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Xiaodong Lin [a]; Daniel L. Schwartz [b]
[a] Teachers College, Columbia University. [b] School of Education, Stanford University.

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Reflection at the Crossroads of Cultures

Xiaodong Lin
Teachers College
Columbia University

Daniel L. Schwartz
School of Education
Stanford University

This article explores how technologies can transform the obstacles of geographical and cultural distance into new opportunities for learning and personal growth. In particular, it focuses on the potential benefits of reflection in the context of cross-cultural exchange and how technology can bring those benefits to the classroom. Several instances of research explore the uses of technology for promoting cross-cultural contact as a way to expose students and teachers to fresh educational values and practices. A consistent result is that when people experience a new culture or community or even a new classroom, they report an increase in reflection about their identities, attributions, and responsibilities. Reflection appears as a deeply social act. Several examples highlight two social functions of reflection in the context of cross-cultural interaction. One function is to help people decide which aspects of culture to appropriate and how to adapt those aspects to their own interests. Another function is to help people become more receptive to the presence of different values and practices. The article conclude with a set of provisional design principles for encouraging learning through cross-cultural reflection.

Across cultures and histories, reflection is a valued mode of thought. For some, reflection is a mental technology for solving problems; for others, it is a thoughtful pause to reconsider the routines of life; and for still others, it is a disposition toward abstraction over impulse. Although the characterizations differ, there are family resemblances. Our research has explored the learning that results from technology-supported, cross-cultural interactions. Although it was not our initial focus, we have repeatedly found that reflection asserts itself. It appears with great force and mediates many of the benefits we might hope for. So much so, that it has led us to think of reflection as a deeply social act.

New views of education describe learning as the appropriation of cultural practices and the development of an identity within those practices (Boaler & Greeno, 2000; Holland, Lachicotte, Skinner, & Cain, 1998; Lave & Wenger, 1991; Wenger, 1998). We have asked people about their experiences entering new cultures, and they spontaneously mentioned the significance of reflection—reflection on their identities, their attributions, their abilities to communicate and learn, and even on their anxiety about whether they committed a faux pas earlier in the day. Yet, when we

Requests for reprints should be sent to Xiaodong Lin, Department of Mathematics, Science and Technology, Teachers College, Columbia University, 525 West 120th Street, Box 8, New York, NY 10027. E-mail: xlin@tc.columbia.edu

looked to the relevant educational literatures to learn more about reflection, for example, the literature on metacognition, we often found descriptions of what seemed more like careful moment-to-moment problem solving than deep reflection. This gap in the literature is problematic for any view of education that takes seriously the idea that learning involves engaging new cultural practices, whether in the extreme form of moving across continents and languages or in the subtle form of moving from one classroom to another. Reflection is a significant element of coming into contact with new cultural forms, and we believe it is worth understanding more fully. This article explores reflection at the crossroads of cultures, and it presents ways that technology can help.

The article is organized into four sections. The first section describes the social character of reflection and its common manifestation in cross-cultural interactions. The second section recounts educational goals for reflection and advocates a new approach that harnesses reflection rather than teaches it as a skill. The third section narrates our on-going application research that uses technology to support reflective cultural exchanges. The results have converged on two important applications of reflection when learning from a new culture. One is reflective adaptation by which people decide what aspects of a culture to appropriate and how to adapt those aspects to their interests. Without opportunities for reflective adaptation, people can become uncomprehending subordinates to practice or cynics stuck in ineffectual rejection. The second application is to promote reflective receptivity. For all but the most blatant social breakdowns, reflection requires that people recognize the possibility that there are specific alternatives to which they should attend. Given a routine life full of habitual beliefs, people are not always open to reflection. Interestingly, we have found that one of the important social functions of reflection is that when people see others reflecting, they become more receptive to reflecting on that person's point of view. In the concluding section, we summarize our research with six design principles for encouraging learning through reflection.

THE SOCIAL CHARACTER OF REFLECTION

Reflection, like deduction or imagery, is a specific manner of thought with its own character. Understanding that character can inform instructional decisions. In this section, we describe the social character of reflection.

By all accounts, reflection is concerned with developing a more coherent set of ideas and actions, and it should be distinguished from impulsive or routine behaviors. Because reflection often occurs in quiet moments, removed from the distractions of behavior, it is tempting to think of reflection as a solitary endeavor. The quiet nature of reflection, however, does not imply a non-social mode of thought as much as it indicates the intensity, vulnerability, and self-centeredness of reflection. Reflection is, after all, about ourselves and we can only expose ourselves and burden our friends so much.

One reason to view reflection as social is that it often takes the form of an internal dialog. Vygotsky and Piaget, for example, both proposed that internal reflection is an echo of external speech. Piaget (1967) wrote:

> Reflection is nothing other than internal deliberations, that is to say, a discussion, which is conducted with oneself just as it might be conducted with real interlocutors or opponents. One could then say that

> reflection is internalized social discussion (just as thought itself presupposes internalized language). (p. 40)

A second reason to think of reflection as social, and the one we emphasize, is that its content is highly social. Piaget's emphasis on the abstract verbal nature of reflection misses this point. Thinking abstractly can occur without the emotional valence or questioning of assumptions that seems attached to self-reflection. As we report next, people who enter new cultures report an increase in reflection. We doubt this has to do with a sudden increase in their abilities for abstract thought; but instead, it has to do with heartfelt challenges to their identity and abilities to function.

Contact with new cultures is a significant catalyst to reflection, because reflection is often about one's relation to the social fabric. Calderhead (1989) described reflection "as a process of becoming aware of one's context, of the influence of societal and ideological constraints on previously taken-for-granted practices, and gaining control over the direction of these influences" (p. 44). Entering a new culture changes the social context and therefore one's relation to it, and this requires resorting goals, assumptions, and practices.

The significance of cultural contact for reflection can be illuminated by research relevant to the *contact hypothesis*, which was developed by social psychologists after World War II (see Hewstone & Brown, 1986). This basic hypothesis proposed that contact between members of different cultures would reduce prejudice. People would discover their similarities and thereby overcome their stereotypes. The hypothesis has had mixed success (Pettigrew, 1986). Contact does not guarantee an appreciation of similarities, and an appreciation of similarities does not guarantee the reduction of stereotypes and prejudice. Our approach is less ambitious. Instead of looking at how contact might lead to a hoped for distal consequence (i.e., prejudice reduction), we try to determine the proximal and dependable outcomes of cultural contact to see what educational goals they are likely to advance.

Based on our evidence, the proximal outcome of cultural contact, at least of a protracted and interactive sort, is reflection on one's identity. We interviewed 20 adults who had spent significant time participating in foreign cultures as students, workers, or spouses. We wanted to know if cross-cultural immersion would lead them to emphasize the discovery of similarities between peoples, or whether they would emphasize issues of identity and reflection in the face of manifest differences.

Among our various prompts, we asked for recurring insights and issues. Some people emphasized the language barrier that impeded understanding and participation in basic social interactions. They discovered that simply speaking the language did not mean they understood or were understood. Everyone spoke of challenges to their identity and their ability to function in a new setting. Across the responses, the depth of insight belied extended periods of reflection in which they reconsidered their identities vis-à-vis the differences between the prevailing culture and their origins. For example, a man who moved from China to the United States wrote:

> The identity issue. How can I be assimilated into the new culture without losing my own identity and how can I become and be perceived as a competent learner. Actually, I am more concerned about the identity issue in the latter sense: to rebuild my confidence of my own learning ability. I am not worrying much about losing my identity in the cultural sense. Even [if] there is something I need to change in order to be accepted into the new culture, I don't see this change in a negative sense as a loss. Rather I do think this is the reconciliation process I have to go through and there is price I have to pay for such

> changes, especially at this beginning phase. Also I care much about in what way can I make the best use of my own culture in this new environment, and I think this combination of two cultures is the key to the successful survival in a new culture.

We asked if the interviewees would recommend that people spend extended periods of time in a foreign culture. Everyone said, "yes." This unanimous support might be due to our selection of people who had chosen to live abroad. Regardless, their reasons are informative. They uniformly said that it helped them learn something about who they are. For example, one woman thought she was not creative, until she lived in an environment where creativity was valued. Typically people said they learned something about themselves vis-à-vis their own culture. A woman who came from Greece to America stated:

> The main benefit of living and working in a new culture seems to be related to the fact that you gain experience of something new [compared] to the way you have been used to live. You become familiar with a different culture, which can ultimately lead you to make comparisons with your own culture. For me this proves to be a reason to eventually become more aware of your own identity.

Many people found they were representatives of the culture from which they came. An Asian-American woman who spent time in Hong Kong stated:

> I'm also viewed as an expert on the United States and responsible for its behavior—"Why do you let your children kill one another?" Naturally, I often fail to meet these expectations.

This led her to re-evaluate the way she made stereotypes and attributions about other people, as well as leading her to clarify her identity.

Notice that the path to reducing stereotypes was not to assume that other people are the same, but, rather, it was to learn that stereotypes mischaracterize the differences in other people's values and activities. For example, some found that they had a narrow conception of what constituted a good person. A schoolteacher believed that going to school and then college was a core social value when he first taught in an aboriginal culture. Over time he realized that the elders questioned the value of institutional schooling. He began to notice that for this culture school had led to frustration and failure without much economic benefit. He realized that level of schooling should not be the estimate of a person. As one woman who moved from the United States to Japan wrote:

> I don't know how or why, but people who have never lived in, or at least visited for longer periods of time, another culture advertise that fact with their very being. They lack an openness, and a level of human understanding—and they are not aware of it. I can only liken it to another level of experience such as becoming a parent.

Reflective experiences like these can be relevant to formal education. Students who come to America from Asia, often begin with the assumption that being an effective learner means memorizing well. When exposed to an environment that values questioning, these assumptions change, and the students become open to new paths of learning. Given that the proximal outcome of cross-cultural contact is reflection on one's identity and practices, it has led us to believe that we can set educational goals for the reflection that results from cross-cultural interaction.

THE GOALS OF REFLECTION

Teaching People to Be Reflective Versus Using Reflection to Improve Future Learning

Instruction that uses reflection has tended to emphasize the development of a reflective capacity. For example, Hatton and Smith (1995) claimed that "the end-point for fostering reflective approaches is the eventual development of a capacity to undertake reflection-in-action which is conceived of as the most demanding type of reflecting upon one's own practice" (p. 46). We do not subscribe to this use of reflection, particularly as it arises in cross-cultural settings. We use reflection to improve learning rather than to improve the skill to reflect per se. Nevertheless, instructing people to be more reflective has a powerful allure that spans both Western and Eastern traditions. One can appreciate this allure by noting how Western and Eastern philosophies identify functions of reflection that are taken up as goals within education.

In Western philosophy, the function of reflection is frequently associated with problem solving and explicit truth. A handbook on Western philosophy states:

> When thought, however, is bent on solving a problem, on finding out the meaning of a *perplexing* situation, or reaching a conclusion which is trustworthy, it is to be distinguished from other types of mental activity and should be called reflection. (Columbia Associates in Philosophy, 1923, p.2)

Reflection comprises justification and logical reasoning. Dewey (1933), for example, wrote:

> Reflection involves not only simply a sequence of ideas, but a consequence—a consecutive ordering in such a way that each determines the next as its proper outcome, while each outcome in turn leans back on, or refers to, its predecessors (p.4). [Reflection is the] active, persistent and careful consideration of any belief or supposed form of knowledge in light of the grounds that support it and the further conclusions to which it tends. (p. 9)

Metacognitive instruction adopts this function of reflection and attempts to teach it. Metacognition is the monitoring and regulating one's cognitive functioning (Brown, 1987; Flavell, 1979). In education, we teach students strategies of metacognition to help them order their thinking. By this view, we include reflection in our curriculum with the expectation that people will learn reflective skills to support future problem solving.

In Eastern philosophy, Confucius proposed that reflection achieves a balanced life. Confucius wrote:

> Self-reflection enhances your ability to conquer your own conflicts and weaknesses. It is the most important means to achieve a balanced mind within oneself. A balanced individual usually knows one's position in the community, is patient, is well mannered, and respects others and self. (Li, 1996, p.180)

According to Confucius, a society filled with balanced individuals will be peaceful and prosperous. Reflection is not reserved for problem solving, and the methods of reflection do not depend on checking one's reasoning. For example, reflection can occur at the end of each day through artistic expression. Reflection is a slow and habitual path to long-term enlightenment and harmony.

Japanese schools adapt these functions of reflection as goals of instruction. There are explicit periods to reflect on current activity, assess how it has gone, and question what school goals have been achieved today, this week, or this month (Sato, 1997). Reflection occurs orally or in writing; it can be cursory or lengthy; and it can be serious or somewhat trivial. Parents and teachers also participate in reflective activities with students on a routine basis. Such habits of mind are cultivated beginning in nursery schools (Lewis, 1995), and by the time students reach the sixth grade, they are often adept at the reflective habit, both as a self and group assessment processes. By this view, we include reflection in our curriculum to cultivate a reflective habit.

Limitations to teaching reflection. Teaching people to be more reflective is a lofty goal and indicates reflection's social value. However, we question whether it is reasonable to suppose that a reflective turn of mind can be achieved within the confines of American courses that meet a few hours a week for a year. Like efforts to teach people logical reasoning (Nisbett, Fong, Lehman & Cheng, 1987), we suspect that the attempt to teach general skills of reflection may not fare well. People incline towards local knowledge over general skills. Reflection works best when it has specific issues to work through (e.g., Chi, DeLeeuw, Chiu, & LaVancher, 1994), and this requires knowing that something specific requires reflection, regardless of one's proficiency at reflection.

One way to see the importance of specificity for reflection is to notice that it is often retrospective. This is because people think best when they have a known specific context to work with (Gay & Cole, 1967), and reflection capitalizes on a specific past as opposed to a vague future. We offer a small and large example showing that reflection depends on specificity. The small example comes from a study that asked people to reflect on the accuracy of five astrological forecasts. Each individual in the study read one forecast per day. They were told that the forecasts applied to their sign (e.g., Gemini), though in reality they all had the same forecasts. One group of individuals read the forecasts over five mornings. Their job was to reflect on each forecast and rate, from 1 to 5, how applicable they thought it would be to their upcoming day. The other group read the forecasts in the evening. Their job was to rate how applicable the forecast had been for the just-ended day. The evening readers rated the applicability of the forecasts nearly 1.5 points higher than the morning readers did. The evening people could map the forecasts into a specific set of experiences, and therefore they had more ways to reflect on the forecasts' relevance. In contrast, the morning raters had little specific to reflect on, and, therefore, they could not as easily imagine ways the forecast would hold true.

The retrospective character of reflection indicates its dependence on specificity. This prerequisite of specificity becomes important when using reflection for educational goals. Simply telling people they should be reflective is like telling people they should think harder; it will not help people get very far unless they have something specific to think about. Noticing reflective opportunities can be very difficult. When embedded in the same situation day after day, people develop habitual ways of seeing. People can fail to reflect on key assumptions, even if they are willing to reflect and their reflection has been institutionalized as "a social practice in which all the participants are involved in modeling, using and making explicit their reflections" (Freese, 1999, p. 898). This point became exceedingly clear in a recent study with Chinese and American schools.

The study arose from a concern that metacognitive education pays attention to strategies but not to the goals that strategy training intends to achieve (Lin, 2001a). For example, students might not have learning as a primary goal, in which case no amount of skill training would help. The re-

sults of our study lend credence to this concern, but the results directly point to the difficulty of recognizing that a situation requires reflection.

We asked 281 fifth grade United States and Chinese students and their teachers to design an ideal student for their classes. The students and teachers came from either public or private schools (three classes were from each of the American and Chinese public schools, five classes were from an American private school, and four classes were from a Chinese private "key" school in China). The students and teachers generated five properties they thought were important for an ideal student. The properties generated naturally broke into three concerns: learning well, behaving well, and socializing well. Here, we only focus on learning and behaving. Properties that emphasized learning included "explaining ideas clearly," "being able to reason and think logically," "knowing when one makes mistakes," and so on. Properties for behaving included "not to fight in class," "sit still during the lecture," "follow classroom rules," and so on. To validate our ad hoc categories, we subsequently asked students what would happen if a boy did not do an assignment. Those students who emphasized learning tended to say, "The boy would not learn." Those students who emphasized behavior tended to say, "The boy would get in trouble."

Figure 1 presents the percentages of students and teachers from each nation and school type who mentioned learning and/or behavioral properties for their ideal students. Each group of students highly valued learning properties, except the American public school students. The American students listed behavioral properties instead. Significant for this discussion, the American public school teachers also emphasized behavior in their ideal students more than the other groups of teachers.

We showed these results to the American public school teachers. They were alarmed when they saw the ideals for their classrooms compared to the other schools. They had no idea that they and their students had been complicit in sustaining a classroom culture that valued behaving over learning. They immediately began to reflect on what they had been doing and how to change it. As is often the case, it is not what people worry about that gets them, it is what they don't.

Cross-cultural exposure can help illuminate specific issues that warrant reflection. In our instructional designs, we do not try to teach reflection. Instead, we orchestrate situations where re-

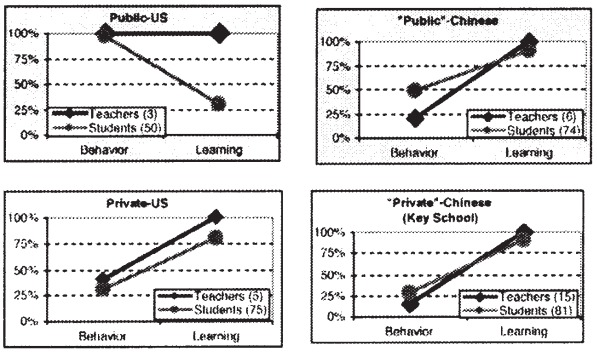

FIGURE 1 Percentage of students and teachers from United States and Chinese private and public schools who mentioned learning and/or behavioral properties for their ideal students.

flection naturally arises over specific issues that support the goal of helping people reflect on their educational identities and practices. The next section describes how we have used cross- cultural interactions with the aid of technology to foster two applications of reflection that are important to educational growth—adaptation and receptivity.

THE APPLICATION OF REFLECTION

Cross-cultural experiences generate excellent opportunities for reflection and learning. In addition to alternative models of practice, they provide contrasts that help people notice tacit elements of their own practice. It is important, however, to avoid the assumption that any cultural exposure leads to productive reflection. People can find a new culture repulsive. One American who lived in Ghana noted, "For some Americans, living in Africa was too much of a shock. I saw this happen. These Americans dismissed differences as pointing to others' inferiority. This kept them from learning about themselves." Culture can also be overwhelming. Durkheim (1951), for example, proposed two ways in which social structures can lead to suicide. With *anomie*, society does not provide sufficient direction for an individual to determine what constitutes a meaningful life. With *egoism*, society overly specifies the models of achievement, and people feel the pressure of falling short. Rousseau, whose *Social Contract* so influenced constitutional democracies, was ironically also an originator of existentialism. In *Reveries of the Solitary Walker,* Rousseau (1979) described how his culture rejected his uniqueness, and he was left to bitter reflections trying to rationalize a life without acceptance. Using cultural contact as a way to encourage learning is a double-edged sword.

When we design cross-cultural exchanges we need to protect our students and provide ways that they can adapt rather than simply adopt, reject, or flounder (e.g., Hammond, this issue). Technology can be a powerful ally. Not only does it enable cross-cultural exchanges, it allows people to meet new cultures in manageable pieces that target specific opportunities for reflection and subsequent changes to practice. Our approach has been to use technology so individuals can interact with another culture while remaining in their own. This technique protects them from the full force of another culture, and it encourages them to adapt their cross-cultural lessons into the life they have to lead right then and there.

Reflective Adaptation

Cultures meet through material artifact. When educators speak of technology facilitating cultural exchange, they frequently mention communication technologies that enable people to talk or watch (e.g., Stigler & Heibert, 1999). Technology, however, is often the culture that gets exchanged. Anthropologists and cultural historians have documented the power of material artifacts in precipitating change, whether by innovations from within a culture (e.g., the printing press, Eisenstien, 1979) or by imported innovations (e.g., snowmobiles, Pelto & Muller-Wille, 1987). Surprisingly, there are few studies that examine this process in the context of classrooms. This seems like an important topic as we increasingly introduce technology into schools (Schofield, 1995).

Importing an artifact often involves importing cultural values and practices afforded by the artifact. If these values are in contrast to the local culture, they may lead to a process of reflection. In one study, we introduced an American educational artifact into a Hong Kong classroom (Lin, 2001b). Our method was consistent with a "breaching experiment" (Garfinkle, 1963). We hoped the artifact would disrupt normal practices so that tacit aspects of the classroom would become apparent to us. Although this happened, it occurred even more for the participants who became aware of their implicit practices and values.

This was a case study that documented how a fifth grade Hong Kong teacher used an educational artifact from the United States. After observing the teacher during a week of "routine" instruction, we asked her to spend a week using *The Adventures of Jasper Woodbury*, a video-based narrative that embodies American ideals about learning math in realistically complex, problem-solving contexts (Cognition and Technology Group at Vanderbilt, 1997). We interviewed the teacher and a sample of students throughout the process, and we videotaped and analyzed the daily lesson structure.

Figure 2 shows the instructional sequences for the four routine lessons and five Jasper lessons. The flow of the instruction was uniform for the routine lessons. When Jasper was introduced, the structure of the lessons shifted and became unpredictable from day to day. The artifact afforded different patterns of interaction and disrupted the previously regimented classroom. The students seized on the open-ended structure of Jasper. They rejected the teacher's attempts to follow the routine of an initial example followed by practice exercises and then assessment. Moreover, because a Jasper Adventure is complex, it typically takes a team effort. These students, who had not worked collaboratively, began to find they were extremely competitive. This raised challenges for the teacher and students to establish a new community of practice.

The challenges to the teacher's ability to sustain her regular classroom structure caused intense self-questioning. She worried that letting the students pursue their problem-solving inclinations would erode her authority in class, and she wondered whether letting students work together without her control meant she was no longer teaching. Ultimately, she made a series of justified decisions to adapt some of the affordances of Jasper and reject others. She adapted her role as teacher by providing lessons on a need-to-know basis instead of using "pre-instruction" at the start of each lesson. She let go of her desire to give in-class quizzes at the end of each day (perhaps not a good

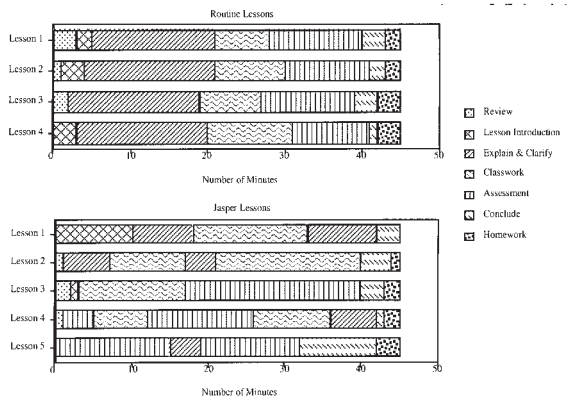

FIGURE 2 Daily instructional sequence for routine and Jasper lessons.

thing). Finally, she did not let students work through the problem at a completely independent pace, and she closely monitored their progress throughout the process of problem-solving.

The level of reflection was intense for the teacher as she began the transition from routine to adaptive expertise (Hatano & Inagaki,1986). She had to make real decisions about whether to change her practices in response to the artifact and what those changes would mean for her identity. We have labeled this reflective adaptation. Unlike watching a videotape of a foreign classroom, the teacher could not treat this as an academic exercise in reflection. And unlike entering a new culture, she could not rely on the prevailing culture to determine the course of behavior. The level of responsibility was high as were the demands for agency—an ideal mix for productive reflection.

Instructional technologies for reflective adaptation. Encouraging reflection via new technologies, like Jasper, can be powerful. But it is not always successful. One problem is that people may not be receptive to new technologies. The Hong Kong teacher was open to Jasper because she was in a school that was searching for ways to improve its standing in the community. Other Hong Kong schools rejected our overtures to introduce Jasper. Another problem is that many artifacts underspecify their use. In the movie, "The Gods Must Be Crazy," a soda bottle becomes a club. Although underspecification provides room for reflective adaptation, it can be a liability. Studies conducted within the United States showed that without guidance, teachers sometimes use Jasper in a way that disregards its potential for reform-based instruction. The artifact gets assimilated into the existing culture without causing much change in traditional teaching methods (Lin & Hatano, 2002). One way to address this challenge is to provide examples of practice to complement the technology. This is tricky because we want to provide guidance, but we do not want to imply there is only one way to use the artifact, which would undermine reflective adaptation.

In our designs of instructional technology, we try to encourage reflective adaptation. We offer teachers and students the responsibility and agency for adapting our technology to their needs, and we try to build in sufficient guidance so they see its educational potential. We originally called this *Flexibly Adaptive Instructional Design* (Schwartz, Lin, Brophy, & Bransford, 1999), but it might better be called *Reflectively Adaptive Instructional Design.*

As one instance, we created STAR.Legacy (Schwartz, Brophy, Lin, & Bransford, 1999). Legacy is a multimedia shell that embodies a set of practices for managing complex problem-, project-, and case-based activities. Figure 3 shows the software interface that suggests a sequence of events that are valuable for inquiry-based instruction. People click on the icons to reach "pages" that hold relevant activities. For example, the challenge icon brings students to a page that presents a problem or case they learn to solve using the rest of the inquiry cycle.

Legacy differs from instructional designs that expect teachers to comply with practices determined by remote instructional designers and which leave little opportunity for adaptation. Legacy offers practices and opportunities for reflection without overly prescribing the curriculum or sequence of activities. For any given instance of Legacy, there are activities and resources that we, as instructional designers, seed into the program. For example, in the domain of the life sciences, we built three progressive video challenges for understanding how exotic flora and fauna can affect an ecosystem, and we included a variety of supportive resources (e.g., anchor videos, expert commentary, web-links, self-assessment activities, simulations). More important, Legacy encourages students and teachers to add further content to adapt it to their local communities. For ex-

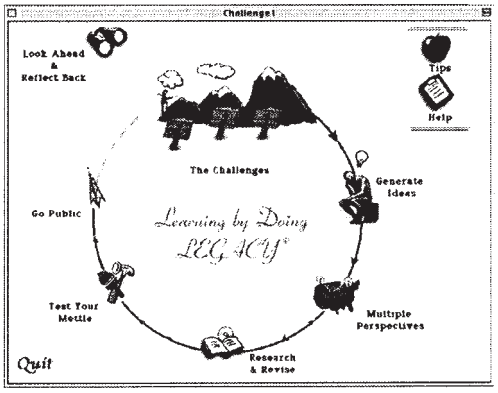

FIGURE 3 The STAR.Legacy, multimedia interface for supporting reflectively adaptive instructional design.

ample, students can interview community members who know something about plants and insects (e.g., at the garden store). They can then include these as resources, leaving a "legacy" for future generations of students. Similarly, teachers can incorporate new challenges, resources, and assessments that map into local curriculum standards. Ultimately, our goal is to have teachers and students adaptively reflect on what is important to learn and to capitalize on the strengths and needs of their local community (see Lee, this issue).

Reflective Receptivity

When immersed in another culture, people face personal challenges that cause them to reflect. When technology temporarily connects people who remain in their base cultures, there is less pressure to be reflective. People can draw on stereotypes rather than being receptive to reflection. To address this problem, we have taken the approach of "humanizing culture," which prior research shows can help people see past their stereotypes, at least temporarily (Macrae, Stangor, & Hewstone, 1996). As much as possible, we want to avoid anonymous cross-cultural contact. Instead of only presenting model practices by videotape or artifact, we help people develop an understanding for the individuals who use those practices and artifacts. This makes them more receptive to the values behind the practices and artifacts and leads to productive reflection.

Humanizing culture. The value of humanizing culture appears in a study that compared presenting a "general culture" versus presenting an individual from a culture (Lin & Bransford, 2001). The study arose in the context of a growing concern about a disconnection between foreign professors and their American students. To explore possible solutions, we examined how "people knowledge" about a foreign professor would change student perceptions and inferences. The college students in the "Strange Professor" study began with a written case about Professor X from China who had difficulties with American college students. Students answered a number of questions about their perceptions of the problem and proposed solutions.

Following the baseline exercise, the students watched one of two videos. In one video, the participants saw a tour video that described the history, famous places, foods, and rituals of the professor's culture. In the other video, the participants heard the story of Professor X's challenges with political and social change as a child and coming to America. Afterward, members of each group were asked to answer questions about the case for a second time.

Prior to the videotapes, almost all of the participants saw the problem as Professor X and her unrealistic expectations. Afterwards, students who watched the tour video did not change their perceptions. One student wrote, "The professor is a typical Chinese who is rigid, critical, and boring." Another student wrote, "Like most Chinese, she is hard-working and values education, but is boring and strict and has few social skills." In contrast, students who watched the personal video altered their thinking. They integrated Professor X's cultural experiences into their thinking. One student wrote, "The professor realizes what life can be like without education because of the personal cultural experiences. She is a responsible professor, values education, and wants to provide her students with a good education."

To assess the degree to which these different experiences could support reflection, we asked the students from both conditions to rate the change in their understanding of the teacher's problem. Our assumption was that if they discerned a change, then they were in a better position to reflect on those changes. At the end of the study, students rated their level of understanding before and after the videotape on a scale of 1 to 5. Both groups of students rated their initial understanding at an average level of 2.1. However, the personal story students rated their subsequent understanding at 4.2, whereas the tour students felt their understanding merely increased to 2.4.

Although we did not test the students further, we suppose that the humanizing video gave them specific knowledge that would support reflection on their own beliefs and practices in regard to foreign teachers. General knowledge of a culture does not provide sufficient grist for the mill. On one level this is common sense—getting to know someone as an individual makes it harder to generalize and stereotype about that person. On another level, it significantly reinforces the value of integrating technology into the culture and reflection mix. Rather than being cold and depersonalizing, technology can be a catalyst to humanistic compassion.

Reflection humanizes oneself for others. Reflection is a form of self-assessment. It is an attempt to re-evaluate one's actions and beliefs in light of the community in which one operates. Within schools, it is a good idea to encourage students to self-assess, if only for the reason that it engages students in thinking about their work more carefully. Self-assessment, however, can be difficult for the same reasons that reflection is difficult. It is hard to know what to assess, and it is hard to make assessments that go much beyond one's initial understanding. To promote self-assessment of student work as well as more profound reflections about themselves as learners, we have been asking students from different cultures to assess one another's homework via the Internet. A striking outcome from this work is that when people see evidence of other people being reflective, they become more receptive to those people and reflective themselves. This is one reason that we characterize reflection as a social act. Not only does it have social content for those who do the initial reflection, it also serves the social function of making other people more receptive.

In our first application of cross-cultural peer feedback, we asked middle school, social studies students from China to assess the homework of their counter parts in America. The homework was to write a story about a historical period of China. We quickly learned that this arrangement caused misunderstanding. The American students felt that the Hong Kong feedback was "too

harsh," and they had little desire to revise their work in response. The Hong Kong students felt that they should be as critical as possible so the American students could learn more. To resolve this problem, we did not prescribe strategies for giving and receiving feedback because we knew our rules could not cover all the misunderstandings that might arise. Instead, we tried to humanize the activity so the students would naturally become more receptive to one another's values.

To humanize the exchange, the American students sent their stories along with self-assessments of those stories. The American students wrote how well they had created stories that had main ideas, were interesting, and were accurate. They also wrote of any difficulties in doing the assignment. Our thought was that including the students' self-assessments and reflections would cause the Hong Kong students to comment not only about the student artifacts but also about the students who produced them. They would become receptive to the needs of the American students causing them to be more reflective about their role vis-à-vis the American students.

Half of the Hong Kong students read the stories plus self-assessments, and the other half only read the stories. The Hong Kong students worked in groups to provide written feedback to the students. The Hong Kong students who did not see the self-assessments were uniformly critical in their feedback. The Hong Kong students who saw the self-assessments were more positive and encouraging. One group of Hong Kong students wrote:

> Your story was not very deep and complex. You should also write about life of upper class people of the time rather than only about lower class people because you need to provide a complete picture of the life in that time. However, from your self-assessment, we felt that you are willing to look into yourself for improvement and you are quite thorough about it. Overall, you guys seem to be good people.

The submissions that included self-assessments elicited friendlier and more specific feedback about possible improvements. Interview data showed that American students who received the more receptive feedback felt more of a bond with the Hong Kong students and indicated more willingness to continue working with them. They tended to view the suggestions for revisions positively rather than as a sign of failure.

The American self-assessors also began to reflect on themselves as learners relative to the values exhibited in the Hong Kong feedback. They noticed important learner characteristics exemplified by the Hong Kong students, including clear and logical explanations and a serious attitude toward schoolwork. They also found that the Hong Kong students' English grammar was only average, which might open an avenue for reciprocity.

Overall, signs of reflection and self-assessment in others made members of both cultures more receptive to thinking about one another's beliefs, practices, and artifacts. As fits our general story, reflection is valued, at least across these cultures, and seeing others reflect causes people to be more compassionate, receptive, and ultimately more reflective.

CONCLUSION

Summary

Learning often involves developing new identities and activities within a cultural matrix, and we have argued that reflection is a signature quality of this development. We find that when people move to a new culture or community, or even a new classroom, they report an increase in reflection about

their identities, goals, and responsibilities in relation to the values of the old and new communities. The goal of this article has been to initiate a discussion on the potential benefits and conditions of productive reflection when people meet new cultures and how we can bring those benefits to the classroom. Much of our research has explored the uses of technology for promoting cross-cultural contact. It can expose students and teachers to fresh models of educational values and practices, and can illuminate their own. In this context, the value of reflection for most people is not simply to be more reflective. Instead, they try to learn a specific body of knowledge about themselves and the cultural basis for their beliefs, and ideally this knowledge can guide their future actions.

An important function of reflection is to help people decide which aspects of a new culture to appropriate and how to adapt those aspects to their own interests. But, for reflection to take place, people must notice and be receptive to other points of view and activities. To achieve reflective adaptation and receptivity, we believe that students and teachers must take on responsible roles that require authentic decisions. Being a tourist is not always sufficient to make people either receptive or sincerely reflective. Technology is useful in this regard because it enables manageable cross-cultural exchanges that target specific learning goals for reflection. At the same time, technology allows people to interact with a foreign culture while maintaining responsibility to their local culture.

Design Principles for Fostering Productive Reflection

We have been working toward principles that can help design productive environments for reflective learning through cross-cultural exchange. There are many possible principles. We highlight those principles that are derived from the preceding discussion.

1. Create reflective activities that target educational goals.
2. Include opportunities for responsible action that motivate genuine reflection.
3. Present culture in bite-sized pieces, which help focus reflection, and are sufficiently manageable that individuals can affect changes based on their reflections.
4. Encourage solitary reflections that may be communicated.
5. Design technology that suggests practices but encourages adaptation.
6. Humanize cultural contact so people will be receptive to reflection.

A Summary Example that Incorporates the Six Design Principles

We conclude with a recent Internet intervention that highlights the six design principles. With Jeff Holmes, we designed a virtual learning space (VLS) in which we asked a teacher in Hong Kong whom we will call Sally, and a teacher in the United States, Cindy, to teach a group of students a biology lesson. The teachers never met each other or their students face-to-face. Instead, they conducted class in a web-based, virtual reality where they appeared to one another as avatars and communicated in real-time by typing. Figure 4 provides a summary of the activities the teachers completed and a glimpse of the VLS that we built.

To foster reflective activities that target learning goals (Principle 1), we created an experiment on insect habitats in the VLS. By co-planning and co-teaching around the experiment, we hoped the cross-cultural interactions would help the teachers increase their content knowledge, pedagogical skills, and appreciation of different learning goals.

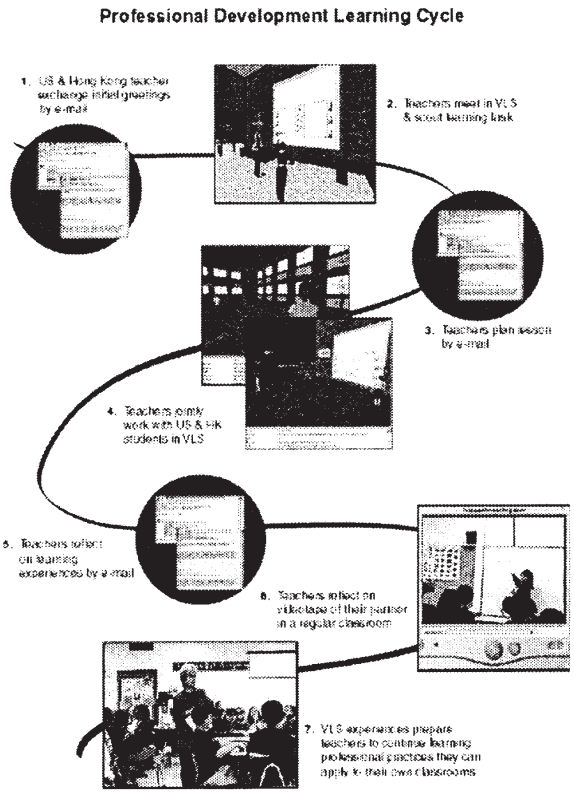

FIGURE 4 The sequence of teacher activities as they prepared and met with students in a virtual learning space.

To enhance authentic responsibility (Principle 2), teachers had the joint agency of teaching real children in real time. They had to make decisions about whether to change their normal practices in response to the VLS and what those changes would mean to them and their students.

To permit adaptive changes, the teachers interacted with another culture while remaining in their own (Principle 3). This protected teachers from the full force of another culture and allowed them to reflectively adapt their cross-cultural peer's values and practices into their on-line teaching.

To allow moments for reflection (Principle 4), we asked teachers to plan their lesson through e-mail before they started teaching. The solitary opportunities to reflect on what they would say in their e-mails gave the teachers a chance to consider and craft their thoughts. During the planning, they spontaneously wrote what was important to each of them and how to compromise in areas of disagreement. This reflection, when made social, enabled the teachers to learn about one another's strengths and their own weaknesses. Cindy e-mailed the Hong Kong teacher, "I am so impressed with you! You have such a command of the science experiment design that I think you ought to be teacher A, who teaches content and I can be teacher B (the social one) and whisper with you and encourage talk among the students. Fondly, Cindy." Meanwhile, Sally learned about Cindy's talents for creating a supportive atmosphere for student learning. These early exchanges

were important once the teachers actually met the students and had to make on-the-spot decisions. When they had trouble controlling the students, Sally asked Cindy to take charge, but when a question arose about the experimental logic, Cindy asked Sally to take over.

To suggest practices while encouraging adaptation (Principle 5), we designed a web-based experiment on insect habitats that highlighted variable control. This afforded specific practices for the students and teachers. At the same time, we under specified the goal of the lesson. We simply asked them to teach the students what they thought the students should learn. This invited each teacher to project and revise her own goals and values during the lesson preparation.

To humanize the cultural contact (Principle 6), we asked the teachers to exchange e-mails to prepare their lesson. The multiple exchanges helped each teacher reflect on the human values behind the other's instructional preferences. These interactions led to the formation of personal bonds as revealed by the content and frequency of their e-mails (19 e-mails during the week of planning, and three per week for 6 months after).

By our account, the VLS experience should have influenced the teacher's receptiveness to one another's knowledge and practice. To examine this hypothesis, we collected videotapes of Sally and Cindy working in their regular classroom. We asked uninvolved (non-VLS) teachers to observe the videotapes and notice any valuable lessons for themselves, just as they might do in a professional development setting. These control teachers tended to dismiss any novel practices they noticed. For example, the control teachers from the United States claimed that the high structure and intellectual discipline of the Hong Kong classroom could never be accomplished in America. In contrast, the VLS teachers did not relegate differences to "culture," and they considered ways to adapt some of the shown practices and values into their own culture. For example, the American teacher saw the high expectations of the Hong Kong teacher had for her students, which caused her to reflect on whether she had allowed her expectations and standards to sink too low.

Ultimately, we will need more work to explain the forms of knowledge that emerge at the crossroad of cultures with the support of technology, and we need more understanding of how to use technology as a catalyst to reflection. Ideally, we will form design principles so technologies can transform the obstacles of geographical and cultural distance into new opportunities for learning, compassion, and personal growth. This, we believe, is the legacy of Jan Hawkins.

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