Issue

Research has indicated that preservice teachers come to any teacher education program with prior beliefs about teaching and learning (Shulman, 1987). These beliefs have been accumulated from a variety of sources, including their past experiences as students in the school system (called apprenticeship of observation), and may filter what they are exposed to in the teacher education program (Lortie, 1975). Hence, differences are likely to exist between what teacher educators think is important for their students to learn and what the students actually learn as a result of taking a course. As a Western language teacher educator in Singapore at the time of this study, I was the coordinator of a methods course for English as a second language (ESL) teachers that focused on the theory and methods of teaching reading to secondary school students. After delivering the course for some time, I wondered what the preservice teachers had learned as a result of taking the course. Of course, the preservice teachers all had to complete an assignment that usually consisted of developing a lesson plan for a reading class along with the rationale behind the plan. However, I had no other way of gauging the real impact of the course on teachers’ beliefs. Had they, for example, filtered the educational concepts they were presented with through their prior belief systems? If yes, were they conscious of this filtering? Which beliefs had they accepted, which ones had they rejected, and why?
These are very important questions. As Joram and Gabriele (1998) argue, it is essential that teacher educators take prior beliefs into account “because any new material taught will have to compete with, replace, or otherwise modify the folk theories that already guide both teachers and pupils” (p. 176). So, I set out to find a different method of evaluating the course’s success in terms of its impact on preservice teachers’ beliefs. After some research, I decided to use concept maps to gauge the impact of this TESOL methods course.

The preservice teachers were enrolled in a 1-year program, called the Post Graduate Diploma in Education (PGDE), to certify them as secondary school teachers in Singapore. Preservice teachers take a 10-month program in which they experience teaching practice and theory classes. Preservice teachers in the English language teaching stream take theory courses in the teaching of reading, writing, grammar, and listening and speaking. The reading course consists of nine classes (18 hours of class time over 9 weeks) of instruction on reading theory, teaching strategies, and current concepts. The course emphasized the following concepts in current reading theory: schema theory, the role of prior knowledge, psycholinguistic theory and reading, metacognition and self-monitoring techniques, text structure, techniques to promote the use of effective reading strategies, vocabulary teaching, and actual lesson plan writing and critiquing. Additionally, the course included various methods of evaluating reading comprehension in the Singapore examination system.

**Background Literature**

The evaluation tools I used, concept maps, are diagrams that show relationships among concepts within a specific domain of knowledge (Novak, 1990). Meijer, Verloop, and Beijaard (1999) define concept mapping as a “technique for capturing and graphically representing concepts and their hierarchical interrelationships” (p. 62). The technique of concept mapping—sometimes called “tree technique” (Mergendoller & Sacks, 1994, p. 589)—originally comes from the field of cognitive psychology and was transferred into educational research to understand how teachers use their knowledge to carry out the complex task of teaching. Van Bruggen, Kirschner, and Jochems (2002) suggested that concept mapping can be a very effective way to relate new concepts to a person’s current knowledge and to encourage his or her involvement in the learning process. Within educational research, concept mapping has also been used to trace conceptual changes in students who take a course or program of study and has even been used successfully to trace changes in preservice teachers’ conceptions about teaching English reading (Meijer, Verloop, & Beijaard, 1999; Mergendoller & Sacks, 1994).
Although several studies (e.g., Horton, McConny, Gallo, Woods, & Hamelin, 1993) have suggested that concept mapping in education can result in meaningful learning, not all researchers have agreed that concept maps are a valuable research tool for tracing conceptual changes in learner teachers. Kagan (1990), for example, has argued that concept mapping to investigate teacher thinking is too complex and time consuming. She further argued that the use of concept maps puts too much emphasis on short-term changes in teachers’ cognition and that these concept maps are usually compared to a target map, such as the instructor’s map. Kagan wondered if comparing students’ and instructors’ course concept maps rendered them invalid.

Although concept mapping may be a complex and time-consuming way to look at cognitive changes in teacher thinking, this study used concept maps as evidence of knowledge growth rather than as a reflection of cognitive structure (Morine-Dershimer, 1993). In other words, I used a nonstructured approach to stimulate students when there was no prepared list of concepts on the teaching and learning of English reading. With this nonstructured approach, the preservice teachers were asked to generate concepts related to the reading process and the teaching of reading comprehension in Singaporean secondary schools. For the purposes of this study, the word concept is defined as a mentally conceived image of what the preservice teachers understand to be important in teaching reading, including their beliefs.

**Procedures**

On the first day of class, the 20 preservice teachers were asked to construct a concept map of the reading process and the teaching of English reading in Singaporean secondary schools. Fischer, Bruhn, Grasel, and Mandl (2002) suggested that students construct their own concept maps, rather than have a precourse map prepared by the course instructor, to ensure greater ownership of the learning process. The first maps students created were for diagnostic purposes; they would give me an indication of the preservice teachers’ beliefs about the reading process and how to teach reading to secondary school students. Even though my students did not have the subject matter knowledge, they did have experience as students in the school system and as successful readers (otherwise they would not have been in the PGDE program). They were all shown an example of a concept map and given a detailed explanation of this map. They all received the same written (and orally explained) directions with the example concept map.

On completion of the maps, they were asked to share their answers during a peer group discussion and reflection session. At the start of the following class, and in order to clarify what they wrote in their concept maps, I conducted a
class interview (Wilson, 1997). I led a discussion and encouraged the preservice teachers to further explore their perceptions, attitudes, feelings, and ideas about the reading process. Most of the class participants contributed to the discussion.

Each preservice teacher’s map was analyzed as follows: Each concept was numbered and a frequency count was noted along with any connections made to other concepts (Taylor & Coll, 1999). Taylor and Coll conducted a similar qualitative analysis of concept maps as a tool for monitoring student learning in science. In my study, each preservice teacher drew a concept map that answered the following question: What does teaching reading to secondary school pupils involve, and how would you do it? I totaled the number of concepts from the 20 individual student maps and constructed a precourse group concept map. The group map provided an indication of what the class as a whole believed about teaching reading.

On the last day of class I distributed a blank concept map with the same question as the map given on the first day of class and asked that each student construct a postcourse concept map. I had told them on the first day of class that they would be receiving their precourse maps back at the end of the course but not that they would be asked to construct a postcourse map. After they created postcourse maps, I returned their original precourse maps. Then I asked them to compare the two versions. When they had finished their comparisons, I asked them to write down the differences they had noted between the two maps and to state the reasons for these differences. I analyzed the individual postcourse maps using the same procedures as with the individual precourse maps, and then I constructed a group version of the postcourse concept maps. However, because the individual postcourse concept maps were much more detailed and sometimes had many different concepts, I found this process time consuming. I also discovered that I would have to use different categories for the postcourse concepts because the level of detail differed from the precourse maps. One final procedure, which I had not planned, was that I interviewed a number of the participants because some of the concepts they put on their maps were not explained clearly.

Results

PRECOU RSE CONCEPT MAP

The group composite concept map I constructed from the students’ individual precourse maps is shown in Figure 1. Figure 1 illustrates that the group (N = 20) had no shared understanding of what it means to teach reading. The issues in order of frequency were comprehension (15); motivation (9); vocabulary (7); reading aloud (4); grammar (3); and an other category, which included many diverse items such as role plays, drama, silent reading, and speed reading.
Comprehension was chosen by 15 of the preservice teachers. Many of them just wrote the word *comprehension* with no explanation. In a class discussion that followed, I asked why they wrote comprehension and what its meaning was. Many said that teaching reading for them meant that the students read a passage, answered some questions—usually 10—and the teacher then “ran through” the answers. They said that this type of reading class was typical of what they had experienced as students in the system and that they would probably teach reading in a similar way.

The next concept, motivation, was picked by nine preservice teachers. They said the concept meant that “teachers must inspire the students to read,” but they did not say how. When asked to explain what motivation was, many preservice teachers said that the teacher should cultivate and encourage an interest in reading. They said that the teacher should explain the benefits of reading to the students. However, none of the preservice teachers was able to come up with an exact method of motivating students to read except explaining the benefits of reading.

Vocabulary was the next most valued idea for teaching reading to secondary school students, with seven preservice teachers placing it in their maps. Again, most of them just wrote the word *vocabulary* with no explanation. When asked what way they would teach vocabulary, many said the teacher should get the students to underline whatever words they did not understand. Then the teacher...
could explain the words, or the students could look them up in their dictionaries. Again, they mentioned that this was what most of them had experienced when they were students. Some mentioned that they could get the students to memorize words because that is the way they were instructed in vocabulary acquisition.

Another issue the preservice teachers included was reading aloud. In fact, many said that even though they did not include it in their initial concept maps, they now thought that it should be included. During the discussion, 15 more students raised their hands in agreement, for a total of 19. However, they did not add this concept to their maps. When asked why they valued this strategy in a reading class, the preservice teachers stated that they themselves had been trained with reading aloud in their own school days and that it would be good for their students’ pronunciation development. Three preservice teachers included grammar in their maps. They stated that grammar should be highlighted during a reading lesson, but they did not indicate how this should be accomplished.

This precourse concept map gave me some indication of these preservice teachers’ underlying beliefs about the teaching of reading. It showed me that many of them did not have explicit knowledge of reading strategies even though they themselves were fluent readers. It was also an indication that many of these teachers had to draw on their experiences as students in the school system to complete their precourse concept maps and show how they would teach reading in the Singaporean secondary school system.

POSTCOURSE CONCEPT MAP

A postcourse group concept map was constructed from the preservice teachers’ individual maps, as shown in Figure 2.

Overall, the postcourse group concept map was more extensive and slightly more complex than the precourse group concept map. The teachers together included 10 headings in their final concept maps. Shah’s comments best represent the general differences between the pre- and postcourse maps. She said that her experiences as a student in the school system had influenced her initial precourse concept map. Shah continued, “Before this course, my ideas were based on my own personal experience as a student in secondary school. That time there were no lessons to teach us reading. Now I have learnt that there are reading strategies and ways and activities to carry out teaching.” Many of the other preservice teachers made similar reflections that traced the origins of the concepts in their precourse maps to the way they experienced reading classes when they were students: all testing and no teaching of how to read. As Evelyn said, “Knowing now that reading strategies exist and we can teach students these is all new to me.”

Except for the topic vocabulary, which was expanded from the combined
precourse map, most of the other topics were different from the ideas presented in the precourse concept maps. The new topics in the postcourse map included extensive reading, teach reading strategies, text awareness, lesson planning, metacognition awareness, direct reading thinking activity (DRTA), top down and bottom up, teach not test, and cultivate interest and passion in reading. Many of these new topics were representative of issues highlighted in 2-hour segments during the course. Additionally, six of these ideas were directly related to the teaching of reading: (1) text awareness, (2) teach reading strategies,
(3) lesson planning, (4) extensive reading, (5) vocabulary, and (6) metacognition awareness.

Top down and bottom up, and DRTA were the most popular concepts, appearing in 12 and 11 postcourse concept maps, respectively. However, the teachers did not elaborate on these topics. Teach reading strategies appeared in nine postcourse maps, with a secondary level represented by what (four maps), where (four maps), when (four maps), why (four maps), and prediction (four maps).

Seven preservice teachers included extensive reading and vocabulary as important concepts for teaching reading, and both topics had two-level representations. The second-level topics for extensive reading were students choose book (four maps), no book review (two maps), and interesting reading (two maps). The second-level technique for vocabulary was guess meaning in context, which was only a slight change from the precourse map. Cultivate interest and passion in reading also appeared in seven maps, but with only one-level representation.

Text awareness was included in six postcourse maps, with a second level showing examples such as recognize discourse markers (four maps) and text types (two maps). Three of the preservice teachers noted the importance of lesson planning, with secondary levels labeled prereading activities (three maps) and postreading activities (three maps).

Two topics on the postcourse concept maps were related to the delivery of lessons; these were teach not test and cultivate interest and passion in reading. Nine of the preservice teachers included teach not test as a separate concept in their postcourse concept maps. All 20 of the preservice teachers commented about this occurrence when asked to write about the changes they noted from the precourse maps. They said that they suddenly realized that what mostly happens in reading classes is testing reading, by having the student read a paragraph and answer the 10 questions that follow, rather than actual teaching of reading.

Comparing this postcourse group concept map with the precourse map, I noticed a complete absence of reading aloud, grammar, and comprehension. I wondered if this might indicate a change in beliefs about teaching reading as a result of taking the module. Yen Wha, for example, noted that reading aloud can be a problem for the reader and the other students. She said, “Reading a passage aloud is not very effective, as the students who are not reading will switch off and even the student reading may not understand what he or she is reading.”

One major disappointing aspect of the group postcourse concept map was the lack of complexity, which can be seen in the branching (spokes) and minimal levels of ideas presented. In fact, only eight of the teachers’ maps had two-level representations, which included the idea or concept (such as vocabulary) at the first level and the method (such as guessing meaning in context) at the second level. None of the teachers’ maps had any third-level examples or techniques that represented these methods. Another disappointing feature of the postcourse
concept maps was that the different ideas presented were not connected in any unified way (see Ken’s concept map in Figure 3 as an exception). Here it seems that the preservice teachers failed to make connections between theory and pedagogic purposes in any meaningful manner.

When I attempted to analyze individual concept maps to see how each teacher internalized the course, I found it difficult to group them into coherent categories. Each teacher seemed to have gained something different from the course. However, I was able to set two broad categorizations in terms of levels of representations: Level 2 maps, which indicated a more sophisticated understanding of the concepts, and Level 1 maps, which indicated only a surface understanding of reading concepts. This continuum from Level 2 to Level 1 is represented in the following individual concept maps, Ken’s Level 2 map (see Figure 3) and Raymond’s Level 1 map (see Figure 4). I interviewed Ken and Ray about the contents of their maps.

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**Figure 3. Example of a Level 2 map, from Ken’s postcourse concept map.**
Ken’s postcourse map shows a more structured understanding of what he learned from the course. He has taken various concepts that were presented to him during the course and reproduced them in a two-level representation. Level 1 concepts are awareness of text structures, reading strategies, top-down and bottom-up, metacognition—awareness of reading process, and activate and build schema. Four of these five concepts had examples of techniques or activities attached to them. Reading strategies, for example, had an attached representation indicating that the teacher should model these strategies by showing students “how, when, where, why, and what the strategies are,” Ken explained in an interview. He said that as a result of taking the course he had a “greater knowledge of technical terms” and that this allowed for “a more accurate expression of ideas.” Ken further elaborated on the importance of discussing the process of reading and reading strategies with students: “Discussions on the reading process leads to a higher level of metacognitive awareness as to the personal process of reading.” Ken said he did not really elaborate on the postcourse map because he did not need to; he said he “knew what each spoke meant” to him. During the interview, Ken did elaborate on the contents of the map, but he said that he was doing this for me as a researcher rather than for himself.

As I discovered, he had a more complete picture of how he would teach reading within an interactive approach, which included both top-down and bottom-up activities. He was also aware of how he would teach various reading strategies and how these fit into the “big picture of reading and learning how to read.” The interview seemed to have yielded more information about Ken’s concept map entries and led me to believe that he had a deeper understanding of the course than he had represented on his concept map.

As a result of explaining his own concept map, Ken seemed to have gained a greater conceptual clarity about the course he had just taken. During the discussion, he became more aware not only of his own conceptions but also of some knowledge gaps and some inconsistencies. Thus, an important finding of this interview was that in the future I should consider having all the preservice teachers explain their concept maps. This practice might enable them to critically reflect on the concepts they included. Posing questions to have students justify parts of their concept maps can help them discover inconsistencies. This process of uncovering teachers’ beliefs may be a crucial step in concept mapping.

Based on these findings, I now wonder if the context influenced what the preservice teachers were prepared to put on paper. Their culture does not encourage students to put their thoughts in writing, because then those words are in a public domain and open to scrutiny. It may well be that the preservice teachers do not want this scrutiny. In fact, the school system itself does not encourage people on either side of the desk, students or teachers, to voice their opinions in public. Therefore, this culture obviously would have a bearing on these findings.

One worrying factor regarding the postcourse concept maps was the fact
that many of the individual maps were unstructured, one-level maps. In fact 12 (60%) of the maps were Level 1 maps, and only 8 were Level 2 maps. These numbers indicate that many of the preservice teachers might have had only a haphazard recollection of what the course was about. Ray’s Level 1 map (as shown in Figure 4) was representative of this side of the continuum.

Raymond’s representation of concepts is minimal and his placement of ideas such as activate schema, predicting, teach not test, and discourse markers shows some understanding of teaching reading. However, because there is no elaboration, his map remains at Level 1. When I interviewed Ray, his answers seemed to indicate that he has more depth to his understanding of the concepts he presented in his map. For example, regarding the issue of teach not test that appeared on his map, he said: “The main idea is to teach reading, not test reading. Usually a comprehension text only tests students’ reading ability. How can we teachers transform this into a teaching activity?” He then proceeded to use all the other concepts in his map together to explain what teachers should do when teaching reading:

First, students need to be taught to be able to predict by looking at the title of the passage and the topic sentences. This helps them skim for gist, and construct meaning. Then they need to be taught appropriate word identification strategies. Students must finally be able to self-monitor own reading and demonstrate independent learning.

Figure 4. Example of a Level 1 map, from Raymond’s postcourse concept map.
The interview did yield more information about Ray’s understanding of the course; for example, he expressed a more coherent view of how he should teach reading in general terms. Yet he still could not explain coherently how he could teach reading in terms of specific methods, techniques, or activities. Many other concept maps were of this haphazard nature, indicating that most students probably had not yet linked the concepts presented to them during the course in any coherent manner.

**Reflection**

One important reason for undertaking this study was to find out if the course had any impact on the learner teachers. Obviously, the module had some impact, but how much and of what quality? The postcourse group concept map indicated that many of the students were indeed able to use appropriate terms associated with the teaching of reading to secondary students in Singapore. Another indication that the course had an impact was the presence of two-level maps from eight of the learner teachers. The two levels showed that they were trying to connect concepts with methods, techniques, and activities that would enable them to implement these strategies in class, thus integrating knowledge gained during the course.

However, individual concept maps showed that the students internalized the course in different ways. The example of the Level 1 concept map shows that some students did not have a very coherent representation of what it means to teach reading. Many of these students could have acquired a superficial knowledge of the terms linked to the teaching of reading, such as top down and bottom up, but not have fully conceptualized them in terms of teaching reading. Furthermore, I now wonder if the Singaporean cultural norm *Kiasu* played any role in these postcourse maps. *Kiasu* means “fear or dislike of losing out to others” (Brown, 1999, p. 123). This fear could have had an effect on the participants when they attempted to include any idea from the course rather than leave the postcourse concept map blank. As a result, I am not sure if I can say that all of the learner teachers have grasped the essentials of what the course was trying to convey.

**WHAT I LEARNED ABOUT THE COURSE**

I have decided to follow a new maxim for this and future TESOL methods courses: less rather than more. I plan to present fewer new concepts to the group during the semester, but I will go into more detail when explaining each new concept: the origins, meanings, and suggested ways to use such concepts. I will allocate more time to finding out how these new concepts agree or clash with my students’ prior knowledge or beliefs, and will address any differences in detail.
For example, for the reading methods course, instead of just lecturing about how to use reading strategies with such methods as the DRTA, I will get them to actually use the DRTA in the classroom and experience it for themselves.

I will follow the “less rather than more” maxim for all the other TESOL methods courses, so the learner teachers will have more of a qualitative, experiential knowledge of the various concepts presented during the course. Thus, information generated from the initial concept maps and the interviews will shape the future content of the curriculum.

WHAT I LEARNED ABOUT THE METHOD

In the last decade, there has been a call for language teacher education programs to acknowledge student teachers’ prior knowledge and personal understandings as having an influential role in developing them as teachers (Almarza, 1996). Thus, teacher education courses “should aim to provide space and means by which student teachers can bring up and examine their pretraining knowledge in order to see how it relates to teacher education knowledge, so that learning is more meaningful” (Almarza, pp. 73–74). Concept mapping offers language teacher educators in Asian settings one method of bringing these prior experiences to a level of awareness.

The results of this case study have indicated that concept mapping, both at the beginning and end of the course, has raised the level of the learner teachers’ awareness about their own beliefs and prior experiences related to learning and teaching reading in an Asian setting. The precourse map is important because teachers’ beliefs often remain at the tacit level and are “often unconsciously held assumptions about students, classrooms, and the academic material to be taught” (Kagan, 1992, p. 65). In fact, the preservice teachers admitted that they had never been asked their opinion in any of the other education courses prior to this one. They suggested that it is not a common Asian practice to ask students what they believe about a subject before they study it.

However, it is essential for learner teachers to become aware of their prior beliefs, because these beliefs serve as a “lens through which they view” (Richards, 1998, p. 71) the subject matter during the course. Unfortunately, research in Western settings has indicated that if learner teachers are not made aware of their preexisting beliefs, then they may only refine these preprogram beliefs instead of restructuring them as a result of taking a course. In this way, the learner teachers confirm what they hold to be true and deny anything that conflicts with what they believe (Hollingsworth, 1989).

The postcourse concept maps are important too for the learner teachers to see what changes have occurred to their beliefs and the impact of the course on their prior experiences with the subject matter. Teacher educators play an important role here as well by having the learner teachers articulate what the changes mean to them as a result of taking the course. It is important for the learner teachers
to be aware of the differences of fine-tuning existing beliefs (which means little change from the beginning) and restructuring many of their beliefs (most desirable).

However, as the findings of this case study suggest (especially the interview with Ken), precourse and postcourse concept mapping should be supported with learner teachers’ explanations of their own maps. Because time constraints may not allow interviews with each learner teacher, instructors can ask course participants to collaborate in pairs or groups to construct concept maps. Teacher educators can then record the resulting discourse about the concept-mapping task.

Learner teachers should be given some guidelines to follow when interacting with peers. They must articulate their thoughts about the concepts they are putting in the precourse maps as well as their prior experiences with these concepts and why they want to include them. They should also try to articulate the reason for the changes between the precourse and postcourse concepts maps. If learner teachers are allowed to articulate the concepts in discussions at the beginning and end of the course, they will have more opportunities for critical reflection during the methods course.

The process of having preservice teachers make and discuss concept maps has allowed me to gauge their conceptual changes as a result of taking the reading methods course. The information gathered from the concept maps and follow-up interviews might also be useful to inform other teacher educators in Asia (and other regions) about how preservice English language teachers internalize the curriculum in TESOL methods courses. Furthermore, concept mapping (precourse and postcourse) is useful because it encourages the teacher and students to reflect before and after the course. In the context of my courses in Singapore, I asked preservice teachers to construct concept maps so they could then become more aware of their understanding of the course material and thus take more charge of their own meaning-making about teaching English reading in Singapore.

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