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# Exploring Reflective Engagement that Promotes Understanding in College Classrooms

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## **Keywords**

Student engagement, Multiple-source learning, Reflective engagement

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## **Exploring Reflective Engagement that Promotes Understanding in College Classrooms**

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### **Abstract**

This study investigated student engagement in class discussions in a university-level, literature-based writing class. The research questions were 1) Does multiple-source learning provide a new lens for the observation of reflective teaching and learning practices? 2) Is there evidence that shows that the practices adopted by one teacher actually relied on and fostered this kind of thinking among students, and if so, what were those practices? The participants were 22 university students and their instructor, chosen because of the instructor's interest in improving class discussions. Data were collected over one semester through videotapes, formal and informal interviews, and class documents and were analyzed using constant comparison. Results showed the instructor facilitated student engagement through probing questions. The instructor's use of symbolism, metaphors, and experiences within this class were teaching tools aimed not at fostering domain-specific, elaborative, one-right-answer interpretations but rather at recruiting multiple sources for creating multiple cross-domain perspectives.

### **Introduction**

In dancing, music promotes performance—physically, emotionally, and mentally. What music does to performance, educationally relevant contexts can, potentially, do to understanding (Iran-Nejad, Hidi, & Wittrock, 1992). Just as music stimulates us to dance to a particular theme, we educators hope to create the tangible context for learners to perform deeper, more reflective acts of feeling and thinking. As in dancing, the educational contexts we create are effective only to the extent that we engage the mental, nervous, and bodily systems of students simultaneously in learning activities.

However, often our educational contexts become less like the full-body experience of dancing to music and more like that of an audience listening to a solo performance. As educators, we may give up the role of conductor and take on that of primary player. Instead of students' performing with our guidance, we perform for them. They memorize our movements for duplication, and lectures become convenient replications day after day. Students, likewise, become content with being told what we tell them. Yet sometimes we

refuse to be the primary player for the passive audience of the students. We listen to our instincts that education should be more than duplication and replication.

Just like dancing is a totality of music, mind, body, and inspiration, education is a comprehensive and irreducible totality (Iran-Nejad, 1994). With each effort to break down the “dance” of education for students, we realize that students must participate in the whole of learning. Without knowing what the entire experience should resemble, it is hard for the students to piece together the complete picture. Yet in education, that is exactly what we have been doing: giving students pieces to a puzzle. Psychology has reinforced the idea that breaking down bits of information to be added together will result in deeper, more complete understanding. Even if we don’t actually believe in piecemealing, our classes often reflect this practice. Efforts to break concepts down into bits of one-class-period teaching have been widespread, but there is a growing recognition that piecemealing may not have been as effective as it appeared to be (Iran-Nejad, McKeachie, & Berliner, 1990).

Education’s attraction to theoretical frameworks provided by psychology has led educators to adopt many teaching methodologies that haven’t been as promising as psychology made them appear. For example, beginning with Thorndike in the 1920s and continuing with Skinner’s research, instruction relied heavily on behavioral psychology’s view of learning (Bransford & Schwartz, 1999; Dyson, 1999). Incorporating concepts of behaviorism led to the popular practice of task-analysis described as analyzing and adding specific responses to the learner’s repertoire (Mayer, 2003); as a result, “an assembly-line model of skill acquisition” became commonplace (Dole, Duffy, Roehler, & Pearson, 1991, p. 240). However, as psychology became disillusioned with behaviorism, educators also had to re-examine the effectiveness of learning bits and pieces for later assembly. This early view of learning made it necessary for researchers to ask additional questions regarding the teaching-learning context beyond the narrow realm of stimulus-response interaction. As a result, more encompassing views of education emerged, such as contextualism (see Jenkins, 1974) and constructivism (see Fosnot, 1996; Prawat, 1992; Shuell, 1986; von Glasersfeld, 1996).

Constructivism proposed a cognitive model in direct contrast with behaviorist views of cognition. While behaviorism denied the presence of inner cognition, constructivism was based on cognitive structures created by the interaction of people upon objects. As important as constructivism was in understanding how cognitive processes work in learners, the focus remained on and within the individual. Yet our learning is not isolated from what happens around us. Vygotsky’s emphasis on the social set the stage for developments in the area of situated learning (see Clancey, 1997; Lave, 1988; Newell, 1986; Rogoff, 1990). Learning came to be viewed as the result of a social process encompassing the use of declarative and procedural knowledge in thinking, perceiving, problem-solving, and interacting inside the immediate context. Rovegno (2003) wrote that in situated perspectives “the individual, the activity in which the individual is engaged, and the environment are an inseparable unit of analysis” (p. 296-297). An important concept from situated learning, then, is that learning is not isolated from the social and contextual environment (Mayer, 2003).

### **Multiple-Source Understanding**

While all these theories have contributed to many of our current educational practices, often their contributions are treated as separate, if not mutually exclusive, educational territories. This is perhaps because none of them addresses the problem of integration.

Here the dance analogy is a useful reminder of the internal and external sources contributing to educational totality. Dancing is no fun without partners, the music, and the singing. While behaviorism confines learners to the role of passive participants under sole control of the classroom teacher, many cognitive learning perspectives also confine learners to the strict internalization of teacher-determined knowledge. If learning is, indeed, multiple-source in nature (Iran-Nejad, McKeachie, & Berliner, 1990), as many now agree (Clancey, 1992; Dunn, Dunn, Andrews, & Languis, 1992; Languis & Miller, 1992; Shuell, 1990), a more systematic exploration beyond knowledge is needed which is aimed at integrating the multiple-source nature of educational contexts. Constructivist and situated learning theories have covered significant ground. However, the principal focus of these theories has been on domain-specific knowledge construction in the form of situated or abstract schemas (Alba & Hasher, 1983; Anderson, 1984). As a result, cross-domain sources have not received much attention in their agenda (Iran-Nejad, 1994). Also overlooked have been motivational sources like interest (Hidi, 1990), affect (Iran-Nejad, 1987), and emotion (Diener & Iran-Nejad, 1986).

To be the most effective, education must include practices that are not domain-specific but that are cross-domain, involving multiple sources that appeal to dynamic sources of learning such as motivation (Iran-Nejad, 1990; Iran-Nejad & Chissom, 1992). Education must identify and integrate multiple sources, and here is where we reach the end of the road for cognitive theories of knowledge acquisition. Multiple sources cannot be integrated by means of constructive elaboration on the knowledge being internalized. To integrate multiple sources in educational settings, we need a theory of understanding (Iran-Nejad, 2000).

The difference between constructive elaboration and multiple-source understanding can be seen in the following example (see also Iran-Nejad, 1990; Iran-Nejad & Chissom, 1992). When a lesion occurs in bodily tissue, we know how to wrap or sew the wound. We may even introduce new tissue from another part of the body. Roughly speaking, this is analogous to constructive elaboration. However, stitching a wound is not the same as healing the wound, something we do not know how to do. When someone says he or she knows how to heal, we think of faith healing, an idea met with skepticism because intuitively we recognize people don't really know how to heal. Only our bodies know how wounds are healed by means of what is currently a mysterious biofunctional process. The same can be said of constructive learning processes in understanding. To claim "I know how to understand" is intuitively unacceptable for the same reason that "I know how to heal" is recognized as miraculous faith healing (Iran-Nejad, 1990, p. 72).

As **understanders**, the "know-how" of understanding is, for us, a mystery in the same way that, by analogy, the "know-how" of how our nervous and bodily systems heal a lesion or a headache is a mystery to us. The body seems to know how to understand; the mind does not. If education is about human understanding, we need to consider the biofunctional contributions of the human bodily and nervous systems (Iran-Nejad, Hidi, & Wittrock, 1992). This is stated even more clearly by Prawat (2000),

The fact that we do not know how we understand but we do know when we understand—the "extraordinary click" referred to by Iran-Nejad—points to a process that lies beneath that of symbolic manipulation (symbols chasing symbols). The lack of awareness of how understanding occurs, coupled with the certainty that it does

occur, is prima facie evidence that the process takes place somewhere in addition to, if not other than, the symbolic or propositional level. (p. 90)

As educators, we have been fond of constructive elaboration because we know how to elaborate as well as when we elaborate. It is not surprising, then, that teaching by constructive elaboration, either on what we teach or on the learner's prior knowledge, is so popular, even though little is said about teaching for understanding (Iran-Nejad, 1978). In a shift to teaching for understanding, educators are called upon to reconsider their approaches and become aware of the role that the brain-mind cycle gives to reflection for understanding in educational settings (Iran-Nejad & Gregg, 2001). As human native capacities, reflection and understanding should become an integral part of teaching and learning. The question then remains on how to include teaching for understanding in the higher education context.

### **Engagement in the Writing Classroom**

In the 1970s and 1980s, compositionists began struggling with questions of how to engage learners in a more meaningful way. While some advocated teaching students to assemble the differentiated whole "bit by bit, by linear methods" (D'Angelo, 1978, p. 142), others, such as Bartholomae (1987), Shaughnessy (1977), and Wyche-Smith (1987), questioned the value of teaching isolated bits instead of whole contexts. Rose (1989) discussed attempts in the 1980s to teach basic writers through a disjointed, disconnected, linear approach to writing. He stated that through this approach students come to feel that grammatical correctness is the most important part of writing, "not the communication of something meaningful, or the generative struggle with ideas" (p. 211). Rose discussed that a canonical, traditional approach to teaching and learning moves the focus away from learning and places it on the subject itself. This can be a subtle, but important difference. Rose wrote that learning must be more than the "mastery of a tradition" (p. 235).

Similarly, Hartwell (1987) discussed the role of grammar instruction, and citing Emig, he wrote that as teachers we often assume "students will learn only what we teach and only because we teach" (p. 348). Hartwell asserted that because of the similarity of writing errors by speakers of different dialects, mastery of writing principles may not be a matter of focusing on rules in an approach "from the bottom up from grammar to usage to fixed forms of organization" (p. 365). Instead, it more likely involves learning "from the top down, from pragmatic questions of voice, tone, audience, register, and rhetorical strategy" (p. 365). As explained by Hartwell (1987), a multiple-source approach to teaching writing draws on different aspects of the writing context (see also Iran-Nejad, Watts, Venugopalan, & Xu, 2007). Troyka (1987) also concluded that students need "access to more than techniques of writing; they [need] access to the underlying rationales for choices they can make as they write" (p. 446).

However, while many compositionists have moved toward issues of audience and ownership in writing (see Lunsford, 1999), others have continued the traditionalist view. Latham (2002) advocated a view of teaching writing based both on information processing and task-based analysis. According to Latham, automation of reading and writing skills is paramount so that "skill tasks [are] performed almost without awareness, such as expert reading and writing skills" (p. 177). Although this is a simplistic view of what occurs in both processes, the adaptation of the older, traditional methods of teaching to newer learning theories such as information processing, allows us to continue with our easier worksheet exercises without asking students to become actively engaged in writing.

### **Beyond Knowledge Transmission in the Classroom**

Dole et al. (1991) argued for a view of the learner who is active in the learning process, in contrast to one which stresses repetition and automaticity. However, neither constructively elaborating on prior knowledge nor being active necessarily goes beyond knowledge transmission or leads to understanding. Holden and Schmit (2002) discussed the importance of creating reflective classrooms by rethinking the role of the student and the level of student engagement. Bruner (1965) also addressed the difference in the quality of interaction that creates the best learning environment. He wrote,

Children have come to expect quite arbitrary and, from their point of view, meaningless demands to be made upon them by adults. . . . Children, like adults, need reassurance that it is all right to entertain and express highly subjective ideas, to treat a task as a problem where you *invent* an answer rather than *finding* one out there in the book or on the blackboard. (p. 1013-1014)

Likewise, Eddleston and Philippot (2002) wrote, "Unfortunately, most schooling continues to be based on a transmission and recitation model of communication" (p. 49). They explained,

. . . the teacher must take a number of roles within the discussion if the conversations are to succeed. These roles include being a facilitator, a participant with ideas and questions, a promoter of diverse perspectives, a linker to real-world concerns, and an instructor of reading strategies. (p. 51)

They argued that probing questions raised by teachers are significant because these questions encourage student reflection about the topic being discussed. Asking probing questions is different from constructive elaboration because probing questions impact the ground for understanding and not merely the string of incoming information (Iran-Nejad, 1978, 2000).

### **Engaging Understanding in the Classroom**

In the present study, we wanted to observe the dynamics of a university classroom that aimed for understanding versus knowledge transmission. Therefore, the purpose of this research was to explore the role teachers can play in creating understanding in students in order to learn more about their understanding-promoting intuitions. Utilizing a multiple-source theory of teaching and learning offers a different perspective on teaching practice. Therefore, this study investigated the dynamics of how understanding-promotion works in a university writing class. The specific research questions were the following:

1. Does multiple-source learning provide a new lens for the observation of reflective teaching and learning practices?
2. Is there evidence showing that the practices adopted by one teacher actually relied on and fostered this kind of thinking among students, and if so, what were those practices?

We hypothesized that a class discussion geared toward reflection rather than elaboration would generate more interest and lead to greater learning as measured by improvement in writing essays.

## Methods

### Data Sources

Several tools for data collection were utilized during the course of this research. The participants in this study were a group of 22 university students (9 females, 13 males) and their instructor in a second semester, first year writing class at a major research university in the southern United States. The class included two African-American male students. This class was chosen because of the instructor's desire to participate in the research and her interest in teaching for understanding. The course is required of all students at the university, and students must pass with at least a "C" or they have to repeat it. Some students had repeated the class more than once while others received an advanced placement because of scores obtained on their university admissions test. The class met for 50 minutes three times a week for 16 weeks.

We began this research by using a non-participant observation method (Spradley, 1980). As non-participant researchers, we wanted to protect the integrity of the study while maintaining our objectivity as researchers (Yin, 2003). Since we came to this study with very definite predictions, we did not want our preconceptions as researchers to be potentially biased by our postures as active participants in this research (Yin, 2003). Therefore, we felt that as researchers our task was to report on the data as it occurred within the classroom.

The first researcher in this study observed the writing class several times over the semester, observing discussions of Donne's *Meditation XVII*, Blake's "The Tyger" and "London," Wordsworth's "Composed Upon Westminster Bridge, September 3, 1802," Rich's "Aunt Jennifer's Tigers," and Simon's "I am a Rock." A video camera was placed in the classroom to record the interaction of the instructor and the students. Three separate tapes of classroom discussions were recorded. Also as part of data collection the first author collected lesson plans from the different sessions observed.

In addition, notes were taken in a field journal to supplement the videotaped interaction. The field notes consisted of the questions, answers, and reactions captured during the discussion. Finally, the instructor in this study was interviewed informally three times during the course of this study. Interviews lasted 35 minutes each and were carried out at the end of the teaching period. Interviews were spaced across a period of four weeks from each other.

Finally, scores on the first and last essays as well as mid-term and final grades were collected for analysis. The essay scores were obtained as one method for showing writing improvement. The scores at mid-term and the end of the semester were obtained to support the analysis on writing improvement. In addition, the instructor questions were tabulated according to the number of open-ended, probing questions that were asked over the course of the class period.

### Data Analysis

The analysis began during the data collection process as the field notes and interview transcripts were reviewed frequently. Once the data sources were collected, the data were analyzed to determine the kinds of questions the instructor introduced during each lesson which stimulated more reflection and a creative disposition within the students. The video recordings of classroom discussions were coded and categorized using constant comparison



(Glaser & Strauss, 1967, Merriam, 1998). Constant comparison was chosen as the method of analysis because we wanted to discover global patterns or themes in the class discussions that may be consistently emerging over the semester as opposed to discourse analysis that would lead to an understanding of each individual discussion. Qualitative questions which demonstrated a less traditional approach to teaching and learning and elicited more dialogue and reflection were the focus of the analysis of questions. We were particularly interested in questions that helped create a "culture of inquiry" as discussed by Teixeira-Dias, Pedrosa de Jesus, Neri de Souza, and Watts (2005). The questions were quantified according to the number of *why* or *what* questions (such as "What kind?") the instructor raised. Most importantly, our use of qualitative data followed the observations of Rovegno, Nevelt, Brock, and Babiarz (2001), "Our aim for the qualitative data was to discuss children's learning from the perspective of teachers—what teachers might see across children they are responsible for" (p. 372). While the present study did not involve children, the goal was to observe and to understand the class from the perspective of the teacher and how the interaction in one classroom can inform teaching practice across academic settings.

In quantitative analysis, the grades of first and last essays and mid-term and final grades were analyzed using simple descriptive statistics and paired sample two-tailed t-tests. In addition, open-ended questions were tabulated during the coding of the videotapes to search for probing questions which required more thoughtful, reflective answers.

Triangulation was used to ensure the trustworthiness of the data. Merriam (1998) wrote, "Triangulation, especially in terms of using multiple methods of data collection and analysis, strengthens reliability as well as internal validity" (p. 207). In addition, Eisner (1998) argued, "In seeking structural corroboration, we look for the recurrent behaviors or actions, those theme-like features of a situation that inspire confidence that the events interpreted and appraised are not aberrant or exceptional, but rather characteristic of the situation" (p. 110). Therefore, the transcribed material was brought back to the instructor for member-checking (Merriam, 1998) to ensure that data results reflected an accurate view of what transpired in the classroom. We believed that using a multiple data collection framework should provide readers an inside view into the design of the study. Interviews, field notes, observations, and video recordings became valuable sources in the data gathering process across the study.

## Results

The videotaped data were first transcribed. Several salient themes emerged out of the transcribed material. The following themes were observed: (1) real-world setting, (2) symbolism, (3) confronting understandings, (4) use of metaphors, and (5) authentic examples.

### Categories of Questions

*Real-world setting.* Real-world setting was the first theme which became evident as the instructor posed questions to establish a context for understanding. For example, in discussing Donne's "Meditation XVII," the instructor asked, "Does anyone live in a small town where the church is really important? Or where the church is important enough that the bells ring?" A few students replied, "Yes." The instructor then asked students to explain the use of church bells in small, rural towns. For Donne's observation of church

bells ringing at different occasions, the instructor asked students about their experiences of hearing church bells at weddings, funerals, and other important social events and used the resulting context to assist students in understanding the concepts discussed. During a follow-up interview, the instructor explained the purpose of her questioning.

*Researcher: I can see the challenges of fostering class discussion while using symbolism as a medium to engage students indirectly in the dialogue.*

*Instructor: The challenge to me is not to use indirect teaching. The challenge is to try to get the students to see the concepts that they read in the literature as something real.*

*Researcher: What do you mean by this?*

*Instructor: When they read symbolic language to me, it seems that it is very abstract to them, and I want to it to be real.*

*Researcher: What is real to you?*

*Instructor: I want them [the students] to be able to take the abstract idea or symbol and to relate to it in a realistic way.*

*Researcher: How does this work with poetry?*

*Instructor: I do not want it to be a word that they read but an image they see.*

*Researcher: An image?*

*Instructor: Yes, an image they can see, or visualize.*

*Researcher: How does the word church fit into this idea?*

*Instructor: Again, I do not want it to be a word they can read, but an image they can see. It is one thing to read about a farm and another to remember the last time you were there, smelling the chickens or hearing the cows mooing. . . . I want them to reflect on their experiences when I ask them to think of what a poet is trying to get across.*

*Researcher: Is this your way of engaging your students with poetry?*

*Instructor: I know that a lot of students are put off by poetry and literature and symbolic language, and I do not see myself teaching literature appreciation as much as I want them to grasp an understanding of what the poet is trying to express.*

*Researcher: Do you want them to engage their experiences with what they read?*

*Instructor: Yes, this is what I am trying to do.*

It appears in this interview that the instructor is actively confronting the puzzle of symbol-grounding in her classroom (Iran-Nejad & Gregg, 2001), rather than implementing the

common practice of constructive elaboration on the words and sentences in the text. For instance, her focus is not on having students make logical or pragmatic inferences from the text. Neither does she use the common catch phrase of “connecting the text to the background knowledge of the students.” Rather, she is trying to build the multiple-source ground in which the students have lived in one form or another experientially, smelling and hearing the animals and so forth. The point of studying literature, according to the instructor, goes beyond the pure act of knowing the abstract or even the concrete meaning of the words or sentences. The experiential ground for which she is striving relies on sources other than those that can be derived deliberately from the text being read. Instead, the instructor is trying to make poetry something as tangible, natural, comprehensive, and multiple-source as the real world itself. She is not isolating poetry as a way to elaborate on the text of it. She leaves the text in search of other sources that contribute to understanding. She wants to see to it that the word itself is not the focus of the student’s attention; instead, feelings, emotions, and other real-life attachments become a catalyst for understanding.

*Symbolism.* In a continuation of the first theme, the second theme was the use of symbolism in the discussion. While the first theme discussed the instructor’s focus on connecting language to real-life experiences, the second theme revolved around the search for symbolic interpretation in the text. The instructor appeared to want to teach the students to see beyond the symbols to enable them to search for more symbolism which paralleled the multiple-source nature of language. For example, one class discussed two poems which used tigers symbolically. The instructor had students to cluster ideas around the concept of tiger. The resulting clusters were then used to shed new understanding on the two poems about tigers, as is evident through the following exchange:

*Instructor: Where did you hear about a hammer, an anvil, and a furnace? What does that mean?*

*Student 1: Ironworks.*

*Student 2: Strength.*

*Student 3: Steel. Hard. Hard to break*

*Instructor: What does this symbolic language have to do with the tiger?*

*Student 4: It symbolizes the way it was made. The design.*

This excerpt demonstrated a desire on the part of the instructor to take the symbolic language to another level so that students took the symbolism, made it real to them, and then applied this new understanding to another level, placing it back in context to shed light on another part of the text. The dialogue itself becomes somewhat symbolic, without the constraints of grammar and structure, as one idea feeds into another from different students, ideas which are then reassembled at the end and contextualized, another characteristic of the multiple-source ground of understanding.

*Confronting understanding.* Learning may be described as multiple-source reorganization of the learner’s own intuitive knowledge base (Iran-Nejad, 1994). This implies that challenges to today’s (old) understandings may become the essential seeds for the development of

tomorrow's (new) understanding. Evidence for this emerged in the form of a confronting-understanding theme in the instructor's teaching. The questions expressed by the instructor probed prior beliefs of the students and their understandings of particular contexts. The instructor repeatedly asked students, "Why do you think so?" "What kind of images do we have now?" "Why?" "Can you expand on that idea?" "What are we talking about?" The questions were open, encouraging the students to expand the ground of their own opinions with every new explanation they offered. These questions asked students to confront and to explain their thoughts and understanding of the discussion topics. This type of problem-defining, solution-defining discussion helped students reorganize their understanding with each new question instead of short-circuiting the discussion by presenting one instructor-defined problem and solution students either attempted to guess or were informed about through a lecture. In fact, in an analysis of these types of questions, approximately thirty were asked every fifty-minute class period.

*Metaphors.* We have already discussed the ground-building power of symbolism. Another related theme emerged when the instructor asked students to explain metaphorical language in a way that fostered multiple-source grounding for the text under discussion. For example, the instructor asked for images (metaphors) in the texts. The students mentioned "womb" and then associated the word with birth and protection. The instructor then asked, "Why is that? How does the idea of the womb protect?" The students mentioned the ideas of poetry, books, and armor. The teacher then asked the students to explain how poetry could protect the poet by asking the students to express directly the analogy to which the poet was alluding. As in the second theme, the instructor began asking students to define the problem and then to identify the solutions. The students had to identify images they saw and then explain what the metaphors meant to them. The students are not told what they should find, but rather they are encouraged to seek out language that interests them.

*Authentic examples.* Finally, the instructor used authentic examples from daily experiences as a technique to create multiple-source understanding in students. For example, the instructor asked students to explain the difference in seeing a city from the point of view of an insider and viewing the city as an outsider to help students understand perspective. The instructor asked students to explain church bells or tigers from their own experiences. She further asked students to relate those experiences to what the poets were trying to say. The understanding of poetry and symbolic language was sought by relating daily experiences to the texts.

The instructor discussed this idea further in the follow-up interview.

*Researcher: What did you want your students to get out of this reading?*

*Instructor: I want them to have experiences working with different kinds of communication. Poetry is highly expressive, usually communicating a type of experience. It is not the form I want them to relate to; it is the ideas. I want them to have practice looking for meaning in different formats. There is nothing really special about a poem, except it allows for a wider interpretation. In fact, I think this is one of the beauties of poetry. Each word is packed with more meaning.*

*Researcher: Meaning what to you and possibly your students?*

*Instructor: Poetry is a highly symbolic kind of communication. In poetry, you use fewer words to get across your meaning.*

*Instructor: Let me see if I understand what you are conveying here in our discussion. The symbolic power of poetry resides within the word itself to the extent we can interpret it?*

*Instructor: The word becomes a window to all the many interpretations and meanings you can apply.*

We believe that the instructor is using a metaphor such as a window to refer to the cross-domain power of words. This is very different from the domain-specific uses of concepts emphasized in traditional education. She is using doors and windows as world-opening metaphors, as opposed to the literal application of words for inferential elaboration.

*Researcher: I noticed that in your class you discuss poetry as if it were something where students can feel free to express their views. I see that you use an indirect approach to teaching poetry, is that right? Like there is not only one way to answer a problem.*

*Instructor: My basic teaching method for anything we discuss is I don't give them answers. I try to validate each answer by writing it on the board and by repeating it out loud. After they tell me a couple of things, I usually say, "What else?" not because they haven't given the standard interpretation, but because I want everyone to participate, and the more time I give to the discussion, the more I get everyone to answer and not just the one answer. It seems to work that more people participate and give their opinions. One of the things I try to do in this writing class is to get students to focus on communication in many ways. For them, communication has two parts. The first one is writing clearly so that they can be understood and the second is understanding what other people write, and poetry helps us do this.*

*Researcher: So in poetry there aren't right or wrong interpretations, since poetry opens the door to discussion about meaning making which is a creative act fostered by dialogue?*

*Instructor: I never tell my students that they are wrong. I do not want to cut short the conversation. Like I said, I write everything on the board. At the end, I highlight the main things they should remember.*

*Researcher: It sounds like that you want to empower their views about poetry and refrain from imposing your own interpretation.*

*Instructor: I want to provide a different experience than I had because even though I was a good student, I was afraid that I didn't know the answer. I felt my ideas were not as good as everyone else's. One of my main teachers would not let us read poetry out loud because he thought poems were difficult to read. We came away with the impression that he was the only one that could read it. I am just trying to make it accessible to everyone.*

It appears that the instructor's use of symbolism, metaphors, and experiences within this class are teaching tools aimed not at fostering domain-specific, elaborative, one-right-answer interpretations but rather at recruiting multiple sources for creating multiple cross-domain perspectives. What emerges here is a type of learning which liberates understanding and encourages independent thinking rather than teacher-expected solutions. We can see that this kind of learning is more authentic since it grounds the text firmly in individual experiences. The individual enlarges the understanding of the group since understanding is not imposed on the students as an absolute concept. Understanding is created when students can see that what they are learning is impacting them in a more natural way. The symbols become more effective when they empower the learner with their own feelings, emotions, and sensory experiences.

### **Essay and Grade Results**

The grades of first and last essays and mid-term and final grades were analyzed using simple descriptive statistics and paired sample two-tailed t-tests. The average of the first essay grades was 79.67, with a standard deviation of 12.94. The average of the last essay grades was 87.29, with a standard deviation of 6.7. The differences in the scores for first and last essays were significant  $t(41) = -35.253, p = .000$ . The average for the mid-term grades was 78.33 with a standard deviation of 16.23. The average of the final grades in the class was 85.48, with a standard deviation of 12.84. The differences between the mid-term and final grades were significant using the paired sample two-tailed t-test,  $t(41) = -48.363, p = .000$ .

Further analysis of the grades revealed that out of 21 students who completed the class, 10 students increased their grades over the course of the term, with 4 students improving by at least 2 letter grades. Also, all but 5 students improved their grades from the first essay in the course to the last.

The instructor explained that the essay assignments were not equal in her opinion, and that she tried to give more difficult assignments, requiring more analysis and synthesis, at the end of the course and easier ones involving narration and explanation at the beginning. She discussed that she thought her grading throughout the semester was also not quite equal. She felt the grading scale shifted slightly with each essay so that it was harder to make an "A" or "B" with each essay. This design, while not experimental, may reflect more what takes place in most classrooms, where the first exam covers material introduced at the beginning of the semester and the final is comprehensive. Like a comprehensive exam, the final essay was also weighted more than the other essays.

In addition, coding of the videotapes revealed an average of 30 open-ended questions which required more thoughtful, reflective answers.

### **Discussion**

The findings indicate that the instructor's use of probing questions created an openness to dialogue in classroom learning conditions. The instructor consistently sought to expand on learners' participatory experiences within the classroom. These questions are significant since they go to the core of creating a teaching environment where students focus their attention on ways to expand, create, and refine their understanding of a particular topic. The probing of the instructor was important since it facilitated learning. Probing questions

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such as those used to elicit prior knowledge and experience seemed to help students develop more understanding, based on their responses in the discussions and grades on their essays.

The findings in the class discussions support the literature on the importance of prior experience in learning. However, rather than elaborate on prior knowledge for its own sake, the instructor attempted to have students relate to the material through multiple sources of understanding. The instructor used the experiences of some students to assist in the learning of other students, and the instructor emphasized the importance of recalling a multi-sensory experience than the definition of a word. Rovegno (2003) argued that the individual, the activity and the environment are all interconnected and cannot be isolated. The individual components of the class discussion created a unique environment for negotiation of meaning and knowledge construction.

Iran-Nejad (1992) and Heflich and Iran-Nejad (1995) argued for the application of biofunctionality in the classroom through reflective teaching practices. The instructor encouraged students to rethink their understanding by asking probing questions and by having students restructure their learning. The instructor asked students to reformulate their ideas after reading additional portions of the text and discussing new concepts. Heflich and Iran-Nejad argued that reflection is necessary for the integration of higher order thinking.

In addition to supporting the theoretical approaches of learning, this study also supports previous classroom research. Holden and Schmit (2002) argued for creating reflective classrooms where students have the opportunity to voice their opinions and understandings. This builds on Bruner's (1965) call for classroom problems that allow for inventive answers rather than one answer. The classes observed were all discussion-based where the teacher asked probing questions and used student questions in order to further the students' knowledge. The use of student questions is also linked to Meyers (2002) and Dole et al. (1991) that student questions lead to deeper understanding of the text as well as Teixeira-Dias et al. (2005) that they lead to a general culture of inquiry. Donaldson and Graham (1999) argued that the complex, rich experiences of adults as well as their capacity to connect what they are learning contribute to their progress in the university classroom. They wrote, "Prior experience leads adults to evaluate themselves across a number of social and psychological dimensions that impact their collegiate experience" (p. 29). The connection of experiences, their academic lives, and their authentic experiences in the real world apparently help shape the meaning adults create from the university experience.

Grades were analyzed in this study to give one form of feedback on the assessment of learning outcomes and objectives. According to the data analysis, most students improved their grades over the semester, and there was a significant difference in mid-term and final grades. While the assignments were not the same, the first and last essays also showed a significant difference in grades as well. Therefore, it would appear that student learning improved.

### **Conclusion**

Convincing support was found in this study to suggest that multiple sources of learning are critical to creating a stimulating environment of curiosity and inquiry. The stimulation of

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reflection, discussion, and knowledge restructuring in students, in other words the multiple-source nature of learning, results in classrooms where learning is active, authentic, and meaningful but most importantly they build around the individual as a member of a learning community where dialogue is not decontextualised from the learning activities students are engaged in. The findings support previous research in active learning, yet there are some limitations to this study. The presence of the researcher and the video camera may have influenced the discussion in some way. Also, the students were not interviewed after the classes, which would have added to the understanding of how the students individually interpreted the complex texts; however, the research was designed to use non-participant observation in order to maintain objectivity in interpreting the classroom discussion and not to bias the students' participation. The researchers did not want to influence the way students perceived the objectives of the class discussions by calling undue attention to the discussions. Although not a perfect measure of assessment, grades were used as one method for estimating learning in the class.

This research adds to the literature in learning because it examines university learners and the conditions that enhance their learning environments because much of the research on learning environments has focused on children. Through the results, we can see that a multi-source level approach used by teachers can foster a more natural learning environment encompassing the totality of experiences of the learner. The learner, therefore, has an opportunity to participate in a context where his/her entire experiences, psychological, social and physiological, act as vehicles for learning.

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