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Wai Cheong Jacky Pow
Hong Kong Baptist University, jackypow@hkbu.edu.hk

Kwok Hung Lai
Hong Kong Baptist University, khlai@hkbu.edu.hk

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Corresponding Author

Jacky Pow, Department of Education Studies, Hong Kong Baptist University, Kowloon Tong, Hong Kong Special Administrative Region, China.

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Enhancing the Quality of Student Teachers' Reflective Teaching Practice Through Building a Virtual Learning Community

Jacky Pow[1] and Tony Lai[2]

Department of Education Studies
Hong Kong Baptist University, Hong Kong
[1]jackypow@hkbu.edu.hk
[2]khlai@hkbu.edu.hk

Abstract

Microteaching and reflection remains an important technique that pre-service student teachers can use to practice their teaching in a safe environment. However, improvements in teaching are not guaranteed without the support and feedback from peers. Previous studies suggest that a learning community supported by information technology promotes improved pedagogical decisions. This study aimed to examine whether virtual learning communities can facilitate student teachers' reflection upon their teaching practice. A video database with both text- and voice-comment functionalities was designed to facilitate the process of giving peer feedback and improve the quality of teaching practice. Student teachers' experiences in using the video database were collected through a questionnaire survey and feedback recorded within the database. Findings indicated that student teachers demonstrated a better understanding of concepts and theories relevant to the teaching of the chosen language skill area. While only some student teachers reflected on their reflective teaching practice more effectively with voice-comment features, most of them did peer evaluation of relevant principles and techniques used in their microteaching. Although feedback on the comment functionalities was divided, student teachers trusted that the microteaching videos with their own reflection and peer feedback were good evidence of their learning outcomes. Future research should examine what types of peer feedback in virtual learning communities may work more effectively in enhancing the quality of reflective teaching practice.

Keywords: microteaching, initial teacher education, microteaching virtual learning community model, interactive video database

Introduction

Reflective teaching practice is a crucial component of initial teacher education programs (Mathew et al., 2017). Unfortunately, it may not be effective if there is no systematic way to stimulate student teachers' self-reflection on their teaching. More and more studies suggest that a learning community supported by information technology facilitates teachers' self-reflection (Kleinknecht & Gröschner, 2016; So, 2012; Tilson et al., 2017). With the support of information technology, student teachers can review a video of their mini-lessons and conduct a detailed analysis of the teaching techniques they applied (Kong et al., 2009). However, the availability of technology does not necessarily mean the student teachers would naturally apply it in their learning. There is a pedagogical need to engage student teachers in doing self-reflection to enhance their future

teaching practice. To encourage and facilitate student teachers to reflect upon their teaching practice and share their teaching experience, a Teacher Education Institute (TEI) in a Hong Kong University has developed an in-house interactive video database with the support of an internal teaching development grant. The interactive video database enables student teachers taking the teacher education programs offered by the TEI to share their teaching practices and build a learning community on a digital platform (Pow, 2014). It allows student teachers to upload digital video clips on an online discussion forum for self-reflection and peer-feedback. Through a process of providing and receiving comments, pre-service student teachers can enhance their reflective thinking skills by sharing their teaching experiences (Mosley Wetzel et al., 2017).

However, not many video databases are designed to facilitate users' feedback and discussion of a particular video segment. General-purpose video databases with a simple online forum may not suit the needs of student teachers to share and exchange their teaching experiences, and hence the video file management and grouping facilities of these databases are not directly applicable to facilitating effective feedback and sharing of specific video segments. With reflective teaching practice in mind, the TEI incorporated different input methods into a video database to facilitate communication in a learning community. Student teachers can choose their preferred ways of inputting comments (i.e. text, voice and voice-to-text) to specific video segments. In this way, the video database can effectively gather peer feedback to help student teachers reflect upon their teaching practices.

Microteaching and Initial Teacher Education

Many teacher educators believe that microteaching helps student teachers to practice their teaching skills and facilitates their reflection (Amobi & Irwin, 2009; Apling & Haryani, 2019; Long et al., 2019). It provides a safe, though artificial, environment in which student teachers can explore their pedagogical knowledge and skills (Arsal, 2014). It also promotes student teachers' understanding through engaging them in meaningful discussion and sharing of experiences in lesson planning and delivery (Donnelly & Fitzmaurice, 2011). Without such an exercise, student teachers may be more focused on developing their content knowledge while overlooking the ways to teach that content (Fernández, 2010). As such, microteaching and reflection has become not just a learning activity, but also one of the major assessment methods in initial teacher education courses. Individual student teachers are required to participate actively in this learning activity, which is scaled-down in terms of class size and lesson length, and focused on specific teaching tasks and skills. In practice, a student teacher is required to teach a short lesson or part of a lesson of 10 to 15 minutes with their peers as pupils. The whole process is video-recorded so that it can be referred to when necessary. The presentation is followed by a discussion of the lesson with the course instructor and student teachers. This activity emphasizes individual student teachers' self-analysis of their own mini-lesson as well as feedback from the instructor and peers. Aside from developing teaching ability, an aim of microteaching is to develop student teachers' ability to reflect on their own teaching practice. It also allows the instructor to check if the intended learning outcomes in a course have been achieved.

As microteaching and reflection is an essential assessment task in a number of courses in an initial teacher education program (Elias, 2018), the quality of student teachers' reflective teaching practice has a direct relationship with the intended learning outcomes of the courses. However, the usual practice of microteaching is that student teachers only receive their instructors' feedback on

their microteaching performance, and peer feedback is often neglected as a valuable source of support for student teachers reflecting upon their teaching practice (Kourieos, 2016). The authors argue that if student teachers only receive their instructors' feedback on their microteaching performance, they may not find it easy to develop their knowledge and skills for reflecting on their teaching practice, which will influence their development as reflective practitioners in school settings in future. Thus, this study focused on investigating whether the quality of student teachers' reflective teaching practice is enhanced by a virtual learning community (VLC) with an interactive video database that features multiple input methods, including [video, audio, text, etc.]. The main objective of this study was to facilitate student teachers in doing self-reflection on their microteaching on an interactive platform to enhance the quality of their future teaching practice. Specifically, this study examined the following questions:

1. Does a VLC for students in teacher education programs enrich their experience in self-reflection and help them to give feedback on their peers' performance?
2. Do the feedback features in the interactive video database help facilitate students' self-reflection on their microteaching performance?
3. Can the VLC collect evidence of students' learning outcomes regarding microteaching?

Building a Virtual Learning Community for Reflective Practice

With the support of a teaching development grant, an interactive video database with a discussion forum was developed by the TEI. The design of interactive video database was based on the requirements of the practicum supervisors and student teachers in order to build a learning community to enhance students' performance in the teaching practice. In the design process, a prototype was developed for a pilot test and used to facilitate the identification of video database user requirements. The prototype database was tested for functionalities, including user interface; speed of uploading for editing; the operation of the forum; security and capacity; etc. The video database was then adjusted according to the feedback obtained in the pilot test.

Privacy is a main concern when a video is posted online (Langheinrich, 2018). One of the advantages of developing an in-house video database is that it can protect the privacy of the participating student teachers. Unlike text-based sharing, *anonymity* is not applicable in watching microteaching video episodes. This is because the instructors need to make comments on student teachers' emotions, facial expressions and eye-contact with their students in the microteaching videos. Hence an in-house database that provides better protection of the students' videos would encourage the building of a virtual learning community (Chen et al., 2009). This was more a practical (privacy issue) need rather than a functional consideration (the ability to access anywhere and to post peer reviews of any format) in the design of this study.

A learning community is a group of people who share common objectives or possess similar characteristics and have the same interest (Sjoer & Meirink, 2016). In a learning community, members should have learning objectives and goals (Visone, 2016). In this study, we aimed to build VLCs so that student teachers could receive continuous feedback on their microteaching and/or teaching practice from each of their peers in a systematic and interactive manner. We also aimed to design a user-friendly e-platform to facilitate the student teachers' sharing of their reflective teaching practice experiences and to help them learn from others. To facilitate communication and capture the original tone of comments, a voice-comment feature to enhance

interactions among student teachers by enabling them to make comments to each other was added to the system. Voice comments were assumed to be less time-consuming and more effective than written comments (Cavanaugh & Song, 2015; Orlando, 2016). Moreover, it was anticipated that being able to hear the tone of the voice comments would reduce the chances of misunderstanding and miscommunication, which is common with text-based feedback and comments (Keane et al., 2018). These aspects of the system were expected to encourage student teachers to give constructive feedback to their peers because they could give more timely and in-depth feedback, which would help them reflect on their teaching practice more effectively (Espitia & Cruz, 2013; Kirby & Hulan, 2016). With the use of this video database, student teachers were able to revisit and monitor their instructional decisions based on high-quality peer feedback. This reflective and self-monitoring practice of student teachers can be promoted as a critical and active habit that improves student teachers' pedagogical ability.

As *Microteaching and Reflection* is one of the major assessment methods in the initial teacher education courses offered by the TEI, individual students taking those courses were required to participate actively in this assessment task which involves a scaled-down and focused classroom situation. If student teachers only received their instructors' feedback on their microteaching performance, it may not be as easy for individual student teachers to develop their knowledge and skills for reflecting on their teaching practice and this will have impact on their development as reflective practitioners in the actual school setting in future.

Viewing videos may help student teachers to bridge theory and practice. The underlying factors that may contribute to this effect have been explored previously (Gaudin & Chaliès, 2015). Hatch and his colleagues (2016) demonstrated that student teachers could learn from others' practice utilizing a video followed by expert comments and facilitation. This was an interesting finding because it has long been believed that expert feedback is crucial for improving the teaching quality of student teachers.

The implementation of the e-platform developed for this study allows student teachers enrolled in TEI courses to share their teaching practices and build a learning community on a digital platform to help enhance their microteaching performance and develop the necessary knowledge and skills for undertaking reflection on their own teaching practice. It was hoped that student teachers who used the video database with multiple comment features developed a foundation for pedagogical content knowledge for effective teaching of their specialized subject and acquired effective strategies for planning, conducting and evaluating teaching of their subject.

Methods

A mixed methods study design was utilized as it was believed that one single data source might not be sufficient to explain the initial results in this study (Creswell & Clark, 2017). One of the advantages of using a mixed methods design was its ability to help generalize exploratory findings (Creswell & Creswell, 2017). The researchers analyzed the content of the interactions stored in the video database and then distributed a questionnaire to collect supportive information to complement the content analysis. The qualitative phase was a content analysis of the feedback and comments recorded in the video database and was the main method used to examine the value of a VLC in facilitating student teachers' self-reflection on their microteaching.

The quantitative phase was a questionnaire distributed to collect the views of student teachers towards the usefulness of a VLC, which served to triangulate the validity of content analysis. The use of triangulation was also intended to strengthen the explanation of results in the qualitative phase (Flick, 2018). As pointed out by Kern (2018), triangulation plays a key role in increasing the validity of inference in both qualitative and quantitative studies. Triangulation, therefore, leads to better measurement of the data sources provided that the sources are not systematically biased (Leuffen et al., 2013).

Participants

Student teachers in initial teacher education programs were required to design and conduct a mini-lesson as an in-class assessment task. Student teachers in these programs were target participants of this study. In order to form groups and provide feedback to each other, the researchers wanted them to come from the same course. Hence, student teachers from three of the courses with a microteaching component offered by the TEI were invited in the first lesson to participate in this study. Each of the courses had a class size of 20 to 22 students. Although participation in the study was voluntary, all the student teachers enrolled in the three courses took part in this study, as they wanted to improve their performance in microteaching and reflection, which was assigned as one of their course assessments tasks.

Procedures

An Informed Consent Statement and a Study Information Sheet outlining the study procedures, rights and obligations of participation were distributed to all the student teachers who were willing to take part in this study. The participants were informed that their participation was voluntary, no incentives were being provided, and that they could withdraw from the study at any time. They were asked to sign and return the Informed Consent Statement to the investigators; however, they were to retain the Study Information Sheet.

The participating student teachers were invited to evaluate this new mode of reflection and sharing of their experiences of microteaching. Their microteaching sessions were video-recorded and uploaded to the video database so that they could comment on them. The participants were randomly divided into groups of three by the instructor. They were asked to reflect on their own microteaching video and then make comments to their groupmates using different methods (text, voice and voice-to-text) according to a simple rubric (see Appendix I) for *Peer Commentary*. The researchers then analyzed the student teachers' reflections and the peer feedback. The criteria for the analysis of students' online interactions regarding the microteaching were as follows:

1. How well the students demonstrated their understanding of concepts and theories relevant to the chosen language skill that have been applied in the delivery of the mini-lessons;
2. How well the students critically commented on their peers' effective teaching of the chosen language skill; and
3. How well the students gave an adequate explanation of relevant principles and techniques used in the delivery of their mini-lessons.

To increase the inter-rater reliability, both the investigators were involved in the analysis. The researchers compared the analysis results and deliberated differences in rating to reduce discrepancies.

After the participants had reflected and provided feedback in their group on the video database, a self-completed questionnaire was administered to collect their comments and feedback on this peer evaluation method. The main purpose of this procedure was to collect evidence of learning outcomes to determine whether the video database facilitated the building of learning communities in which student teachers reflected on their microteaching and teaching practice. Questionnaires were sent to 63 student teachers who participated in microteaching and 31 valid responses were collected—a response rate of 49.2%.

The questionnaire included seven items on student teachers' perceptions of the interactive video database, which included an evaluation on their experiences with the video database on a 5-point Likert-type scale. The first two items were related to the first research question. One item focused on their perception of how well the video database helped the participants to reflect on their microteaching performance, and the other one focused on how useful this VLC was in helping them to identify their strengths and weaknesses in teaching.

With respect to the second research question, items 3 to 6 collected opinions about the video database as a whole and each of the comment features of the video database. The last item, which addressed the third research question, asked the student teachers whether they would include the video clips (together with their self-reflection and the peer feedback they received) in their learning portfolio as learning evidence. Internal reliability of the questionnaire items was checked. Cronbach's alpha for the six items (the last item was excluded as it was not gauging participants' attitudes towards the video database) was computed and the alpha coefficient for the six items was .702, which suggested that the items had good internal consistency (van Griethuijsen et al., 2014).

Results and Findings

Based on the survey results, analysis of individual student teachers' video clips of their mini-lessons and the peer feedback uploaded to the video database, the research questions of the study were addressed with the following evidence:

1. Student teachers using the new e-platform demonstrated a better understanding of concepts and theories relevant to the teaching of the chosen language skill area;
2. Some student teachers could reflect on their teaching practice more effectively with voice-comment features; and
3. Student teachers could do peer evaluation of relevant principles and techniques used in their microteaching.

A Web-Based Learning Community to Facilitate Self-Reflection and Peer-Feedback

In this study, the infrastructure to facilitate the development of a learning community on a web-based interactive platform for students of teacher education programs was built. The research explored whether VLC was able to assist students in making the best use of their microteaching experience to bridge the gap between theory and practice through self-reflection and peer feedback.

The survey results indicated that the respondents thought that the video database facilitated their reflection on their microteaching performance and helped reveal their strengths and weaknesses in the microteaching sessions. In a Likert-type scale of 1 to 5, the mean scores were 4.13 and 4.39 respectively (Table 1). This suggests that the student teachers found the interactive video database a good platform for sharing their teaching experiences. In particular, most of the student teachers in this study indicated that the video database helped in revealing their strengths and weaknesses in the microteaching with a high mean ($\overline{x}$ = 4.39) and a small standard deviation ($\sigma\overline{x}$ = .495).

Table 1. Perceived User Experience of Student Teachers on the Interactive Video Database

Perceived Usefulness	***N***	***Min.***	***Max.***	***M***	***SD***
Facilitate reflection on MT performance	31	2	5	4.13	.806
Help reveal strengths and weaknesses	31	4	5	4.39	.495

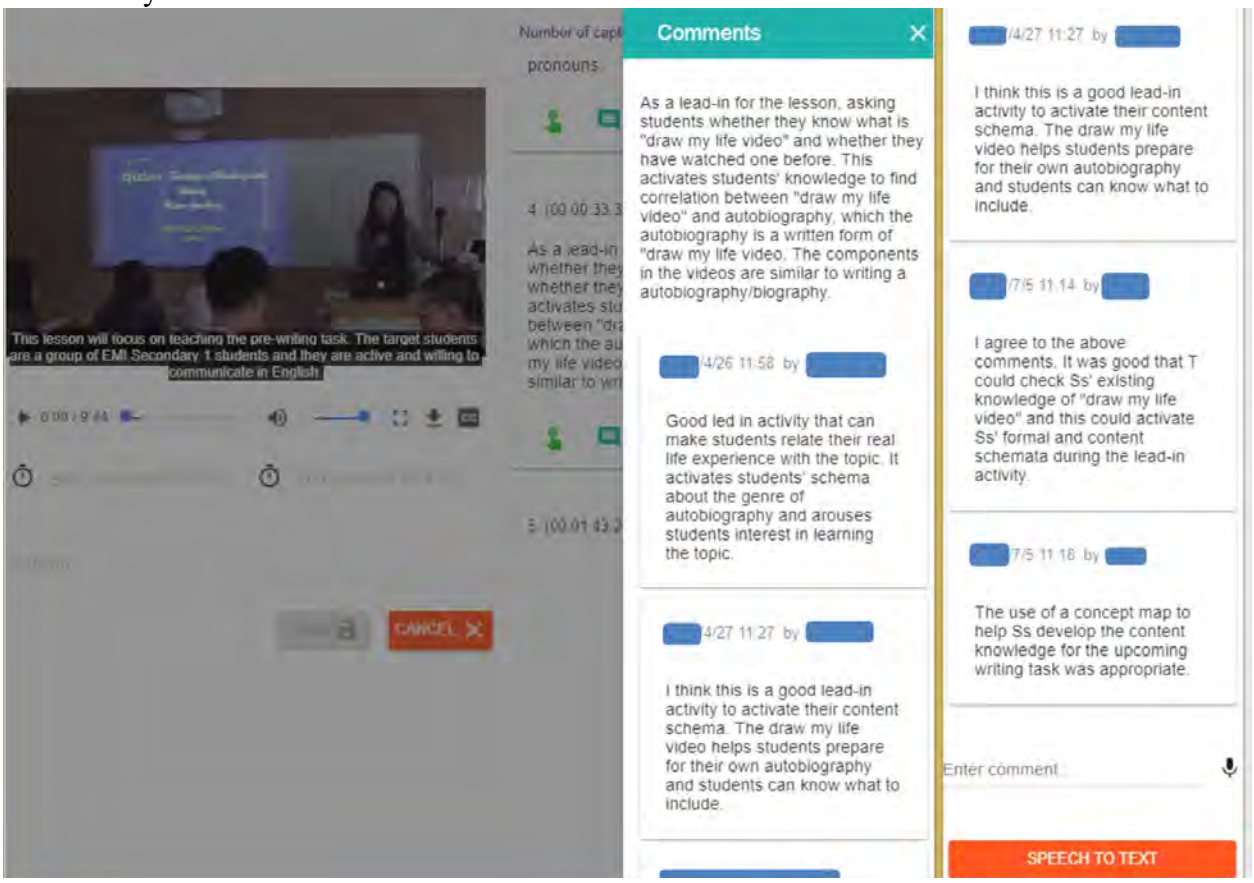
In the past, microteaching was conducted as an in-class assessment task. For a class of 20 students, at least three two-hour microteaching sessions were needed before all students could finish their mini-lessons. Because of the time limitation, individual students did not have the opportunity to give detailed peer feedback in each of the microteaching sessions. With the help of the video database, the students in this study were able to develop a learning community (in groups of three initially) on a web-based interactive platform to share their teaching experiences and give detailed feedback on their peers' performance to enhance the quality of their microteaching.

Figure 1 shows that a learning community on a web-based interactive platform for student teachers was used in a course. With the assistance of this e-platform, the student teachers' sharing of their teaching experiences became much easier and more effective. The instructor gave feedback on the student teacher's performance, and at the same time, provided comments on peer feedback to further enhance the quality of microteaching (e.g., I agree with the above comments. It was good that T could check S's existing knowledge of *draw my life video* and this could activate S's formal and content schemata during the lead-in activity). For some students, they provided very constructive peer feedback on their peer's delivery of her mini-lesson.

Some peer feedback turned out to be rather constructive. Some student teachers commented on different parts of the mini-lesson based on the captions provided by their group mates. For example:

> Brainstorming part 2 (Information gap activity): Integrating information gap activity enables students to communicate with the target language (names of food items). They can learn by reading aloud and listening to their classmates. Pronunciations can be checked within groups as certain level of accuracy in pronunciation has to be attained for filling the gaps. The enrichment of word bank builds up on their language system knowledge. Again, it would be good if you could explain how the food items are healthy apart from inviting them to read out the answers. Tell your students explicitly the aims and connections of this and the previous activity, healthy food, invites students to elaborate on their answers with knowledge acquired from the previous activity. It is hopeful that students can provide answers like "the dish is healthy because it contains pepper and onions, ingredients which are low in fat and sugar". You can provoke thinking and association with previous knowledge by asking follow-up questions like "How is pepper healthy?" and "Do you know what nutrition do onions contain?"

Figure 1. An Example of Feedback on Different Parts of a Mini-Lesson Based on the Captions Provided by Individual Student Teacher



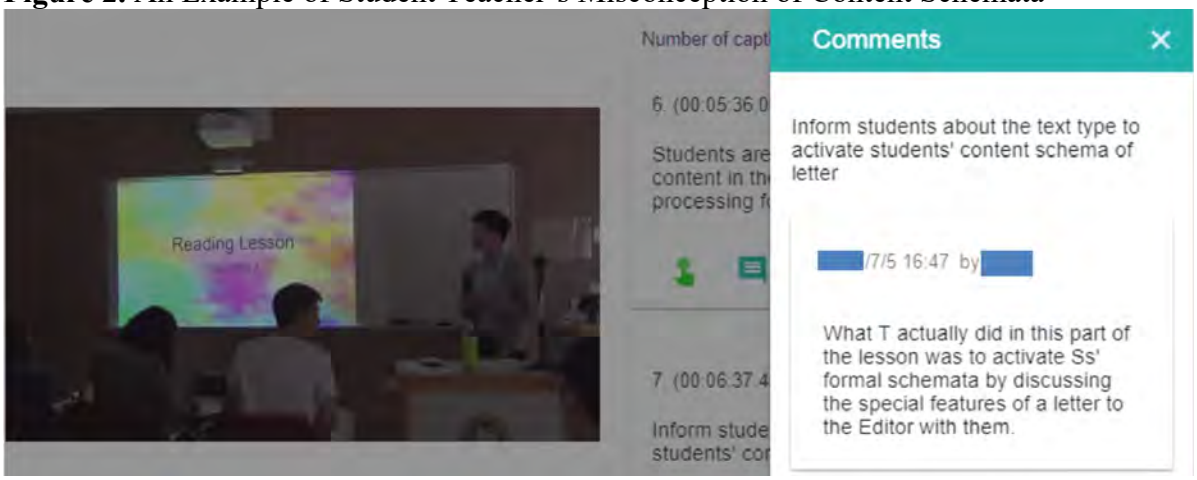
For instance, individual group mates not only made comments on what their peers' teaching strategies and classroom techniques had achieved but also gave advice to their peers on how to improve their teaching (Table 2).

Table 2. An Example of Peer Comments and Advice Given by a Student Teacher on Her Group Mate's Lesson Delivery

Student teacher B's comments on Student teacher A's use of specific teaching strategies	**Student teacher B's further advice on Student teacher A's use of specific teaching strategies**
Integrating information gap activity enables students to communicate with the target language [names of food items]. They can learn by reading aloud and listening to their classmates.	Again, it would be good if you could explain how the food items are healthy apart from inviting them to read out the answers. Tell your students explicitly the aims and connections of this and the previous activity– healthy food. Invite students to elaborate on their answers with knowledge acquired from the previous activity. It is hopeful that students can provide answers like "the dish is healthy because it contains pepper and onions, ingredients which are low in fat or sugar". You can provoke thinking and association with previous knowledge by asking follow-up questions like "How is pepper healthy?" and "Do you know what nutrition onions contain?"

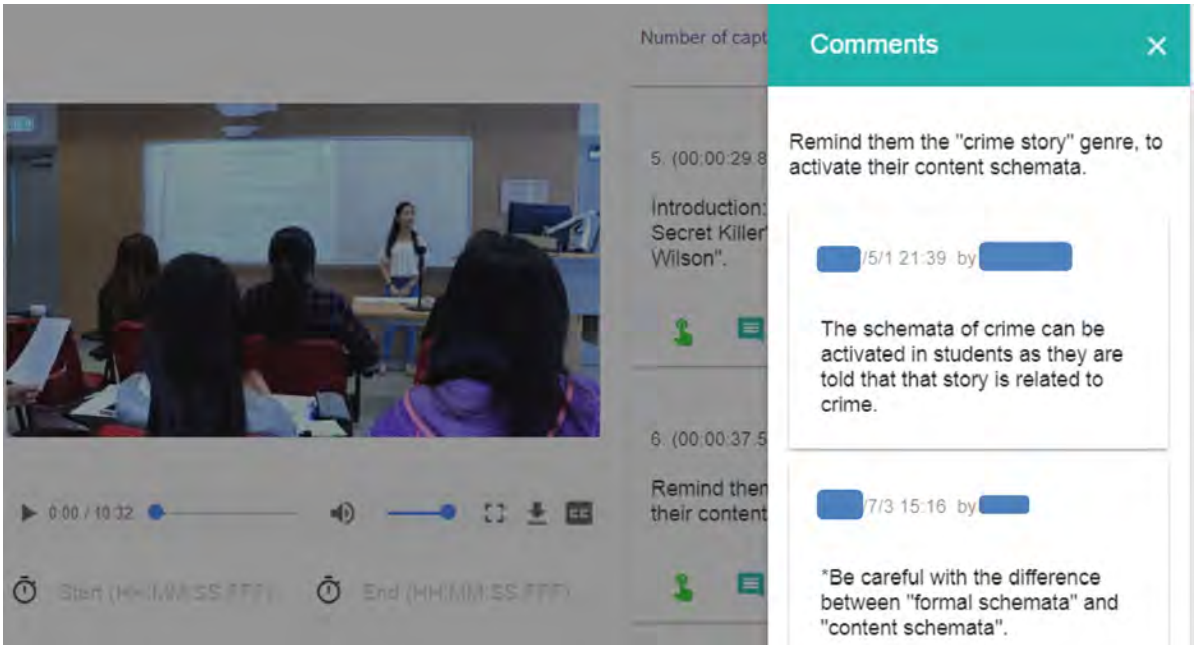
In addition, the interactive video database also allowed the instructor to point out the misconceptions of individual student teachers. The example in Figure 2 illustrates that one of the student teachers thought that informing students of the target text type was to activate students' content schemata. However, as pointed out by the instructor, what the student teacher actually did in this part of the mini-lesson was to activate students' formal schemata through in-class discussion on the special features of a letter to the Editor. Sometimes, the instructor also pointed out the misconception found in the student teacher's captions and/or in the peer feedback.

Figure 2. An Example of Student Teacher's Misconception of Content Schemata



In one case (as showed in Figure 3) the instructor found that both the student teacher and her group mate mistakenly thought that the presentation of the target genre during the mini-lesson was to activate students' content schemata. The instructor then drew their attention to the distinction between *formal schemata* and *content schemata*.

Figure 3. An Example of Student Teacher and Her Group Mate's Misconception of Content Schemata



As illustrated by the above examples, the learning community on a web-based interactive platform for student teachers facilitated high-quality sharing of teaching experiences. Peer feedback and the instructor's comments on individual student teachers' performance helped the student teachers enhance the quality of their microteaching.

Facilitation of Students' Self-Reflection on Teaching Practice With Voice-Comment Features

Aside from the typical text-comment function, voice-to-text and voice-comment functionalities were integrated into the interactive video database. The researchers, who designed the video database, expected that the student teachers would make use of these new features to provide comments on their peers' microteaching in the videos.

The mean scores revealed that the respondents preferred to use the text-comment functionality ($\overline{x}$ = 4.19) rather than voice comments ($\overline{x}$ = 3.06) or voice-to-text comments ($\overline{x}$ = 3.03). However, the standard deviations of the scores for the two voice-comment features were larger than one (Table 3), indicating that the student teachers' preferences for these functionalities were very diverse. In general, the video database was considered helpful as a way of providing comments ($\overline{x}$ = 4.23).

Table 3. Perceived User Experience of Student Teachers on the Video Database

Perceived Usefulness	***N***	***Min.***	***Max.***	***M***	***SD***
Text-comment	31	2	5	4.19	.654
Voice-comment	31	1	5	3.06	1.093
Voice-to-text comment	31	1	5	3.03	1.140
Helpful in providing comments	31	2	5	4.23	.717

We examined the student teachers' user experience of the voice-comment functionality of the video database and found that 22.6% of the participants indicated that they did not find the voice-comment feature helpful in providing feedback (rating it 2 or below). However, 35.5% of the participants reported that the voice-comment feature was helpful in providing comments (rating it 4 or above). Nearly 42% of the respondents gave a rating of 3, which showed that they were indifferent toward this feature (Table 4).

Table 4. Frequency Analysis of User Experience on the Voice-Comment Feature

Valid Case	**Frequency**	**Percent**	**Valid Percent**	**Cumulative Percent**
1	4	12.9	12.9	12.9
2	3	9.7	9.7	22.6
3	13	41.9	41.9	64.5
4	9	29.0	29.0	93.5
5	2	6.5	6.5	100.0
Total	31	100.0	100.0	

Similar to voice-comment functionality, 25.8% of the student teachers did not find the voice-to-text comment functionality helpful (rating it 1 or 2) while 32.3% of them gave positive feedback about this function (rating it 4 or 5) (Table 5). Through informal conversations with some of the student teachers, it was determined that those who did not find the voice-comment functionalities of the video database helpful answered in this way because it required a computer with voice input capability and a microphone. It was not convenient for them to find a microphone or they simply did not have one as a result, they therefore did not use these functions.

The survey results suggest that the enhanced functionalities of the video database were helpful to nearly one third of the student teachers. Although these voice-comment functionalities seemed not to be particularly useful to some of the student teachers due to hardware limitations, it is believed that these voice-comment functionalities may become more popular if the capability of smartphone or mobile devices with embedded voice input functions can be harnessed and the video database can be transformed into an app.

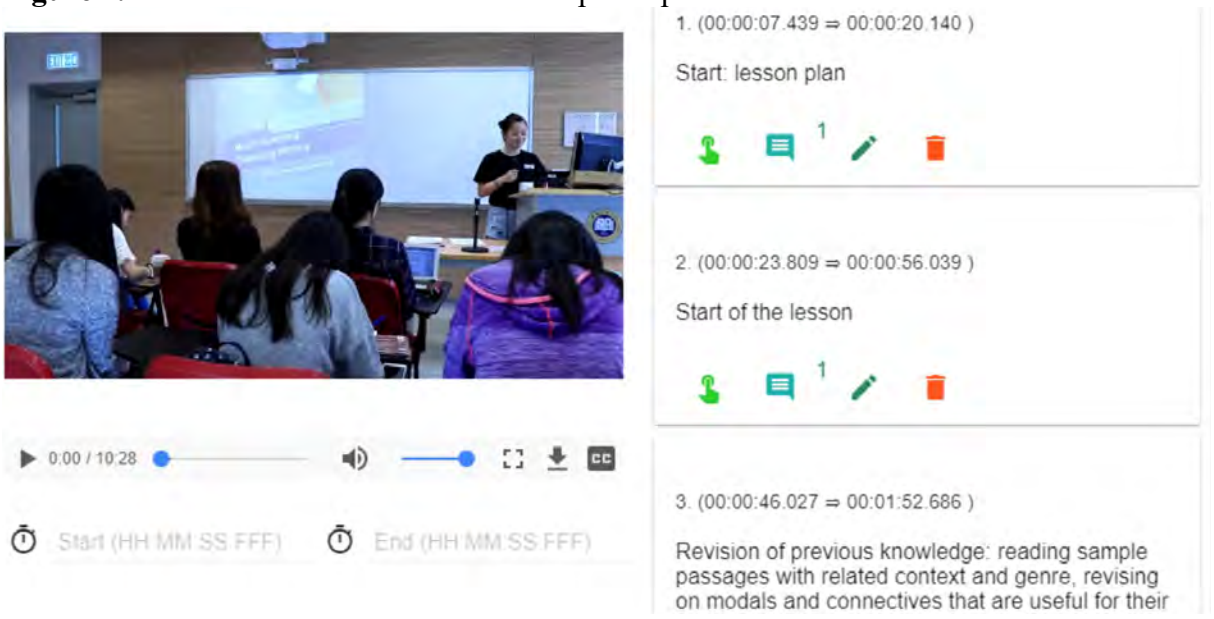
Table 5. Frequency Analysis of User Experience on the Voice-to-Text Comment Feature

Valid Case	Frequency	Percent	Valid Percent	Cumulative Percent
1	4	12.9	12.9	12.9
2	4	12.9	12.9	25.8
3	13	41.9	41.9	67.7
4	7	22.6	22.6	90.3
5	3	9.7	9.7	100.0
Total	31	100.0	100.0	

Rich Evidence of Students' Learning Outcomes Regarding Microteaching

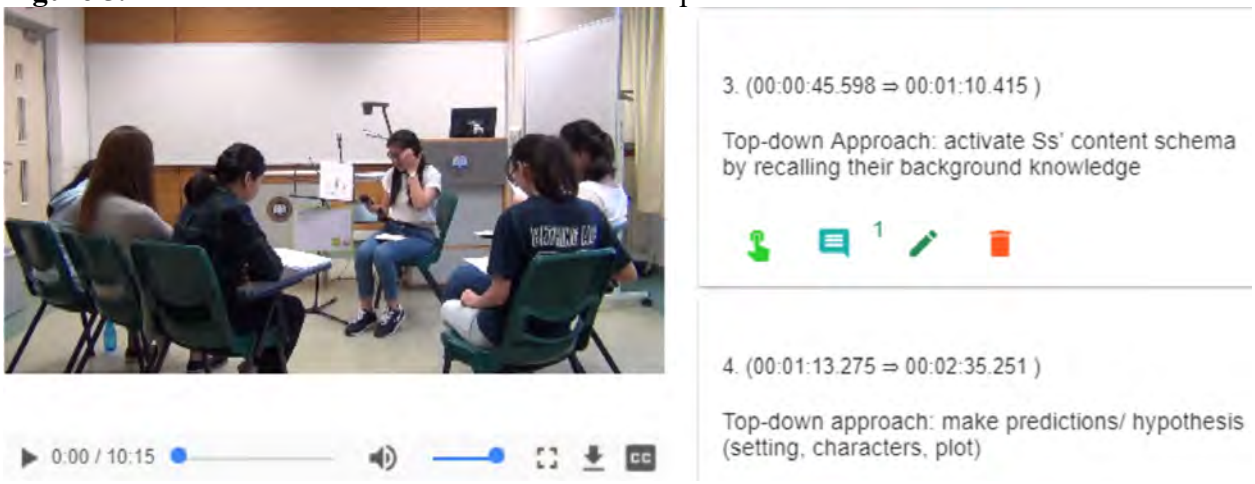
Using the video database, evidence of students' learning outcomes regarding microteaching can be collected systematically and it is much easier for the instructor to identify individual students' strengths and weaknesses based on the evidence of their learning outcomes (see Figure 4). As the students were required to input captions for different parts of their mini-lessons, they were encouraged to reflect on their performance more critically.

Figure 4. A Student Teacher Who Gave Simple Captions for Her Mini-Lesson



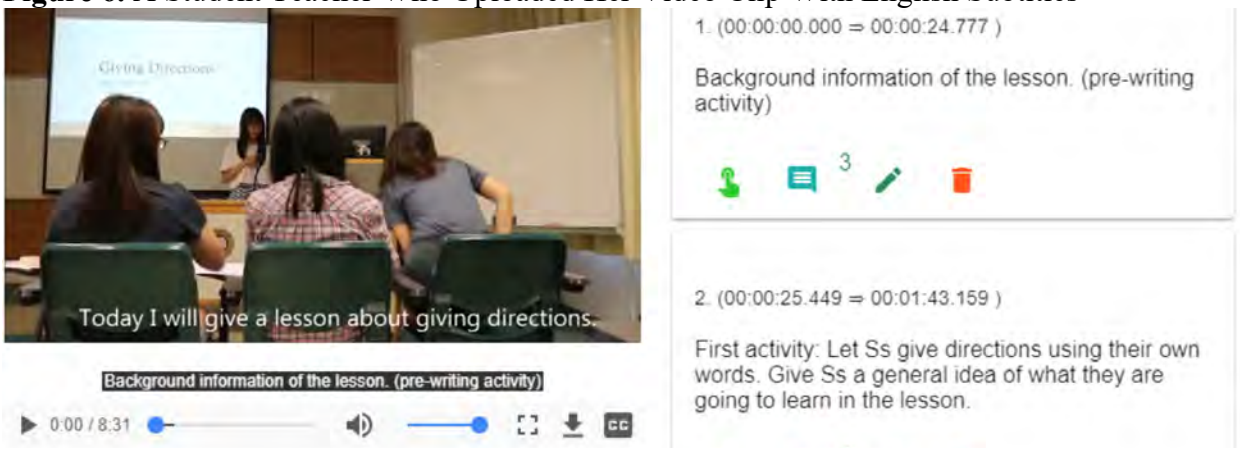
The students who provided simple captions were less likely to articulate the rationale behind their teaching strategies or classroom techniques in detail and it was more difficult for their group mates to give detailed peer feedback. For those who gave detailed captions, their knowledge of teaching strategies or classroom techniques was revealed in the captions and it was more likely for their group mates to have a better understanding of the rationale behind their mini-lesson and thus give more critical feedback on their performance.

Figure 5. A Student Teacher Who Gave Detailed Captions for Her Mini-Lesson



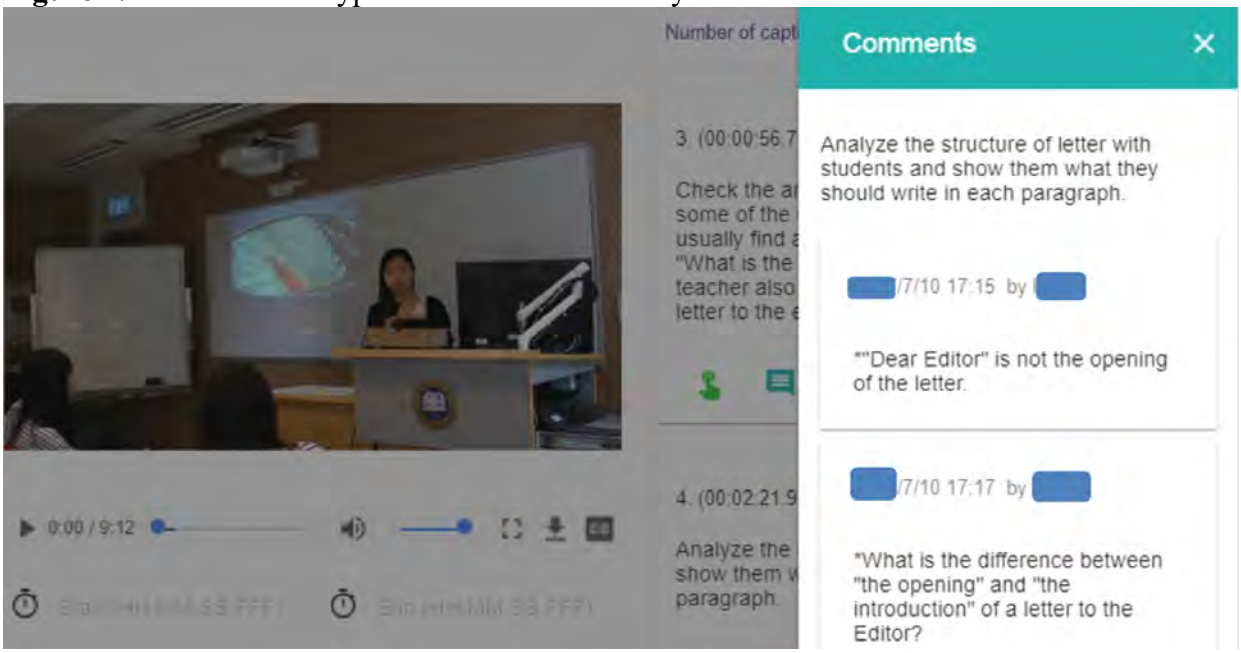
As shown in Figure 5, one of the student teachers was able to articulate the English Language Teaching (ELT) theories concerned (e.g. the *Top-down Approach* and the *Schema Theory* in reading) in the captions. In doing so, group mates could evaluate the student's performance by checking if the relevant ELT theories to conduct the mini-lesson were applied and at the same time they could check if the student's understanding of those theories was revealed in the delivery of the mini-lesson. A few students in the class even uploaded the video clips of their mini-lessons with English subtitles (see Figure 6). This allowed the student teachers concerned to have more time to reflect on their performance because they could take the opportunity to review their mini-lessons in great detail while they were preparing the subtitles.

Figure 6. A Student Teacher Who Uploaded Her Video Clip With English Subtitles



As shown in Figure 7, apart from evaluative feedback given by the instructor, the student teacher was able to conduct a second round of reflection on their performance guided by the instructor's question (e.g. *What is the difference between the opening and the introduction of a letter to the Editor?*).

Figure 7. The Different Types of Feedback Given by the Instructor



The interactive video database helps to provide clear evidence of the student teachers' learning outcomes regarding microteaching, as shown in their different levels of performance in microteaching, their different ways of inputting their captions, giving peer feedback, and doing their reflections. The student teachers believed that these were pieces of good evidence of learning outcome and 67.7% of them (rating it 4 or above) indicated that they would include their microteaching video clips with their own reflection and peer feedback in their portfolio (Table 6).

Table 6. Frequency Analysis of Including Microteaching Video in the Learning Portfolio

Valid Case	Frequency	Percent	Valid Percent	Cumulative Percent
2	3	9.7	9.7	9.7
3	7	22.6	22.6	32.3
4	13	41.9	41.9	74.2
5	8	25.8	25.8	100.0
Total	31	100.0	100.0	

Discussion

With the aim of developing collaborative work cultures for teachers, the idea of developing a learning community has been advocated in the field of education over the past two decades (Sjoer & Meirink, 2016; Thompson et al., 2004). Bolam et al. (2005) define a professional learning community (PLC) as a community "has the capacity to promote and sustain the learning of all professionals in the school community with the collective purpose of enhancing pupil learning" (p. 145). From this, we hypothesized that the establishment of a VLC on a web-based platform for pre-service student teachers would benefit them greatly, especially in microteaching. As pointed out by Vescio and her colleagues (2008), "at its core, the concept of a PLC rests on the premise of improving student learning by improving teaching practice" (p. 82). It is beneficial for student teachers to be encouraged to improve their teaching practice through their participation in a learning community as part of their professional development when they are receiving their initial

teacher education. To achieve this, peer evaluation is one of the components of their microteaching. It is hoped that student teachers, with reference to the rubric for peer commentary (Appendix I), will play the role of critical friends when they give feedback on their group mates' performance. The dialogue between student teachers can enhance their understanding of the pedagogical content knowledge gained in their education courses and help improve their teaching practice gradually through their active participation in microteaching as the performer and the evaluator. As suggested by Rallis and Rossman (2000), "the rule of the evaluator in facilitating dialogue is explicated through examples from practice" (p. 81).

The findings of this study suggest that a VLC on a web-based interactive platform has a positive impact on the quality of student teachers' microteaching. The in-house interactive video database provided the room for student teachers to establish a VLC among themselves to exchange meaningful dialogue that facilitated in-depth learning of effective teaching strategies and classroom techniques. The conversation among student teachers helped them to improve by consolidating their learning of teaching and learning theories, putting theory into practice and generating new knowledge after practicum. As Alles and her colleagues (2019) pointed out that a positive learning atmosphere and conversation culture may help construct new pedagogical and subject content knowledge that are essential in improving teaching quality.

The student teachers who participated in this study were able to articulate the rationale behind their mini-lessons and they were willing to spell out the relevant ELT theories, teaching strategies and classroom techniques. At the same time, they played the role of evaluators and gave peer feedback on their group mates' performance in microteaching. The video database facilitated meaningful dialogue among student teachers by creating a safe zone in which they established a VLC where they could learn from each other as critical friends.

> Critical friends recognize and value the unique contributions of the other and understand that true dialogue entails give and take. They come together for a common purpose, and they develop shared meanings about where the program is, the value of its status, and where it should go. They determine actions according to their new understandings (Rallis & Rossman, 2000, p. 85).

From the evidence collected in this study, it was clear that student teachers were willing to communicate their thinking about what they wanted to implement in their mini-lessons. Their peers were also willing to provide comments and give advice on their performance in microteaching. As *the relationship [was] equitable and reciprocal* (Rallis & Rossman, 2000, p. 85) in their learning process, the student teachers were not afraid of making mistakes in their thinking or in the delivery of their mini-lessons. The instructor also monitored the student teachers' learning process by giving further comments and advice on their captions and peer feedback via the discussion forum of the video database.

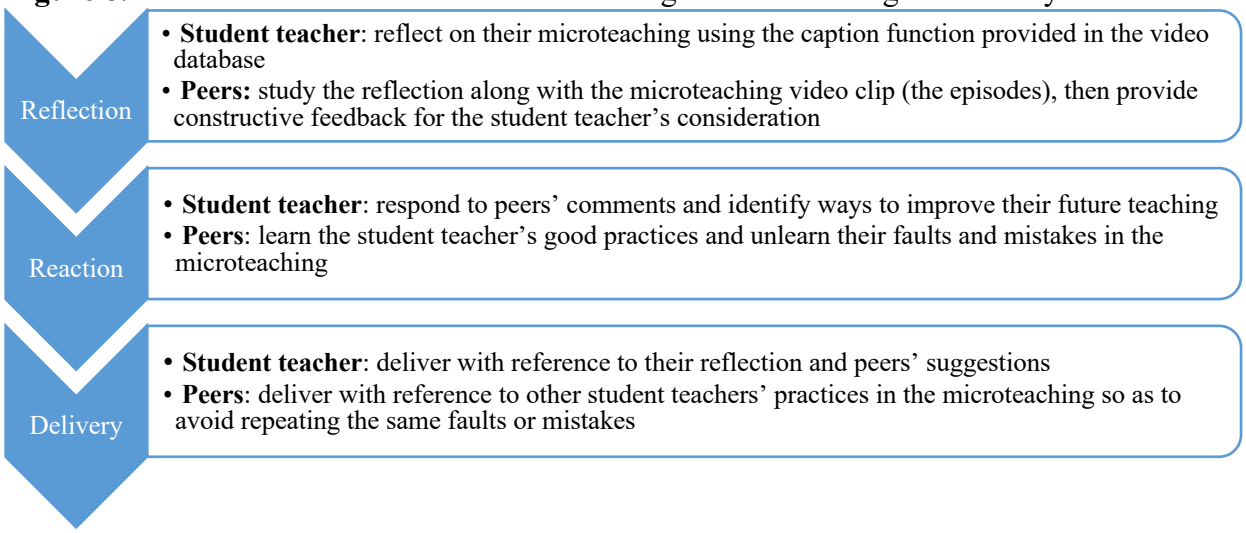
Although the student teachers were not required to revise their mini-lessons to include the feedback and changes approved by the instructor, they had to submit their course-end written assignments through which they had the opportunity to apply the knowledge and skills gained in microteaching to design a teaching package that integrated reading and writing. This written assignment was designed to show how individual student teachers incorporated relevant ELT concepts, theories and techniques into their teaching. Some evidence of the quality of student teachers' reflective teaching practice were found in the actual design of individual teaching packages (with detailed lesson plans).

The VLC does not end there. Microteaching is only a process to enhance student teachers' pedagogical practice; teaching practice also needs to be continuously enhanced, at least during initial teacher training. Hence in their practicum, the student teachers were encouraged to record their lessons and share them in the VLCs. With this interactive video database as the platform, these VLCs enabled the students to reflect and share their teaching experiences in their practicum schools without the need to have face-to-face meetings. After the whole supervised teaching practice had finished, a reflective seminar was held to conclude the program. In the seminar, the students had a chance to share their teaching experiences in their practicum schools with their follow classmates and express their views toward teaching as a career. In the reflective seminars, the students shared that they felt support and encouragement from the learning communities and as a result they are more confident in embracing their future teaching careers.

Microteaching Virtual Learning Community Model

In this study, we examined how technology may facilitate self-reflection and peer feedback in microteaching. We demonstrated that an interactive video database, which served as a platform for student teachers to reflect on and provide comments to videos of microteaching, helped student teachers better reflect and learn from peers' comments. Based on these two essential practices, a microteaching virtual learning community model was proposed. Figure 8 contains a diagrammatic illustration of the possible interactions within the model.

Figure 8. Possible Interactions in the Microteaching Virtual Learning Community Model



In the model, the student teachers play two roles. They reflect on their microteaching and are required to provide feedback to other student teachers as peers with the support of the interactive video database.

For the first role, self-reflection is considered an important practice in pre-service teacher education (Beauchamp, 2015). Student teachers should have the motivation and ability to reflect on their teaching and make necessary improvement; however, without a practical and convenient tool to record and store their reflection, student teachers may not be able to reflect effectively. The interactive video database in this study served two main functions in building a VLC for student teachers. The first was to facilitate the student teachers to reflect on their own teaching from a

third-party perspective. This tool may enable student teachers to review their own teaching from another angle that may help rectify or adjust their teaching. The other function was to formally record and store student teachers' reflection on their microteaching that they can refer back to as learning evidences, which may help them improve their practices in actual school settings.

Regarding the second role, providing feedback to peers will be difficult and fragmentary if the relevant teaching episode in the microteaching cannot be easily referred to in a meaningful way. There have been cases where peers were not able to provide accurate feedback simply because they were unable to provide evidence of particular incidents in the microteaching. Without a shared reference point in the microteaching, peer feedback was not as effective since the feedback was mostly in the form of general comments, which was overwhelming due to busy classrooms and a failure to recall specific activities conducted during the microteaching experience. To have an abiding effect on improving a certain teaching skill or technique, an interactive video episode in the video database showing the implementation enables both parties to readily refer to the same issue in the microteaching rather than just a general comment. This focused discussion on the delivery will create a common understanding that will facilitate meaningful deliberation and sharing.

Conclusion and Recommendations

With the aim of exploring whether or not a VLC can help improve the quality of student teachers' reflective teaching practice, learning communities were built on an interactive video database that featured voice-commenting functionalities to facilitate student teachers' self-reflection and feedback to their peers. Based on survey results and an analysis of the comments made on the video database, this research determined that the quality of student teachers' reflective teaching practice was improved. Although only one third of the participants indicated that they appreciated the voice-comment functionalities of the video database, they regarded it as a good platform on which to share their teaching experiences and improve their own practice. In this study, a microteaching VLC model was introduced, and instructors of teacher education courses were encouraged to make use of this model to provide practical advice and explain underlying educational theories to help student teachers better integrate theory into practice. Teacher education institutes that are practicing microteaching in their teacher education programs can easily adopt this model.

Limitations and Future Research

The employment of the video database in this study aimed at helping student teachers to share their teaching experiences and give detailed feedback on their peers' performance to enhance the quality of their microteaching through developing a VLC on a web-based interactive platform. Based on the online peer commentaries provided by individual student teachers, different levels of peer feedback and self-reflections were observed in this study. It was found that some student teachers tended to give some general comments on their peers' performance in their microteaching and sometimes the focuses of their comments were not on ELT, but on classroom management issues. These types of general comments did not facilitate in-depth discussion on the relevant ELT concepts, theories and techniques incorporated into individual microteaching. Although the interactive video database allowed the instructor to point out individual student teachers' misconceptions found in their peer comments, some student teachers failed to do a second round

of reflection on their performance guided by the instructor's question(s). Because of this, future studies need to be conducted to investigate on-going online interactions regarding student teachers' microteaching in order to study the improvement in the quality of student teachers' reflective teaching practice with the support of a learning community on a web-based interactive platform.

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Appendix I: Rubric for Peer Commentary

Level Descriptor				
The student teacher is able to reflect on his/her own teaching practice by giving constructive and reflective commentary on his/her peer's mini-lesson	The student teacher is able to reflect on his/her own teaching practice by giving adequate and critical commentary on his/her peer's mini-lesson	The student teacher is not always able to reflect on his/her own teaching practice by giving adequate and critical commentary on his/her peer's mini-lesson	The student teacher gives inadequate response to his/her peer's mini-lesson	A totally irrelevant piece of work or Non submission
(7-8)	(5-6)	(3-4)	(1-2)	(0)