Pedagogical Communication Issues Arising during International Migrations to Teach Science in America

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Introduction

There has been a long-standing shortage of teachers in the United States (Darling-Hammond, 1999; Orlosky, 1988). Although some, such as Ingersoll (1997), have argued elsewhere that this problem is only a perceived one, schools in many areas of the United States are indeed scrambling for teachers (National School Boards Association, 2000). In fact, the problems of demand and supply of teachers has long been a part of education (Pipho, 1988). Recently however, the shortage of teachers has become problematic enough as to cause some states to change long-standing policies for hiring teachers. For example, in the state of Georgia, teachers' salaries have been increased for several consecutive years in order to appeal to prospective candidates who otherwise would enter other competing professions. Some states have offered up to $20,000.00 sign-up bonuses for prospective teachers willing to commit to teaching in certain teacher-shortage locations (Chaddock, 1999).

In several states across the United States (e.g., New York, Georgia, South Carolina, California, Illinois, and Texas), teachers are being invited from other countries

to fill mathematics and science positions (Cook, 2000; National School Boards Association, 2000). Chicago (Illinois) schools have procured working visas for admitting foreign teachers in shortage areas for several years, while school districts in Texas have brought in many teachers from Mexico (Cook, 2000; National School Boards Association, 2000).

For a prognosis, Darling-Hammond (1999), in concert with the National Commission on Teaching and America's Future, notes in a report that,

> There is no doubt that demand for teachers will continue to increase over the next decade…. The most well-reasoned estimates place the total demand for new entrants to teaching at 2 million to 2.5 million between 1998 and 2008, averaging over 200,000 annually. About half of these are likely to be new teachers, and about half will be *migrants* (italics added) or returnees from the reserve pool of teachers. (p. 6)

According to a National Education Association November 2003 report, as many as 10,000 international teachers are working in public school systems on "nonimmigrant" or cultural exchange visas. International teachers may be expected to go through new pedagogical and cultural experiences (Gay, 2002). However, little is known about the pedagogical issues that arise as a result of the transitions of these teachers. Therefore, the purpose of this study was to address some of the initial communication issues confronting four international science teachers in U.S. high schools. The two guiding questions for the study were: What are some of the pedagogical issues international transitional teachers encounter when they come to United States to teach science in high schools? And, how have such science teachers managed to become effective or successful

communicators in their classrooms? The theoretical frameworks for this study were cross-cultural teaching and cross-cultural communication, both of which are addressed later in this paper.

According to Hussar (1999), the modal age of United States teachers is projected to be about 58 (in the year 2004). One of the major implications of Hussar's (1999) projection is that the problem of teacher shortages is going to be even more acute, as larger numbers of United States educators go on retirement each year. In fact, the next decade should see about half of all native United States teachers go on retirement (ibid.). With a diminishing teacher base (Grissmer & Kirby, 1997), and an opportunity to mitigate the current teacher shortages with international teachers, it is interesting to investigate the specific communication issues such teachers encounter.

International Teaching as a Cross-Cultural Experience

Cross-cultural teaching has been treated in the literature across different disciplines and issues (He, 2002; Kuhn 1996; Shatz 2002; Woods, 2001; Wu, 2002). In all these studies, the notion of culture shock is implicit. For example, He (2002) generalizes it as a situation whereby the international traveler may initially negotiate new experiences, become influenced by the new culture, and would ultimately assume a new cross-cultural identity. Sarkodie-Mensah (1991), on the other hand, talks about the process involved in such cross-cultural experiences, and compared the college experiences of his native country, Ghana, to those of the United States. He concluded that for foreign students, serving as Teaching Assistants in United States schools can be an overwhelming experience. Kuhn (1996) pointed out that German culture is similar to United States in some ways, and yet even Germans who speak English very well still

encounter certain complex problems. All these authors are in harmony with Fortuijn's (2002) belief that, "organisers of international teaching are faced with 'diversity paradox': they must solve the problems of differences in language and culture and at the same time profit from diversity" (p. 272). Atwater and Riley (1993), and Ladson-Billings (1994) therefore maintain that when teachers move into a new cultural context, their teaching approaches should be revised accordingly.

Cultural Barriers as Communication Barriers

Gay (2002) contends that determining what "students already know and can do, as well as what they are capable of knowing and doing, is often a function of how well teachers can communicate with them" (p. 110). Taylor (1990) strongly believes that cross-cultural communication is an essential dimension of effective education. As a foreign college instructor in Hong Kong, Shatz (2002) noted the issue of communication as vital for effective instruction. He is in agreement with Fortuijn (2002), who emphasizes that communication barriers can be a major issue in international or cross-cultural education. Fortuijn (2002) observes that "the problem of language is a problem of understanding," and that language involves "finding the right words, the right idioms, and the right nuances; it is a problem of pronunciation and audibility, tempo, tone and tune" (p. 266). He adds that even people who are proficient speakers of English may have problems with idioms and nuances. Therefore, even if they are good teachers in their native languages, pronunciation and audibility become problems in international teaching. He further explains, with an example, that the issues of accent may be national or regional, and that there are several types of English, including, but not limited to

British, America, Australian, or other English. Confusion of non-native speakers by choice of words and pronunciation is therefore understandable:

> In particular, Americans speak with more differences in their tune—speaking Dutch in this way is considered to be excessive or hysteric, especially when women speak in this way. To be taken seriously, one has to find a balance between monotony and exaggeration (p. 267).

White (2000) would concur with these observations and notes that pronunciation is a vital factor in the U.S., and that proper pronunciation may help to elicit student respect and confidence in a teacher.

Ladd and Ruby (1999) caution that when using idioms or forms of speech that cannot be understood from the individual meanings of their elements, instructors should be careful. They cite an example of a graduating foreign student senior who consulted a professor for advisement on coursework. The professor's comment was, "You have quite a few electives," to which the student became panic-stricken and replied: "No, I have quite a lot of electives" (p. 5).

Clyne (1987) suggests that German communication patterns are different from America's. In academic discourse, American generally would inform their audience exactly what they are going to say in detail, according to "advance organizers" (p. 229). Therefore, if they digress from the main point, Americans would warn the audience of the digression. Germans on the other hand, are less linear. They would simply digress and expect the audience to follow. Kuhn (1996) adds that Germans would simply launch into their examples with just a change in inflection as the marker or signal to their audience. She continues that, whereas American students begin speaking to audiences beginning in

kindergarten, German students generally have no training in public speaking, since good presentation skills are not necessarily seen as desirable feature in academic teaching. Rather, more distanced, humorless presentations are considered more appropriate.

Wang and Frank (2002) agree with several others that, whereas in the United States, directness and assertiveness are valued within the academic community, in some Asians countries, the phenomena of “saving face,” and “losing face” may imply a proclivity to indirect communication. In these situations, students may indicate that they understand something when they actually do not. This is because “a response indicating that the student does not understand may reflect negatively on the student and the instructor (p. 211). Clyne (1987), however, indicates that as compared to Germany, United States communication approaches are less direct. He notes, for example, that American teachers are less likely to be blunt with their comments on student work, whereas German teachers are very direct and blunt with their remarks on student work. All these observations are in agreement with Taylor’s (1990) observation that during cross-cultural communication, teachers and students will naturally follow the assumptions and values governing discourse within their respective cultures.

White (2000), in consonance with Taylor (1990), proposes that non-verbal communication is important in establishing credibility and leadership, and that these are two traits that excellent teachers exhibit. She mentions six non-verbal factors that relate to effective teaching, including eye contact, gesticulations, paralanguage, posture, clothing and environment, and overall facial expression. Wang and Frank (2002) provide several cross-cultural examples of potential issues in non-verbal communication. They cite, for example, that while Middle Eastern students, for example tend to be physically

closer to their conversation partners, Japanese students do the opposite as a gesture of respect for others. They also note that while Americans tend to maintain eye contact to indicate interest and respect, other cultures tend to look away as a sign of respect. These were all points of interest to this study.

Method

This work is part of a larger qualitative study that employed interviews of four international teachers as sources of data. The selection of participants was based on convenience sampling. Guiding this study were specific questions exploring the pedagogical issues that arose when the participating international teachers came to teach science in United States high schools.

Participants

The participants of this study were very knowledgeable of international science educational issues. Mary, Joe, and Kofi had each lived and had science teaching experiences in two or more countries before coming to the U.S. While Mary and Joe came to America as a part of their global adventures, Kofi came to the U.S. for better life opportunities. Inga, on the other hand, had lived and taught only in Germany, and had come to the U.S. on her husband's job transfer.

Mary was a middle-aged, white British woman teaching in a private high school in a large metropolitan area in the Southeastern United States. Having taught biology for over a decade, she could boast of being a very confident teacher. Some of her students came from several parts of the world. Her school climate, (which was the same as Joe and Inga's) was relatively more academically serious than that of Kofi's. The school was relatively small, with less than one thousand students as compared to Kofi's, which had

over two thousand students. The parents were relatively wealthier than average populations in the general area. She had been in the United States for more than five years at the time of this study.

Joe was a white British man in his late forties. Like Mary, one could easily recognize him as British when he spoke. Having lived till adulthood before traveling globally, he still retained his unmistakable British parlance. He had previously lived and worked in Western Europe, Eastern Europe, and Africa, before coming to teach in the United States. He had taught chemistry for several years in the United States, and sounded very confident in his knowledge of the subject matter and the profession. He had previously taught physics as well in the same private, cosmopolitan high school. He was open to the students, and tried to get to know them better through coaching soccer.

Inga was a German woman in her early thirties. She taught in Germany for less than two years, and had been in the United States about two years at the time of her interviews. She had worked on part-time basis in the same school as Mary and Joe's for a year, before she was employed as a full-time teacher. Being a new teacher in the Untied States (and having taught only a year in Germany), she was going through her initial transitional issues. It was obvious that she was a foreigner partly through her mild accent.

Kofi was a Ghanaian (in West Africa), and had been in the United States for over ten years, although his Ghanaian accent was obvious. He taught high school in Nigeria before coming to the United States to pursue two graduate degrees in accounting and theology. In the United States, he was teaching in a large public school of over two thousand students in a suburb of the Southeastern United States. Although this suburb was in a relatively wealthy area, the students came from mixed economic backgrounds,

and it was easy to distinguish them by the kinds of cars they drove. The school campus was very large and rather overwhelming. Kofi was very confident in himself as a teacher, since he was very competent in all the science content areas, and was being enticed by other institutions for employment. He shared his early experiences as an international transitional teacher with an unmistakable Ghanaian accent, clear memory, and several anecdotes.

Procedures

Seidman's (1998) protocol is a guide for doing in-depth interviews in three sessions. Using this guide, 32 open-ended, research-guiding questions were crafted. Each participant of the study was interviewed three times, with each interview lasting between 45 to 60 minutes. Each interview was recorded on a cassette tape, and prolific notes were taken as back-up and supporting evidence. The notes were also used as a guide for asking follow-up questions.

The first interview concentrated on the participants' perspectives of the teaching profession in general, especially with respect to their native countries. There were questions eliciting beliefs about education in their native country and the nature of their personal teaching experiences in the classroom in their native countries. This generated a "pedagogical biography" of each participant. These biographies became very useful tool for assessing the internal validity of each participant's responses in later interviews.

The second interview focused on their lives in the United States, and also how they found the American high school science teaching experience. Specifically, solicitations were be made about their perspectives of the similarities and differences that exist between their native country's teaching experiences, and those of their current high

schools in the United States. They were also asked to reconstruct the details of their lives as high school science teachers in the United States. Specific instructional events were solicited, as they related to communication with students and other school personnel, and also school social events.

In the final interview, the participants were asked to reflect on their personal experiences as teachers in the United States and their native countries. Information solicited concerned what they thought about their specific experiences in the United States classroom, as compared to their previous experiences in their native country. Of particular interest was to finding out the reasons they assigned to any differences (where applicable), that existed between their teaching practices in the United States and their native countries.

Data Analysis

The data were analyzed in three stages, using the constant comparison approach (Schensul, LeCompte, Nastasi, & Borgati, 1999). The raw data were reviewed several times, looking for key words and phrases in each transcript. The second stage focused on coding the transcripts to explore possible regularities in response to specific questions. Words and phrases with similar meanings were used formed the initial themes. During the third stage, the initial themes were consolidated under representative words (the major themes) based on consistent relationships among patterns, constituents, and structures (Schensul, LeCompte, Nastasi, & Borgati, 1999). For example, the procurement of driver's license, credit cards, social security cards, and recreational outlets were merged under "support systems," and all classroom-related issues were consolidated under "knowledge gaps." The major themes were then compared with the

"pedagogical biography" of each participant from the first interview. These "pedagogical biographies" were very useful for assessing the internal validity of each participant's responses in later interviews. The participants were then consulted to review the materials and clarify any issues that did not harmonize with their earlier assertions. The major themes were identified as the issues facing the international teachers in this study. Quotes from these major themes were then used for clarifying discussion.

Findings

In response to the first guiding question, "What are some of the pedagogical issues international transitional teachers encounter when they come to United States to teach in high schools?," the participants' responses were very revealing. On initially entering the United States, the participating international teachers faced a variety of issues that had an impact on their effectiveness in the classroom. In this section, an in-depth description of the communication issues they faced illustrates the key challenges faced by these teachers interested in teaching in a foreign country.

Communication Gap as a Pedagogical Gap

There were several levels at which communication proved to be of particular interest to the international teachers. These included differences in the use of expressions, manners of speech, accent, the different meanings of specific words, and spelling. The teachers expressed the need to learn new communicational approaches in order to function effectively in their United States schools.

Gaps in word meanings. At the word-meaning level, Mary thought that the communication gap was very significant for her. She provided an example of this, and elaborated on it:

> You do get in trouble sometimes with the faculty if you are talking about important issues. One very important word has a different meaning in English. In American English, it's "quite": q-u-i-t-e [spelling it]. In "English English," it means "It's OK"; quite average: "I feel quite well. I feel OK." But in American English it means good: excellent. So if a fellow English-Brit said to me: "You're quite good at your job," it wouldn't really be a compliment, but if an American said it to me, "You're quite good," it would be a compliment; it would mean you're very good.

Mary elaborated on how such an expressional gap could be a problem, not only in general communication, but also in the performance of the teaching job in America; talking with parents and other colleagues:

> …And that single word has caused more problems than I could describe to you, because I would say to someone, "Yeah your child's quite good. He's behaving quite well and I actually mean in English "quite"; they're OK." They think I mean American "quite," which is "very". It takes a long time to find where you're crossing. It took me a long time to find why we were misunderstanding each other and then I realized it's that word "quite." Somebody told me you're quite good as a teacher and I was offended… I thought I must be better than that. It's a linguistic thing, but a simple word like that can make a huge difference.

Joe, a fellow British (as Mary), noted that "it was harder" initially for him to distinguish between British and American spelling. During the interview, the following ensued:

> Interviewer: You were using a term, "full stop" which over here means "period"
>
> Joe: You're talking about words?

> Interviewer: Yeah, do you encounter some of these issues in the classroom?
>
> Joe: Yes. Not only could it be that, it could be, again, the age difference. The "in" words change, and as you're younger, you're more likely to know the "in" words with teenagers than as you get older. I remember for example, in Germany, this student came in—she had just been playing basketball—and I said to her, "you look hot" meaning you look as if you overheated doing so much exercise, and you see, that was inappropriate to say that to her. So, it can go [with] age as well.

Inga introduced similar issues, noting that as a German, she had learned the British version of English. That sometimes further complicated things for her, since there were translation issues with which to contend. An illustration is as follows:

> The biggest problem is that you have some words where you have two words in English and only one word in German and vice-versa, so I sometimes write a word and I understood it and I misused it because I wasn't sure about the second meaning. For example, like in Germany, you only have one word for "speed" and "velocity," so you have to talk about the "vector character" all the time, so I ended up talking about velocity—and that velocity is a vector so we have to give it direction… The definition of velocity… is nice when you figure it out, because it makes it easier [to know the correct words to use].

Inga gave other examples in the same vein:

> …sometimes, little words like "vaporization," "evaporation"--getting them straight is sometimes [difficult]--just in the class situation, the teaching situation. If I sit down and put it on paper, it's pretty clear which is which, but just, yeah, being busy teaching, I sometimes mix them up.

Inga elaborated about the absence of a German equivalent term for “acceleration”:

> That’s a classic. I actually like it because it’s hard in Germany to tell the kids that, you know, “Change up” (utters a word in German), which is a word for “acceleration,” because it’s not; because only if we have it as a vector point of view, then the change is an acceleration; that makes it so complicated to explain to an eighth grader what it is.

As did Joe, Kofi mentioned some local expressions, which were different in meaning from what he was used to. It therefore took him some time to get used to them:

> There are some expressions that are local, and there some expressions that are foreign to the American culture. For example, when a student once said to me, “Can I go the restroom?” it did not occur to me that the restroom was what the toilet was, so I asked, “What’s wrong?” and he said, “I need to use the restroom.” And one student said “He needs to use the bathroom,” and I said, “Oh, OK.” You know, it connected! But restroom was not a common vocabulary to me at the time.

The participants used anecdotes to drive home the point that “correct” choice of vocabulary is relative. Kofi, for example taught his students that familiarity breeds the illusion of normality, and the students had to be cautious of making the assumption that their local terminology is ubiquitously admissible:

> …I shared a story with my students about “hotdogs” [which was that many foreigners are rather surprised that Americans eat real dogs]. And they realized that… there are certain words that you use that you think that everybody ought to know, but not everybody knows, and there are certain words that I use that I think

> that everybody out to know that they do not know. So feel free to ask me, and when you say something that I am not familiar with, I will ask you, and I want you to ask me.

These observations are supported by Fortuijn (2002), and Ladd and Ruby (1999), who caution instructors to be aware that words could have different meanings in different cultures. All the participating teachers clearly expressed a degree of difficulty navigating the differences in the meanings of words, and felt the need to learn to understand the local usage of certain words.

Gaps in spelling. Spelling was the subject for interesting conversations. On being asked, "...what about when you have differences in spelling?" Mary went on:

> Oh, how do I do like colo[u]r? Yeah, I spell it my way. I spell h[a]emoglobin my way. And I say [to Americans] you don't get the [letter] 'a' in it. I don't care how you spell it. Just spell it the same way every time, and I'd say I'm not changing because I've been doing this for too long, and they laugh about that. C-o-l-o-u-r [spelling it], colour is one. Humo[u]r.
>
> …. Yeah. Hemoglobin. Things like [o]estrogen, which doesn't have the 'o' in front of it. All sorts of things like that. But it's OK. I don't think it's a problem as long as they appreciate, you know, it's not a spelling mistake.

Mary also observed that the students were aware of the differences thought that her students' attitudinal response was positive to such spelling differences. On her part, she thought that "consistency" was important during academic engagement and for assessing student spelling.

One other solution to the spelling differences was through the use of computers, although she sometimes intentionally tried to make the educational point of letting the students sort some words out by, and for themselves:

> The computer corrects a lot of that for me if I'm writing it down but sometimes I deliberately override it and put the English down. It's a small point, but it's quite important for the students to know that this way is not always the only way.

Like Mary, Inga talked about the issue of spelling, which arose as a result of her having learned British English:

> [In Germany,] I was never confused—I learned British English in Germany. I completely adapted to the American one just because we use Microsoft Word and it gives you the spellings, and you get used to them ….

She provided an example of how this confusion could have arisen, and how a dictionary at hand is always a good idea:

> One of my language issues is that I have a British textbook, and I get confused about spelling… So one day I put two problems on the board and I had "traveling" spelled once with one "l" and one with two "l's," and I had so many British students and we all didn't know anymore which was correct, so we had to get a dictionary.

Spelling was obviously a communication issue for the all the participating international teachers. In fact, several international journals make a clear distinction between British and American spelling. Joe was a British, and had similar experiences as Mary, while Kofi, like Inga, had learned British English. Unless one learned the American version of

English, the issue of spelling could be expected to crop up. These are in general agreement with Fortuijn's (2002) observation that that there are several types of English.

Gaps in expressions. Mary, being British, naturally had an unmistakable British parlance. Therefore, on initially arriving in the U.S., she soon noted, for example, that "when people say 'come around' or 'we must go out' or 'keep in touch,' they don't necessarily mean it," and that was an "odd thing" to her. Joe made a very similar observation as follows:

> The typical American greeting, "Have a nice day" or parting comments was totally foreign to me and I didn't like it at first, because it was said by people I hardly knew, who seemed to me to not care whether I had a nice day or not, and so it was false affection, and so to me it was bordering on sarcasm. So it took me a while to respond, and it wasn't meant in that way but that's how initially I felt it was meant, so it took me awhile to be able to respond more positively to that.

This is in consonance with Ladd and Ruby (1999) and Wang and Frank's (2002) observations that, if the overall meanings of expressions are not in agreement with their component elements, foreigners may misunderstand.

It was in the classroom, however, that the language differences became interesting, since participants and their students were the captured audiences of each other. In terms of teacher-student relations, expressional gaps were obvious, but Mary mentions that she survived, employing the weapons of humor and respect:

> Interviewer: So are there occasions that they use expressions which you don't understand?

> Mary: Yeah, but I think that they would try to do that. Me, I don't try to do that ... so when they're just chatting they will use phrases and I must say "I'm sorry, I don't know what you mean; you have to explain that to me." Again [with] that kind of respect—the differences seem to work. But again don't forget I work with older students so it's easier. I don't know if you'd get away with that with an eighth grader. Just making mild jokes. One of them comes in late, I just look at my watch and say "Oh, how good of you to come! Thank you." Or, if they fall asleep, I'd say "I'm not keeping you awake am I?" and things like that.

Expressional gaps are therefore a form of communication gaps, and, given the proper context, it is possible to manage this issue with humor.

Tone of language. Mary acknowledged that linguistically, "Brit's have a reputation for being sarcastic," and with this seeming language differential, "You can actually use the differences to make a bond if you use them correctly." In the axiomatic co-mingling of velvet and iron, Mary, a master teacher harmonized sarcasm and humor, in order to reach her students. This is similar to what Joe, a fellow British also reported. Joe was particularly sensitive to the issue of students' emotional response to British sarcasm as was Mary. He cautioned that

> The kids get a bit put out by British sarcasm—that's certain. It takes a little while to adjust to me and me to adjust to them. But once they become familiar, I think everything settles down, but I have to be more sensitive to their feelings.

As an illustration of this sarcasm, he told the story of a student who was trying to joke with him during class:

> I had one kid say to me: “What would you say to me Mr. Key, if I said you suck?” I said “I’d presume you’d give me instruction on how to use a drinking straw.” (Laughter) He was angry. He [then] just burst out laughing and the rest of the class laughed. As a Brit, it’s not part of my vocabulary. The way that it was said told me that it was inappropriate.

Joe also emphasized that, linguistically speaking, the English are more direct in their approach:

> There are cultural differences and I would be more prone to play it straight in England. If someone has performed poorly on a test, I would probably say, “You did badly” full stop! “This is rubbish” full stop! Whereas here [in the U.S.], I might phrase it more delicately.

Kofi emphasized that his local language is “filled with parables.” Therefore, as opposed to the “direct approach” to speaking, his native language used the “indirect approach” to address each other. He also indicated that the differences in communication approaches could elicit both emotional and cognitive responses from teachers and therefore could caution international teachers to observe caution and tactfulness in potentially flammable situations:

> You have to be really willing to see yourself as a helper for the students. Otherwise it would have generated serious discipline issues, especially for those of us from a culture where students could not under any condition scream at a teacher, to a culture where anything goes; everybody has the right to do anything they want to do. So you have to be really tactful in dealing with issues like that.

The observations in this section express the notion of language discourses relativity (that is, directness and indirectness in speech among different cultures. Mary and Joe's observations are all in agreement with Clyne (1987), who asserts that Germans, for example are more direct and blunt in their discourses than Americans. Kofi's observations harmonize with Wong and Frank's (2002), indicating that some Asian cultures tend to be more indirect in speech with respect to Americans.

Accent issues. The issue of accent is raised only because all the participants had clear foreign accents, and the interviewer had to listen attentively in order to best follow the conversations (with recorded back-ups). However, Kofi was the only one who raised the issue of accent as a point of classroom interest. He noted that that initially, his accent was problem in the classroom, and provided an example how this played out:

> My first week in class, a number of students kept saying, "You have a beautiful accent." So I found that some of them were concentrating more on the accent than the material I was trying to impart to them. I had the same experiences with the faculty and staff.

On the other hand, he noted that "there [were some] of the kids who would say, 'You have an accent and you're teaching chemistry?" To such kind of questions and remarks, Kofi cautioned that one has to be "really tactical about how to respond." He recalled what he did in one such instance:

> I remember one time I had to tell one student who said, "You have an accent." I asked "Where are you from?" He said, "I'm from Georgia." I said, "You have an accent too," and the whole class laughed. He said, "No, I don't have an accent." I said, "Have you heard a New Yorker talk before?" He said, "Yeah, they talk kind

> of funny." I said, "That's what..." So I had to let him know that everyone has an accent. It's not a bad thing to have an accent because everyone has an accent. It depends on whose perspective you're looking at. If you talk to me, I'd say you have an accent, vice-versa. And it's true we both have accents.

The above exchanges are in consonance with Fortuijn (2000), who observed that even if people are good teachers in their native languages, pronunciation and audibility could become problems in international teaching.

International Teachers as Learners of American English

All the participants did assimilate the American lingo: After five years of teaching in the American school, Mary said that, "I use the words they understand." On being asked if she still used her native words, she replied that, "I do sometimes, but I correct it…" To the same question, Joe, in almost exact sensibility, said that he self-retranslates his British English into American English for his student audience.

The notion of embracing students as teachers among these international teachers was common across the participants. Mary, Inga, and Kofi specifically mentioned the students as being influential in their learning of American English, while Joe only indicated that. The specific process involved in this learning and the struggle for better classroom communication is probably different for each teacher. For Inga, the pedagogical communication experience needed to be negotiated through her cognitive translation apparatus. This was elaborately described in her narrative, when she was asked how she provided locally relevant examples in her teaching:

> That is the issue. If I think of a German example, I have trouble translating it. The problem is [that] as soon as I switch the language in the head, the English is gone.

> The prepared example [helps]–I usually think about them before, and then it's not a problem. It's just when the students sometimes come up with something and I just get a very specific German word in my head, then that might cause a problem for like a minute or so, then I have to switch back. That's quite hard. Usually, I just put it down and say we'll talk about that tomorrow and I try to find a picture of something or diagram–which is not a problem in the time of the Internet—that I can show them and talk about it.

Like the rest of the participants, Inga made progress with her American English mostly because of her attitude. She was very aware of her limitations, and, because of the kind of relationship she had established with her students, was able to learn from them. In the same vein, Kofi mentioned that,

> I let them know that this is a teaching environment, and it's also a learning environment. So I am willing to learn from them, just as much as they are willing to learn from me. So it helped greatly.

Although they were the teachers to their students, the international teachers were also willing to be their students' students.

Atwater and Riley (1993); Ladson-Billings (1994); Fortuijn (2002); and Shatz (2002) all maintain that when teachers move into a new cultural context, their teaching approaches should be revised accordingly. These are reminiscent of the notion of the reflective practitioner (Schon, 1983). Apparently, all the participants did find the need to review their teaching tools. They also found that their students were useful in their efforts to learn about their new educational landscapes.

Implications and Conclusions

This paper described the pedagogical communication issues four international high school teachers faced when they began teaching science in United States high schools. It demonstrated that some international teachers could potentially face pedagogical communication issues. It also shed light on some of the processes by which some of these communication issues may arise and some possible ways to minimize them.

The communication issues found in this study included the use of expressions, manners of speech, accent, the different meanings of specific words, and spelling. Although they were secondary issues in the sense that they were not content or pedagogical problems in themselves, they were however, the vehicles by which content was delivered, and pedagogy exhibited. Consequently, student learning outcomes can be potentially affected. In a climate of science teacher shortages, it is important to find ways to harness and optimize the potentials of this emerging teaching force which incidentally possesses a strong content mastery.

Based on the experiences of the teachers in this study, it is implicit that some international teachers may benefit from activities which can enhance their local communication skills. Conversations with American English speakers, watching and listening to American audio-visual programs such as television programs, audio tapes, and reading books (especially those which focus on local expressions) are examples. International teachers should also capitalize on their own students as potential teachers of American English, and be reflective of their personal practices.

In an increasingly global community where teachers in various capacities, including those involved in college faculty, international student teaching, and cultural exchange programs are traveling around the world, communication issues may become increasingly interesting. Potentially, greater numbers of international teachers may be expected to immigrate into the United States in order to alleviate teacher shortages in such areas such as science and mathematics (Darling-Hammond, 1999; Hussar, 1999). Pedagogical communication issues may therefore be implicitly interesting in our quests for leaving no child behind (NCLB, 2002) and for national scientific literacy for all Americans (AAAS, 1993).

The awareness and understanding of pedagogical communication issues in teaching may be one of the first steps toward the achievement of NCLB (2002) objectives and the development of scientifically literate citizenry. A further impact of understanding pedagogical communication issues is that, cross-cultural or international teaching, including student-exchange and international faculty programs may stand to benefit from further exploration of related issues.

Although some important communication issues facing international science teachers have been described, further research with more participants and more varied backgrounds would help to further illuminate the specific challenges international science teachers face.

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