1]

The above quote was a description of the objectives of that study that covered curriculum, instruction, and assessment. The wide coverage of the objectives made it difficult for readers to identify specific problems that the study was sought to investigate. Ill-defined questions would also result in difficulty in evaluating the validity of instructional and assessment design that followed.

Feature 2: Discipline-focused Review of Literature

Category 2b (i.e., discipline-focused review) formed a significant part of Criterion

[1] The coding information consisted of three parts. Cr1-c-p20 represents criterion 1 (Cr1), subcategory c, and proposal number 20.

2 pertaining to review of literature. Given that SoTL research is cross-disciplinary in nature, academics are required to integrate pedagogical knowledge into a specific discipline, which could be difficult for teachers who are not familiar with the field of educational research (Richlin, 2001). Table 5 shows that around 27% of the proposals were focused entirely on disciplinary literature. For example, Proposal-14 was aimed at enhancing students' motivation and their perceived value of cultural knowledge. However, the literature review section was centered entirely on the history and development of the specific culture. None of the studies reviewed was related to motivation or pedagogy. Lacking in educational references make the instructional design the teacher proposed grounded in a vacuum and in isolation.

Category 2d represented the other salient feature. Although the proposals included a review of educational studies that related to the question under investigation and/or instructional design. However, a critical summary that highlighted research gaps or inconsistent findings from prior research was lacking. A lack of critical review would to some extent diminish the significance of a proposed study. Take Proposal-2 as an example. The proposal presented a comprehensive review of learning theories and instructional strategies related to case study pedagogy. Nevertheless, when it comes to a discussion about previous studies that adopted the case study approach, the teacher merely used a table to display the publication details of eight studies and failed to summarize key findings of the studies listed, let alone discussing critically to identify a research gap to be addressed in his/her study. The literature review ended prematurely with the sentence "a review of previous studies has showed that the proposed pedagogy could lead to considerable positive effects". The connection between the prior studies and the proposed study was missing.

Feature 3: Lack of Instructional Design

Table 6 shows that Category 3b and 3c formed a significant proportion of Criterion 3 that pertained to instructional design. Although the proposals falling into this category included a list of instructional tasks or strategies, an overarching principle that guides the instructional design was absent. For example, the author of Proposal-43

described the procedures of three hands-on projects to be implemented in the study. The topics of the three projects were different and so were the experimental procedures. The lack of an overarching framework made it difficult for readers to understand the line of reasoning for implementing the three projects as well as the association between them. It is reasonable to question whether the three projects could improve student learning or if there are other alternatives that the author did not consider. A list of instructional tasks or strategies only explained what a teacher intended to do. The rationale behind the list was missing. An ill-structured list did not respond directly to a problem under investigation, let alone convincing the readers that the study is a systematic inquiry.

Feature 4: Lack of Assessment Criteria

The primary goal of a SoTL study is to examine the effects of an instructional intervention on student learning, and such an examination requires the use predefined assessment criteria to evaluate its effects. Table 7 indicates that around 64% of the proposals were classified into Category 4a, representing a lack of assessment criteria. For instance, Proposal-19 adopted a scale to gauge the effectiveness of digital products made by students. However, the teacher did not define the standard of effective clearly; nor were performance indicators that defined each level made clear. Proposal-09 is another example. The study involved various assessment tasks to evaluate student learning, including group project, performance assessment, and an end-of-semester examination. Despite the variety of assessment tasks, the teacher did not specify any assessment criteria for these tasks. Given that the primary purpose of an assessment is to elicit evidence of student learning, more information about the assessment criteria should have be provided to convince the readers that the assessment tasks proposed were valid tools that could be used to verify the effects of an intervention.

4.2 Essential Support for SoTL Development: Accounts from Academics

The four features emerged from the analyses of the 36 proposals suggest that

academics might encounter a wide range of challenges when attempting to undertake SoTL. The challenges were evident at the very beginning of the research process as reflected in the proposals. To investigate further essential support that academics would need when preparing for their proposals, we interviewed four academics. Accounts from the four academics echoed the features emerged from the analyses of the proposals.

4.2.1 Identification of a Research Question

Teacher 4 shared that this was her first time to apply for the TPRP fund, and it was not an easy task. She benefited a lot from the consultation session in which the ED professionals worked with her to consolidate scattered ideas into more focused research questions. She found herself constantly jumping between ideas and straying off topics easily. The consultation provided her an opportunity to communicate with people with whom she shared a common language to help her tidy up the line of reasoning of her proposal.

> The most helpful part of the whole process of the consultation is to help me focus on and formulate specific research questions. I will need to explore more later. I got an opportunity to discuss with you my ideas which were widely scattered at first. New ideas emerged through the interactions. (T4-s6-e1)[2]

4.2.2 Review of Educational Literature

Teacher 3 thought locating references related to educational research particularly challenging in terms of using appropriate keywords to search for research papers. The references recommended by ED professionals could save her from aimless searching, serving as a key to a field that she is interested in but not familiar with.

[2] The coding information consisted of three parts. T4-s6-e1 represents teacher 4, section 6, and excerpt 1.

> I want to know what to cite and where to find the references related to educational research. I think I need support of this kind, if you can tell us the keywords. (…). I hope you can provide us with say two key references and then I can look for two more myself. So that I don't need to spend a lot of time searching. (T3-s18-e1)

4.2.3 Instructional and Assessment Design

Teacher 1 indicated that her research interests had specific foci on her discipline, that were less relevant to educational research. Her attempts in getting her work published in educational journals were quite discouraging. She thought support from the X-CTLD helpful in sorting out the overall instructional and assessment design. She emphasized the benefit of working with ED professionals on the design of a set of rubrics for assessing students' clinical performance during internship. She thought the rubrics are a useful tool that can be applied to her class, as the quotation below illustrates.

> You really need to think through it (assessment). We usually consider teaching as moving students from unknown to known, but we rarely evaluate what they have achieved exactly. (…) The rubrics we just developed are what I can apply in practice. That helps me a lot. We also went through the research procedures and I think I can complete my proposal more quickly. (T1-s19-e2)

4.3 Integrating SoED into ED: Accounts from ED Professionals

Three ED professionals from the X-CTLD were invited to participate in a focus group discussion to respond to the difficult areas that teachers might encounter when preparing for a TPRP proposal. The three professionals were also prompted to discuss

approaches that could help integrate SoED into their current ED practices to enhance the impact of ED on SoTL development in the X University.

4.3.1 Identification of Topics for ED Programs

When asked to respond to the analysis results of the 36 proposals, Professional A indicated that the four difficulty areas reflected in the proposals helped ED professionals identify topics for upcoming ED programs. The analysis results demonstrated various teaching scenarios and issues that academics are interested in or concerned about. These findings contributed to valuable topics that are worth investigating by teachers through classroom-based research and should be made known to more teachers. Based on their observations, the underlying challenges entrenched in SoTL resulted from disciplinary differences. Teachers might get accustomed to what happens in class and do not consider a problem problematic. The lack of awareness might partially explain why nearly 70% of the proposals in the sample failed to define research questions clearly. Professional A emphasized that ED professionals have an important role to play in raising academics' awareness of problems related to teaching and learning through dissemination of the results of SoED (e.g., analyses of TPRP proposals) in ED programs.

> What we should do is to share with academics the statistical results we got through sharing sessions. We can also talk about the status quo of teaching and learning in the university and show them some issues we observed. They might notice the existence of the issues and have a better understanding of them. (PA-s9-e1)[3]

[3] The coding information consisted of three parts. PA-s9-e1 represents professional A, section 9, and excerpt 1.

4.3.2 Strategizing Institutional ED Agendas

Professional B indicated the bridging role of ED in scaffolding SoTL. Although teachers can identify a problem worth investigating, they may still find it difficult in using a proper term to describe the problem and choose the right keywords to search for references. Building a resource bank that provides teachers with key references for various topics might be one of the solutions to familiarize teachers with learning theories.

In addition to the development of a resource bank, the three interviewees coincidently agreed that ED professionals should work strategically with specific goals in mind. The prevalence of SoTL will inevitably result in greater demand for support from ED. However, it is impossible to expect ED professionals to locate research papers for teachers in all disciplines. Professional B indicated that it requires a strategic approach to keep up with the increasing demand, and the first step ED professionals might consider is to align ED agendas with the strategic plan of the university, as the quotation below illustrates.

> We used to rely on our instinct when planning ED programs and there were a lot of things that we wanted to try. This made it difficult for us to prioritize our agendas. The to-do list seemed endless. But we would need a direction. This year I think the goal is clear. We will focus on the signature pedagogy the University aims to promote this semester. The pedagogy will become the theme of the ED programs this semester and other events for academic development afterwards. The results of these events might not come up to our expectations. But at least the events we are about to hold have a core spirit. (PB-s60-e4)

The quotation highlighted the importance of aligning ED with institutional goals. At the time when the interview took place, the three ED professionals were planning for a new series of training programs regarding SoTL. The new programs were centered on the signature pedagogy that the X University aims to promote as stated in the proposal

of the Higher Education Sprout Project. Alignment of ED agendas with institutional goals would make the theme of ED programs clearer and more relevant to a wider community of the institution, and this is an essential strategic approach to enhancing the impact of ED.

Professional B also pointed out the difference between professional instinct and evidence-based decision making. The planning of ED programs used to be informed by first-hand experiences of hosting events, and these experiences would gradually turn into professional instinct telling ED professionals what might work and what might not. Nevertheless, the limitation of professional instinct is evident, particularly in the face of an emerging field such as SoTL, with which neither ED professionals nor university academics are familiar. Such unfamiliarity with SoTL requires ED professionals to work strategically, and needs analysis is obviously the very first step that should be undertaken in individual institutions. ED professionals could leverage on the data collected to strategize ED agendas in response to pressing issues that concern teachers as well as in alignment with institutional goals.

In sum, analyses of the 36 TPRP proposals pointed out four major challenges that academics had encountered when embarking on SoTL, including identification of a research question, review of literature, instructional design and assessment of learning outcomes. These challenges suggest that university academics' attempts to undertake SoTL involved a steep learning curve. The interviews with the four academics showed that the learning curve might become smoother if ED professionals exert an active role in supporting academics to cross the knowledge gap between pedagogical and disciplinary research. Accounts from the academics reveal the importance of building positive partnerships between academics and ED professionals in the development of SoTL. The focus group discussion with the three ED professionals further substantiated the value of evidence-based ED in needs analysis and in strategizing ED agendas in alignment with institutional goals. An integrating of SoED into ED is necessary to help ED professionals transform their practices from instinct-based toward evidence-based ED.

V. Discussion

Carried out in a research-intensive university, this study uncovered several challenges that academics encountered when embarking on SoTL. The findings are consistent with the challenges that have been documented in the previous studies (Harland et al., 2014; Hubball, Clarke, & Poole, 2010; Richlin, 2001), substantiating the importance of building positive partnerships between academics and ED professionals (Cruz et al., 2019; Felten et al., 2007; Healey et al., 2019; Kenny et al., 2017; Louie et al., 2003). To enhance the capacity of ED, the present study further explored the possible ways of integrating SoED into ED to help academics sail through the challenges and facilitate the ongoing development of SoTL. Constant upskilling for ED professionals is the key to the integration as well as sustainable development of SoTL within and across higher education institutions.

5.1 Facilitating SoTL through Evidence-based ED

Consistent with previous studies (Bass, 1999; Richlin, 2001), this study found that the cross-disciplinary characteristics inherent in SoTL might be a significant factor leading to the challenges faced by the academics. The present study also found that these challenges had existed in the very early stage of research when academics wrote their proposals. It is reasonable to speculate that such a learning curve would become steeper in the implementation phase if academics do not get any support and work alone. Among the four categories, Criterion 2 that concerned review of literature and Criterion 3 instructional design were particularly salient. The two criteria require academics to build their studies on the shoulders of giants through a comprehensive as well as critical review of pedagogical literature. Nevertheless, as the interviews illustrated, locating useful research papers might be a daunting task especially for teachers who are not familiar with pedagogical research. This may explain why 27%

of the proposals (i.e., 10 proposals) in Table 5 included discipline-focused literature only, and why 75% of them (i.e., 27 proposals) in Table 6 had a list of instructional tasks or strategies rather than a coherent instructional design. The lack of pedagogical underpinning resulted in proposed instructional and assessment design grounded in a vacuum.

To help academics sail through the cross-disciplinary barrier, ED programs need to be informative and effective in enhancing academics' pedagogical literacy (Felten et al., 2007; Geertsema, 2016). As illustrated in Table 1, ED professionals have different roles to play along Cruz et al.'s (2019) SoTL scaffold. The first and foremost role is to bridge the knowledge gap between disciplines through training programs at the micro level. ED professionals need to assume the responsibility that goes beyond marketing the notion of SoTL to boost applications for research funding (e.g., the TPRP). More effort should be invested in consolidating the key principles of pedagogical research and then translating them into workable methods to a wider academic community. Building a resource bank that collates key readings with regard to learning theories and research instruments could help save academics from aimless literature search.

The ongoing development of SoTL will inevitably lead to a myriad of SoTL projects across disciplines. It is unrealistic to expect that every academic will become experts in pedagogical research; nor is it possible for ED professionals to keep abreast of the educational trends in all disciplines. As Cruz et al. (2019) suggest the development of SoTL requires collaboration not only between ED and academics but also among academics in disciplines. In addition to a general resource bank, compilation of discipline-specific journals and establishment of disciplinary SoTL communities might also be necessary when more teachers coming from similar academic backgrounds are engaged in SoTL. Engaging academics in disciplinary SoTL communities could catalyze productive discussions and encourage teachers who have similar research interests to exchange resources for experimentation in teaching and learning.

5.2 Constant Upskilling for ED Professionals to Integrate SoED into ED

Analyses of the TPRP proposals and interviews with the academics substantiate the close relationship between SoTL and ED. In facilitating the continuous development of SoTL, ED professionals need to upskill constantly. Findings of the focus group discussion highlight the importance of integrating SoED into ED (Hoessler et al., 2010; Kreber & Brook, 2001; Timmermans, 2014). Researchers have argued that regular approaches that rely on participation numbers and satisfaction rates do not suffice to inform ED professionals about effectiveness of ED programs (Chalmers & Gardiner, 2015; Levinson-Rose & Menges, 1981). These "happiness indices" (Levinson-Rose & Menges, 1981) also failed to reflect academics' needs or challenges when undertaking SoTL. As an emerging scholarship, SoED echoes the role-changing of ED professionals from SoTL advocates to SoTL researchers as illustrated at the meso level in Table 1 (Cruz et al., 2019). To enhance the impact of ED on SoTL, ED professionals need to equip themselves with research skills that are required to advance from SoTL proponents to researchers; data collected from ED programs or related events such as the TPRP proposals can help ED professionals evaluate the effectiveness of the prevailing training programs and make informed decisions about the planning of future programs (Amundsen & Wilson, 2012; Gibbs, 2013; Kenny et al., 2017; Timmermans, 2014).

As the very first step toward SoED, analyses of the TPRP proposals informed the ED professionals about academics' needs when undertaking SoTL. The data could provide solid evidence that help the professionals to prioritize ED programs in a clear direction, rather than simply relying on professional instinct. As shown in the focus group interview, all the three interviewees agreed that ED professionals should work strategically with a specific goal in mind. Evidence-based decision making is an important feature representing that ED professionals are transforming from SoTL advocates to researchers. Similar to academics who need professional support to cross the threshold of SoTL, in-house training in research skills is essential for ED

professionals to engage in SoED so as to facilitate the ongoing development of SoTL.

Ultimately, ED professionals are expected to act as thought leaders to set institutional SoTL agendas as illustrated at the macro level of Table 1 (Cruz et al., 2019). Leaders of higher education institutions and CTLDs need to consider the repositioning of ED professionals whose duty should not be limited to regular administrative work. Advancement of ED professionals toward thought leaders requires an incorporation SoTL into institutional strategic plans as well as participation of ED professionals in the planning process. The alignment between SoTL agendas and institutional plans could make instructional innovations relevant to a wider community within an institution, contributing to an institutional culture that is supportive of SoTL (Harland et al., 2014) and in turn conducive to institutional signature pedagogy (Poole, 2007; Shulman, 2005).

It is worth noting that the integration of SoED into ED is not the downgrading of the value of professional instinct that ED professionals accumulated through first-hand experience. Instead, the paradigm of upskilling we would like to argue is a systemic professional development for ED professionals to evolve from service/resource provider to change agents. To this end, the role of ED professionals should evolve constantly and so does their capacity.

VI. Conclusions

The recent prevalence of SoTL in the global and local context reveals that quality teaching is not only an integral part of academic work but also indicative of the credibility of a higher education institution (Louie et al., 2003; Vithal, 2018). Developing a partnership between academics and ED professionals is essential in the process of transforming teaching into a scholarly act and in turn enhancing teaching and learning in higher education (Bayerlein & McGrath, 2018; Vithal, 2018). SoED, as an emerging form of scholarship in higher education, is fundamental to the transformation. The capacity of ED professionals should not be limited to administrative domains. They

need to upskill constantly and assume greater responsibility for creating and leading SoTL agendas.

Several implications could be drawn from our findings. The TPRP has been implemented in Taiwan for three years and has been inviting applications for its fourth cohort. Higher education institutions might consider adopting a dual approach in response to the increasing demand for SoTL. The first part of the approach is about academic development. CTLDs could play an active role in supporting teachers to cross knowledge gaps because of the transdisciplinary nature of SoLT. ED programs are expected to be informative in introducing the principles of SoTL and making pedagogical research transferable to various disciplines. The planning of ED programs needs to be evidence-based to be responsive to challenges that academics might encounter at the initial stage when preparing for their proposals.

The second part of the dual approach aims to contextualize SoED in individual institutions. Reginal and nationwide sharing sessions and workshops on SoTL and TPRP applications have been increasingly popular recently and have contributed to knowledge exchange among institutions. Apart from cross-institutional collaboration, contextualization of SoED is also important to facilitate institutional SoTL development. Given that each higher education institution has its own profile in terms of academic orientations and educational goals, academics' needs in SoTL and the corresponding ED agendas would vary if not totally across institutions. Needs analysis, as the very first step of SoED, should be undertaken within an institution by its ED professionals to make ED programs cater to the needs and reflective of the characteristics of an institution. The abovementioned dual approach entails considerable involvement of ED professionals. It is necessary to provide ED professionals with ongoing in-house training and a career ladder that give due recognition to the profession. The current Higher Education SPROUT Project has provided opportunities that higher education institutions could leverage on to engage ED professionals in decision making processes. Apart from administrative capacity, ED professionals are expected to develop research skills that are required to undertake SoED that underlies effective ED programs as well

as upskilling for ED professionals toward thought leadership.

Several limitations must be acknowledged. First, this study was carried out within a research-intensive university. Given that universities that have different characteristics might approach SoTL differently. The generalizability of the results should be treated with caution. In addition, the study was carried out in a single institution. Comparative studies that involve multiple institutions or studies that document the practices of cross-institutional collaboration would offer illuminating insights into the path forward for SoTL. Moreover, this study examined the TPRP proposals submitted by academics. The analysis results revealed the challenges they faced in the very early stage of research when writing the proposals. However, the results did not represent the teachers' actual SoTL practices in the implementation phase. Future studies may be carried out later after the release of the results of the 2020 TPRP fund. A follow-up study that examines further how the teachers implement their SoTL projects will be necessary. It will enable ED professionals to keep track of the entire process of SoTL from application to implementation. Such an examination will contribute a more solid evidence foundation for SoED, upon which ED professionals can identify the needs of academics in different phases and thus strategize ED programs to better support academics in carrying out SoTL.

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