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Learning Effective Instructional Strategies in a Workshop Context: Lessons about Conceptual Change from Chinese English Teachers

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Reforming teaching necessitates that teachers learn to use effective teaching strategies. To help teachers adopt these strategies, conceptual discrepancies between teachers' initial teaching beliefs and alternative ideas need to be created so that they will be able to adopt new ideas and test them in their classrooms. Examining this assumption, this study draws on surveys, reflections, and written assignments from 32 Chinese English teachers in a three-week workshop as they learned eight teaching strategies ranging from behaviorist to constructivist-based strategies. Findings indicate that although most participants shifted from a behaviorist-based approach--direct instruction, only a few were able to adopt constructivist-based methods conceptually. Contrived curricula and teaching and limited experiences prevented most participants from embracing the strategy that was strikingly different in conception from those with which they were familiar.

Changing teachers' beliefs about knowledge, learning, and teaching is assumed to be important in helping them develop effective teaching strategies encouraged by educational reformers (Darling-Hammond, 1995; Kennedy, 1991b). This assumption is based on two lines of research in Western teacher education literature. First, although demonstrated through various teacher classroom behaviors (Brophy, 1989), effective teaching is largely shaped by the kinds of dispositions and thoughts that teachers hold for their teaching (Clark & Lampert, 1986; Richardson, 1996). As such, learning to teach using effective teaching strategies necessitates the initial development of relevant dispositions and ideas.

Second, the dispositions and ideas underlying teaching strategies advocated in teaching reforms are often different from prevailing teaching practices (Feiman-Nemser, 2001; Wang & Odell, 2002). Thus, learning to use new teaching strategies for many teachers means an inadvertent process of conceptual change about learning and teaching rather than a direct formation of certain teaching behaviors.

However, changing teachers' existing conceptions towards new ways of teaching in short and intense workshops situations have shown to be difficult, if not impossible, in U.S. school contexts (McDiarmid, 1991; Richardson, 1996; Wideen, Mayer-Smith, & Moon, 1998). Drawing on data using surveys, daily reflections, and written documents from a group of elementary and secondary Chinese English teachers, this study attempts to describe the factors that influence and limit their conceptual change and acquisition of effective teaching strategies in a workshop context. Using this as a base, the study further explores the strengths and limitations of popular theories and assumptions in explaining teachers' conceptual change.

Conceptual Discrepancies, Experiences of Teaching, and Conceptual Change

How teachers change their conceptions and develop alternative ideas to teaching is an important question that requires a clear understanding in order to help teachers develop effective teaching strategies. Emerging from the Western literature on teacher, learning is a popular assumption about the process of teachers' conceptual change based on a constructivist perspective (Posner, Strike, Hewson, & Gertzog, 1982; von Glasersfeld, 1995). From this perspective, the development of teachers' beliefs is seen as a process of construction and reconstruction of ideas and the relationships among them (Kennedy, 1991a; Richardson, 1996). In this process, teachers' existing conceptions of teaching plays an important role in influencing what and how they develop new ideas through actively filtering and assimilating new ideas in order to fit their pre-existing conceptions . Unless teachers are evoked to question their own ideas of teaching as they confront alternative ideas of teaching, a conceptual

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discrepancy cannot be created for them to be open to reconstruct existing ideas and form new ideas of teaching. Further, this perspective argues that such conceptual transformations are more likely to occur if the following three situations exist. First, teachers need to be willing or open to change their ideas to form alternative conceptions (Wang & Odell, 2003). Such willingness or openness is often related to their epistemological beliefs about the conditions under which their existing ideas and model is perceived as problematic (Cooney, 2001). Second, alternative teaching strategies need to be vivid, concrete, and contain sufficient details that match credible and believable examples in their minds (Lampert & Ball, 1998). Third, their exposure to alternative models need to follow a process that enables them to move back and forth between their pre-existing and alternative strategies accompanied by constant reflection, analysis, and questioning (Kennedy, 1991a).

However, research on teachers' conceptual change as summarized by a number of literature reviews (Kagan, 1992; Richardson, 1996; Wildman, Niles, Magliaro, & McLaughlin, 1989) suggests that teachers' conceptual change in workshop and classroom contexts seems to be extremely difficult, if not impossible, despite the popularity of such training approaches. This holds true even if the instruction in these contexts is designed with a strong focus on creating conceptual discrepancies (Richardson, 1997). Several explanations are proposed to interpret this difficulty.

The first stems from a personal historical interpretation that attributes the lack of conceptual change to the resiliency of teachers' existing teaching beliefs that have been entrenched through years of observations and experiences in teaching. These observations and experiences often lead them to believe that they are already knowledgeable about teaching and have little to learn (Ball & McDiarmid, 1989; Kennedy, 1991a; Lortie, 1975). Consequently, short-term workshops are not able to generate a long, persistent, and strong influence to challenge teachers' existing conceptions of teaching based on their years of personal history relevant to teaching (Darling-Hammond & Cobb, 1996; Zeichner & Gore, 1990; Zeichner & Hoeft, 1996). However, this interpretation fails to explain why experienced teachers who have longer and more exposure to traditional ways of teaching are more likely to change their conceptions of teaching in workshops settings than new teachers who have no or little teaching experiences (Richardson, 1996).

The second is a contextual interpretation that ascribes the difficulty of conceptual change to the ultimate need for teachers to maintain a balance among their commitments to various contextual factors with competing goals, of which the quality of student academic learning is only one (Cusick, 1983; Feiman-Nemser & Floden, 1986; Powell, Farrar, & Cohen, 1985). From this view, although alternative teaching strategies can be potentially useful in improving student academic learning, teachers still perceive these strategies as unrealistic for implementation as they contend with and pursue other conflicting commitments in their teaching context (Lipsky, 1980). As a result, changing their conceptions and practice of teaching is difficult to accomplish through short and intense coursework and training in workshop contexts. A more ecological approach to reforming teaching is necessary that would marry teachers' conceptions of teaching with a comprehensive reform and consideration of their teaching contexts (Hargreaves, 1994; Little, 1999; Wideen et al., 1998). However, this explanation does not satisfactorily account for findings that demonstrate that even under similar contexts of teaching and learning to teach, some teachers are more likely to change and adapt than others (Wang & Odell, 2002).

The third is a developmental interpretation which suggests that teachers follow a sequential stage of development in which the progression from one stage to the next relies heavily on individual teacher's accumulation of teaching experiences (Fullan, 1991; Kagan, 1992). This interpretation is consistent with research findings that changing the conceptions of novice teachers appears to more difficult than that of more experienced teachers in the workshop context (Richardson, 1996). From this perspective, novice teachers are generally more concerned about establishing themselves as teachers (Kagan, 1992) and lack the necessary teaching experiences as a base to examine their own teaching ideas and determine the usefulness of alternative strategies (Richardson, 1996) leading to more difficulties in changing ideas. In contrast, more experienced teachers are likely to be in a developmental stage possessing the necessary foundational teaching experiences for improving and broadening teaching strategies (Kagan, 1992). This experience allows experienced teachers to examine their own

ideas of teaching and conduct a mental test of alternative teaching strategies (Richardson, 1996). However, verification of this assumption remains open in the literature. In addition, even if experiences are shown to be necessary, it is still unclear as to the kinds and levels of experiences and the nature and type of contexts required for teachers to change conceptually in order to develop alternative teaching approaches.

This study not only explores the influences of workshop on teachers' conception and application of teaching strategies but also attempts to develop a deeper understanding of the role of teachers' experience, their openness to learn, and their school contexts in their conceptual change process. We believe that these explorations and understandings will help build the knowledge base upon which policy makers and teacher educators can develop effective policy initiatives and programs to better support teacher professional development, improve their teaching, and the quality of student learning.

Contexts, Data, and Analysis of the Study

Program and course contexts

Data for this study were drawn from 32 elementary and secondary Chinese English teachers who were part of a total of 60 participants in a three-week summer workshop in a newly developed suburban area in a large Southern city in China[1]. In the program, four U.S. professors offered four courses to the Chinese English teacher participants. Each course focused on popular topics found in Western teaching reform literature that were unfamiliar to the participants and created opportunities for conceptual discrepant experiences (Kennedy, 1991b). The participants participated in whole-day classes that extended from Monday to Friday for a three-week period, which mirrors many Western professional workshop environments (Richardson, 1994).

The first course engaged the participants in writing that allowed them to express their own ideas and provided reflective opportunities on their own writing. The second course focused on the theory of multiple intelligences and its application in developing curriculum. The third course emphasized the theories of second language acquisition and their applications in teaching English to foreign language learners. The last course, from which the data of this study were drawn, focused on various teaching strategies useful for instruction in various disciplines and different contexts of teaching.

The topics in the last course were designed to explore the research questions in this study. The course content included two theories of learning and eight relevant strategies. The first theory was a constructivist perspective on knowledge and learning (von Glasersfeld, 1987; 1995), which emphasized learning as actively constructing and reconstructing one's understanding of the connections among ideas, concepts, and theories through assimilation and accommodation as one interacts with his/her social and physical environment. This learning theory constitutes one of the most important theoretical bases for various teaching reforms in the western world (Wang & Odell, 2002). The second learning theory, a behaviorist perspective of knowledge and learning (Skinner, 1974), stressed learning as acquiring different kinds of concrete and observable behaviors ranging from simple to complex through stimulation, response, and reinforcement. This learning theory is often seen as one of the most important theoretical bases for the traditional ways of teaching in the western literature of teaching (Wang & Odell, 2002).

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[1] Pseudonyms are used in this paper to represent the participants, their schools, school districts, and cities for the protection of human subjects purposes in the research.

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The eight teaching strategies offered in this course were divided into three groups based on their levels of adherence to either constructivist and/or behaviorist perspective of knowledge and learning. The first group included three constructivist strategies: *group investigatio*n, *inductive thinking*, and *Synectics*. Each strategy focused on the engagement of participants in (1) constructing solutions to authentic problems based on available facts, concepts, and information (group investigation); (2) developing conceptual categorization, relationship, and theories by working with specific but unorganized information and artifacts (inductive thinking); or (3) creating new ideas through connecting unrelated information, ideas, and artifacts (Synectics) independently and collaboratively (Joyce, Weil, & Calhoun, 2004). When using these strategies, the instructor functioned only as a facilitator, questioner, and organizer.

The second group involved two behaviorist strategies, *simulation* and *direct instruction*. These strategies fostered participants' development of concrete and observable behaviors through either: (1) instructors' demonstration, structured participant practice, and appropriate and immediate feedback (*direct instruction*) or (2) engaging participants in simulations to develop particular skills that could be used in real-life contexts through constant practice and feedback (*simulation*) (Joyce et al., 2004). In these processes, the role of instructor was the source of information, organizer of practice, and the judge of participants' performance.

The third group consisted of *concept attainment, picture-word inductive* strategies, and *advanced organizers* (Joyce et al., 2004), which reflect elements of both constructivist and behaviorist ideas of knowledge and learning. For example, the first two strategies focused on participants' own construction, reconstruction, and demonstration of concepts (*concept attainment*) or their own understanding of pictures, and meaning of words, sentences, and paragraphs (*picture-word inductive*) as suggested by constructivist ideas of learning (von Glasersfeld, 1987). However, the results of learning through these strategies are isolated concepts, words, sentences, and paragraphs, which is more consistent with behaviorist notions of knowledge (Skinner, 1968). Contrasting these first two strategies, the use of *advanced organizers* stressed the structure and connections among different facts, concepts, and theories which are more aligned to a constructivist perspective of knowledge (von Glasersfeld, 1995). However, in using the strategy, the instructor's role involved demonstrating, reinforcing information for participant internalization, and assessing participant mastery of the knowledge structure which reflect a more behaviorist perspective of learning (Skinner, 1968).

The range of theories and strategies offered us important guidelines and opportunities to observe the locus of participants' thinking about teaching strategies and their intentions to apply them in their classrooms from the beginning to the end of this workshop. It also allowed us to examine whether their changes throughout the instructional process were aligned with expectations advanced in the teacher conceptual change literature (Kennedy, 1991a).

Each class session in this course was designed to mirror many Western professional workshop situations (Richardson, 1994). Participants read and developed a personal understanding about a theory or strategy before each class session. Each class session began with the participants watching a video or reading a case that reflected a particular theory or teaching strategy and discussing the connections between their readings, experiences, and cases, with the strategies. In this way, participants were expected to develop both a theoretical understanding and a vivid image of the theory or strategy. After the participants engaged in an activity that allowed them practical experience with the strategy, they discussed their critiques and analysis of their learning experiences. In the end, the participants worked individually and collaboratively to generate ideas about possible problems, challenges, and implementation of the theory and/or strategy into their own classrooms.

Participants

Chinese English teachers were selected to explore the research questions based primarily on the following considerations. Historically, English had been seen as an academic subject in China with a strong focus on grammar, reading, and translations and taught primarily through direct instruction approaches typically featuring teacher demonstrations followed by student practice and memorization

(Yang, 2000). Propitiously situated, the participants possessed little exposure to constructivist-based strategies which created possible conceptual discrepancy.

Like their colleagues teaching other subjects, the participants worked under contrived contexts of curricula and teaching which stressed accountability using formal tests (Wang & Paine, 2003). This context is not only reminiscent of the emerging accountability environment in the U.S., but also it is often seen as a counter to the development of teachers' autonomy and confidence in fostering curriculum and methods with a constructivist orientation (Cochran-Smith, 2001; Hargreaves & Dawe, 1990; Helsby & McCulloch, 1996). Thus, their teaching conditions provided us the opportunity to explore and verify possible contextual influences on difficulties of participants' conceptual change.

Our usable data were collected from 32 of 60 participants in the summer workshop, among whom, 15 were middle and 17 were elementary school English teachers with only three male participants. The participants' age ranged from 24 to 36 years with a mean of 30.09 years. According to the Chinese coordinator of the summer program, the gender and age distribution of these participants represented the general English teacher population in Chinese metropolitan schools. Participants' average formal English teaching education was 3.9 years which typically included three years of normal school for most elementary participants and four years of college or university English teacher education for most secondary participants. The average length of English teaching for this group was 8.03 years, ranging from 2 to 16 years (see Table 1). This participant background information offered us a chance to explore the influence of workshop influences on teachers' conceptual change with a relatively experienced group of participants.

Table 1
Demographics of Participants

Teachers	Gender		Mean Age (years)	Mean Years of Teacher Preparation	Mean Years of Teaching Experience
	Males	Females			
Middle School (*n*=15)	1	14	29.7	4.267	7.47
Elementary (*n*=17)	2	15	30.5	3.647	8.53
Total (N=32)	3	29	30.1	3.938	8.03

Common to teacher training workshops in the district, the participants were selected by their schools with the assumption that the workshops emphasized English language learning rather than pedagogical preparation. Although workshop attendance accounted for partial professional development credits, the quality of their participation in the workshop had little influence on whether course credit would be granted. As a result, any threats to evaluative or course instructor effects on their learning outcome was largely eliminated since participants were able to freely discuss their ideas, experiences, and future use of teaching strategies.

Data collection and analysis

To explore our research question, we used a mixed-method research design, which combined both qualitative and quantitative techniques for us to examine the core issues of this study using different sources of information from our participants (Brewer & Hunter, 1989; Johnson & Christensen, 2004; Johnson & Onwuegbuzie, 2004; Tashakkori & Teddlie, 1998, 2003). These multiple sources of information are crucial for conducting a more complete analysis of participants'

conception and intention to use the new teaching strategies and offered empirical evidence to verify important theoretical assumptions regarding teachers' conceptual changes.

Aligned to a mixed-method design (Johnson & Onwuegbuzie, 2004), data for this study combined quantitative and qualitative sources of information including the following kinds from each participant. First, an initial take-home survey with open-ended questions was administered on the first day of the workshop (see Appendix A). This survey was designed to identify the participants' personal, teaching, and educational background as well as their initial ideas about good English students and attitudes towards the workshop. Second, a story that participants wrote on the first day of the workshop about how they would design and teach a lesson on a particular topic represented their most commonly used teaching strategy. This data was then categorized as their initial teaching strategy in this study. Third, daily reflective entries by each participant at the end of each day addressed what and how they learned from any of the four courses offered. This data was used to triangulate their initial and final strategies and to identify any possible explanations or evidence of conceptual change. Lastly, their final assignment required them to determine their favorite teaching strategy and identify its assumptions, processes, and reasons. They were also asked to design a lesson using their favorite strategy on any of the topics found in the textbook that they intended to use in the upcoming semester. This data was used to compare their initial and final strategies learning during the course in order to identify the conceptual changes as well as the direction and quality of their conceptual change in light of the theoretical orientation framework.

Data analysis was conducted in the following ways. First, the initial survey for each participant was coded for emerging themes (Strauss & Corbin, 1990). These themes were categorized to identify English training experiences, the participants' ideas of good English learners, and their expectations for training in order to determine their aim and level of willingness and openness to learning in the course (Cooney, 2001; Wang & Odell, 2003). The results from each participant were compared across all the participants to establish general patterns for the group. Each participant's story describing their typical teaching strategy was coded in a similar manner to identify his or her initial teaching strategies followed by a comparative analysis across all the participants to establish the patterns of initial teaching strategy in the group.

Daily reflections from each participant were coded in a similar way to capture the participant's thinking about the theory or strategy that he or she learned during a particular day. The results of this coding were compared with the following five standards developed based on the teachers' conceptual change literature (Kennedy, 1991a; Lampert & Ball, 1998) in order to determine the extent to which each participant learned the theory or teaching strategy. These standards were as follows: (1) whether the theory or strategy was addressed in the reflection; (2) whether it was positively addressed; (3) whether it was negatively addressed; (4) whether a connection was made between the theory or strategy taught and his or her own past teaching experience; and (5) whether there was a discussion about using the theory or strategy in the future. A comparative analysis was then conducted to identify any patterns in each of the reflections across all the participants.

In the end, each of their final assignments was coded to capture their understanding and future use of their favorite teaching strategy. This analysis was conducted based on four standards: (1) what was his/her favorite strategy; (2) whether he/she was able to fully understand it; (3) whether he/she was able to use it for teaching in general; or (4) whether he/she was able to use it specifically in relation to a particular topic in the textbook. A comparative analysis was conducted to establish any patterns in the final assignments across all the participants. The findings from this analysis were used to compare, first, with findings from the teaching strategy story to identify any evidence of conceptual change in their thinking about a teaching strategy and, then, with the findings from their initial survey and daily reflections analyses to capture explanations for any conceptual change.

## Participants' Conceptual Change about the Use of Teaching Strategies

Initial attitude and strategy of the participants

Three specific results emerged from the analyses of participants' initial surveys and the story lesson designs in which their typical teaching strategies were described. These results are shown in Figure 1, which suggested the following:

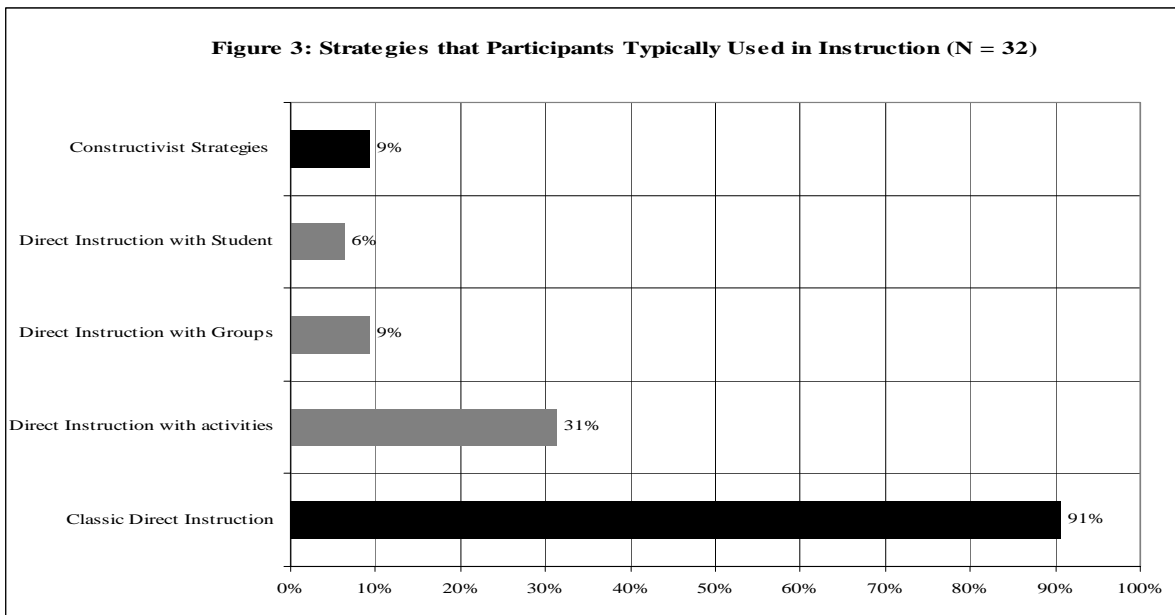Figure 1: Participants' Ideas of A Good English Learner (N = 32)
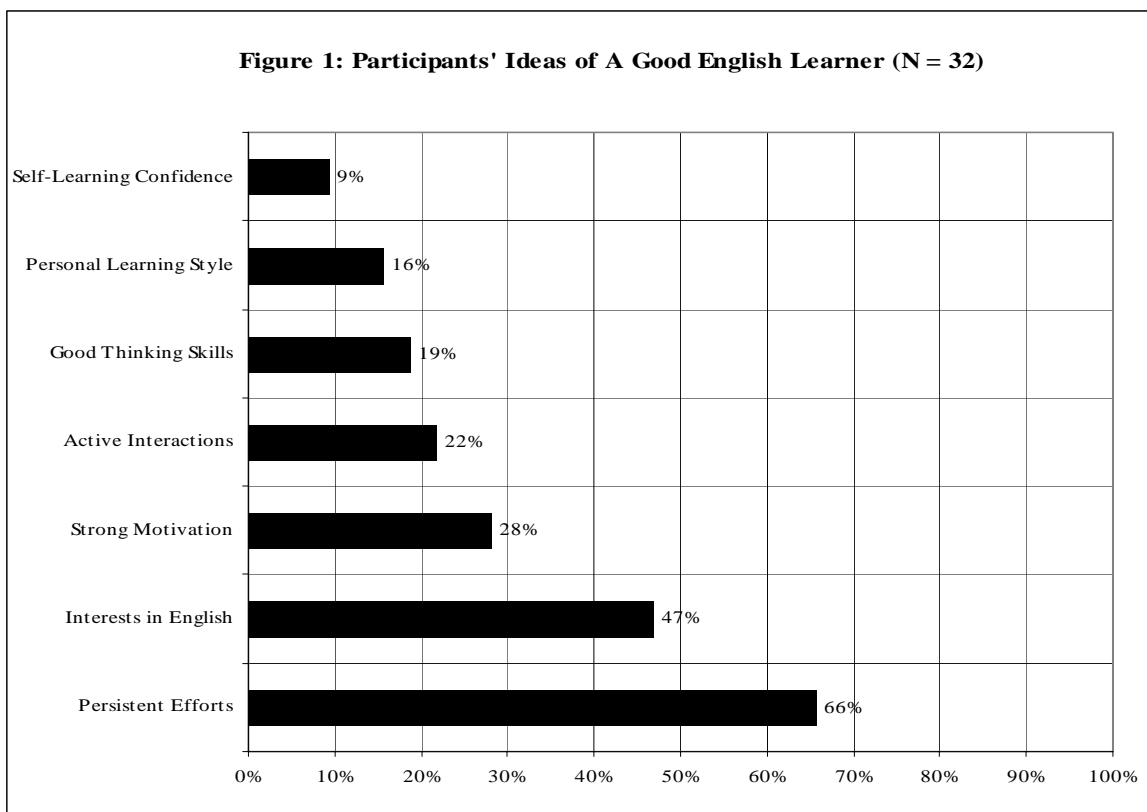
First, the participants perceived the characteristics of a good English learner to possess good effort, interest, motivation, active, confident, personal style of learning, and constantly reflecting. Among them, the characteristics that most participants agreed upon were: (1) learners' efforts in learning (66% of the participants), (2) learners' interests in learning (47%), and (3) a strong motivation to learn (28%). In contrast, learner's self-confidence in learning, their own style of learning, and flexible thinking were only shared by 9%, 16%, and 19% of the participants, respectively.

Second, as seen in Figure 2, their expectations for the workshop included learning about English, U.S. culture and education, educational theories, teaching strategies, classroom management, reflections on teaching and learning, connections of other subject content to English teaching, curriculum development, and design assessment. Among these, two expectations were prominent: learning English skills (63%) and acquiring teaching strategies (81%). These patterns demonstrated the participants' readiness to learn effective teaching strategies.

Figure 2: Participants' Learning Expectations (N = 32)
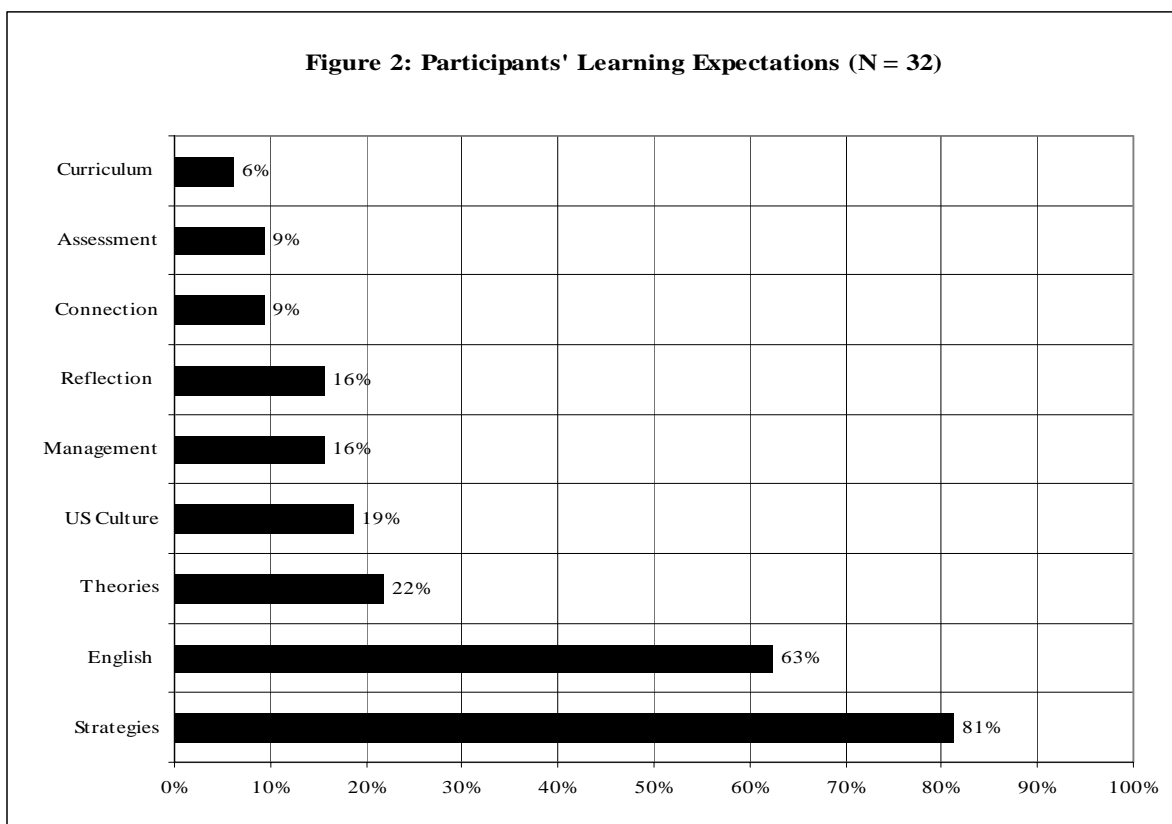
Third, the analysis of their stories of lesson descriptions showed that all but three of the participants (91%) used the direct instruction strategy. As shown in Figure 3, 46% of the participants used modified versions of direct instruction. For example, instead of using a repetitive practice component found after teacher demonstration seen in the classic form of direct instruction (Rosenshine, 1985), some (31%, especially the elementary participants) used activities as a way to engage students in practice and some (9%) used group work as a way to help students practice after teacher demonstration. Some participants (6%) also used good students as instructors to impart knowledge to other students. Only three participants (9%) each used the inductive thinking, picture-word inductive, or concept attainment strategy. As described by one secondary English teacher participant, Carrie viewed the direct instruction teaching strategy as:
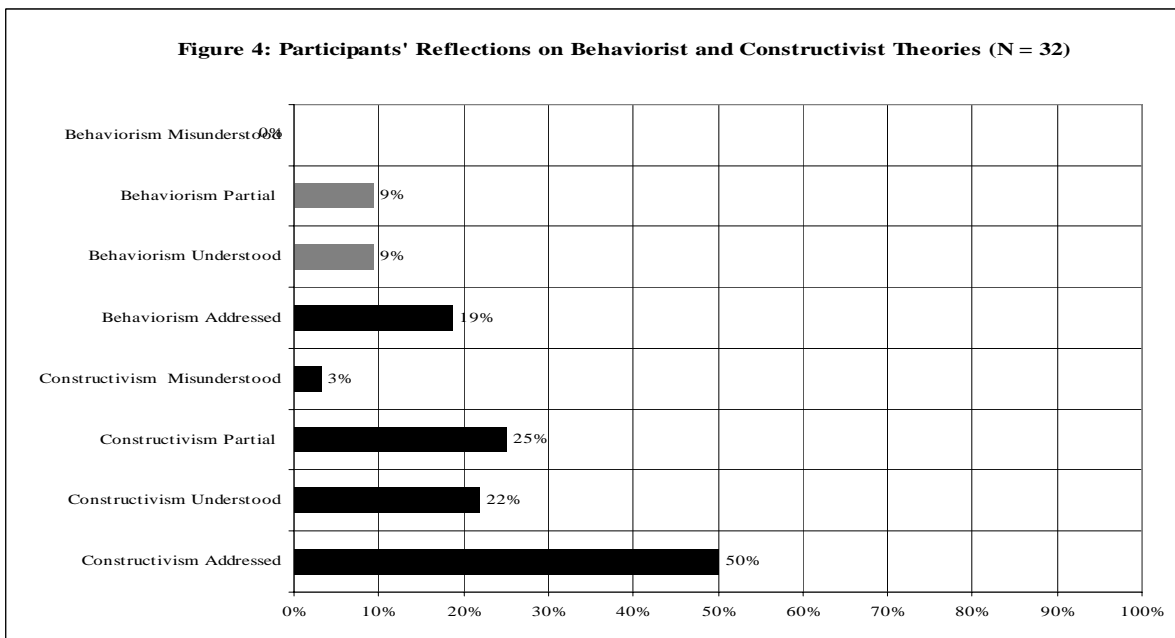
> As for my teaching strategy, I can sum it up to you as three steps, that is presentation, practice, and production. At the beginning of each lesson, I go over the learned knowledge with students, after that, a warm-up activity is developed that led to the new lesson. Then, the new knowledge, such as new words and phrases, is presented on the blackboard to students. After presentation, an audiotape is played for students to listen to the new words and phrases and ground drills are followed. Then, the pair works together to practice. After a series of practice, scenes are set for students to act roles, make conversations, or monologue. In such a way, students are given chances to use what they learned.

Figure 3: Strategies that Participants Typically Used in Instruction (N = 32)

Strategy	Percentage
Constructivist Strategies	9%
Direct Instruction with Student	6%
Direct Instruction with Groups	9%
Direct Instruction with activities	31%
Classic Direct Instruction	91%

In short, the participants in this study entered the course with a widely shared image of a good English learner as one who was committed to learning, interested in learning, and more importantly, made tireless effort in practicing what they learned. Most of the participants were prepared to learn different teaching strategies despite the fact that the majority relied on direct instruction as their primary approach to teaching English.

Participants' perceptions on theoretical orientations

Formal instruction started with the study of two theories of knowledge and learning in two sessions in order to establish the basis for later discussions, analysis, and critiques of each teaching strategy in the course. The analysis of the participants' reflections on the constructivist and behaviorist perspectives of learning and knowledge lead to the following findings as shown in Figure 4.

Figure 4: Participants' Reflections on Behaviorist and Constructivist Theories (N = 32)

Category	Percentage
Behaviorism Misunderstood	0%
Behaviorism Partial	9%
Behaviorism Understood	9%
Behaviorism Addressed	19%
Constructivism Misunderstood	3%
Constructivism Partial	25%
Constructivism Understood	22%
Constructivism Addressed	50%

First, fewer than half of the participants' post-lesson reflections centered on learning constructivist or behaviorist perspective of knowledge and learning, although more participants commented on constructivists than behaviorist ideas. For example, about 50% of the total responses reflected constructivist ideas compared to only 19% of the participants who mentioned behaviorist ideas as shown in Figure 4.

Second, as for the quality of their understanding of the two theoretical perspectives, among those participants who responded to each theoretical perspective, about half of them developed a limited understanding or misunderstandings of each perspective. For example, of the total 19% who commented on the behaviorist perspective, only 9% of the responses indicated partial understanding of the ideas. A total of 50% of the participants addressed a constructivist perspective but of this total, 28% of the responses indicated a partial understanding or misunderstandings of the concepts.

These findings together suggest that participants were either not interested or had difficulties understanding both the constructivist and behaviorist perspective of knowledge and learning. A deep understanding of these theoretical perspectives were challenging for classroom teachers although they were engaged in watching videos that showed concrete examples of the theories, participated in discussion of comparisons between the two theoretical perspectives, and critiqued these ideas using their own experiences and readings from the course.

Participants' Perspective on different kinds of teaching strategies

The participants' responses to constructivist-based teaching strategies

The participants' responses to the three constructivist-based teaching strategies, *Synectics*, *group investigations*, and *inductive thinking* models, showed the following patterns. First, none of the participants responded to the *inductive thinking* strategy while about half of the participants responded to either *Synectics* or *group investigation* strategies. As revealed in Figure 5, only 50% of the responses were coded for *Synectics* strategy while 38% mentioned *group investigation* strategy.

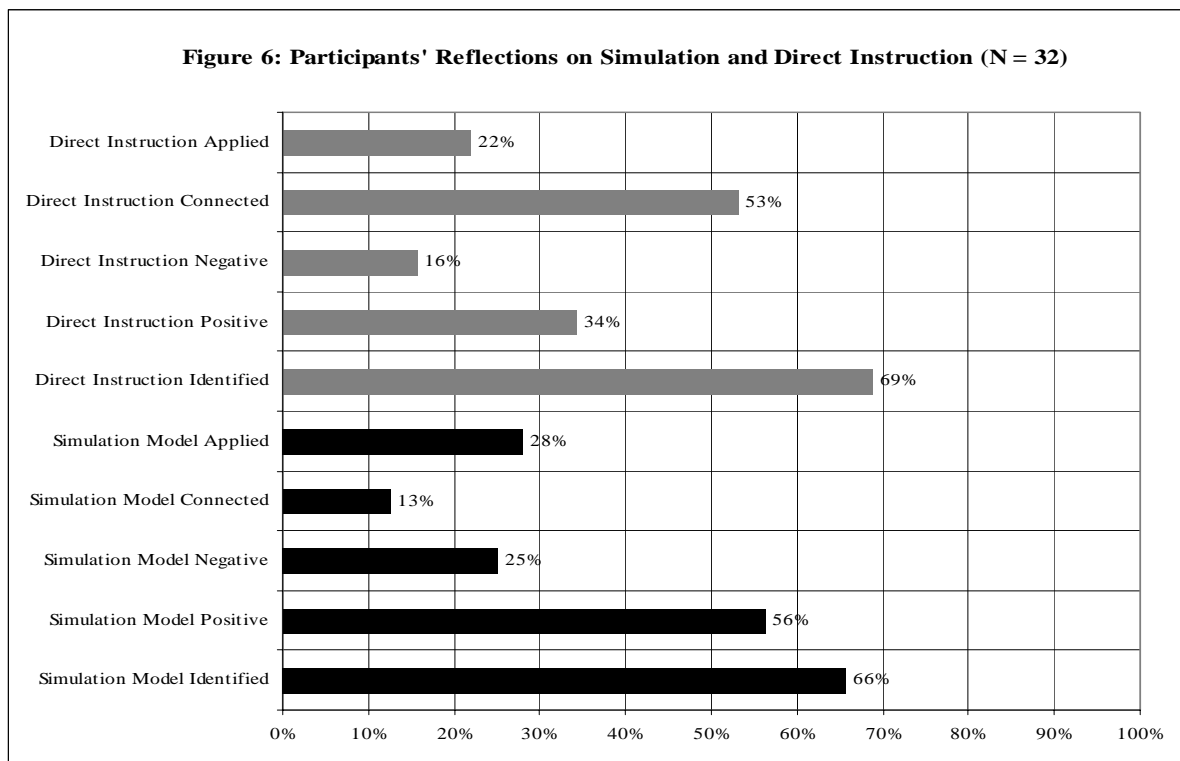Figure 5: Participants' Reflections on Synectics and Group Investigation (N = 32)
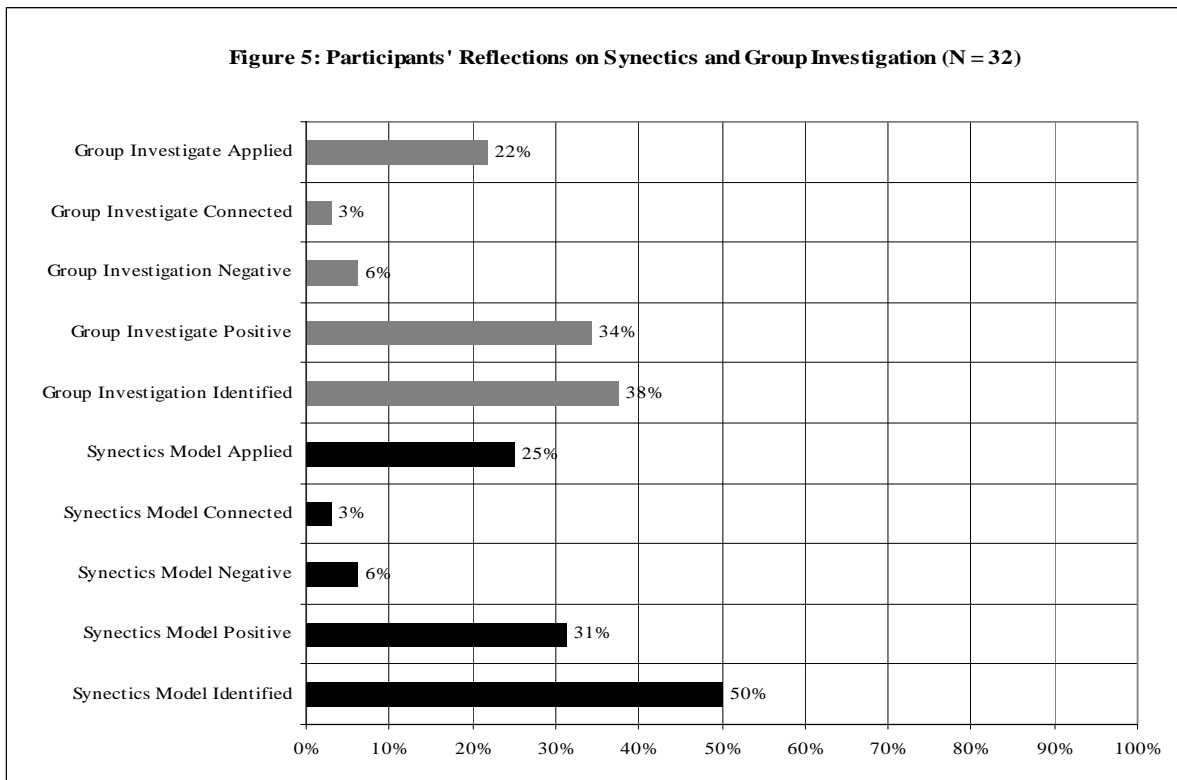
Second, also seen in Figure 5, most of the responses to the *Synectics* (31%) and *group investigation* (50%) models were positive. A case in point was Kara, an elementary teacher participant, who clearly expressed a positive attitude toward the group investigation strategy in her reflection:

> The professor taught us "teacher can help create problem situation in classroom." I think it is a good way to create problem situation for pupils learning. On the other hand, I think it's good for pupils to create problem situation by themselves, but not only by teacher. Let pupils talk about a topic and create problems about it. Let pupils be both participant and observer in inquiry.

Third, most of participants were unable to critique or connect either *Synectics* or *group investigation* strategies to their own experiences of teaching and learning. Only 6% of the responses were negative about the strategies while 3% of their responses connected the two strategies to their experiences in teaching. Fourth, only 25% of participants reported an intention to use *Synectics* and 22% intended to use *group investigation* in their future instruction.

Response to behaviorist-based teaching strategies

The participants' response to the two behaviorist-based teaching strategies, *simulation* and *direct instruction*, demonstrated the following patterns, as exhibited in Figure 6:

Figure 6: Participants' Reflections on Simulation and Direct Instruction (N = 32)

| Category	Value
Direct Instruction Applied	22%
Direct Instruction Connected	53%
Direct Instruction Negative	16%
Direct Instruction Positive	34%
Direct Instruction Identified	69%
Simulation Model Applied	28%
Simulation Model Connected	13%
Simulation Model Negative	25%
Simulation Model Positive	56%
Simulation Model Identified	66%

First, similar to the findings of constructivist-based teaching strategies, about 69% of the responses alluded to direct instruction and 66% addressed simulation. Second, *simulation* received more positive responses than *direct instruction* even though most participants were more familiar with *direct instruction*. For example, more than half of the responses (56%) to the *simulation* strategy were complimentary and positive while the positive responses to *direct instruction* was 34% Third, most participants were unable to critique either the *direct instruction* or *simulation* strategy. As seen in Figure 6, only 16% of the responses to *direct instruction* and 25% to simulations were negative. Fourth, 13% of them were able to connect *simulations* and 53% were able to connect *direct instruction* to their teaching experiences. The following is an example of how Participant 12, Amy, an elementary teacher connected direct instruction to her own teaching experience in her reflection:

The professor's direct instruction model consists of five phases of activity: orientation, presentation, structured practice, guided practice, and independent practice. This model, I also use it in our English class, but I never designed different questions for my students. Never according to the level of students--best students, better students, good students, poor students-- to ask my question…After listening to the professor, I know I should effectively diagnosis my students' level.

This finding may be explained by the participants' familiarity with *direct instruction* since the majority proclaimed this to be their dominant teaching strategy upon entering the summer workshop. Fifth, about 22% of the participants intended to use *direct instruction* while 28% would use *simulation* in the future, which resembled the findings about their intentions to use constructivist-based teaching strategies.

Responses to the teaching strategies with both constructivist and behaviorist components

The participants' responses to the three teaching strategies with both constructivist and behaviorist components, *concept attainment*, *picture-word inductive* strategy, and *advanced organizers*, were somewhat different from those to the constructivist or behaviorist strategies. These responses showed the following patterns as displayed in Figure 7:

Figure 7: Participants' Reflections on Advanced Organizer, Concept Attainment, and Picture-Word Inductive (N = 32)
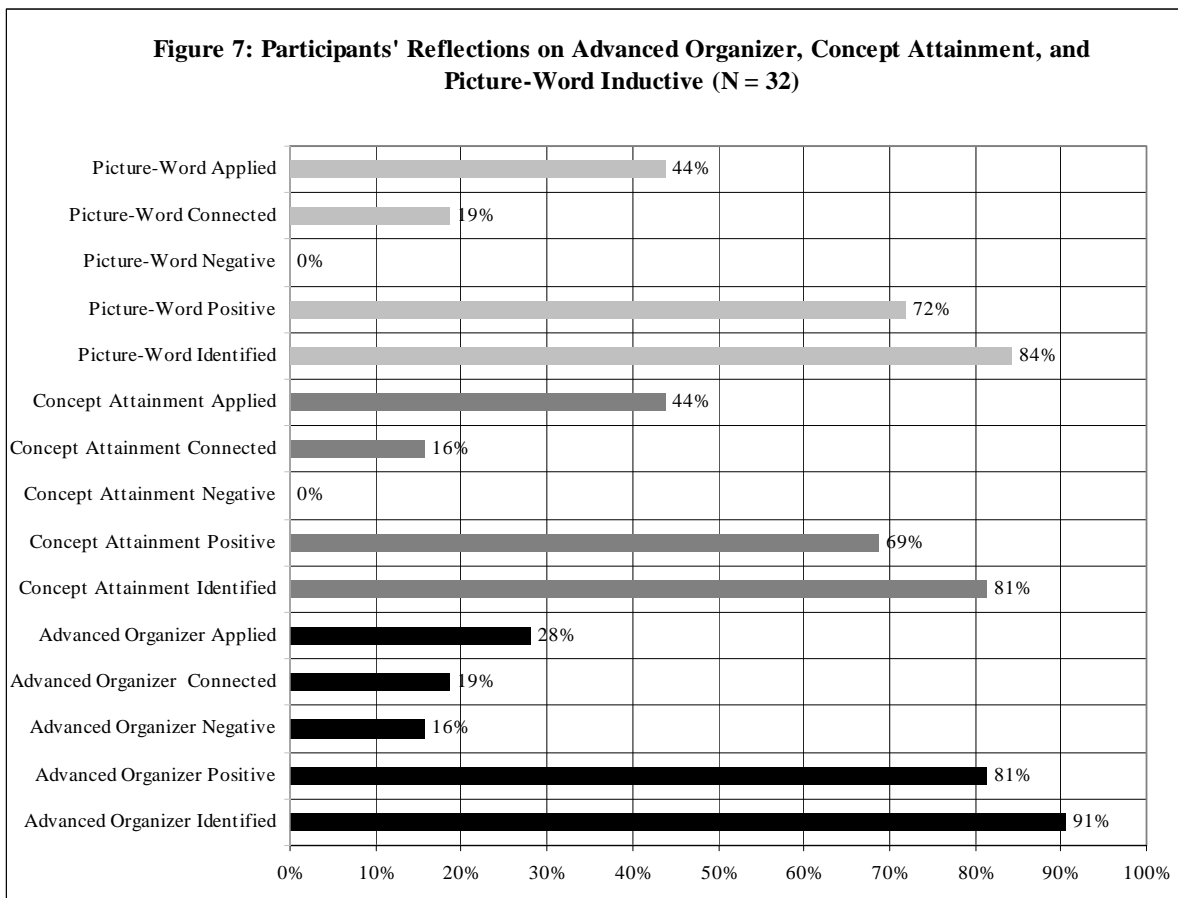
First, most participants responded to the three strategies, *advanced organizer*, *picture-word inductive*, and *concept attainment*, with 91%, 81%, and 84% respectively. Second, there were far more complimentary and positive responses to the three teaching strategies containing both constructivist and behaviorist components than to those based solely on either constructivist or behaviorist strategies. For example, about 69%, 72%, and 81% of the responses to *concept attainment*, *picture-word inductive*, and *advanced organizer* teaching strategies, respectively, were positive. Third, most

participants were unable to critique and connect *concept attainment*, *picture-word inductive*, and *advanced organizer* strategies to their teaching experiences. For example, there were no negative responses to *concept attainment* and *picture-word inductive* strategies and only 16% of the response to *advanced organizers* were negative. Their responses connecting *concept attainment*, *picture-word inductive*, and *advanced organizer* strategies to their own teaching experiences were only16%, 19%, and 19%, respectively. Fourth, far more participants showed future intentions to use the three strategies with both constructivist and behaviorist components than those based solely on either constructivist or behaviorist perspectives. For instance, about 44% of the participants would use *picture-word* or *concept attainment* strategies while 28% would use *advanced organizers* in the future. Such responses were clearly shown in the following reflection on concept attainment by Participant 10, Cathy, an elementary teacher:

> The steps of concept attainment taught by the professor are useful. I reflect and understand why my students made the same grammar mistake again and again because they didn't understand the concept. When the teacher told them the concept, they listened passively and didn't think about it. If I use the concept attainment in my future teaching, I think the students will be more active in learning the concepts. They will be interested in testing the hypothesis.
> After their hypothesis is confirmed, they will have a sense of success and they will be smarter.

In sum, the findings in this section together showed that more participants favored strategies with both constructivist and behaviorist components in their future teaching. Their responses were far more positive than those for strategies based solely on either a constructivist or a behaviorist perspective. The difference between the responses to the teaching strategies based on the constructivist and behaviorist-only perspectives was not substantial with the exception of participants being more likely to critique and connect the behaviorist-based strategies to their current practices compared to constructivist-based strategies.

**Participants' favorite strategy and its future use**

The analysis of the participants' final assignments also revealed several interesting patterns. First, by the end of course, more than half of the participants favored at least one of the three teaching strategies with both constructivist and behaviorist components. For example, Figure 8 showed that 31%, 16%, and 6% of the total participants, correspondingly, chose *concept attainment*, *picture-word inductive*, and *advanced organizer* strategies as their favorite teaching strategy, which produced a total of 53% of the participants.

Figure 8: Participants' Favorite Strategy (N = 32)
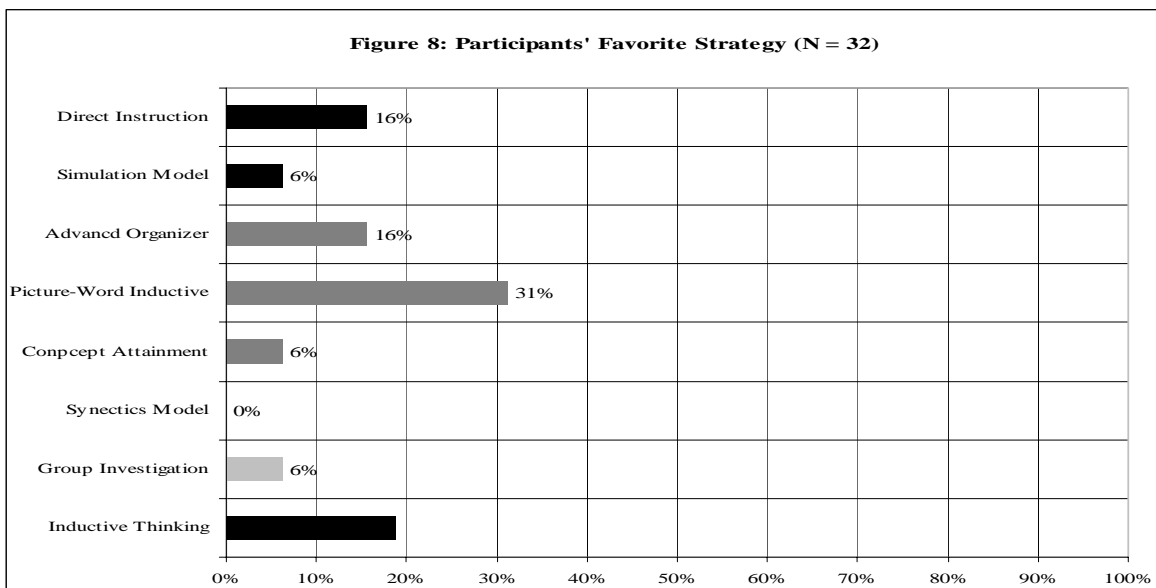
Second, almost equal numbers of the participants chose either behaviorist or constructivist-based teaching strategies. For example, about 22% favored behaviorist-based teaching strategies while 25% selected constructivist-oriented strategies. Third, the least favorite teaching strategies were *simulation, concept attainment*, *group investigation*, and *Synectics*, with only 0-6% of the participants showing these preferences.

As for the quality of the participants' understanding about their favorite teaching strategy and how well they were able to implement it in their particular teaching contexts, the analysis suggested the following:

First, most (75%) were able to develop a thorough understanding of their favorite teaching strategy while 22% still showed misconceptions and misunderstandings, as shown in Figure 9. Misconceptions appear to be more related to the strategies with constructivist orientations or components.

Figure 9: Quality of Participants' Understanding in Implmenting their Favorite Strategy (N = 32)
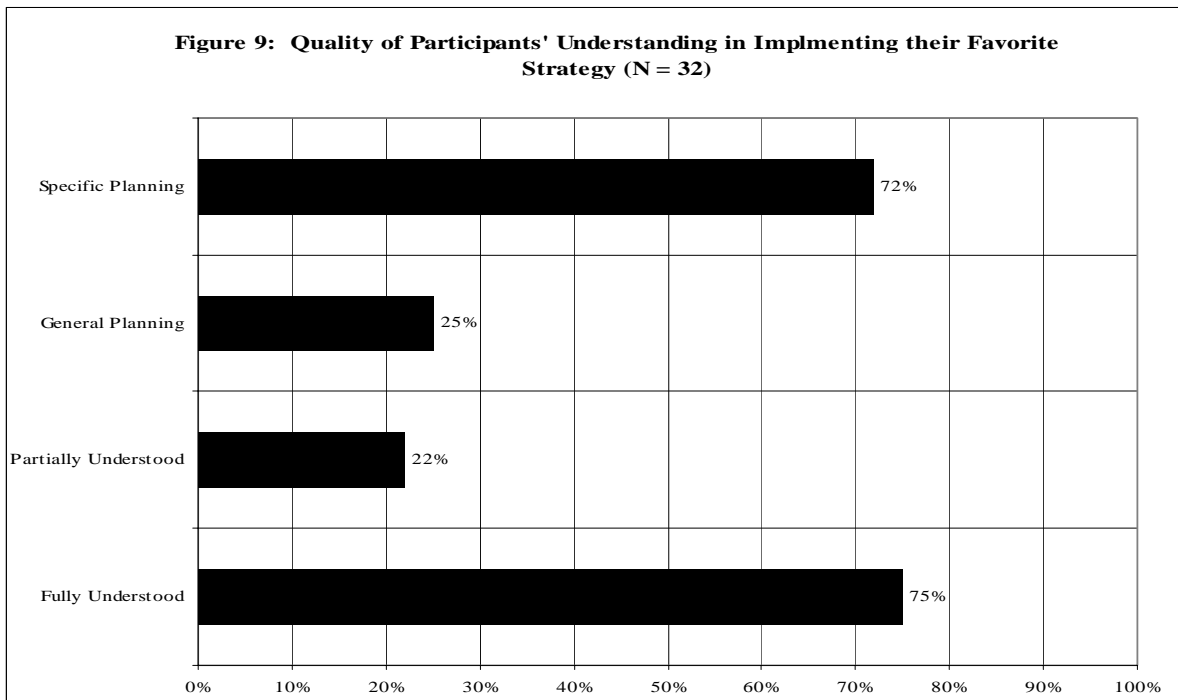
Second, most (72%) were able to design a specific lesson using their favorite teaching strategy to teach a concrete topic selected from the textbook they intended to use in the subsequent semester while 25% developed only general outlines in their lesson plans with no specific descriptions of the topic and context for the lesson.

The final assignment results together indicated that although the participants were more likely to choose some teaching strategies over others, the majority still preferred to use those with both constructivist and behaviorist components over those based solely on a constructivist or behaviorist perspective. Most were able to show a strong understanding of their favorite teaching strategies and design plan lessons that were specific and usable for future teaching. Those who held misconceptions or misunderstandings about their chosen strategies were mostly those who chose the teaching strategies with constructivist orientations as their preference.

Discussions and Conclusions

One of the central tasks of this study was to examine the influence of the professional development workshop on teachers' beliefs and intended application of teaching strategies. Our analysis suggests the following.

First, findings indicated that the workshop approach, designed with constructivist principles, was able to help teachers develop relevant understanding about alternative teaching strategies that differed from their pre-existing approaches. They were able to articulate adoption of these strategies into their own teaching contexts. As shown in this study, prior to the workshop, most of the participants used either a classic or modified form of direct instruction in their daily teaching; they had very little exposure to the teaching strategies and relevant theories introduced in the course. Following the course, 94% of the participants chose an alternative teaching strategy for future implementation in their classrooms. Among them, most were able to develop a thorough understanding of their chosen strategy and design a specific lesson using the strategy to fit into their teaching contexts. This finding seems to confirm the assumption developed in the literature on teacher conceptual change (Richardson, 1996) that experienced teachers are more likely than preservice teachers to change their teaching conceptions in workshop environments designed with constructivist ideas of learning. Surprising was the magnitude of teachers' conceptual change in this study, which appeared to be greater than those observed in Western environments.

Second, the study also suggested that while teachers were able to alter their initial conceptions and use alternative teaching strategies, they were less likely to shift towards the strategies based solely on the constructivist perspective within a workshop approach as suggested by the teacher conceptual change literature (Kennedy, 1991a). Instead, the participants showed a greater affinity towards strategies that were different from their own but still blended both constructivist and behaviorist notions. Relatively few teachers were able to accept the teaching strategies based solely on the constructivist perspective, which participants tended to develop greater misunderstandings about, if they choose these as their favorites. This finding indicated that learning to teach using alternative teaching strategies in the workshop environment for many teachers is not a revolutionary process caused simply by conceptual discrepancy as described by radical constructivists (von Glasersfeld, 1995), in which alternative conceptions and concepts transform existing ideas and models. Rather, it was a process of peripheral adaptation as suggested by the situated learning theory (Brown, Collins, & Duguid, 1989), in which old ideas are blended with new ideas without realizing conceptual inconsistency.

Nevertheless, why did the teachers in this study change their conceptions of teaching in the way that they did? The analysis of this study pointed to the following factors which may have shaped the teachers' conceptual change outcome.

First, the finding that relatively more participants shifted from their initial towards alternative teaching strategies may be partly explained by the fact that many were open and ready to learn new strategies from the workshop. Such openness and readiness for learning is crucial for teachers to experience conceptual change as suggested by the literature (Cooney, Barry, & Arvold, 1998; Kennedy, 1991a). As showed in their initial survey, most of the participants expected to learn new English skills and teaching strategies from the workshop.

Second, certain cultural values regarding successful learning shared by most participants may have also contributed greatly to conceptual changes experienced in the workshop environment. According to the research on motivation (Dweck, 2001; Weiner, 1986), effective learners are more likely to see learning as a matter of adapting to their learning environment through personal effort and determination that could be controlled by the learners themselves. However, ineffective learners see uncontrollable factors such as intelligence, individual learning styles, and self-confidence as important to learning. As seen in this study, most participants envisioned a good English learner as someone who had high interest, strong motivation, and made a persistent effort to learn rather than alluding to intelligence, self-confidence, and individual styles of learning. These same shared values are

consistent with findings about Chinese teachers, parents, and students in relation to mathematics learning from large comparative studies with U.S. counterparts (Hess, Chang, & McDevitt, 1987; Stevenson & Stigler, 1992).

Third, this study also suggested that teachers preferred to choose teaching strategies that blended both old and new ideas, since their familiarity with aspects of novel teaching strategies combined with prior experience permitted the essential mental testing of chosen teaching strategies. This interpretation is consistent with the findings of this study in the following ways. Most of the same participants began their training with direct instruction strategy. Most embraced strategies that contained a blend of both behaviorist and constructivist ideas. Few participants adopted the teaching strategies that diverged too much from their existing teaching ideas. This phenomenon seemed to be consistent with the assumption that teachers' conceptual change in the workshop environment requires participants to possess enough basic and relevant teaching experiences in order for them to mentally test the potential usefulness of alternative strategies (Richardson, 1996). However, when the teaching strategies were identical to their own experience of teaching, such as direct instruction in this case, their mental testing of the strategies were not necessary since the strategies offered no new aspects of learning. In the same vein, if the teaching strategies appeared too distant from their existing experiences, mental testing would not likely occur since the ideas would seem unworkable and impractical.

Fourth, teachers' knowledge is experience-based, event-structured, and contextualized as suggested in the literature (Carter, 1990; Clandinin & Connelly, 1987; Elbaz, 1983; Grimmett & MacKinnon, 1992; Sykes & Bird, 1992). The nature of teachers' knowledge could further urge them to adapt teaching strategies through experience-based comparison, analogies, and testing instead of theoretical reasoning in the workshop environment. This assumption was supported by this study's finding that only about half of the participants were able to discuss either constructivist or behaviorist theories of knowledge and learning. Of the participants able to do this, many developed a partial or misunderstandings of these theories. These misconceptions were also evident in the way that the participants described how they were going to use the constructivist-based teaching strategies.

This finding is also consistent with the literature on teacher conceptual transformation (Kennedy, 1991a) in that within a workshop environment, conceptual discrepant events and participants' readiness to learn new ideas and strategies are necessary conditions to catalyze teachers' conceptual transformation. However, these conditions are not sufficient to help teachers transform their conceptions of teaching through theoretical reasoning in the direction expected by radical constructivists (von Glasersfeld, 1995). Rather than undergoing a radical revolutionary process, teachers' conceptual change looked more like a peripheral adaptive process (Lave & Wenger, 1991), in which a need for mental testing of new ideas and strategies based on teachers' past experiences were also necessary conditions. The major feature of this peripheral adaptation in the workshop context is not to move towards the ultimate goals predicted by the conceptual discrepancies but towards a zone of proximal development between what they had previously known and what they see as possible (Vygotsky, 1994).

Based on the above findings from this study, we offer the following two implications for policy makers and teacher educators who are committed to helping teachers develop effective teaching strategies.

First, rather than viewing teachers' conceptual change as revolutionary and expecting fundamental transformations of teachers' conception through a workshop context, it may be more reasonable to use an approach that gradually evokes continual peripheral changes in their conceptions (Hiebert, Gallimore, & Stigler, 2002; Stigler & Hiebert, 1999). In doing this, systematic and long-term workshop interventions must be designed and implemented so that they are aligned with teachers' existing conceptions at the different developmental stages in order to move teachers gradually and continually towards more sophisticated levels of conceptions of teaching.

Second, in designing these workshops, it is important not only for policy makers and teacher educators to consider constructivist ideas of knowledge and learning, but it is also necessary to

consider teachers' relevant experiences and their readiness and openness to change in meeting the goals of each session within a series of workshops.

The findings of this study were derived from a small number of the participants in a limited context of teaching in China. This situation prevents generalizable results to teachers from other content areas in different school contexts. In addition, no in-depth interviews and follow-up observations were conducted to further verify whether the inferences based on the survey and document data could measure the influence of the workshop on their actual teaching practice. Thus, further studies addressing the above lines of research are necessary.

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Appendix A: Initial Questionnaire

Teachers' Background Information and Belief Survey

(You can answer the questions in either English or Chinese)

Your Chinese and English Name:

1. How long have you been teaching and when did you start your formal teaching career?
2. Which grade levels and what subject areas have you been teaching so far?
3. In which school are you teaching right now and in which school have you taught? Please include the cities and provinces. List periods of your teaching in the schools.
4. How many years of formal English teaching and English teaching training did you receive at the levels of college and above? Please include on-job training like this one.
5. Please list three things that you learned and that you think most important for your current teaching:
6. Please list three things that you think you should learn about teaching that you formal English study and English teaching training failed to provide you:
7. How many on-job training did you participate in that were taught by foreign teachers so far? Pease do not include this one.
8. Please list three useful things that you have learned about teaching in these teacher-training sessions:
9. Please list three most useful things that you think that you should learn about teaching that you failed to learn from the above training sessions:
10. Please list three things that you most want to learn from this teaching training summer institute:
11. Please describe three important things that you believe will make a student excellent English learner?
12. Please use a paragraph (at least 8 sentences) to describe yourself as an individual in a creative or interesting way.