Forming a change environment to encourage professional development through a teacher study group

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HIGHLIGHTS

- This teacher study group (TSG) features a university–school partnership.
- Teachers are inclined to value practical knowledge grounded in their own contexts.
- This TSG has the potential for triggering teachers’ changes in beliefs and practices.
- The design of the TSG plays a major role in shaping the sequences of teacher change.

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ABSTRACT

This study is grounded in the context of English-as-a-Foreign-Language (EFL) teacher education in Taiwan and aims to promote the potential of teacher study groups. The Interconnected Model of Teacher Professional Growth provides a framework to design this teacher study group and to analyze the learning process as experienced by the participating teachers within the collaborative inquiry. The study illustrates the group’s learning process by characterizing the major patterns of the teachers’ changes in beliefs and practices. The results support the claim that the design of the teacher study groups plays a major role in shaping various sequences of teacher change.

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1. Introduction

Contemporary approaches to teacher professional development have evolved along with the paradigm shifts in teacher learning. Stein, Smith, and Silver (1999) identified the contrasting features of traditional versus new paradigms for teacher professional development, wherein the old approach corresponds to a transmission model of education that considers the role of teacher-learners as passive knowledge-absorbers, and the new model reflects a constructivist view of education that assumes teacher-learners to be self-directed in their own professional learning and growth. Along the same lines, in a recent review of research on teacher professional development over the previous ten years, Borko, Jacobs, and Koellner (2010) placed a renewed emphasis on the so-called new paradigm and mapped out key features of high-quality professional development. They stated that, for teacher professional development to be effective, the content of such endeavors should be situated in practice and focused on students’ learning. It should also incorporate the modeling of preferred instructional practices, engaging teachers in inquiry-based learning activities, and building a learning community for professional development. As Borko et al. (2010) summarized, contemporary approaches to teacher professional development should focus on “providing a long-term, inquiry or learner-centered structure that supports teachers as they collaboratively develop the professional knowledge they need to use in their own context” (p.548).

The currently emerging model for improving teacher learning has moved away from one-shot workshops and instead adopts a variety of forms, such as peer coaching (Kohler, Crilley, & Shearer, 1997), self-study (Cole & Knowles, 1998), action research (Ponte, 2002), and lesson study (Lieberman, 2009). Among these alternative approaches to professional development, one promising method is to form teacher inquiry groups (Crockett, 2002) or teacher study groups (Carroll, 2005). A teacher study group is a professional learning community in which the teachers meet regularly for collaborative inquiry about their practical experiences.

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to achieve their collective goal of group learning in a systematic and interactive way (Lambson, 2010; Wenger, McDermott, & Snyder, 2002). The value of teacher study groups for professional development is well documented in the United States (e.g., Cochran-Smith & Lytle, 2009; Ermeling, 2010) and many other Western nations (e.g., Aubusson, Steele, Dinham, & Brady, 2007; in Australia; Meirink, Meijer, & Verloop, 2007; in Netherlands; Gallagher, Griffin, Parker, Kitchen, & Figg, 2011; in Canada). However, the implementation of teacher study groups to foster professional learning is comparatively understudied in Asian countries. In the field of English as a Foreign Language (EFL) in Taiwan, common approaches to professional development for EFL teachers predominantly adopt the conventional model of knowledge transmission (Yeh, 2007), and little guidance is currently available for designing appropriate content and structuring inquiry-oriented professional development for teachers in general and those working in EFL in particular.

Inspired by the promise of achieving high-quality professional development, as portrayed by Borko et al. (2010), this study thus attempts to contribute to the literature on EFL teacher education by exploring the feasibility of forming a teacher study group to foster teacher changes in beliefs and practices that are closely connected to classroom-level curriculum development. While much outcome-oriented research has reported improved student achievement and teacher growth, resulting from various well-designed forms of teacher professional development, the present study takes a process-oriented stance to enhance the knowledge base of teacher learning. As Ermeling (2010) pointed out, scant empirical evidence exists to clearly illustrate the process of how teacher inquiry can lead to change or learning, and thus this study also presents an analytical approach with a focus on group learning for researchers in the field of teacher education in general to better understand the complex nature of teacher change. Accordingly, the research questions addressed in this study are as follows: (1) What enactive and reflective practices are prevalent in the teacher study group? (2) What sequences of change are observed within the context of the teacher study group?

2. Conceptual framework of teacher change

2.1. Defining teacher change

In an attempt to clarify how the concept of teacher change is used in the literature on teacher professional development, Clarke and Hollingsworth (2002) identified the following six interpretations: (1) change as training, (2) change as adaptation, (3) change as personal development, (4) change as local reform, (5) change as systemic restructuring, and (6) change as growth or learning. Among these alternative views of teacher change, they noted, “the central focus of current professional development efforts most closely aligns with the ‘change as growth or learning’ perspective” (p.948). Given that our research aims to extend contemporary approaches to teacher professional development through the use of a teacher study group, in this work we consider teacher change as a growth or learning process in which teachers as active learners are engaged and empowered in a professional learning community to make changes in their own beliefs and classroom practices.

Behind this rationale is an understanding that the literature on teacher change is vast and multi-faceted, and thus having a clear, working definition of teacher change allows us to better align our study with the focal research area. Two basic observations can be made with regard to the current literature. One line of research is directed at understanding what makes teachers change. Such studies predominantly focus on the effectiveness of the various driving forces or professional development avenues that contribute to changes in teachers and consequently to changes in how their students learn. Another line of research is devoted to understanding how teacher change occurs, with an emphasis on teachers as learners and their learning processes or paths to growth. In this process-oriented research camp, there is a sub-distinction between how teachers are changed and how teachers are changing, wherein the former focuses on teachers’ long-term changes or growth (e.g., changed beliefs and practices as a result of participation in a professional learning network) and the latter focuses on teachers’ changing or learning processes (e.g., professional learning experiences with participation in peer coaching) that at first appear to be temporary adjustments, but may later become lasting transformation.

In practice, however, most would agree that when conducting research on teacher change, it is challenging to trace all possible changes and to document the related processes without juxtaposing the ideas of the “changed” and “the changing.” We thus understand that the concepts of growth, learning, and change are inevitably inter-connected, which provides a legitimate reason for us to adopt Clarke and Hollingsworth’s (2002) synthesized perspective of change as a process of growth or learning. From such a perspective, we have chosen to focus our attention on the concept of practical knowledge (or knowledge of practice) presented by Clarke and Lytle (1999; 2008) in order to illustrate how teachers can construct and develop their knowledge of teaching practice through collaborative inquiry processes.

2.2. Conceptualizing the process of teacher change

According to Clarke and Hollingsworth’s (2002) Interconnected Model of Teacher Professional Growth (hereafter, the Interconnected Model), teacher change takes place through four major domains: the personal domain (teacher knowledge, beliefs, and attitudes), the external domain (external source of information or stimulus), the domain of practice (professional experimentation), and the domain of consequence (salient outcomes). These four domains form a conceptual context (i.e., the change environment) that fosters teacher change through the mediating processes of enactment and reflection.

Within the perspective, enactment and reflection are the necessary “mechanisms whereby change in one of the above dimensions triggered change in another” (p.953). By definition, enactment is the mediating process of putting new ideas or beliefs into action wherein the teacher enacts new forms of pedagogical practices. Reflection is defined as the process by which the teachers evaluate their students’ learning outcomes and reflect upon their teaching beliefs, attitudes, and knowledge to examine the effectiveness of the pedagogical practices they have enacted. As illustrated in Fig. 1, teacher change is thus made possible by the two mediating processes or mechanisms of enactment (solid arrows) and reflection (dotted arrows) that interactively connect the four domains in the change environment.

The Interconnected Model has three functions, as it can be used as an analytical tool, a predictive tool, and an interrogatory tool (see Clarke & Hollingsworth, 2002; for a theoretical argumentation and also Justi & van Driel, 2006; for an empirical investigation). The model has been applied in many different subject-matter domains in various countries, with science teacher education in the United States being an especially productive research area (Voogt et al., 2011; van Driel, Meirink, van Veen, & Zwart, 2012). In conducting an overview of the current state of art in the field of science teacher education in international contexts, van Driel et al. (2012) found that the Interconnected Model was useful for framing and categorizing the 44 empirical studies under review. Likewise, Voogt et al. (2011) used the same model to identify and classify processes
of teacher learning in their review efforts. Rather than situating their literature review in domain-specific teacher education, they were interested in applications of collaborative curriculum design (conceptualized as the “external domain” in the Interconnected Model) to foster teacher change in different subject matters. These reviews show that the Interconnected Model is capable of representing the inter-relationships among the four domains of teacher learning across disciplines and contexts.

With respect to the types of teacher education programs, a few empirical studies have investigated pre-service and in-service teachers’ learning experiences from the perspective of the Interconnected Model. For instance, in the context of pre-service teacher education, Jong, van Driel, and Verloop (2005) adopted this model to examine a group of 12 chemistry teachers’ learning processes in a 10-week course module, embedded in a one-year postgraduate teacher education program in Netherlands. In their study, textbook analyses conducted in the course module (the external domain) led to different processes of enactment and reflection, and thus varied development of the pedagogical content knowledge (PCK) of the participating teachers. In the context of in-service teacher education, Eilks and Markic (2011) conducted a six-year case study on 10 German chemistry teachers’ long-term development of PCK by engaging these teachers in participatory action research (the external domain). In another case study, Witterholt, Goedhart, Suhre, and van Streun (2012) investigated one mathematics teacher’s learning and change as she participated in a teacher network with colleagues (the external domain) to develop her practical knowledge of inquiry-based teaching. These studies all demonstrated that the Interconnected Model is flexible with regard to context-specific professional development, and can help researchers to operationalize the four inter-connected domains that conceptually frame a nurturing environment for teacher change to take place within.

Given the generalizability and flexibility of the Interconnected Model, it not only provides a conceptual lens for the present study to design a high-quality context for professional development (i.e., with a teacher study group as the external domain within a change environment), but also serves as an analytical tool through which to identify specific patterns or paths of teacher learning that occur in this particular context. While initial attempts, as noted above, have been made to analyze pre-service and in-service teachers’ experiences with various approaches to professional development, the use of the Interconnected Model to examine the change-as-learning processes of teaching practitioners within teacher study groups has not been systematically investigated, particularly in Asian contexts (van Driel et al., 2012; Yeh, 2007). This study thus aims to fill the gap in the literature by paying specific attention to in-service EFL teacher professional development in Taiwan and providing an illustration of how this model can be adopted to analyze group learning patterns.

3. Methodology

3.1. Research background

The Ministry of Education in Taiwan, like its counterparts in many Asian countries, has been carrying out a reform of its English education practices since 2001, when English became a mandatory subject for elementary students. However, most of the elementary school teachers received their degrees and teaching certificates in elementary education, and thus had limited training with regard to English language teaching. To address the needs of those teachers who required in-service job training to conduct their English classes, some schools adopted short-term courses at local public universities. Nevertheless, many in-service English teachers remain
under-prepared to deal with the effects of the still evolving English education reforms in Taiwan.

Research also indicates that over the past few decades, few studies have examined Taiwanese EFL teacher professional development. Chao, Lo, and Yeh (2006) conducted a 30-year literature review of 1056 articles on the subject of English education published in English Teaching & Learning (ETL), an international refereed journal notable for its longest history in Taiwan. Chao et al. (2006) reported that there were very limited studies on the education of Taiwanese EFL teachers. To further investigate the status of EFL teacher education in Taiwan, Yeh (2007) surveyed 216 elementary school teachers’ professional development experiences and identified the eight most common avenues, including (1) keynote lectures, (2) self-study activities, (3) reflective practices, (4) classroom visits or observations, (5) seminars or conferences, (6) short-term courses or degrees, (7) action research, and (8) teacher study groups. While keynote lectures were the most common approach, the majority of teachers felt these often had little impact on their professional growth, as most of the lecture topics delivered by outside experts were impractical or unconnected to their daily teaching practices. Interestingly, teacher study groups were found to be the least common avenue for professional development, but most of the teachers who took part in these expressed positive attitudes toward such collaborative efforts, stating that they were able to address important classroom-based issues and meet their actual teaching needs. However, these teachers also recognized that it was difficult to form a teacher study group without institutional support or guidance from experts.

Taken together, the findings of Chao et al. (2006) and Yeh (2007) echo previous studies in Western countries on the value of teacher study groups as an effective professional development approach (e.g., Cochran-Smith & Lytle, 2009; Ermeling, 2010; Gallagher et al., 2011), and point to an urgent need to improve the quality of professional development for Taiwanese EFL teachers.

3.2. Research method

The present study is part of a nationally funded research project that involves a group of Taiwanese EFL teachers and researchers/teacher educators working together to develop classroom-level curriculum reforms in the participating teachers’ own contexts. In this specific work, we adopted a qualitative case study design to examine the process of teacher change, with a focus on a group of EFL elementary school teachers’ practical knowledge development.

According to Merriam (1998), “the single most defining characteristic of case study research lies in delimiting the object of study, the case” (p.27), and she defined the case in a qualitative case study as “a thing, a single entity, a unit around which there are boundaries” (p.27). In the current study, we understand the case as a social unit that refers to the teacher study group, which is intrinsically bounded with the group members’ mutual goals for professional learning and change. Given the purpose of this research, the qualitative case study method is regarded as an appropriate research design that was able to help us as we collected and analyzed informative data, and eventually allowed us to derive a holistic picture of how changes occurred in the case of the teacher study group under investigation.

3.3. Setting and participants

As a university-school partnership in Taiwan, the teacher study group comprised of one professor from a public university and five EFL teachers from an urban primary school. The university professor specialized in EFL teacher education, so she was invited by the primary school where the research took place to guide the five elementary school teachers in their professional development via the use of a study group. These five Taiwanese EFL teachers were recruited by the school administrators, and all of their respective students at the school were Taiwanese EFL learners speaking Chinese as their first language. A summary of the details of the six members of the teacher study group is given in Table 1 below.

The teacher study group operated on a voluntary basis. All the group members confirmed their willingness to participate in the group without receiving any additional duty pay by signing a consent form, informing them of the research scope, data to be collected, and their right to withdraw from the study at any time. These participants then made an informed decision to authorize the researchers to audio-record their group discussions and follow-up interviews. To ensure the participants’ anonymity, all names presented in this study are pseudonyms.

3.4. Content and structure of the teacher study group

This study set out to examine how EFL teachers collaboratively constructed knowledge of their practices as they participated in an inquiry group to design a classroom-level English curriculum for their own students. In this case, the research intervention was the teacher inquiry group, the content of which was situated in the participating teachers’ own immediate contexts, with a focus on developing their practical knowledge of Reader Theater (RT). According to Walker (2005), RT is an established group activity in which students interpret and perform a scripted reading in a dramatic fashion through reading aloud. With the distinctive features of repeated oral reading and using facial expressions rather than full acting, RT is often designed to engage students in creative interpretations and meaning-construction in relation to children’s literature.

With the support of a careful instructional design, RT has been shown to be an effective instructional approach to many aspects of literacy learning for various learners, such as vocabulary acquisition, reading comprehension, writing skills, and learning motivation. For example, Tsou (2011) investigated how RT contributed to Taiwanese children’s literacy learning and development in the EFL classroom. The results showed that after one-semester of RT instruction, these young EFL learners not only increased their learning motivation, but also made improvements in reading accuracy and fluency, while mixed results were found with respect to writing proficiency. In the United States, Liu (2000) used RT as an instructional strategy to improve reading and writing skills of 14 Hispanic and African-American students who learned English as a second language. The findings indicated that the students reacted positively toward RT, because it effectively enhanced the students’ reading and writing skills, supported peer collaboration, and

<table>
<thead>
<tr>
<th>Table 1 Participants’ background information.</th>
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<tbody>
<tr>
<td>Participants</td>
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<tr>
<td>Mr. Tsai (T1)</td>
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<tr>
<td>Ms. Shen (T2)</td>
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<tr>
<td>Ms. Chang (T3)</td>
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<tr>
<td>Ms. Peng (T4)</td>
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<td>Ms. Lai (T5)</td>
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<td>Prof. Wu</td>
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created an enjoyable learning environment. Keehn, Harmon, and Sho ho (2008) conducted a six-week RT instruction to measure its effects on the vocabulary acquisition of English native-speaking children. The results showed that the students who experienced the RT instruction gained higher vocabulary scores in a post-test than those who did not receive it. In short, since much research has shown the positive influences of RT on learners with different linguistic and literacy backgrounds, the teacher study group in the present research chose this approach as a strategic solution to some of the issues raised by the current process of curriculum reforms in the participating teachers’ own classrooms.

In terms of the structure and process of the teacher study group, all group members met bi-weekly after school for nine times throughout an 18-week semester. Each group meeting lasted for approximately 3 h. Over the course of the study, the group proceeded with the professor modeling and giving mini-lectures during the first meetings to explain how RT is different from traditional drama, and specifically that it is carried out with the students reading scripts rather than memorizing them. The professor also stressed that it is important to write RT scripts based on predictable and familiar stories in which sentence patterns and culturally-responsive vocabulary can be easily integrated and reinforced through the use of chants, rhymes, and repetition. With such customized learning materials, teachers can explain the meanings and forms of the target language and educate their students with regard to the related cultural values. While the RT curriculum developed in this study group aimed at increasing the teachers and their students’ knowledge of the area in which they lived, Yunlin County, the professor specifically guided the teachers to highlight its famous food, tourist spots, and local cultures. After learning the central principles and operational guidelines of RT, the teachers started to compose stories in both English and Chinese to provide their students with meaningful reading materials, and then rewrote these stories into English RT scripts, with specific efforts being made to incorporate culturally-responsive elements into the English curriculum.

In the process of this collaborative inquiry, the university professor assumed a leadership position and raised general questions (e.g., What are key attributes of RT?), allowing various issues or questions to emerge for further discussions. More specifically, the university professor acted as a content expert, information provider, and thought challenger to facilitate the group’s discussions and provoke the teachers’ reflections, rather than working to direct the teachers’ thinking (see also Yeh, Hung, & Chen, 2012). For example, she guided the teachers to share their teaching experiences with other members by asking reflective and evaluative questions, such as “What were students’ reactions to your RT lesson last week?”

3.5. Operationalization of the Interconnected Model in this teacher study group

Clarke and Hollingsworth’s (2002) Interconnected Model, as shown in Fig. 1, has been used to unpack the complexity of teacher change processes in various research settings. In terms of the operationalization of this model in the specific context of this study, we adjusted it based on our research design, as shown in Fig. 2 below.

The personal domain (PD) refers to the teachers’ development of practical knowledge of RT before, during, and after participation in the teacher study group. The external domain (ED) represents the teacher study group, mentored by the university professor as an outside stimulus. It is worth noting that there were two layers of external domain in the context of this study: the teacher study group itself as well as the university professor as the group mentor. As described in Section 3.4, within the university-school partnership, the teacher study group was designed to nurture the group members’ collaborative inquiry.
into RT with the guidance of the university professor. The domain of practice (DP) is reflected in the teachers' professional experimentation, with a focus on how they applied the practical knowledge of RT into their classrooms to promote student learning. The domain of consequence (DC) is identified as the teachers' reflection on their students' reactions to or learning outcomes of their enacted RT practices, and this enables them to self-evaluate whether their implementations of RT could actually foster student learning.

3.6. Data collection and analysis

The data collected in this work included (1) transcripts of nine bi-weekly group meetings in an 18-week period, and (2) transcripts of five semi-structured interviews that were conducted on an individual basis with the participating teachers three weeks after the last group meeting. The former is the primary data set that provides the empirical evidence reported in this paper, and the latter serves as the supplementary source of information that triangulates the research findings. Both the group meetings and interviews were conducted in the teachers' native language, and these were audio-recorded and transcribed verbatim for later analysis. Excerpts used in this paper were translated from Chinese into English.

In analyzing the collected data, particularly the transcripts of study group meetings, we relied on the Interconnected Model to provide an analytical framework and adopted thematic analysis to explore the processes of teacher change in response to our research questions. Braun and Clarke (2006) defined a thematic analysis as "a method for identifying, analyzing, and reporting patterns (themes) within data" (p.79), and this often involves a recursive process of searching across data sets in order to derive representative patterns or themes of meaning. Our specific process of thematic analysis went through five major phases, as follows.

Table 2
Indicators of teacher change adjusted from Zwart et al. (2007) and used in this study.

<table>
<thead>
<tr>
<th>Coding examples</th>
<th>Teacher participant</th>
<th>Group meeting</th>
<th>Discussion theme</th>
<th>Mediating process</th>
<th>Domain relationship</th>
<th>Analytical code</th>
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</thead>
<tbody>
<tr>
<td>1. Statements regarding teachers' own learning outcomes</td>
<td>Ms. Chang (T3)</td>
<td>Group Meeting 5 (GM5)</td>
<td>Discussion Theme 7 (DS7)</td>
<td>Reflection (RE)</td>
<td>From DP to DC (DP2DC)</td>
<td>U358-T3-GM5-DS7-RE-DP2DC</td>
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<td>2. Statements concerning observations or evaluations of student learning outcomes</td>
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<td>3. Statements indicating a wish to carry out certain behaviors</td>
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<td>4. Statements based on comparison and contrast of events or perceptions</td>
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<td>5. The use of verbs that incorporate change in teacher reports of events, such as:</td>
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<td>6. The use of change signaling adverbs in teacher reports of events, such as:</td>
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<td>for example:</td>
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</table>

3.6.1. Phase I: identifying meaningful utterances in the transcripts as the minimal units for analysis

To begin with, we first had to identify meaningful utterances of the group meeting transcripts as the minimal units of our data analysis. In this study, a meaningful utterance was defined as a unit of discourse concerning an intact idea that often goes beyond the sentence level. We found that the group meeting transcripts contained 569 meaningful units of utterances, of which 292 units (51%) pertained to the research questions and 45 units (7%) to the procedure and social talks in the study group. Discourse markers, such as "I tend to do things differently now" were interpreted as indicators of teacher change based on our adaptation of Zwart, Wubbels, Bergen and Bolhuis' (2007) criteria (see Table 2).

3.6.2. Phase II: applying analytical codes to the minimal units of meaningful utterances pertaining to the research questions

In a next step, we applied analytical codes to the 292 units of meaningful utterances that reveal some indicators of teacher change. Table 3 provides an example of how a meaningful utterance by an individual teacher in a group discussion can be coded for analysis. Such meta-coding of the identified meaningful units allowed us to sort or group the codes by themes, identify patterns within specific coding categories, and establish relationships across the codes and coding categories.

Table 3
A coded sample of minimal analytical unit.

"I observed that in the RT rehearsal process, the students could acquire the unfamiliar words with the support of the literal forms in repeated reading. I think that repeated reading is more effective than the practices and drills that I used to do in class, and my students seem to be more motivated with it." (Utterance 358 – U358)
sequences, respectively. We then calculated the frequency of all teacher change sequences and derived three dominant patterns. These specific sequences of teacher change that emerged in the particular context of the study will be discussed in Section 4.2.

3.6.5. Phase V: triangulating results to increase the trustworthiness of the study

Finally, we utilized two methodological techniques to triangulate our preliminary findings. On the one hand, member checks were accomplished in the follow-up interviews at the conclusion of the study, wherein the participants were presented with summaries of the data analysis process to examine perceived accuracy and authenticity. The participants affirmed roughly 90% of the preliminary data analysis results, and the suspect interpretations were re-examined and revised based on the participants' comments in order to enhance the credibility and validity of the study results. On the other hand, peer debriefing with the research team was carried out on a weekly basis during the data analysis process to reach a consensus with regard to all the coded data, and particularly to validate the prominent patterns of the teachers' mediating processes and change sequences. The overall inter-rater reliability throughout the data analysis process was satisfactory (0.82—0.91). In brief, through the participant member checking and researcher peer debriefing, we sought to ensure a consistent representation of the collected data and thus to offer trustworthy interpretations of teacher change processes in this study.

4. Results

The significance of our study is to promote the less commonly recognized conceptualization of teacher change as a learning process by illustrating some possible interactional patterns of a context-specific teacher study group without generalization. Based on the analytical results, we were able to make a number of interpretations to address our research questions, with one pertaining to the participating teachers' common practices in the study group, and the other concerning their change sequences, which were representative of this group's learning processes. In this section, the major findings of the current study are organized by themes or patterns based on a frequency count, and illustrated by typical instances.

4.1. Prevalent enactive and reflective practices in the teacher study group

As shown in Table 5, three prevalent enactive and reflective practices were manifested across the nine group meetings, including sharing practical knowledge, co-designing teaching activities, and self-appraising classroom teaching. These practices were viewed as "mediating processes of reflection and enactment" or "the mechanisms by which change in one domain leads to change in another" according to the analytical framework of the Interconnected Model (Clarke & Hollingsworth, 2002, p. 950). Identifying the two mediating processes or mechanisms in this case under investigation allowed us to account for how the five EFL teachers collaboratively participated in the study group, with the facilitation of the professor, to achieve their collective learning objectives.

To explicate the three major themes of the teachers' mediating processes that triggered their changes in beliefs and practices, we selected three typical sets of excerpts from our database to discuss more fully in relation to each theme, as presented in the following sub-sections.

4.1.1. Sharing practical knowledge

Since one of the major objectives of this teacher study group was to develop practical knowledge of RT, it was not surprising that sharing such knowledge was found to be the most common practice in this collaborative inquiry. The following excerpts show that while the professor was generally viewed as the RT expert in this study group, the other members also spontaneously shared their insights and developing knowledge of RT.

Professor: Everyone has a place in RT. The students can choose the roles they love to play and rotate with the others, and then get to decide what each role should sound like, look like, and act like. Finally, students get chances to present cooperative read-alouds on the stage. Before the on-stage presentation, rehearsal is the key.

Ms. Peng (T4): In my understanding, oral reading ability is also the key to RT.

Ms. Shen (T2): I think we should also attend to our students' reading comprehension, besides their oral reading fluency.

[Group Meeting 1]

In the same meeting, responding to one teacher's concerns, the professor continued to share how students with different language proficiencies could benefit from RT through repeated language practice.

<table>
<thead>
<tr>
<th>Teachers' common practices as mediating processes</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sharing practical knowledge</td>
<td>14</td>
</tr>
<tr>
<td>Co-designing teaching activities</td>
<td>12</td>
</tr>
<tr>
<td>Self-appraising of classroom teaching</td>
<td>9</td>
</tr>
</tbody>
</table>
As shown in the above excerpts, the professor provided the teachers a rationale for how to effectively develop an RT curriculum by introducing the major premises of RT and incorporating recommended classroom activities to accommodate students with different English proficiency levels. These instances also reflect the professor’s facilitative leadership in the teacher study group.

### 4.1.2. Co-designing teaching activities

This teacher study group was designed to foster teacher change by engaging the participating teachers in classroom-level curriculum development, and they were guided to develop a variety of lesson plans for their own classrooms. Co-designing RT teaching activities while participating in continuous dialogue became another common practice that contributed to teacher professional learning, as exemplified below.

Professor: In RT, everyone is involved in contributing to the plot of the story. The distributed effort is emphasized to make each individual’s contribution significant.

Ms. Shen (T2): I think we can assign students in row one to play the character of A, and row two to play the character of B. And sometimes, the whole class can read together.

Ms. Peng (T4): Yes, pretty much like a chorus. I think it works.

Professor: And it’s like having a conversation, but in a performance form.

Ms. Chang (T3): Can I divide the whole class into two groups, and simply ask them to read out loud on a rotating basis?

Professor: It’s fine. It works this way, too.

Ms. Peng (T4): Before I ask my students to perform the RT scripts, I plan to talk about our soybean sauces and introduce how our soybean skins have become popular in Japan.

Mr. Tsai (T1): You may also have your students brainstorm what Yunlin County is famous for, and ask them which local products they are proud of.

Professor: Sounds great. Perhaps, you should all consider incorporating a similar brainstorming activity in your very first RT lesson.

Ms. Lai (T5): Yes, I’ll give it a try.

[Group Meeting II]

The above excerpt illustrates how the teachers’ ideas interacted with one another. In this exchange, Ms. Shen’s original thinking was extended. It can be noted that new or extended ideas often emerge from peer interactions, functioning as an impetus to enrich each other’s understanding. Furthermore, by being immersed in dialogues that focused on innovative teaching ideas in bi-weekly meetings, the teachers were expected to enhance their practical knowledge of how to better engage their students in learning English. In another instance of their RT co-design efforts, Ms. Peng and Ms. Chang shared their collaborative class project, and Ms. Lai expressed high interest in replicating the activity.

Ms. Chang (T3): I found that my students’ language proficiency varies dramatically, and this makes it hard to implement RT in my class.

Professor: Some students with high proficiency levels can be the narrators, and those with lower proficiency levels can read with a group of 4 or 5. By doing so, both high and low achievers could polish their language skills and benefit from the collaborative activity of RT in different ways. Engaging students in collaborative learning activities is one major principle we should attend to when designing RT lessons.

[Group Meeting I]

Mr. Tsai (T1): I observed that some of my students did not use their emotions to read the lines. I noticed they read like a robot. So I thought to myself — “They might not fully comprehend the story yet.”

Professor: What did you do then?

Mr. Tsai (T1): I then used storyboards for them to draw the sequences of the stories, like comic books. I found that they did a better job in reading out loud after the scaffolding activities of drawing, reading, and re-telling the stories.

Ms. Chang (T3): I also had a similar problem before. I found it useful to videotape my students’ performance on the stage and played the recordings for them to view in class. It was amazing that some of my low-motivation students even asked me to re-tape them so that they could improve their performance.

Ms. Shen (T2): That’s interesting.

Ms. Chang (T3): I figured that when my students viewed their own recorded performance visually, they could critically observe how others performed and how well each individual did. They would then monitor their oral reading fluency and self-correct themselves in the follow-up practice. Their progress is encouraging.

[Group Meeting VIII]

The above excerpt shows that alternative RT practices were often being proposed, enacted, and re-appropriated. In this particular instance, Mr. Tsai adopted drawing, reading, and storytelling activities, so his students could better understand the stories in the scripts, and thus better express their emotions while presenting the scripts. Recognizing that the students did not become fluent readers instantly after the initial implementation, Ms. Chang videotaped her students’ RT performance so they could observe and self-correct themselves. Both modified RT activities led to satisfying student-learning outcomes based on the teachers’ self-appraisal.
4.2. Prominent change sequences of the teacher study group

We found that with the mediation of the teachers’ enactment and reflection, as presented in Section 4.1 above, the teacher study group’s overall learning and development can be described in three major patterns of change sequences, as shown in Table 6 below. Such teacher change sequences were identified from the 32 discussion themes in or across the nine group meetings and then converted into pictorial representations to illustrate how the four teacher learning domains in the Interconnected Model were networked in the particular change environment of the current study. As defined and operationalized earlier in Section 3.5, the four inherently bounded domains of teacher learning are as follows: the external domain (ED), the domain of practice (DP), the domain of consequence (DC), and the personal domain (PD).

The following sub-sections focus only on the three prominent teacher change sequences, and other less frequent patterns that sporadically occurred in this teacher study group are not reported here.

4.2.1. Change sequence I: ED → DP

The most common change sequence occurred from the external domain (ED) to the domain of practice (DP). It started as the teachers’ professional learning was initiated by the professor’s introduction of RT knowledge and skills, and resulted in their professional experimentation in various forms based on their teaching experiences in which the major source of teaching materials was textbooks. This monotonous material, along with the audio-lingual approach, centering on drill patterns, bored students. Ms. Peng thus reflected on her past teaching experiences in which the major source of teaching materials was textbooks. This monotonous material, along with the audio-lingual approach, centering on drill patterns, bored students.

Ms. Lai (T5): As the professor suggested last time, I tried to assign students different roles for them to search for more information on the RT stories before each class. I put them in a group of four with different roles, including a character investigator, vocabulary checker, story illustrator, and summarizer. When they come to the class, each of them needs to contribute to the group, based on their assigned roles.

Professor: Yes, pretty much like a jigsaw puzzle. Everyone has something to contribute to the group.

[Group Meeting V]

The above excerpt illustrates that the teachers did not merely adopt the traditional read-aloud form of RT, but also enacted professional experimentation in various forms based on their discussions in the study group (ED to DP). It should be noted that in the initial meetings of the study group, it was the professor who often made recommendations for designing RT activities, but as the study group evolved, all the members (particularly the senior teachers) would offer creative teaching ideas in the group discussions as will be presented in later excerpts.

4.2.2. Change sequence II: ED → DP → PD

The second most common change sequence started from the external domain (ED), moved to the practice domain (DP), and then to the personal domain of teacher knowledge (PD). Changes in the teachers’ practical knowledge of RT also occurred through their reflection on their RT implementations after they obtained innovative ideas from the group discussions. Through constant interactions with the external support and ongoing professional experimentations, the teachers’ practical knowledge with respect to teaching materials and methods were reshaped and expanded.

In the meeting before the one in which the following excerpt occurred, the professor collected some problematic sentences from the textbooks, so that the group could critically analyze the language use. In this meeting, Ms. Peng thus reflected on her past teaching experiences in which the major source of teaching materials was textbooks. This monotonous material, along with the audio-lingual approach, centering on drill patterns, bored students. Before Ms. Peng attended the teacher study group, she did not consider any alternative teaching materials. Ms. Peng now noted that the textbooks presented some de-contextualized and therefore meaningless sentences, such as “What is this?” and “Can you walk?” She elaborated the change in her pedagogical beliefs, and Ms. Shen echoed her thoughts, as follows.

Ms. Lai (T5): Since the professor guided us to examine the problematic sentences in the textbooks in the last meeting, I now have raised my awareness of the issue of authenticity regarding foreign language textbooks.

Ms. Peng (T4): What we did last time was quite useful. I now compared my past teaching materials and methods with RT. I came to realize that RT is a practical activity that provides students with meaningful contexts for language learning. The conversations in the textbooks sound very artificial to me now, which I didn’t notice before.

Ms. Shen (T2): Same here! Now I understand that many modified sentences created specifically for our textbooks are instrumental and sometimes not practical to use in real life.

Ms. Peng (T4): Right, I think RT changed my view of traditional practice and drill and its use with foreign language textbooks.

[Group Meeting V]

<table>
<thead>
<tr>
<th>Pictorial representation</th>
<th>Change sequence I</th>
<th>Change sequence II</th>
<th>Change sequence III</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD</td>
<td>ED → DP</td>
<td>ED → DP</td>
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<td>DP</td>
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<tr>
<td>DC</td>
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<td>DC</td>
<td>DC</td>
</tr>
<tr>
<td>Frequency</td>
<td>12</td>
<td>8</td>
<td>6</td>
</tr>
</tbody>
</table>

Table 6
Frequency of prominent teacher change sequences in this study group.
The above excerpt illustrates that with the stimuli from the study group and the successive enactments of RT (ED to DP), the teachers came to realize that the teaching materials they had been using for a long time were perhaps inauthentic and ineffective, so they were able to make necessary adjustments and gradually developed their practical knowledge in terms of the design of RT materials and the related teaching activities (DP to PD).

4.2.3. Change sequence III: ED → DP → DC

The third prominent change sequence was established by moving from the external domain (ED), to the practice domain (DP), and to the domain of student outcomes (DC). As the group generated and implemented the collective ideas in their classroom practices, the teachers also continuously observed how their students performed in class and reacted to their RT implementations, so they could make adjustments for follow-up instruction.

As demonstrated in the following excerpt, the teachers discussed their ongoing observations of students’ learning outcomes after their adaptive implementations of RT. The salient outcomes of student learning were manifested in their reflections, observations, and evaluations.

Ms. Shen (T2): I am glad we adopted Mr. Tsai’s and Ms. Lai’s ideas from the first meeting to write our RT lessons based on our cultural elements of Yulin County.

Mr. Tsai (T1): I am surprised to see that my students enjoyed performing RT scripts in groups when they read the scripts with those local features.

Ms. Chang (T3): I found that my students were fascinated by learning those stories with the local elements. They seemed more motivated to learn “steamed buns”, “pottery studio” and “pomelo” from our RT scripts.

Ms. Shen (T2): So did my students.

Ms. Chang (T3): I think our students are not only learning English, but also learning about our local culture in English through the RT implementation. I found that these cultural things were more related to their lives, so they could relate to the stories better. It surprised me that many culturally-responsive words are more difficult to learn, but they can pick them up easily because they felt these words were relevant to their daily lives.

Mr. Lai (T5): It’s really a great idea to have our students express our culture in English by reading these RT materials.

As shown above, this excerpt illustrates how participating in the study group prompted the teachers to co-design and implement the innovative RT lessons (ED to DP), and how they reflected upon their students’ learning outcomes after their RT implementations (DP to DC). The teachers observed that the class dynamics had become more collaborative and the students became more motivated to learn pronunciations, word meanings, and communication skills than before. The teachers realized that the content of their usual textbooks focuses on the target cultures in English-speaking countries. In contrast, with the customized RT scripts, the students could not only learn about their own culture in English, but also draw on their own cultural understandings and experiences to express themselves in English. Such reflections, along with constant self-appraisal of their adaptive implementations of the RT curriculum, allowed the teachers to better develop their practical knowledge of RT based on their direct observations of students’ learning outcomes.

5. Discussion and conclusion

5.1. Potential of using teacher study groups for professional learning

The first research question asked what enactive and reflective practices were prevalent in the teacher study group, since from the perspective of the Interconnected Model such mechanisms constitute the basis of the teachers’ participation in the learning environment that is necessary for change to take place. While the semi-structured design of this teacher inquiry allowed the teachers to raise issues or questions of their own interest for discussion, we were able to observe that they preferred to focus their inquiry on classroom practice when given an opportunity. More specifically, the teachers were engaged in interactive reflection on and for their enactive practices in which (1) sharing practical knowledge, (2) co-designing teaching activities, and (3) self-appraising classroom teaching were found to be prevalent throughout the process of this collaborative inquiry. These common practices reveal that the factor which the participating teachers were most concerned with was closely related to their own teaching experiences in the classroom, and this finding is consistent with Cuban’s (1992) assertion that school teachers, as opposed to university-based practitioners, are inclined to value practical knowledge that is grounded in their own contexts.

Several studies on teacher learning have shown positive impacts by engaging in-service teachers in collaborative inquiry with a focus on their everyday practices (e.g., Erickson, Brandes, Mitchell, & Mitchell, 2005; Carroll, 2005; Mertler, 2009). For example, in a practice-centered teacher inquiry involving of four high-school science teachers, Ermeling (2010) made a special effort to design the intervention with the following four features: identifying important instructional problems, connecting theory to action,
utilizing evidence to drive reflection, and persistently working toward detectable improvements. The teachers’ active engagement and positive development as a result of the intervention led Ermeling (2010) to conclude that when collaborative inquiry aligns with teachers’ routine practices, changes are more likely to occur. Likewise, the teachers in our study were able to see the connection and relevance of participating in this collaborative inquiry to their own classroom contexts as they engaged intensively in co-designing RT lessons, implementing them in their respective classes, and reflecting on their students’ learning outcomes. Accordingly, we affirm that forming a teacher study group that is closely geared toward improving teachers’ classroom practices can match their preferences as well as engage them in the professional learning process, and thus leads to possible improvements and changes in their beliefs and practices.

After characterizing the participating teachers’ reflections and enactments, in our second research question, we sought to understand what particular sequences of change could illustrate the learning process of this study group. With the stimuli of the teacher study group itself and the guidance of the professor (i.e., the double-layered external domain as the intervention of this study), we found that the depth of teacher inquiry or discussions can possibly extend from the external domain (ED) to the domain of practice (DP), the personal domain (PD), or the domain of consequence (DC). Our findings revealed three prominent patterns or paths of teacher change, including change sequence I (ED to DP), change sequence II (ED to DP to PD), and change sequence III (ED to DP to DC), based on their frequency of occurrence over the course of the intervention. These recurring change sequences, mediated by the teachers’ enactive and reflective practices, were identified as how teacher change occurred and evolved in the current research. The change sequences grew organically out of collaborative inquiry without a predetermined agenda of group learning mechanisms. In this regard, the emerging interactional patterns that suggested a fit with the learning paths in the Interconnected Model readily unpack the complex nature of group learning process in this study.

With respect to the four change domains of teacher professional development, we further contend that the professor provided primary support for the participating teachers to develop into active knowledge constructors, and thus had an impact on shaping various teacher change sequences. As Voogt et al. (2011) stated, “the stimuli and support offered in the external domain were crucial in directing the learning paths of teachers” (p.1243). In our study, it occurred that even the teachers with many years of teaching experience still needed stimulus and support to promote their continuous learning. With facilitation for developing their practical knowledge in collaborative learning activities, they could easily extend their professional knowledge, take initiative in their own implementation, and evolve their own ongoing inquiry.

The significance of leadership in teacher study groups is also emphasized in a few recent studies (Ermeling, 2010; Lambs, 2010; Voogt et al., 2011; Yeh et al., 2012), in which the external support provided by experts or teacher educators has demonstrated mediating effects on the teachers’ participation and learning. Lambs’s (2010) study, for instance, investigated how a university teacher educator facilitated the professional growth of three primary school teachers in their first year of teaching with the use of collaborative inquiry. The facilitator role of the teacher educator was established when she shared her knowledge and expertise with the novice teachers, and responded to their individual needs with regard to literacy teaching. Such facilitative leadership accords with the current study, in that the university professor offered guidance to foster the teachers’ collaborative inquiry into RT curriculum design and develop their practical knowledge of RT. These teachers could thus effectively make sense of their teaching experiences through collaborative inquiry, and then apply the co-constructed knowledge developed in the study group into their own classroom practices.

In contrast to other studies (e.g., Justi & van Driel, 2006; Witterholt et al., 2012; Zwart et al., 2007) which demonstrated that teacher change sequences may initiate from different domains of the Interconnected Model, the sequences of teacher change in the current study started from the external domain in most cases. This difference may be partly due to the fact that the participating teachers in this study were inexperienced with regard to using collaborative inquiry as an alternative approach to professional development, which meant that the professor was placed in a particularly crucial position to support their participation and learning in the inquiry process. Nevertheless, we were pleased to observe that once the teachers learned the premises of RT through the professional development intervention (particularly with the support of the external domain), they gradually gained autonomy over their learning and made efforts to integrate what they learned into their own classrooms. These indicated that the teachers were capable of transferring the practical knowledge of RT developed in the teacher study group to their immediate teaching contexts.

5.2. Instructional implications for designing teacher study groups

Our findings have demonstrated that the current intervention of the teacher study group, featuring a university-school partnership provided on-site, is effective in engaging teachers in the learning process and bringing about changes in their beliefs and classroom practices. The content and structure of this teacher study group corresponds to the key characteristics of effective professional development outlined by Borko et al. (2010) in the introduction to this paper. Based on our experience, we assert that the design of intervention (i.e., the external domain) plays a crucial role in establishing a nurturing environment for teacher change, and the Interconnected Model serves as a “predictive tool,” as termed by Clarke and Hollingsworth (2002), which is helpful for guiding such design efforts of teacher educators.

To improve the implementation of collaborative inquiry in teacher education, we offer three suggestions for teacher educators. First, facilitative leadership of collaborative inquiry, mentored by external experts or on-site senior teachers, can provide support for novice teachers who are either inexperienced with in-service professional development or new to the teaching profession. Second, setting a practical goal for collaborative inquiry that is clearly tied to teachers’ everyday practice can engage them in the process of teacher learning (e.g., classroom-level curriculum development in the case of this study). Third, a semi-structured inquiry format can be used to achieve collective learning objectives, while also allowing individual teachers to raise questions revolving around their own personal interests and meeting their immediate teaching needs.

5.3. Research implications for investigating teacher learning

In line with other empirical studies (e.g., Justi & van Driel, 2006; Zwart et al., 2007) that utilized the Interconnected Model as an analytical tool, we found this model valuable for informing our data analysis and interpretations. We assumed the social-cognitive nature of learning and built on the belief that participation or social interaction in a teacher study group provides the necessary context for possible changes in cognition and behaviors of any individual members of the group. Contrary to the use of the model in studies that attempt to track changes in individual teachers or describe their unique learning processes, our study has demonstrated the
potential for using it to analyze the group or team learning that occurs in collaborative inquiry.

From our experience of examining teacher learning with the Interconnected Model, we make two recommendations for teacher education researchers. First, forming a working definition of teacher change in an unambiguous way that aligns with a certain theoretical frame can help to better communicate the research significance to the reader and enhance possible applications of the findings. In this study, our focus is on immediate changes or short-term outcomes in the process of teacher learning, rather than long-lasting changes or growth, so the perspective of teacher change as a learning process has enabled us to achieve our research aim. Second, developing an operationalization of the Interconnected Model in the specific setting of an intervention will help the researcher appropriately identify the four inter-connected domains underlying the teacher learning process or professional growth, and subsequently develop proper coding schemes that comply with the overarching conceptualization of teacher change. Such a data analysis process often requires the researcher to critically think through the lens of the Interconnected Model, and adapt or adjust it to suit the research purpose. For example, an adaptation of the original Interconnected Model allowed Zwart et al. (2007) to closely investigate the changes of individual teachers with regard to both cognition and behavior. With an analytical focus on group learning, we have also modified and built on the coding schemes developed in other works to meet our needs.

5.4. Concluding remarks

Situated in the context of in-service EFL teacher education in Taiwan, the present study employed the Interconnected Model, formulated by Clarke and Hollingsworth (2002), to design the intervention of teacher study groups and to analyze the learning process as experienced by the participating teachers within the group. The adoption of this established model enabled us to frame more focused propositions for research questions that clearly reflect our theoretical position and the aims of the study. Drawing on the findings, this study concludes that forming a teacher study group with a focus on classroom-level curriculum development provides a promising context for teachers to develop practical knowledge that is relevant and applicable to their own classrooms. This study also shows the value of a university-school partnership to improve the quality of teacher learning in the process of collaborative inquiry. We thus urge more EFL teacher educators in Asian countries, such as Taiwan, to embrace teacher study groups as an alternative approach to teacher professional development.

One limitation of this study is its reliance on teacher reports as the primary evidence of teacher change, without direct data of students’ learning outcomes. However, from our research perspective of teacher change as a learning process, we believe that we have demonstrated the potential of teacher study groups for triggering immediate change in the process of collaborative inquiry. While we used the Interconnected Model as an analytical tool to examine the teachers’ changing processes in terms of group learning patterns, more longitudinal research is needed to clarify whether and how the long-term growth of individual teachers occurs and is sustained by tracking their progressive changes and analyzing data from their respective students.

We would like to emphasize, as a process-oriented qualitative case study, the findings reported in this paper were merely representative of what these particular teachers actually experienced within this research context and were not intended to be generalized to other professional learning settings. These findings are significant in that they confirm and extend our theoretical understandings that: (1) Teacher change may be conceptualized as a learning process; (2) The learning process of teacher change can be illustrated using the Interconnected Model as an analytical tool to track individual or group learning patterns; (3) While there are nine inter-relationships among the four domains of the model that all together can form numerous change sequences, there are no prescribed or so-called “best” paths to success (At least, little or no such evidence is found in the existing literature). Based on our theoretical stance, instead of proposing “effective” change sequences that can be applied across professional development contexts, we hope our findings can be enlightening to provide a prototype way of understanding how teachers are learning as they are engaged in collaborative inquiry, which we believe is helpful for teacher educators to monitor what’s going on and to plan for what’s next in order to better support their teacher-learners.

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Appendix A. Supplementary data

Supplementary data related to this article can be found at http://dx.doi.org/10.1016/j.tate.2013.07.009.

References


