

**DRAFT**

**Viability and reflection: A radical constructivist approach to learning to  
write in a second language**

CHARLES NELSON

*Kean University*

ABSTRACT

Most L2 composition studies do not address directly the nature of learning. Instead, they *describe* differences in product or process between experts and novices (or between L1 and L2 writers). They describe what experts or native speakers do and ask novice or nonnative writers to try to do the same, a sort of *Here you are and There you need to be* approach that notes the two ends but does not map out the crucial path of processes connecting them and through which good writers *acquired* their expertise. One theory that does provide an explanatory model of learning is radical constructivism. Based upon Piaget's concept of equilibration, radical constructivism provides an explanatory model for learning, leading to pedagogical practices that pay attention to reflection and the viability of students' schemas. In this paper, I analyze how two international students in a first-year university composition course learned to write, paying particular attention to the roles played by reflection and viability. I conclude by positing that radical constructivism has considerable potential for contributing to our understanding of the learning process and for informing second language composition theory and pedagogy.

## INTRODUCTION

As a teacher of L2 writing for seven years, I had puzzled over how my students were learning to write and correspondingly how I could improve my pedagogy. While teaching writing (and reading) in an intensive preparatory program in a Turkish university, I had taken a current-traditional rhetoric approach, stressing the arrangement of sentences and paragraphs into appropriate patterns within the traditional five-paragraph essay and correcting liberally with red ink to prevent, I had hoped, grammatical errors from taking root. In addition, I had read various composition theories pointing out differences between “good” and “novice” writing and strategies, and had attempted to “transmit” them to my students. These theories offered only descriptions of what good and novice writers did. They did not explain how novices became good writers, nor did they offer me the critical edge I needed to analyze my teaching practice. After all, most students do improve their writing with sufficient study and practice. Were they improving because of my teaching practice? Because of their own practice? A mix of the two?

My quest to answer these questions began with returning to the U.S. to pursue a doctorate degree in foreign language education. Among the courses I took, several dealt with writing, and I studied the research on composition in school and in the workplace. L2 studies looked into the processes and strategies of L2 writers in, for example, composing, revision, planning, and invention (Cumming, 1989; Hall, 1990; Johns, 1986; Jones & Tetroe, 1987; Raimes, 1985; Sasaki, 2000; Spack, 1984; Zamel, 1983). Other L2

studies took a product-oriented approach, comparing the textual features of native speakers and nonnative speakers (Bunton, 1999; Eggington, 1987; Park, 1988; Reid, 1996; Scarcella, 1984). Other product studies showed the influence of culture on rhetorical conventions (Boiarsky, 1995; Charteris-Black & Ennis, 2001; Clyne, 1987; Hinds, 1987; Simpson, 2000; Thatcher, 2000). Other L2 studies still looked at the social context of writing and socialization of students into disciplines (Angelova & Riazantseva, 1999; Braine, 1995; Casanave, 1995; Connor & Mayberry, 1996; Spack, 1988).

Most of the research, whether focused on process, product, or socialization, *described* differences between “good” writers and “novices,” between native-speaker products and those of non-native speakers, and between newcomers and oldtimers in the workplace or a discipline. This research did not, however, address the nature of learning. Rather, studying differences between experts and novices (or L1 and L2 writers, or oldtimers and newcomers), it analyzed what experts do and, if suggesting teaching applications, asked novice writers to try to do the same, a sort of *Here you are and There you need to be* approach that notes the two ends but does not map out the crucial path of processes connecting them and through which good writers *acquired* their expertise.

Other scholars have noted the descriptive nature of most studies and the lack of explanatory models (e.g., Cumming, 1998). Cumming and Riazi (2000) wrote,

Considerable information now exists describing how people compose in a second language and the features of the texts they produce for single writing tasks, but we have very little information on how people actually learn to write in second languages or how teaching might influence this.

... For this reason, research within educational programs is necessary not only to account realistically for what occurs in learning and teaching practices but also to help to explain them. (p. 57)

In fields other than writing, I came across current theories that did address the nature of learning and that provided explanatory models. One of these was radical constructivism,<sup>1</sup> a theory prominent in the field of science and mathematics educational research. Nevertheless, it is not well known in L2 research, and much less in L2 composition research. Only a few articles have appeared explicitly addressing radical constructivism in the L2 literature, although some L2 writing studies have taken approaches congruent with it.

Radical constructivism, I believe, offers an explanatory mechanism for how L2 students *learn* to write in a second language. Radical constructivism is based primarily on the work of Jean Piaget, one of the foremost psychologists of the 20<sup>th</sup> century. Piaget, who received his doctorate in biology at the age of 21, turned to the study of psychology, applying his biological background to investigating how knowledge and cognitive processes developed in children<sup>2</sup> and proposed that knowledge resulted from biological adaptations to an experiential world.

Educators' early understandings of Piaget's concepts were not "radical" in nature, however; that perspective commenced with von Glasersfeld's presentation to the Jean Piaget Society in Philadelphia in 1975 and caught the attention of researchers in mathematics (Steffe & Kieren, 1994). In his presentation, von Glasersfeld put forth the two main principles of a radical epistemology:

- Knowledge is not passively received either through the senses or by way of communication;
- Knowledge is actively built up by the cognizing subject;
- The function of cognition is adaptive, in the biological sense of the term, tending towards fit or viability;
- Cognition serves the organization of the experiential world, not the discovery of ontological reality. (1995b, p. 51)

It is the second principle differentiating radical constructivism and what von Glasersfeld called “trivial” constructivism, which holds only to the first principle that learners construct their own meaning and understanding. In contrast, radical constructivism emphasizes that

there is no direct access [to reality]. The only way for human beings is to construct their own interpretations, their own realities, and to adapt these subjective constructs through trial and social interaction until they function with sufficient actual success. We can arrive at “viable” solutions and models only. They are formed “until further notice” that is until difficulties or other constraints and limits are realized. (Bauersfeld, 1992, p. 16)

The main concept separating radical constructivism from “trivial” forms of constructivism, then, is a consideration of *viability* vs. *truth* (von Glasersfeld, 1995a). That is, individuals actively construct viable models of their experiences with their environments instead of improving on increasingly accurate representations of reality.

Rather than there being one correct representation of reality, there are now multiple representations. Those representations, or schemas, that “work,” that adequately explain phenomena and concepts in one’s experiences are viable, and those that do not, are not. Of course, what schema works varies according to individual as indicated by the various positions on second language acquisition and composition taken by theorists, researchers, and educators.

Although the precise definition of *schema* varies among researchers and theorists (Alexander, Schallert, & Hare, 1991), I take schemas to be networks of cognitive structures that “involve the anticipation and/or recognition of a situation” (Confrey, 1995, p. 197). When a situation is encountered that differs from already held schemas, that difference is either integrated into and *assimilated* to existing schemas, or, when assimilation is not successful, the situation triggers a perturbation in one’s knowledge so that new schemas are created or old schemas are restructured to *accommodate* the new knowledge in a process of *equilibration*, that is, of self-regulating, or self-organizing, the mental tension between assimilation and accommodation and between internal mental states and external reality. At levels of learning higher than imitation, that process requires reflection.

Although radical constructivism is prominent in mathematics, science, and reading education and implicit in many foreign language education (FLE) practices, it is seldom discussed explicitly in FLE. When constructivism does appear in FLE sources, it generally takes the form of social constructivism (e.g., Craig, 1995; Kaufman & Grennon Brooks, 1996; Williams & Burden, 1997), sociocultural theory (e.g., Nyikos &

Hashimoto, 1997), or trivial constructivism, which often appears as discovery learning (e.g., Cobb, 1999).

As far as I know, only two authors in the FLE literature have directly addressed radical constructivism. Blyth (1997) explored how a radical constructivist approach to teacher education could help inexperienced teachers understand the learning and teaching of grammar. Reagan (1999) gave an overview of core concepts of constructivism, including radical constructivism, and their implications for L2 pedagogy.

Other FLE researchers have used aspects of radical constructivism without invoking its name. Sidman-Taveau and Milner-Bolotin (2001), for example, in introducing a web-based model for second language learning, noted that Piaget's concept of disequilibrium supported the value of errors and uncertainties in the learning process. Piaget's schema theory has been prominent in L2 reading research (Carrell, 1983; Carrell & Eisterhold, 1983; Floyd & Carrell, 1987; Hauptman, 2000; Peretz & Shoham, 1990).

With respect to L2 writing, the sources mentioning schema theory are rare, and of those that do, they generally do so only in passing (e.g., Johns, 1990, Stevick, 1996). One exception is Johns (1986), who, stating that the ability to understand a text is dependent upon the reader's schemas matching those of the author, used insights from schema theory to help her ESL students revise their papers by modeling an L1 reader's expectations while reading a text.

The main role of schema theory in the FLE literature seems to be limited to that of pointing to the need to provide sufficient background information for L2 readers and writers. Ferris and Hedgcock (1998), for instance, wrote,

Therefore, it is important for L2 writing teachers to be aware of the differing schemas (including rhetorical variations considered by CR researchers) that their students bring to the writing class—backgrounds that differ not only from those of NES learners, but from the schemas of other L2 students. (p. 13)

The authors recommended that reading and writing assignments should build upon students' prior experience and background knowledge to help them develop new schemas for engaging with class texts and topics. Stating that schemas “behave like open databases,” they treated the construction of new schemas as a simple “search and modify” operation without considering the difference between assimilation and accommodation, *thus overlooking the need for students to reflect upon contradictions between the students' knowledge and their experiences with the concepts being presented.*

The “radical” form of constructivism is almost unknown in the L2 literature and not mentioned in the field of L2 composition. Yet, it holds potential for contributing to our understanding of how students learn to write in a second language. To look at this potential more closely, this paper poses two questions:

1. What role does reflection play in learning to write in a second language?
2. What is the importance of viability of learning to write in a second language?

## METHOD

To investigate the processes of learning to write in a second language, I wanted to study a class whose primary purpose was an introduction to academic argumentation aimed to help foreign and international students enrolled in the university to make progress in learning to write in English. In such a class, the students would not only write a considerable amount, but they would also study rhetorical concepts that potentially could enable the students' writing to develop more than in a class that had extensive writing requirements but whose subject matter did not directly address rhetoric. Only one such class was available: my own first-year university composition and rhetoric class.

Of course, there were dangers in selecting my own class. Bogdan and Biklen (1998) have commented on direct involvement with a study. It can be difficult for the researchers "to distance themselves both from personal concerns and from their commonsense understandings of what is going on," roles between researcher and teacher become blurred, and the teacher's authority can "coerce" students into participating in one's research (p. 52).

Actually, it is not clear why "distance" should be valued. My role as teacher, as Pring (2000) argued, gave me "access to the data crucial for an understanding of the classroom ... that only teachers access to" (p. 120). Regardless, some distance was gained, because the role as teacher predominated throughout the duration of the course, as time was not sufficient to conduct more than minimal on-going analysis while teaching. As a result, the analysis—the majority of which was based on student-written

documents and audio-taped interviews conferences—did not take place until after the semester had ended so that the roles of teacher and researcher did not become blurred, and “personal concerns” did not interfere with the analysis.

On the third point of coercion, that possibility does co-exist when disparities of power exist, as between a teacher-researcher and students. To counteract this possibility, all students were informed that they had the opportunity to withdraw from the study at any time, including up to one month after grades had been assigned; yet, none did. In addition, my concern and respect for the students mitigated, if not nullified, any feeling of coercion. In fact, one student challenged me on more than one occasion as to what should be the proper “purpose” of this course. Furthermore, being aware of the possibility of coercing students made me sensitive to potential ethical conflicts.

For an investigation into the nature of learning to write, an experimental design or survey did not seem feasible. First of all, I needed to understand the students’ processes of learning and negotiating class practices and course concepts, the historical context of their writing, and the meaning that they assigned to different aspects of this class and former ones. I also had to answer questions, such as, What were the students’ schemas? On what contradictions did they reflect? Why did they behave in such a way? How do their prior experiences differ from their present ones? To grasp these processes and answer such questions required qualitative research strategies, such as sustained contact, observation, in-depth interviewing, and understanding the participants’ perspectives (Bogdan & Biklen, 1998). In particular, a case study seemed most appropriate for these characteristics and types of questions (see Yin, 1994).

### Context of Study

The course, Rhetoric and Composition for Nonnative Speakers of English (an international version of a required first-year university writing course), was situated in a large, research-oriented university in the U.S. Designed to teach argumentative writing supported by research, the class required students to write at least three papers<sup>3</sup> of three to five double-spaced pages, along with extensive writing of observations of their writing activity and analyses of their learning in the class. The students were guided through a process approach of preparing topic proposals, preliminary drafts, peer and teacher reviewing, revising, and final drafts for each paper.

Participants included myself and all 14 students in the class, although one student stopped coming to class around the middle of the semester. Participant backgrounds were diverse. They represented eight different countries, and for most of them it was their first year in the U.S. Their classifications ranged from first year to graduate student, and ages, from 19 to 31. Some had had considerable writing experience in English, and others, almost none. Majors ranged from the liberal arts to the sciences, and two students already had a baccalaureate degree

Data collection for this article came from tape-recorded interviews with the students and various informal and formal written documents. Informal documents included, for example, postings to an electronic message forum and e-mails between students and with me. Formal documents included rough drafts, final drafts, and Learning Records Online, a portfolio system of assessment that included analyses of their learning

and weekly observations by the students' on class-related activity, both within and without (see Syverson, 1995).

The interviews, 40 minutes to one hour each on average for most students, were conducted in a small, private room in the main library with each participant at the beginning, middle, and end of the semester. Each interview was formal and semi-structured. The students were aware that the interviews were part of my research, and each interview had 27 to 42 mostly open-ended questions that covered students' education and writing backgrounds; perspectives and understanding of class assignments, concepts, and class practices; and their own approaches to writing.

Because this was a theory-informed case study, my approach for selecting data to analyze was to look for patterns of interactions, relationships, and tensions among the students with each other and the teacher, with course assignments, and with instructional artifacts. Patterns unique to individuals were sought. Unique patterns would illustrate radical constructivism's perspective that students, influenced by their prior experiences, held differing schemas, thus perceiving the viability of actions differently from classmates. In addition, I focused on the students' own words in order to develop a "thick description" of the participants' perspectives (Geertz, 1973, 1983).

## ANALYSIS AND DISCUSSION

Students come with their own backgrounds and experiences that influence how they perceive new events. They may assimilate the new events into their existing framework of understanding, or with sufficient perturbation, they may restructure their

framework, often uniquely due to differences in individual experiences. To highlight the uniqueness of individual adaptations, I have chosen two students who differed from each other in terms of writing background and of class participation with respect to speaking. One was Lihua, a woman from China. Compared to previous Southeast Asian students in my classes and the four Chinese students in this class, she participated in group and class discussions considerably more. The second student, Yiping, also from China, was the least active participant in the class with respect to speaking in English. I chose her for this comparison because I wanted to reduce, at least to some degree, differences attributable to cultural and gender factors.

*Lihua - leader, language enthusiast, author, and communicator*

A graduate of Peking University, Lihua was a leader in the Chinese community at the university here. She was the president of the university's Chinese Students and Scholars Association; she arranged meetings between her association and the university's student government, wrote letters inviting the city mayor and state governor to the Chinese national banquet (at which she performed a dance), and was involved in the Harvard China Review Conference and the Austin Asiatech Conference.

Lihua was a language enthusiast. From the beginning of the semester, she stood out in her desire to learn to write in English. While most students in the class stated they hated or were afraid of writing, she said, "I love English, I think the efficient way to improve language is writing. So I will [be] very active to learn how to write." And, in fact, she was active: She wrote prolifically in her Learning Record Online (portfolio)

observations, approximately 25% more words than the second most prolific student in the class.

Lihua was also aware of the differences between her ability to converse and write in Chinese and her ability in English. Before this class, she said she could only speak a simple sentence if she thought about it first “for a long time.” Before coming to the U.S., she had written little in the way of academic writing, only three papers in Chinese for her major of archaeology during her senior year at Peking University. In English, she had written only short three- or 4-paragraph, one-page essays in preparation for the TOEFL exam. In contrast, she had written poetry and novels in Chinese for her own pleasure and had had two novels published. As a result, the bulk of her background in writing was focused on creative writing, and she felt that writing was created through inspiration.

I think when you are writing for a task and think about the struggle and the structure and the strategy and the beautiful words, that will stop your ideas, stop your thinking, then you can't express your feeling fluently.

But in fact, but if you forget that structure, grammar, or just express something from your heart, that you will feel very good about your writing, because you directly express yourself and you know something with emotion, people can easily understand you. That is the best way to express in communication.<sup>4</sup>

Good writing, she said, has “real life behind [it]. You can tell it from this kind of words. The words will have magic to influence you. ... You know it by your heart, not by your knowledge.”

Lihua's poetic schema led her to a focus on words, words that were “simple, but ... express[ed] a very wide meaning.” Thus, from the beginning, she felt strongly that the class should emphasize “words” and improve one's “entire English ability.” Her expectations quickly ran into an obstacle: the curriculum. As a first-year university

rhetoric and composition course, the class was designed to introduce the students into research-supported academic argument. Her experience with this approach to writing, discouragingly different and constraining in her eyes, conflicted with her earlier schema for creative writing.

The second paper<sup>5</sup> assigned in the class was to take the form of a definition argument, and as a prelude, students were required to submit topic proposals to ensure that they understood the nature of a definition argument and to get them thinking about criteria necessary and sufficient for their argument. Most students seem to have problems formulating definition arguments, and this class was no different. Lihua stood out in that we exchanged a total of 14 emails (seven apiece) on her topic proposal for the definition paper (the maximum for other students was a total of four emails, two apiece for student and myself). Her schema for creative writing was not “working” for this assignment. These emails represented continued attempts on her part to construct a viable model for a definitional claim with supporting reasons. In her LRO observations, she wrote,

I receive Charles email, but I feel not so exciting this time. The writing really become a grinding thing without pleasure. Why we have to restrict in the definition topic? It make me lose ideas on how to argue in an interesting way. I used to this way to write directly from heart, from intuition not skills, which makes me feel glee and sparks more ideas. Now I just lost them and don't want to write those mechanical articles any more. Yesterday, Charles have a long discussion with me. I have turned in three definition articles. But none of them is correct definition argument though it nearly takes me the whole week to write them. The main reason is that my criteria to choose a topic depends more on whether it is my interest than to consider whether it is debatable enough to use definition to argue.

Like Lihua, other students spoke of their difficulties in formulating a definition argument. Unlike Lihua, they made no reference to “losing ideas” or writing

“mechanical[ly].” They had no well-developed schemas, it seemed, about creative writing that were then perturbed by the assignment. In contrast, as a confident, published author, Lihua’s schema for creative writing was being disturbed by her experiences of the course’s requirements to produce a new type of writing, a schema she did not yet possess. This conflict between internal schemas and environment—or more precisely, her “perceived discrepancy between [her] expectation(s) based on one or more schemas [she] use[d] to understand the world and [her] experience(s)” (Dykstra, 2002, February 25, personal communication)—led her to reflect and try to resolve the discrepancy. As indicated in her last sentence above, she had come to realize that one contradiction lay between writing for her own “interest” and finding, or phrasing, a topic so that it was debatable. Remembering my advice on free writing and reading in our Handbook on getting started, she began again to write, using her “intuition.” However, she still was not immediately successful in producing a definition argument, perhaps because little difference existed between such free writing and her own form of creative expression.

Lihua also reflected on other discrepancies between her previous experiences and her present ones. Like Lihua, many of the students made suggestions for changes in class tasks, as requested in the LRO Evaluation sections. However, unlike her, they did not challenge the nature of the course objective, as she did on several occasions. The first challenge came after I emailed her concerning her LRO observations, that they were not fully following LRO guidelines to be descriptions of her activities related to the class. In response, she wrote the following observation at the beginning of the semester’s seventh week:

Yesterday I got Charles' email, he remarked my observation is more like a diary than an observation for the rhetoric. I would like debate this evaluation.

What is the rhetoric? I think rhetoric should cover all the writing skills in life. In our class it mainly means how to efficiently argument. But I think that to improve entire English ability should be the real purpose of this class. Of course we should concentrate on academic rhetoric, research, and collaboration.

Obviously, Lihua and I had different schemas for the curriculum, but both were coherent based on our previous experiences. In this particular case, however, viability was determined by my role as teacher. My reply to Lihua was sufficient for her to adapt her observations to focus fully on course content, yet was not enough to change her expectations of the appropriate content for our class, as indicated in our second interview about five weeks later in which she again challenged the purpose of observations, saying,

So, I think, if the observation can broad his role, not only concentrate on what you learned in the textbook, what the method of rhetoric, but all you think you can improve your English, all the way, you think, it works, to improve English.

It seemed that Lihua wanted a course on general English rather than academic argumentation alone. Long-held schemas, both of students and of teachers, do not easily accommodate to new concepts, nor do they fade away; rather, they integrate, "opening up unto new possibilities" (Gruber & Vonèche, 1995). During our third interview at the end of the semester, Lihua still felt that rhetoric should emphasize words and language, likely because her background in writing poetry and novels had given her a preference for creative writing. Yet, she also had come to the conclusion that the class's emphasis on logic and transitions would benefit her more in her academic and future business endeavors. Thus, her schemas for writing became richer and more complex.

Besides differing from her classmates in her love of language and writing and in challenging the curriculum, Lihua also differed from the other Chinese students in the class in the amount she talked in group and class discussions. In general, students from Southeast and East Asian countries had spoken considerably less than students from other countries in my previous classes (e.g., Nelson & Kim, 2001), and in this particular class, the five Chinese students (three from mainland China and two from Hong Kong) spoke less than the other students during small group and class discussions, unless they were speaking among themselves in Chinese.

According to Lihua, the Chinese students talked less for several reasons. Chinese are “shy” and, even while in the U.S., they “talk too much in Chinese” and so feel uncomfortable speaking in English. Yiping mentioned that she felt ill at ease talking in the groups; Sheung concurred with Yiping for the beginning of the semester; Fengshan said he was “shy to speak [to] strangers before coming to US”; and even Lihua herself felt “nervous” while speaking with Americans. Lihua added that Yiping, who spoke the least, probably did so because of the level of her English. In addition to individual reasons for speaking less, there also seemed to be cultural schemas. Lihua said that Chinese individuals do not like to “lose their face ... [and] be looked down by others.” Yiping, somewhat similarly, said that Chinese individuals choose the “safe” way, adding a proverb by a famous author, who said, “Never be the first and never be the last.” Fengshan and Sheung (both from Hong Kong) attributed the lack of speaking in English in class to the culture of the Chinese education system, in which students only listened to lectures but did not speak up in class.

None of these cultural factors seemed to hinder Lihua much from speaking in class. In fact, she was the only Chinese student who gave an optional presentation in class, actually two of them. When asked in the third interview why she spoke more than the other four, she said,

One reason is because I know more than them. They are younger than me. And another reason I think, I have a requirement for myself [her goal of an MBA], I should talk because it's good exercise chance, and I should cherish ... the chance. And I find the more you talk, the more you can talk.

It seems likely that age was a factor, that being the eldest of the Chinese students placed her in a position of authority different from that of the other Chinese students. In addition, Lihua's previous and present experiences in leadership positions in the Chinese community gave her schemas of knowledge and authority that enabled her to interact more than the other Chinese students. However, Fengshan concurred with Lihua's analysis that her goal of an MBA and of going into business led her to accommodate to talking more. No doubt, prior experience provided the foundation, but her reflection on the contradiction between her existing level of English and the level she perceived as necessary for achieving her goals propelled her to communicate as much as possible both orally and in writing.

#### *Yiping – musician*

Yiping, a student from China majoring in piano performance, had little formal writing background and had only written 300-word essays in Chinese during class time and no essays in English. Her informal writing was more extensive due in part to the affordances of technology. She said that before coming to the U.S. she had written at

least one email a day to her Chinese friends in different countries—all in English because “it’s easy to type in English.”

Prior experience, or the want of it, can affect a person’s attitude. Yiping’s attitude toward writing was not positive at the beginning of the class. Although she saw a need for writing in her future, she considered formal writing to be “a waste of time” and did not like “formal writing course[s].” Her dislike for formal writing seemed to derive, at least in part, from a lack of knowledge of how to go about writing. She said in our first interview that she did not “know how to write ... when I see a topic, I may have many ideas, but when to write, I just don’t know to pick which one, and how to organize it.” She added that although a topic seemed “easy” at the beginning, the more she wrote on a topic, the more “confused” she became.

As her experience with the class and writing grew, her attitude towards writing gradually changed. Two weeks into the semester, she mentioned becoming more “comfortable” with writing, and on the Midterm LRO, she wrote, “After 8 weeks of learning, writing has been a thing I don’t feel so unfamiliar and uncomfortable.” Eventually, she was able to say that “writing a paper [was] no longer something quite scary to [her]!” She attributed this change of attitude to learning how to write an essay. It seems it had been her “unfamiliarity,” or lack of experience, with writing that had wrought her earlier attitude of apprehension. As she wrote more and more, she was able to construct a model of how to approach writing an essay, thus alleviating her fear of writing.

For Yiping, constructing a different attitude toward writing rested in part on her reflectively juxtaposing aspects of writing with other subjects she had experienced, such as logic and mathematics. She wrote,

*Writing is, to some extent, more logical than thinking. ... I'm getting to like writing now. Just a bit :-). Since I don't dislike logic. I am taking math as well now, which has been doing logically, too. And I realize that the problem that I have is I'm not good at proving things, which is not required at all when I perform [music].*

This juxtaposition of subjects she liked, or at least did not dislike, created a tension between her differing attitudes, helping her to reflect on them, question them, and reconstruct a different attitude toward writing.

Similarly, a lack of reflective juxtaposition influenced Yiping's attitude towards her mathematics class. Yiping liked the way mathematics was taught in China considerably better than how it was taught in the U.S. because, as she said in our first interview, in China, they "analyze the problem very clearly and don't ... rush" the next day to another problem. In China, the teacher told her "the specific things [she] should do, and [she] just follow[ed] it."

This attitude toward mathematics instruction contrasted with the one toward music instruction. She said,

*Every [music] teacher [in China] has their own style to teach. Some teacher will let you know very details, and always want you to do what they want to do. I don't like that. And some teacher will let you know the rough idea, and if they are very good, they will let you know how you can approach that.*

Yiping, it seemed, tolerated more ambiguity in music than she did in mathematics, likely because her schemas for music were much more developed than those for mathematics, and as such, she was able to “function spontaneously” with schemas of music, but not with those of mathematics (Eckblad, 1981). As a result, she had a lower tolerance of ambiguity or loss of control in mathematics, conceiving a dislike of the method of instruction. Moreover, by not reflectively juxtaposing her instructional preferences for music and mathematics, as she had done for composition and logic, she was not able to change her attitude toward mathematics instruction.

Reflective juxtaposition also changed Yiping’s attitude toward collaboration in class. Initially, Yiping did not value group work as much as lectures. In our first interview about two weeks into the semester, when asked what she might change in the class, she said she would reduce the amount of discussion, because “I think I can learn more from the teacher than I just talk with students.” A few days after the interview, she reaffirmed that position, writing in an LRO observation that she preferred to work “independently” due to not having enough time “to think about something just thoroughly.”

Approximately four weeks later, however, Yiping shifted her position on class collaboration. Building on her experience in music, she compared accompanying the piano to other musicians, instrumentalists and vocalists, in duets and trios. In both situations, she wrote in the following LRO observation,

*we make our own music by being able to learn with each other. .... I think it is the same as the collaboration in this class. Whenever we get a chance to work together, we will have to try to find how our collaborators*

*are thinking and working in their own way, how wonderful the ways are and how helpful they can be.*

Yiping's background in music also helped her to assimilate knowledge gained in our class. For instance, she compared the importance of having a "master plan," or "master idea," for playing the piano to having one for organizing her essays. She also associated reading and writing with

*listening to music recordings. When performers are listening to the music, the thing that they are paying attention to is not only to appreciate how beautiful that music is but to realize how that beautiful music has been made as well.*

At times, however, rhetorical concepts resisted Yiping's assimilation to music schemas. Five days after a lecture and exercise on writing introductions, she wrote in an LRO observation that she had trouble writing an interesting introduction for comparing acoustic pianos to digital pianos. Understanding an introduction to "summarize" the essay, she compared it to a Variation:

*There is always a Theme at the very beginning of a Variation, which is supposed to be the soul of the whole Variation. It looks just like an essay with the very first paragraph which is an outline of the entire essay. But we all know that after the Theme, the real variation parts begin, which are developed by making more and more all kinds of embellishments usually. I think, however, an argument is not supposed to be looked like this way. It needs to be developed much more rather than adding embellishments of a theme. So, what I am trying to find for the very first paragraph of a paper is an interesting motive that has potential to be really developed, which has been making me really headache though.*

A “headache,” such as this one of reconciling contrasting concepts, causes reflection, thus providing a resistance potential for accommodation. Drawing upon her prior knowledge of music history, she created a vivid introduction by beginning in mythic history with the love of Zeus and Mnemosyne giving birth to the Muses, the inspirers of dance and music, then developing the pianos’ histories, moving into “natural” versus “artificial” sound, handling rebuttals, and ending on this note: “Although worship of the muses faded, let us still remember them by allowing the natural essence of music and art shine through!”

Yiping’s reflection on parallels between music and writing and collaboration helped her to change her attitudes and to adapt to new rhetorical concepts. In contrast, Lihua’s background in creative writing hindered her assimilation of rhetorical concepts of argumentation, as indicated with her difficulty in formulating a definition argument. At the same time, Lihua’s reflection on the contradiction between her existing level of English and the level she anticipated as essential for entering a graduate school of business motivated her to overcome her difficulty and eventually to accommodate to her new experiences of academic writing. Consequently, although well-developed schemas can hinder the accommodation of new knowledge if they are in conflict, reflection upon the conflict can lead to resolution and thus to learning.

## CONCLUSION

Radical constructivism moves us past the descriptive studies of what language learners do and offers an explanatory model of how they learn to write in a second

language. It is not sufficient to consider learning as merely a straightforward process of building upon students' prior experiences and filling in schemas with new data, or knowledge. Rather, learning to write involves a process of reflecting and acting on contradictions between students' existing schemas and their present experiences.

As students reflect and act on contradictions between their models and those of the course, one misconstrual would have it that these contradictions should be resolved in favor of the teacher's "correct" model. The concept of viability reminds us that reality cannot be directly perceived. Teachers, as well as students, construct models representing their experiences rather than an actual reality. Thus, the student's schema may not only be coherent according to his or her experiences but may also be insightful and effective. Until the student shows otherwise, we must listen closely to hear what is productive in the students' models and build from there (Confrey, 1991, 1998).

Radical constructivism does not deny the social dimension of learning. In fact, it seems accurate to say that students acculturate to sociocultural patterns of interactions. For instance, the students in this class did not develop any new genres of writing but rather accommodated to their experiences with the genres presented in the course. Thus, an asymmetrical influence exists between individual schemas and sociocultural practices. Yet, a sociocultural approach generally looks at the endpoint of learning rather than the actual mechanism of learning that takes place in individuals. Depending on the questions being asked, both perspectives are useful for understanding how students learn to write in a second language classroom.

For understanding the mechanism of how individuals learn to write in a second language classroom, radical constructivism can move us beyond the pedagogical prescription of *Here you are and There you need to be* and provide an explanatory model of learning that helps us critique our teaching practices and results.

---

<sup>1</sup> The word 'radical' was first associated with Piaget's genetic epistemology in 1974 in a research report by Charles Smock and von Glasersfeld entitled "The implications of radical constructivism for knowledge acquisition" (Steffe & Kieren, 1994). The term 'radical' was used to differentiate the constructivist perspective that objective knowledge is unknowable from the 'trivial' constructivism that simply posited that individuals constructed their own knowledge.

<sup>2</sup> Piaget's theory of development in stages has been criticized by many. Although this aspect of Piaget's work is not essential to this article, support for stagewise development can be found in a complexity theory approach. See Molenaar and Raijmakers (2000) for further reading.

<sup>3</sup> Students using the Learning Record Online generally only write three papers, as in this class, due to the LRO's own extensive writing requirements.

<sup>4</sup> All quotations from students have been copied verbatim.

<sup>5</sup> In order to establish a baseline for their writing proficiency, an initial paper was handed in during the second week of class with the only instruction being to take a position on some issue. The second paper was the first one in which the format of an essay and the nature of academic argument had been taught in the class.

## References

- Angelova, M., & Riazantseva, A. (1999). "If you don't tell me, how can I know?": A case study of four international students learning to write the U.S. way. *Written Communication, 16*, 491-525.
- Alexander, P. A., Schallert, D. L., & Hare, V. C. (1991). Coming to terms: How researchers in learning and literacy talk about knowledge. *Review of Educational Research, 61*, 315-343.
- Bauersfeld, H. (1992). Activity theory and radical constructivism: What do they have in common, and how do they differ? *Cybernetics & Human Knowing, 1*(2-3), 15-25.

- Blyth, C. (1997). A constructivist approach to grammar: Teaching teachers to teach aspect. *The Modern Language Journal*, 81, 50-66.
- Bogdan, R. C., & Biklen, S. K. (1998). *Qualitative research for education: An introduction to theory and methods* (3rd ed.). Boston: Allyn and Bacon.
- Boiarsky, C. (1995). The relationship between cultural and rhetorical conventions: Engaging in international communication. *Technical Communication Quarterly*, 4, 245-259.
- Braine, G. (1995). Chapter 5: Writing in the natural sciences and engineering. In D. Belcher & G. Braine (Eds.), *Academic writing in a second language: Essays on research and pedagogy* (pp. 113-134). Norwood, NJ: Ablex.
- Bunton, D. (1999). The use of higher level metatext in Ph.D theses. *English for Specific Purposes*, 18, S41-S56.
- Carrell, P. L. (1983). Some issues in studying the role of schemata, or background knowledge, in L2 comprehension. *Reading in a Foreign Language*, 1, 81-92.
- Carrell, P. L., & Eisterhold, J. C. (1983). Schema theory and ESL reading pedagogy. *TESOL Quarterly*, 17, 553-573.
- Casanave, C. P. (1995). Chapter 4: Local interactions: Constructing contexts for composing in a graduate sociology program. In D. Belcher & G. Braine (Eds.), *Academic writing in a second language: Essays on research & pedagogy* (pp. 83-110). Norwood, NJ: Ablex.
- Charteris-Black, J., & Ennis, T. (2001). A comparative study of metaphor in Spanish and English financial reporting. *English for Specific Purposes*, 20, 227-247.

- Clyne, M. (1987). Cultural differences in the organization of academic texts. *Journal of Pragmatics*, 11, 211-247.
- Cobb, T. (1999). Applying constructivism: A test for the learner-as-scientist. *Educational Technology Research & Development*, 47(3), 15-33.
- Confrey, J. (1991). Learning to listen: A student's understanding of powers of ten. In E. von Glasersfeld (Ed.), *Radical constructivism in mathematics education* (pp. 111-138). Dordrecht: Kluwer Academic Publishers.
- Confrey, J. (1995). How compatible are radical constructivism, sociocultural approaches, and social constructivism? In L. P. Steffe & J. Gale (Eds.), *Constructivism in education* (pp. 185-225). Hillsdale, New Jersey: Lawrence Erlbaum Associates.
- Confrey, J. (1998). Chapter 7: Voice and perspective: Hearing epistemological innovation in students' words. In M. Larochelle & N. Bednarz & J. Garrison (Eds.), *Constructivism and education* (pp. 104-120). Cambridge: Cambridge University Press.
- Connor, U., & Mayberry, S. (1996). Learning discipline-specific academic writing: A case study of a Finnish graduate student in the United States. In E. Ventola & Maurane (Eds.), *Academic writing: Intercultural and textual issues* (pp. 240-253). Amsterdam/Philadelphia: John Benjamins Publishing Company.
- Craig, B. (1995). Boundary discourse and the authority of knowledge in the second-language classroom: A social-constructivist approach. In J. Alatis & C. Strachle & B. Gallenberger & M. Ronkin (Eds.), *Linguistics and the education of language teachers: Ethnolinguistic, psycholinguistic, and sociolinguistic aspects*

- (Georgetown University Round Table of Languages and Linguistics 1995) (pp. 40-54). Washington, DC: Georgetown University Press.
- Cumming, A. (1989). Writing expertise and second language proficiency. *Language Learning*, 39, 81-141.
- Cumming, A. (1998). Theoretical perspectives on writing. *Annual Review of Applied Linguistics*, 18, 61-78.
- Cumming, A., & Riazi, A. (2000). Building models of adult second-language writing instruction. *Learning and Instruction*, 10, 55-71.
- Eckblad, G. (1981). *Scheme theory: A conceptual framework for cognitive-motivational processes*. London and New York: Academic Press.
- Eggington, W. G. (1987). Written academic discourse in Korean: Implications for effective communication. In U. Connor & R. B. Kaplan (Eds.), *Writing Across Languages: Analysis of L<sub>2</sub> Text*. Reading, Massachusetts: Addison-Wesley Publishing Company.
- Ferris, D., & Hedgcock, J. S. (1998). *Teaching ESL composition: Purpose, process, and practice*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Floyd, P., & Carrell, P. (1987). Effects on ESL reading of teaching cultural content schemata. *Language Learning*, 37(1), 89-108.
- Geertz, C. (1973). *The Interpretation of Cultures*. New York: Basic.
- Geertz, C. (1983). *Local Knowledge*. New York: Basic.

- Gruber, H. E., & Vonèche, J. (1995). Looking back at the essential. In H. E. Gruber & J. Vonèche (Eds.), *The essential Piaget* (2nd ed., pp. 864-878). Northvale, NJ and London: Jason Aronson.
- Hall, C. (1990). Managing the complexity of revising across languages. *TESOL Quarterly*, 24, 43-60.
- Hauptman, P. C. (2000). Some hypotheses on the nature of difficulty and ease in second language reading: An application of schema theory. *Foreign Language Annals*, 33, 622-631.
- Hinds, J. (1987). Reader versus writer responsibility: A new typology. In U. Connor (Ed.), *Kaplan, Robert B.* Reading, MA: Addison-Wesley Publishing Company.
- Hyland, K. (1996). Nurturing hedges in the ESP curriculum. *System*, 24, 477-490.
- Hyland, K. (1998). *Hedging in scientific research articles*. Amsterdam: Benjamins.
- Johns, A. M. (1986). The ESL student and the revision process: Some insights from schema theory. *Journal of Basic Writing*, 5(2), 70-80.
- Johns, A. M. (1990). L1 composition theories: Implications for developing theories of L2 composition. In B. Kroll (Ed.), *Second Language Writing: Research for Insights for the Classroom* (pp. 24-36). New York: Cambridge University Press.
- Jones, S., & Tetroe, J. (1987). Composing in a second language. In A. Matsuhashi (Ed.), *Writing in real time*. New York: Longman.
- Kaufman, D., & Grennon Brooks, J. (1996). Interdisciplinary collaboration in teacher education: A constructivist approach. *TESOL Quarterly*, 30, 231-251.

- Molenaar, P. C. M., & Raijmakers, M. E. J. (2000). A causal interpretation of Piaget's theory of cognitive development: Reflections on the relationship between epigenesis and nonlinear dynamics. *New Ideas in Psychology, 18*, 41-55.
- Nelson, C., & Kim, M. K. (2001). Contradictions, appropriation and transformation: An activity theory approach to L2 writing and classroom practice. *Texas Papers for Foreign Language Education, 6*(1), 37-62.
- Nyikos, M., & Hashimoto, R. (1997). Constructivist theory applied to collaborative learning in teacher education: In search of ZPD. *The Modern Language Journal, 81*, 506-517.
- Park, Y. M. (1988). Academic and ethnic background as factors affecting writing performance. In A. C. Purves (Ed.), *Writing Across Languages and Cultures: Issues in Contrastive Rhetoric*. Newbury Park, California: Sage.
- Peretz, A. S., & Shoham, M. (1990). Testing reading comprehension in LSP: Does topic familiarity affect assessed difficulty and actual performance. *Reading in a Foreign Language, 7*, 447-455.
- Pring, R. (2000). *Philosophy of educational research*. London: Continuum.
- Raimes, A. (1985). What unskilled ESL students do as they write: A classroom study of composing. *TESOL Quarterly, 19*, 229-258.
- Reagan, T. (1999). Constructivist epistemology and second/foreign language pedagogy. *Foreign Language annals, 32*, 413-425.
- Reid, J. M. (1996). U.S. academic readers, ESL writers, and second sentences. *Journal of Second Language Writing, 5*, 129-161.

- Sasaki, M. (2000). Toward an empirical model of EFL writing processes: An exploratory study. *Journal of Second Language Writing, 9*, 259-291.
- Scarcella, R. C. (1984). How writers orient their readers in expository essays: A comparative study of native and non-native English writers. *TESOL Quarterly, 18*, 671-688.
- Sidman-Taveau, R., & Milner-Bolotin. (2001). Constructivist inspiration: A project-based model for L2 learning in virtual worlds. *Texas Papers for Foreign Language Education, 6*(1), 63-82.
- Spack, R. (1984). Invention strategies and the ESL college composition student. *TESOL Quarterly, 18*, 649-670.
- Spack, R. (1988). Initiating ESL students into the academic discourse community: How far should we go? *TESOL Quarterly, 22*, 29-51.
- Steffe, L. P., & Kieren, T. (1994). Radical constructivism and mathematics education. *Journal for Research in Mathematics Education, 25*, 711-733.
- Stevick, E. (1996). *Memory, meaning, and method: A view of language teaching* (2nd ed.). Boston: Heinle & Heinle.
- Swales, J. (1990). *Genre analysis: English in academic and research settings*. Cambridge, England: Cambridge University Press.
- Syverson, M. A., & Center for Language in Learning (1995). *The Learning Record Online*. Computer Research and Writing Laboratory. Retrieved March 1, 2001, 2001, from the World Wide Web: <http://www.cwrl.utexas.edu/~syverson/olr>.

Thatcher, B. L. (2000). L2 professional writing in a US and South American context.

*Journal of Second Language Writing*, 9, 41-69.

von Glasersfeld, E. (1995a). A constructivist approach to teaching. In L. P. Steffe & J.

Gale (Eds.), *Constructivism in education* (pp. 3-15). Hillsdale, New Jersey:

Lawrence Erlbaum Associates.

von Glasersfeld, E. (1995b). *Radical constructivism: A way of knowing and learning*

(Vol. 6). London: The Falmer Press.

Williams, M., & Burden, R. (1997). *Psychology for language teachers: A social*

*constructivist approach*. Cambridge: Cambridge University Press.

Yin, R. K. (1994). *Case study research: Design and methods* (2nd ed.). Thousand Oaks,

CA: Sage.

Zamel, V. (1983). The composing processes of advanced ESL students: Six case studies.

*TESOL Quarterly*, 17, 165-187.