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Transfer of Ownership: Designing for Scholarship of Learning and Teaching

Jayakrishnan WARRIEM [a*], Sahana MURTHY [a] & Sridhar IYER [a]
[a]IDP in Educational Technology, IIT Bombay, India
*jayakrishnan.m@iitb.ac.in

Abstract: Teachers engaged in higher levels of Scholarship of Learning and Teaching (SoLT) is associated with better teaching-learning outcomes. Variety of strategies, like seminars, conferences, trainings etc. is used for elevating teachers to engage in higher levels of SoLT. In this paper, we extend the design principle of "Transfer of Ownership", available in development research literature, to design teacher professional development (TPD) programmes to target SoLT among in-service teachers. We explain how this design principle was used in implementation of a blended TPD for technology integration among a group of 53 engineering college teachers. At the end of the training, 9 of the teachers who were most engaged in the training had successfully taken ownership of the problem of effective technology integration in their own classroom and had devised action research studies to further investigate it. The results opens up avenues for us in exploring ways of operationalizing "Transfer of Ownership" across multiple modes and scales of TPD implementation.

Keywords: Scholarship of Learning and Teaching, Transfer of Ownership, Teacher Professional Development, Technology Integration

1. Introduction

Scholarship of Learning and Teaching (SoLT) movement encourages teachers to perform inquiry on students' learning and further disseminate their findings through peer-reviewed academic publications (Boshier & Huang, 2008). Adoptions of SoLT practices have shown evidences of faculty contribution to the knowledge in their individual discipline (Healey, 2000) and generation of sustainable teaching-learning practices within an institution (Richlin & Cox, 2004). With the ubiquitous use of technology in teaching-learning practices now, promotion of SoLT around teacher professional development (TPD) practices gains currency and relevance (Hutchings, Huber & Ciccone, 2011). The existing conceptual models of SoLT (Trigwell & Shale, 2004, Kreber and Cranton, 2000; Trigwell et. al., 2000) provide additional guidance in the aspects to be considered while designing and implementing such TPD activities. However the challenge lies in, i) facilitating the participants to rethink and refine their current practices, and ii) further scaffolding them in the process of inquiry on students' learning due to the refined practice (Kreber & Kanuka, 2006).

An initial effort of the authors targeting SoLT practices through a TPD programme had shown encouraging results. In addition to statistically significant learning gains in educational research methods, 9 participants had successfully disseminated their action research experiences in a peer reviewed international conference (Warriem, Murthy & Iyer, 2013). However, a major challenge that we faced during this effort was that most of the teachers in our operating context didn't have any formal pedagogical training (National Knowledge Commission, 2009). This made it hard for them to learn and engage with the SoLT practices. To overcome this challenge, we had designed and implemented two large-scale training programmes that focused on introducing research-based student-centered pedagogy (Murthy, Iyer and Warriem, 2015). These efforts had introduced the design principles of "Immersivity" and "Pertinency" for design and implementation of TPD programmes (Warriem, Murthy & Iyer, 2015). These principles were found to have a visible impact on teachers' awareness of their teaching-learning practices and its effect on students' learning, which is a desirable starting point to engage in SoLT practices. In this paper,

we present an extended TPD effort to engage teachers in further SoLT practices by adapting the design principle of "Transfer of Ownership".

We have adapted the idea of transfer of ownership from the works of Honkalaskar et. al. (2014) and Chambers (2007), that identifies peoples' involvement, their sense of ownership and control to be crucial in sustainability and spread of interventions, while being done by an external agency. We have extended this idea to the context of teacher professional development (TPD) by identifying Transfer of Ownership as the planned action of shifting the focus of TPD from the trainer's goal of improving teaching-learning practice to the participants' involvement and control to engage in effective teaching-learning practices. In our TPD program we apply transfer of ownership to design relevant activities and corresponding scaffolds for participants. We first provide teachers with scaffolds to elicit ideas for solving their teaching-learning problems. Then these teachers are provided with training on educational research methods that they can use to conduct systematic inquiry on the implementation of these ideas. This design principle thus helps in design of TPDs that reflect a "narrative of growth", emphasizing the agency and desire of the participating teacher in their own professional development (O'Meara, Terosky & Neumann, 2008) and resulting in improvement of student learning. The narrative of growth is known to have alignment with the key ideas in SoLT practices (Kong, Lai and Wong, 2017).

In the current work, we explain design and implementation a teacher professional development programme for engineering educators in India in blended mode. The focus of this training was to train teachers in action research and disseminate their action research findings. Results at the end of the training showed that participants had taken up the ownership of the teaching-learning problem within their classrooms and devised study plans to perform an inquiry on their practice.

2. Related Work

2.1. Evolution of Scholarship of Learning and Teaching (SoLT)

Boyer (1990) initially proposed the idea of "Scholarship of Teaching", where he identified teaching as a "highest form of understanding" that can be further taken up for scholarly research work (Vardi, 2011). This was further refined to differentiate it from excellent teaching, by clarifying the need for teachers engaged in "Scholarship of Teaching and Learning" to systematically investigate questions related to students' learning (Hutchings & Schulman, 1999). McKinney (2006) further expanded the teaching practice to include three levels: i) good teaching, which looks at performance of the teacher, ii) scholarly teaching, which requires teachers to reflect and refine their practice and iii) scholarship of teaching and learning, that advances the knowledge on teaching-learning issues by making it available for public review. Thus teachers engaged in SoTL typically poses questions about their own practice, tries to collect evidence, analyze and interpret the results, take informed action on the findings and finally document and disseminate both the process and outcomes (Connolly et. al., 2007). Though evidences are collected on student learning, SoTL was criticized for both its focus on the formal classroom practice that stresses teaching more than learning (Boshier and Huang, 2008) and the ambiguities involved in the operationalization of SoTL (Boshier, 2009). Scholarship of Learning and Teaching (SoLT) was thus proposed for the practice to emphasize the paradigm shift to learning from teaching (Boshier and Huang, 2008).

2.2. Models of SoLT

There exist several conceptual models that provide us guidelines on the processes involved in engaging teachers in SoLT practices. Trigwell et. al. (2000) had proposed a model that consisted of four dimensions – Informed dimension, Reflection dimension, Communication dimension and Conception dimension, that tries to explain the engagement of teacher in the process of SoLT. The informed dimension measures the extent to which a teacher engages in scholarly contributions of others (research literature) while the conception dimension measures the extent of the teacher's focus on the teaching practice as against that on student learning. The reflection dimension

measures the extent of reflection and can vary from an unfocused approach to a very focused approach aimed at increasing the teacher's present understanding of the teaching-learning process. The communication dimension refers to the extent to which the teacher engages in dissemination of their findings and can vary from absence of dissemination to publication in international journals. Kreber and Canton (2000) had developed their model on the basis of types of reflection possible across three domains of knowledge about teaching – Instructional knowledge, Pedagogical Knowledge and Curricular Knowledge. Three types of reflections were found to be possible in each of the dimension viz. Content reflection, Process reflection and Premise reflection. Thus a total of 9 elements were present in this model.

With teaching academies being created to support SoLT, Schulman (2004) had proposed four models that involved different roles played by teaching academies in promoting SoLT practices. These models considered teaching academy as – An interdisciplinary center, an aspect of graduate education, organized around technology and distributed teaching academy. A practice-oriented model also was available that looked into the dimensions of knowledge, practice and outcome to explain achievement of SoLT (Trigwell & Shale, 2004). While the knowledge included the various dimensions of domain, pedagogy and context, outcomes included elements like student learning, documentation, teacher learning and teacher satisfaction. The dimension of practice acts as a bridge between knowledge and outcome and included elements of teaching, evaluation, reflection, communication and learning.

A common feature that can be seen in all models, except Schulman's institutional model, is the focus on teacher's internal processes and the ways in which these could be measured.

2.3. Teacher Professional Development and SoLT

The relevance of SoLT for teacher professional development has further increased due to the ubiquitous presence of technology within teaching-learning (Hutchings, Huber and Ciccone, 2011), as the impact of technology on student-learning can be carefully examined and understood by the teacher themself. Numerous TPD activities like seminars, pedagogical courses, campus conferences on learning and teaching and reward programmes are available for engaging faculty in SoLT. Engaging teachers in a community of practice is yet another PD activity that is found to greatly avoid issues related to isolation, stress and marginalization among teachers participating in an SoLT community (Martensson, Roxa & Olsson, 2011).

2.4. Positioning of our work

SoLT based professional development is being criticized due to a lack of clarity involved in the exact activities and outputs expected from the faculty (Brew, 2007). The current models for promoting SoTL inform us of different dimensions across which the change has to occur within the participating teachers. However the TPD designer faces the challenge of i) facilitating the participants to rethink and refine their current practices, and ii) further scaffolding them in the process of inquiry on students' learning due to the refined practice (Kreber & Kanuka, 2006). The current work tries to address this gap by providing a design principle and an instance of its operationalization that will benefit TPD designers.

3. Background

Before the current study, we had designed and implemented two large-scale blended training programmes focusing on introducing research-based student-centered pedagogy while integrating technology in classroom (Murthy, Iyer and Warriem, 2015). Participants were trained in student-centered pedagogies like Think-Pair-Share and Peer Instruction and also in effective use of technologies like Wiki, Screencast and Visualizations. These trainings were designed and developed using the design principles of "Immersivity" and "Pertinency".

"Immersivity" is defined as the feature of the learning environment that drives participants to be involved in a set of meaningful activities (Howland et. al., 2012) and to get cognitively engaged in the content (Sherman & Craig, 2003). Immersivity is built upon the need for having

active learning within the training environment (Desmione, 2009) by adding the concept of immersion (Calleja, 2007), prevalent in the virtual reality and gaming literature."Pertinency" of teacher training content is defined as the training participant's perception of degree to which the given content is applicable for his/her teaching immediately after the training. This idea builds upon the element of job relevance (Venkatesh & Davis, 2000) by adding the constraint of immediate practice.

4. Transfer of Ownership

Transfer of Ownership is defined as the planned action of shifting the focus of TPD from the trainer's goal of improving practice to the participants' realization of the need to improve practice, by trying to solve teaching-learning problems within the context of the participant. This principle has been adapted from the development literature dealing with participative research methodologies. Development literature identifies peoples' involvement, their sense of ownership and control to be crucial elements in sustainability and spread of interventions (Honkalaskar et. al., 2014; Chambers, 2007). Thus a participative development process would have ensured the transfer of ownership from development agency to the intended beneficiaries by engaging them in the problem and solution identification process (Honkalaskar et. al, 2014). The "Transfer of Ownership" was implemented explicitly by training the participants in performing classroom action research (CAR). CAR allows teachers to carry out systematic inquiry in their own practice and enable them to improve their understanding of the pedagogy and thereby improve student performances (Norton, 2009). Within the broad continuum of action research, CAR method fits between personal reflections and formal educational research (Mettetal, 2012). Apart from the reported student benefits and institutional benefits, CAR is known to have benefits of greater sustainability and empowerment among the teachers (Bradshaw et. al, 2014).

4.1. Implementing Transfer of Ownership

The seven-step process of CAR identified by Mettetal (2012) has been adapted as three separate phases within our design (see Figure 1 below). These three phases are: Idea Proposal Phase, Study Planning Phase and Study Implementation Phase. In this paper, we focus on the first two phases to explain the implementation of Transfer of Ownership.

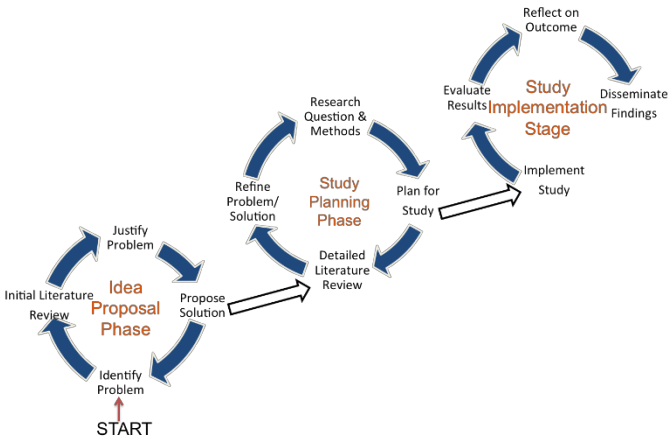

Figure 1. Phases in the implementation of "Transfer of Ownership"

- In the *Idea Proposal phase*, participants first identify a teaching-learning problem within their own context. This is followed by a preliminary literature review (3-4 research papers) to justify the need to solve problem and identify existing solutions. Once the problem has been sufficiently motivated, they proceed to proposing their own solution, based on the technology integration practices learnt during training.

- In the *Study Planning phase*, participants will refine their problem/solution through a detailed literature review. The framing of the research questions and detailing of the research method follow this, leading to a plan for the study.

The entire process of Idea Proposal and Study Planning is iterative and participants may have to perform several iterations to refine their solution idea and research study plan. Hence these stages are shown as loops in the figure.

4.2. Scaffolds for assisting in inquiry

To scaffold the participants in this process, they are provided with two scaffolds – Idea Planning Template and Study Planning template (Murthy & Iyer, 2013). These templates contain both guiding questions and example answers to help the participants reflect on their intended practice and identify ways to systematically perform inquiry on student learning. For example, in figure 2 below, we see a sample question from the idea planning template, which elicits proposed solution by the participant, along with an example solution idea. As seen in the figure, the main guiding question contain further probes that help participants to reflect on both their intended practice and its impact on student learning.

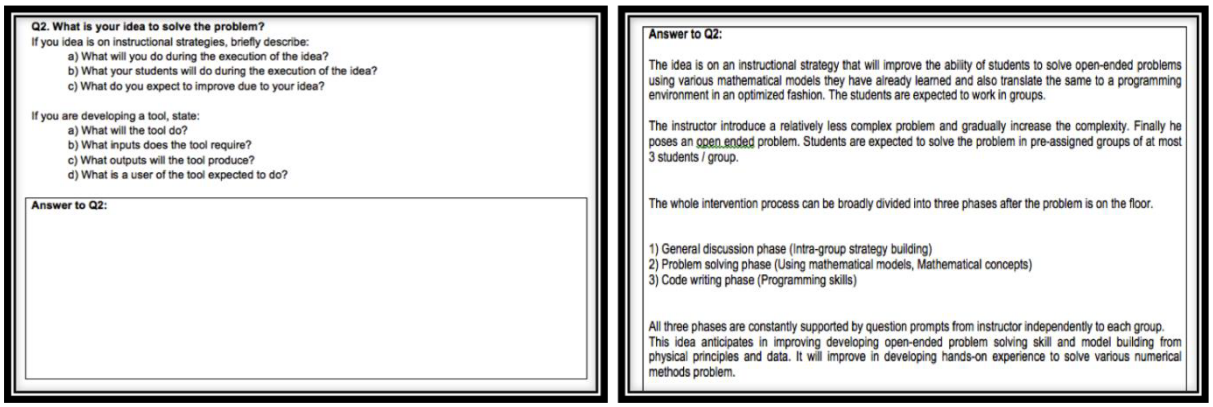

Figure 2. An example question from Idea Proposal Template with a sample answer

5. The TPD Programme

The current training programme started a semester after the end of the training programme discussed in section 3 above. 53 members, who participated in one of the earlier training programmes, volunteered for participating in this training. Participants were provided training in a new technology – Padlet™. The training utilized the technology platforms of MOODLE, Wikispaces and Padlet. There were two phases of training – (i) An asynchronous online training, equivalent to an instruction time of 1.5 weeks, started in June and ended in October, 2015 and (ii) A face-to-face training in classroom action research training, which lasted for 3 days, during the final week of October (October 23-25, 2015). In the asynchronous phase, participants engaged in reflection about their practices in the wiki, engaged in discussion with other participants through MOODLE and Padlet and had designed lesson plans to integrate Padlet within their teaching-learning practice. Apart from the design principle of "Transfer of Ownership", this training had used "Immersivity" and "Pertinency" to ensure participants' engagement during the training. In the face-to-face sessions participants were provided with training on educational research design and had to submit an Idea Proposal and a Study Planning Assignments that they plan to take up after the training. These participants used the course wiki (MEET2k15, 2015) to detail out these assignments. At the end of the training, the participants presented their study and observed feedback from both peers and the trainers.

6. Evaluation

This is part of a longitudinal study and at the time of reporting, two years since the training programme has transpired. We now explain the methodology used for evaluation of the training programme. Since there are multiple aspects that needed to be investigated, mixed-methods were adopted for the evaluation. The research question that guided our evaluation was – "What changes were observed in the ownership of problem during the training for engaging participants in SoLT practices?"

6.1. Sample and Data Collection

We analyzed the artefacts created by the 9 participants, who submitted both the idea proposal and study planning assignment. The study had multiple qualitative data sources to evaluate the effect of training on participants, and we primarily relied on content analysis. Table below shows the various data sources, instruments and the methods that we have used for data collection and analysis.

Table 2: Data Collection and Analysis Methods

Focus of Investigation	Data Source	Instrument Used	Procedure for data collection	Data Analysis Method
Inquiry in TL practice	Idea Proposal Assignments		Idea proposals written in Wiki	Content Analysis
	Study Planning Assignment		Study Plans written in Wiki	
Reflection about the training programme	Focus Group Discussions	Semi-structured questions	Recording and Transcribing discussion.	

7. Results

We are still in the process of content analysis and in the results we show ~~you~~ our preliminary findings.

- *Participants explicitly applied the technology and pedagogic practices that they learnt in the TPD to create proposals to improve student learning in their classroom*

Nine participants had submitted a research idea during the idea proposal stage. On closer examination of these idea proposals it was observed that all the participants have made use of either the strategy or technology that they were trained in. Four participant ideas utilized technology of Visualizations, two utilized Padlet and one used Wiki. Three of the ideas utilized the strategy of Think-Pair-Share while one study utilized Peer Instruction for effective technology integration. An example of ideas was "Use of Padlet and TPS in a flipped classroom strategy to engage participants in discussions within the topic of CPU Scheduling".

- *Participants perceive that the TPD activities designed on the basis of Immersivity have resulted in their being able to design effective learning activities for their own students*

The focus group discussion highlighted the effect of design principle of immersivity and transfer of ownership has led to significant positive effects in participants' own practice. Comments like "*while introducing a new tool to us, in the pedagogy workshop [Initial trainings], Wikispaces, they [Researchers] have treated us as a learner"* and "*Because of the training what we have experienced here [Initial trainings and Asynchronous part of the current training], the same level of training we are followed in our classroom to create a familiarity of the tool. Now the students are asking whether we can use wikispace or some other tool for our course*" indicate how the learner-centered designs (for Immersivity) led to positive practices and experiences.

- Participants reported that their students show higher interest and engagement when they used technology-based learner centred strategies learnt in the TPD

The focus group discussions shed light on evidence of positive student attitudes and behaviours when particpiants devised more learner-centered strategies using technology. The participants also indicated how the students, taking examples of specific tools that they were trained in, appreciated their technology integration practices. E.g. the comment by a participant "*the students are so much interested whenever the staff [the participant] comes to class. [The students say that] we will be using wikispace, so we will be posting materials there, we will be getting materials, we will be doing activities there, mini projects in a team work. So they [students] have too much interest to work with the tool [wikispaces]* " indicates how ownership of technology integration practices are being taken up actively by teachers.

- *Participants plan action research to sustain inquiry practices post training*

Participants created the idea proposal and study planning assignments to solve problems related to student learning within their own practice. Comments like '*[the workshop] is promoting us to be an Educational Researcher. We have learnt these things [about planning the research], now we need to practice'* indicated that participants had intention to follow-up and sustain the inquiry practices that they were trained in. The engagement in the workshop has also led the participants to think of more action research studies as is evident from the comment '*Actually we have taken 3-4 ideas with us [after this training]. So it is 3-4 [study] templates we can independently plan.*'

8. Discussion and Conclusion

The above results indicate that the TPD training has helped participants to refine their practice. Taking their role as action researcher further, participants prepared detailed action research study plans to evaluate their students' learning. Finally, participants have intention to apply technology integration strategies beyond what they learnt the TPD, and have planned further studies. To address our RQ, "What changes were observed in the ownership of problem during the training for engaging participants in SoLT practices?", we see that the training helped in transfer of ownership of the problem from the trainer to the participant teacher and they have engaged in higher levels of SoLT.

Two months post the training; two of the participants had presented four action research studies in a peer reviewed international conference. These studies were co-authored with 9 other colleagues from their institution, who were among the participants of initial pedagogy training (described in 4.1). Three of these papers dealt with classroom teaching-learning experiences (Mistry, Halkude and Awasekar, 2016; Indi, Yalagi and Nirgude, 2016; Yalagi, Indi, and Nirgude, 2016) and one paper dealt with the working of professional learning community developed in an institution based on the various student-centered practices detailed in the pedagogy training (Halkude et. al., 2016). Together these results can be interpreted as teachers taking both ownership and leadership roles in solving the teaching-learning problems within their own context.

A limitation of this study is that we have not reported the analysis of evaluation of the idea and study plans to provide insights on the quality of the inquiry practices reported. This is planned as a future work, as the current effort primarily looked at the evaluation of the training. Another limitation is that we have not explored the specific reasons for high attrition (only 9 out of 53 attending face-to-face training) within the training itself. Being a voluntary effort, we suspect that contextual factors like timing of the workshop (mid-semester) and academic load would have had a greater bearing on participation rates.

In this paper, we describe the implementation and evaluation of TPD aimed at engaging teachers in SoLT practices. The design principle of "Transfer of Ownership" was utilized in the TPD design to achieve this aim. It is seen that over the course of training, participants shift their focus from effective use of technology to sustain inquiry practices about student learning. Thus transfer of ownership can be regarded as a potential means to progress towards higher levels of scholarship of learning and teaching. Further work can focus on how TPDs can be designed to incorporate transfer of ownership as the basis of the TPD activities right from the start.

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