

Cognitive Apprenticeship in a Language Learning Classroom

Kazuko MINEMATSU

1. Introduction

The traditional vision of schooling is known as *instructionism* (Papert, 1993). The schools were designed on the assumption that knowledge is a collection of facts about the world and procedures for how to solve problems. However, memorization of facts and procedures is not enough for our students to participate in the global society along with information and communication technologies. When students gain a deeper conceptual understanding, they learn facts and procedures in a much more useful and profound way that transfers to real-world settings (Sawyer, 2006).

In recent years, there has been a great deal of discussion concerning the importance of active learning. The recent research findings suggest that using an active learning pedagogical approach results in significant student learning gains over using a lecture-based approach (Baepler, Walker, Brooks, Saichaie & Petersen, 2016). Active learning has proven not only to engage students but also to promote skills in motivation, higher-order thinking, communication, creative thinking, and problem-solving (Creekmore & Deaton, 2015). However, it is difficult to foster these skills using a traditional approach, especially a lecture-based approach, because the teacher has been considered as a main actor while the students have been expected to be passive participants in the learning process. Therefore, it is necessary for educators to learn to adopt a new teaching paradigm whereby learners actively engage in the learning process.

In a language learning classroom, especially in the English as a foreign language (EFL) classroom, sociocultural theory (SCT) will contribute to creating this kind of new teaching paradigm because SCT considers language

learning as a social practice and regard learners as active participants in the construction of learning processes. This paper focuses on two concepts of SCT: *the zone of proximal development* (ZPD) and *cognitive apprenticeship*. In order to make the EFL classroom where learners can be active participants in learning processes, the concepts of the ZPD and cognitive apprenticeship will give educators and practitioners significant implications.

The purpose of this paper is to discuss the importance of creating a cognitive apprenticeship learning environment in the EFL classroom. More specifically, this paper attempts to explore how the cognitive apprenticeship learning environment can be best employed in the EFL classroom. Then, this paper presents the practical strategies to cultivate such an environment, especially in designing and implementing activities such as pair-work or group-work activities in the EFL classroom.

Section Two shows how the zone of proximal development (ZPD) explains the learning process in sociocultural theory. Section Three discusses the significant aspects of cognitive apprenticeship. Section Four presents principles for designing cognitive apprenticeship environment in the EFL classroom. Section Five concludes the paper.

2. The Zone of Proximal Development (ZPD)

Sociocultural theory (SCT) suggests that cognition and knowledge are regarded as constructed through *social interaction* (e.g., Lantolf, 2000; Lantolf & Appel 1994; Ohta, 1995, 2000, 2001). For human development, social connections and relations, and social cooperation (Vygotsky, 1930s/1999) are essential. In other words, individual cognition emerges in and through engagement in social activity. In SCT, the learner is not the passive recipient of the transferred knowledge but the active participant of the teaching and learning process.

In order to understand the social nature of learning, one of the essential constructs of SCT is the zone of proximal development (ZPD). The ZPD is an important construct which explains how learning takes place, emphasizing potential development. The ZPD, termed by Vygotsky (1978), explains how

learning takes place in sociocultural theory. Vygotsky (1978) defines the ZPD as the distance between the actual developmental level and the level of potential development. The former is determined by independent problem solving and the latter is determined through problem solving under adult or teacher guidance or working together with more capable peers. The ZPD defines development prospectively and every learner has his or her own ZPD, where future learning may take place. Vygotsky's concept of the ZPD embodies his view that an individual learner needs to receive assistance appropriate to his or her potential level. This perspective can be applied to second language learning (SLL) since the concept of the ZPD explains the process of language learning.

Next, how interaction is viewed in SLL is discussed from a sociocultural perspective. Learning is considered to be a process of *internalization* in SCT. Stetsenko and Arieviditch (1997) explained that “psychological processes emerge first in collective behavior, in cooperation with other people, and only subsequently become internalized as the individual's own ‘possessions’ ” (p167). Individuals are considered to move through stages in which they are controlled first by the objects in their environment (*object-regulation*), then by others in this environment (*other-regulation*), and finally they gain control over their own social and cognitive activities (*self-regulation*).

In SCT, internalization can be interpreted such as “activities, which are external to the learner but in which he or she participates (*interpsychological*) are transformed into mental ones (*intrapsychological*)” (Swain, Brooks, & tocalli-Beller, 2002, p. 171). After the internalization, learners become self-regulated when they no longer need to rely on outside resources to carry out the task or access that awareness, because the new knowledge and skills have now become part of their cognitive repertoire. Vygotsky considered cognitive development as a matter of the *appropriation* of dialogue. The term *appropriation* means the internalization of dialogue experienced during interaction in his theory. In short, internalization is the process by which a person moves from other-regulation to self-regulation. Thus, SCT sees language learning as dialogically based. The ZPD is a significant construct that explain how learners move from being able to do something only with the help of that expert

(other-regulation) to being able to do it independently (self-regulation).

The question is whether it is possible to learn the language within the ZPD of each other in the classroom as a whole, especially in the English as a foreign language (EFL) classroom. It is necessary and meaningful to explore how the concept of the ZPD can be best utilized in the EFL classroom, which usually consists of more than 30 students in Japan. In other words, it is essential to explore how a group of learners can together “create a powerful ZPD” (Wells & Claxton, 2002, p. 9).

3. Cognitive apprenticeship

In order to understand social nature of learning, not only Vygotsky's (1978) notions of learning situated in the ZPD but also social theory such as cognitive apprenticeship (Collins et al., 1989; Collins, 2006; Dennen & Burner, 2008) will play significant roles, concerning the creation of the ZPD among the group of learners.

In recent years, learning institutions have tried to implement elements of cognitive apprenticeships in formal learning settings. Moreover, there has been extensive research that has incorporated the principles of cognitive apprenticeship in the design of learning environments (Collins & Smith, 1982; Palincsar & Brown, 1984; Burton, Brown, & Fischer, 1984; Collins & Stevens, 1983; Collins & Brown, 1988; Burton, Brown, & Fischer, 1984; Quintana et al., 2004; Lampert, Rittenhouse, & Crumbaugh, 1996; Hatano & Inagaki, 1991; Sandoval & Reiser, 2004; Bransford, Brown, & Cocking, 2000; and White & Frederiksen, 1998). In a review of the empirical literature on cognitive apprenticeship, much of the research was in web-based learning environments and higher education (Dennen & Burner, 2007).

In schools, a new form of apprenticeship called “Cognitive Apprenticeship Methods,” has emerged in education to teach cognitive skills used in performing classroom tasks. Cognitive apprenticeship is defined as “learning through guided experience on cognitive and metacognitive, rather than physical, skills and process” (Collins et al. 1989, p. 456). There are two differences between cognitive apprenticeship and traditional apprenticeship. First, in traditional

apprenticeship, the problems and tasks given to learners arise from the demand of the workplace, but in cognitive apprenticeship, they are sequenced to reflect the changing demands of learning” (Collins, 2006, p. 49). Second, while traditional apprenticeship focuses on teaching skills in the context of their use, cognitive apprenticeship emphasizes generalizing knowledge in order for learners to use it in many different settings. In other words, learners learn how to apply their skills in different contexts.

Since cognitive apprenticeship is “a process by which learners learn from a more experienced person by way of cognitive and metacognitive skills and processes” (Dennen & Burner, 2008, p. 426), it is possible for apprenticeship to appear in both formal and informal learning environments. Learning by cognitive apprenticeship gives the opportunity to see “the subtle, tacit elements of expert practice that may not otherwise be explicated in a lecture or knowledge-dissemination format” (Dennen & Burner, 2008, p. 427).

4. Principles for designing cognitive apprenticeship environment

It is necessary and meaningful to explore how the cognitive apprenticeship learning environment can be best employed in the EFL classroom. More specifically, what kind of instructional strategies are meaningful in order to support learning. The critical point is that the teaching method based on cognitive apprenticeship gives learners “the opportunity to observe, engage in, and invent or discover expert strategies in context” (Collins, 2006, p. 50). There are six types of instructional strategies: (a) modeling, (b) coaching, (c) scaffolding, (d) articulation, (e) reflection, and (f) exploration.

These three, (a) (b) and (c) are the core of traditional apprenticeship. Modeling refers to demonstrating the thinking process, coaching means facilitating while learners perform a task, and scaffolding refers to supporting learners’ cognitive activities as needed. The next two is as follows: (d) articulation means encouraging learners to verbalize their knowledge and thinking, and (e) reflection means encouraging learners to compare their performance with other. Finally, the last strategy (f) exploration means encouraging learners to

pose and solve their own problems. The aim of this method is to encourage learner autonomy, which would help learners to define and formulate the problem which should be solved.

Next, this paper focuses on each strategy and suggests how it can be implemented in activities such as pair-work or group-work activities in the EFL classroom.

(a) Modeling

In designing and implementing an activity in the EFL classroom, it is necessary to provide students with the opportunity in which “a teacher performs a task so students can observe” (Collins, 2006), or an expert or more capable peers “demonstrating the thinking process” (Dennen & Burner, 2008). Modeling involves an expert performing a task so that the students can observe and build a conceptual model of the processes that are required to accomplish it (Collins, 2006). This is the externalization of usually internal processes and activities. For example, a teacher might model the reading process by reading aloud in one voice, while verbalizing her thought processes in another voice (Collins & Smith, 1982).

There are two types of modeling: behavioral modeling and cognitive modeling. In other words, learners may observe the targeted action or reasoning as presented by an expert or more experienced peer. In this case, peer modeling is possible when learners observe and follow the strategies used by others who are working on similar tasks nearby (King, 1999). The critical point is whether students can build a conceptual model of the processes that are required to accomplish the task.

(b) Coaching

Coaching means facilitating while learners perform a task. Coaching includes the following two: (a) observing students while they carry out a task, and (b) offering hints, challenges, scaffolding, feedback, modeling, reminders, and new tasks, in order to bring their performance closer to expert performance (Collins, 2006). In designing an activity, it is necessary that a coach or a teacher should play a role as a facilitator, while engaging in observing, giving

some advice, and giving appropriate scaffolding. When the students work in pairs or groups, the role of the teacher has significant meaning.

(c) Scaffolding

Compared with coaching, which refers broadly to all the different ways that coaches foster learning, scaffolding refers more narrowly to the supports provided to the learner (Collins, 2006). Scaffolding includes the supports the teacher provides to help the student carry out the task, taking either the form of suggestions or help.

Related to the Vygotskian notion of ZPD is the metaphor of scaffolding introduced by Bruner and his colleagues (Bruner, 1983, 1985; Wood, Bruner, and Ross, 1976). The term was first used by Vygotsky and Luria in reference to how adults introduce children to cultural means. The graduated and contingent nature of the help provided by the expert has been referred to in the literature as “scaffolding” (Wood, Bruner, & Ross, 1976). The term was later made popular by Bruner (1978) as “a metaphor for a mother’s verbal efforts to maintain conversation with a child and, indirectly, to promote language acquisition” (de Guerrero & Villamil, 2000, p. 52). The scaffolding behavior is classified into five features: (a) reducing the complexity of the task, (b) getting the child’s attention and keeping it focused, (c) offering models, (d) extending the scope of the immediate situation, and (e) providing support so that the child moves forward (Bruner, 1978).

Furthermore, Wertsch (1979a) described scaffolding as a dialogically produced interpsychological process and that learners internalize knowledge they co-construct with more capable peers through scaffolding. The critical point is that scaffolding is the help given to a learner “that is tailored to that learner’s needs in achieving his or her goals of the moment” (Sawyer, 2006). It can be said that if the teacher tells the students how to do something without taking consideration of the student’s ZPD, it may not be effective. Effective scaffolding provides promotes and hints that help learners to figure it out on their own (Sawyer, 2006). The student needs to actively participate in constructing the knowledge. The essential point is that effective learning environments scaffold students’ active construction of knowledge. Moreover, fad-

ing, the gradual removal of supports until students are on their own, is also important aspect of scaffolding. In order to create effective learning environments in the classroom, scaffolding is gradually added, modified, and removed according to the needs of the learner, and eventually the scaffolding fades away entirely (Sawyer, 2006).

(d) Reflection

Reflection involves enabling students to compare their own problem solving processes with those of an expert, another students, and ultimately, an internal cognitive model of expertise (Collins, 2006). More specifically, learners need to be encouraged to look back on their performance and compare their performance to other performance including their own previous performances and those of experts.

In designing and implementing an activity in the EFL classroom, it is critical whether the activity includes three forms of reflection: (a) reflection on your process, (b) comparison of their own performances to that of others, and (c) comparison of your performance to a set of criteria for evaluating performances. These aspects are important for learning because they could help the students to determine what factors lead to success and to formulate an explicit model of a good performance (Collins, 2006). Reflection can be enhanced by the use of various techniques for reproducing or replaying the performances of both expert and novice for comparison. Reflection can contribute to learning in the EFL classroom, because reflection can draw special attention to the critical aspects of a performance, which would encourage learners to think about what makes for a good performance and how they might improve in the future (Collins, 2006).

(e) Articulation

Articulation means verbalizing the results of reflection. The critical point is how to support students in this ongoing process of articulation in the classroom. In designing and implementing an activity, it is critical whether the activity can encourage students to verbalize their knowledge, thinking, reasoning, or problem solving processes in a domain. Students need to be

encouraged to articulate their thoughts as they carry out their problem solving. It is also important to have students assume the critic or monitor role in cooperative activities in order to articulate their ideas to other students (Collins, 2006). Studies (Bransford, Brown, & Cocking, 2000) show that when learners externalize and articulate their developing knowledge, they learn more effectively.

Furthermore, the best learning takes place “when learners articulate their unformed and still developing understanding, and continue to articulate it throughout the process of learning” (Sawyer, 2006, p. 12). In other words, while thinking out loud, learners learn more rapidly and deeply than studying quietly. Articulation can contribute to learning because it makes possible reflection metacognition —thinking about the process of learning and thinking about knowledge (Sawyer, 2006).

(f) Exploration.

Exploration involves guiding students to a mode of problem solving on their own. In designing and implementing an activity, it is critical whether the activity can invite students to pose and solve their own problems. It helps students to frame questions or problems that they can solve. In addition, once a general goal is set by the teacher, exploration can help students set particular subgoals for their own. This also makes it possible for students to revise the general goal when they find something more interesting to pursue (Collins, 2006).

As these instructional strategies suggest, it is possible and meaningful to employ these six methods in designing and implementing activities in a language learning classroom, especially in the EFL classroom. Therefore, it is necessary to investigate what type of activities can help create the cognitive apprenticeship learning environment in the EFL classroom for future research.

5. Conclusion

This paper discussed the significance of creating the cognitive apprenticeship learning environment in a language learning classroom, especially in the EFL classroom from a sociocultural perspective. Since the concept of cognitive apprenticeship helps operationalize the ZPD idea in the EFL classroom, the attempt to apply the concept of cognitive apprenticeship to the EFL classroom is necessary and meaningful.

Then, this paper presented the principles for designing the cognitive apprenticeship environment in the EFL classroom. As the ways to promote the development of expertise, there are six types of instructional strategies: (a) modeling, (b) coaching, (c) scaffolding, (d) articulation, (e) reflection, and (f) exploration. These elements are critical in designing and implementing activities in the EFL classroom.

The concept of cognitive apprenticeship can contribute to the shift from a traditional teaching paradigm, which focuses on transfer of knowledge from the teacher to the students, to a new paradigm which focuses on the learning process. The principles for designing cognitive apprenticeship environment will contribute to creating learning environments in which language learners can be engaged in active learning in the EFL classroom.

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