DOCUMENT RESUME

ED 399 208 SO 026 803

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TITLE The Metaphoric Nature of Teaching and Learning and the Role of Personal Teaching Metaphors.
PUB DATE 94
NOTE 17p.; Paper presented at the Annual Meeting of the Mid-South Educational Research Association (Nashville, TN, November 9-11, 1994).
PUB TYPE Speeches/Conference Papers (150) -- Viewpoints (Opinion/Position Papers, Essays, etc.) (120)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Educational Change; Higher Education; Imagery; *Learning Processes; *Metaphors; *Student Role; Symbols (Literary); *Teacher Role; *Teaching Methods

ABSTRACT

This paper explores how individuals develop their personal definitions of teaching and learning and how that translates into the classroom. The literature on psychological and educational research suggests that human thinking and communication are profoundly metaphorical in nature. If this is true, metaphors can play a valuable role in revealing, reaching, and reorganizing the thought processes of students, teachers, and researchers and thereby serve as a valuable tool in bridging the gap between learning/teaching conceptions (or attitudes) and learning approaches (or practices). This paper discusses how metaphors reveal commonly held assumptions about the way people view human communication, learning processes, teaching processes, the role of students, and the role of teachers. The goal is to examine how metaphors fundamentally govern existing educational processes and how restructuring educational processes must include restructuring existing metaphors and replacing them with new ones. (EH)

Running head: THE METAPHORIC NATURE OF TEACHING AND LEARNING

The Metaphoric Nature of Teaching and Learning and the Role of Personal Teaching Metaphors

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This paper was presented at the annual meeting of Mid-South Educational Research Association, Nashville, TN, 1994

Abstract

The literature on psychological and educational research suggests that human thinking and communication are profoundly metaphorical in nature. If this is true, metaphors can play a valuable role in revealing, reaching, and reorganizing the thought processes of students, teachers, and researchers and thereby serve as a valuable tool in bridging the gap between learning/teaching conceptions (or attitudes) and learning approaches (or practices). This paper discusses how metaphors reveal commonly held assumptions about the way we view human communication, learning processes, teaching processes, the role of students, and the roles of teachers. The goal is to examine how metaphors fundamentally govern existing educational processes and how restructuring educational processes must include restructuring our existing metaphors and replacing them with new ones.

The Metaphorical Nature of Human Cognition

Studies of language and communication (Lakoff & Johnson, 1980; Ortony, 1979; Reddy, 1979; Schon, 1990) make the claim that the linguistic device we call metaphor profoundly influences thought. One reason for this is that our conceptual system itself is fundamentally metaphorical in nature. Lakoff and Johnson (1980) assert "that what we think, what we experience, and what we do is very much a matter of metaphor" (p. 3). Related concepts such as analogy and simile, even though distinguishable from metaphor in so far as linguistic format is concerned, will not be treated as separate categories in this paper. The assumption is that, beyond their linguistic form, metaphor, simile, and analogy all share in varying degrees in what Ortony (1979) calls metaphority. Therefore, this assumption is compatible with the claim made by Lakoff and Johnson that metaphor grounds our thinking and action and extends the sphere of influence of metaphor, analogy and/or simile beyond language and into the realms of thinking, experience, and practice.

There is no doubt that language, thought, and action are intimately interrelated. Reddy (1979), makes a compelling argument that words are for the most part conduit metaphors for ideas, that thought and action are influenced by an overreliance on what he called conduit metaphors, and that about two-thirds of the English language comprises conduit frames and structures. Reddy suggests that true (or literal) communication, which is extremely difficult, is made deceptively simple by conduit metaphors. What we reap through the overuse of these metaphors is "success without effort" (p. 295).

For Ortony (1978) and Schon (1990), metaphor is a vehicle for the creation of new meaning and fresh viewpoints. It is widely known (Ortony, 1978) that some new scientific endeavors were guided by metaphorical comparisons such as the comparison of the atom to the solar system. The latter metaphor was valuable not only because it allowed comparison of both structures, but because it created a fresh perspective which stimulated vital research about the extent to which the comparison could hold. Schon calls this the generative function of metaphor because such metaphors allow us to

reframe old problems so that we may discover new solutions. For example, (Schon, 1990), when tackling the problem of improving paintbrushes, it was observed that paint flowed from a brush like water flowed from a pump, not altogether smoothly, but in spurts. The metaphor provided a new way to see paintbrushes, and the new insight led to improved design.

This generative function is also evident in educational research, an area where fresh insight is sorely needed. Bullough and Stokes (1994) and Marshall (1988) and Pineau (1994) show that metaphorical identification of the role of teacher is associated with generation of alternative conceptions of "self-as-teacher" (Pineau, 1994, p. 219). According to Bullough and Stokes (1994), "comparing and contrasting metaphors may well be a helpful means for beginning teachers to develop alternative ways of thinking about teaching..."(Bullough & Stokes, 1994, p. 200).

The Educational Value of Metaphor

As a teaching tool, the value of metaphor has been often stressed (Ortony, 1975). When abstract concepts need to be made concrete, or something that is too vague needs to become more clear, nothing can replace a well-chosen metaphor. However, some (Sticht, 1979) assert that metaphor, instead of clarifying, may actually be misleading. An examination of these two opposite viewpoints on metaphor is necessary if an appreciation of its educational value is to be gained. Ortony (1975) makes the argument that there are three important aspects of metaphor that make it useful pedagogically. We will examine them by imagining that learners are exposed to the metaphor Time is a thief. Through brainstorming the many ways in which this might be true, students can gain an awareness of the breadth and depth of experience that the metaphor encompasses. For instance, time robs all of youth, energy, and much more as it passes. Such losses, though numerous, are summed up by the brevity of the metaphor. This aspect Ortony calls compactness. Additionally, there is the indescribable nature of time as an abstract concept that is captured through the concreteness of the metaphor. This quality of making the inexpressible expressible suggests that metaphor is a necessary tool because it is sometimes the only tool available for the job. And, finally,

the metaphor's vividness can be used to reach emotion, to stretch the imagination, and to encourage comparison. Thus, Ortony (1975) argues, because of their compactness, expressiveness, emotional content metaphors are necessary in education. The compactness of metaphor is of interest to the teacher because it distills many characteristics of a concept into a few words. Metaphor is actually often the only means available for the expression of an abstract idea. And, when used to reach the affective response in students, the value of metaphor is unmatched by concepts presented in other ways.

But, there is also another side in the educational value argument. Sticht (1979) suggests that metaphors run the risk of leading to misunderstanding, and that, consequently, their value as teaching tools may be exaggerated. There are two facets of this argument. One is that students from greatly different cultural backgrounds may not share the required experiences for "receiving the large chunks of information to be transferred by the metaphor" (p. 477). For instance, metaphors which are highly technological, like the computer metaphor for memory, are not universally comprehended, even in a highly technological era. The other facet is that children of different ages may have quite different understandings of the same metaphor. It is possible that both of these aspects have to do more with the issue of selecting the right metaphor for the context and less with the implication that the metaphor should be avoided as a teaching tool.

In academic settings, there is always the possibility that instruction may mislead, and that possibility makes even more important the need to strive for clarity. It certainly is evident that certain variables, such as age or culture, will enhance or limit understanding. This problem is by no means unique to the role of metaphors. One way to try to reach clarity regarding the problems associated with the metaphor as a teaching tool is to explore how and why metaphors should be used in teaching. To address this issue, the present paper explores the notion that (a) the metaphor's influence is thematic in nature and (b) metaphor is a tool for reaching and reorganizing the intuitive knowledge base of learners (Iran-Nejad, 1994).

The Thematic Nature of Metaphor

An important aspect of metaphor is that it can become the theme, or context, for learning. For instance, it has been argued that the classroom is traditionally seen as a workplace (see Bereiter, 1990; Marshall, 1988). By using this particular metaphor, a shared theme is established that is applicable to both the classroom and the workplace (see Iran-Nejad, 1989a). This shared theme (let us call it for now the learning-is-work theme) serves as the context from which numerous similarities about work and/or learning are understood. Examples are work is hard, boring, and one must be paid for it with some tangible extrinsic reward (money or grade). Iran-Nejad (1989a) argued, from a biofunctional perspective that metaphor has the capacity to reach the thematic level of our intuitive knowledge of the world and, thereby, to make salient the important similarities and differences that exist between two thematic domains, in this case the learning situation and the workplace.

Iran-Nejad (1989a; 1989b) defined thematic knowledge as whole-level knowledge and contrasted it with part-level or categorical knowledge. This distinction is compatible with recent developments in the literature (Brown, 1989; Smith, 1989). Smith (1989) has described analogy as having a global aspect and a dimensional aspect. Along the same lines, Brown (1989) argued for a distinction between surface and deep structures for analogy. Smith (1989), in a number of studies of both pre-school and early school-age children, suggests that there is a developmental trajectory for perception of similarity, and that, for example, very young (under age 5) children demonstrate a consistent tendency to classify objects by their global similarity and that classification by a single dimension occurs later, in the early school years (p. 159). Also, it is interesting to see, that in spite of traditional assumptions that young children are perceptually bound, Brown (1989) concludes that these children can match surface features when the task is "embedded in a domain for which they have the requisite knowledge" (p. 374). These findings are consistent with implications of the biofunctional theory which distinguishes between thematic and categorical knowledge (as whole-level and part-level knowledge) and which assigns a primary role to thematic knowledge. When viewed

from this perspective, learning is the result of thematic knowledge, and the experiences which support learning are wholetheme as opposed to piecemeal (Iran-Nejad, 1994).

Therefore, by identifying thematic knowledge as the knowledge to be the primary target for teaching (Iran-Nejad, 1994), by relating metaphor and thematic knowledge, by relating both of these to the intuitive knowledge base of the learner, and by placing them in the context of the research on brain functioning (see Iran-Nejad, Marsh, & Clements, 1992), the biofunctional model takes a significant step toward our understanding of the role of metaphor in education. The possible role of metaphor as an educational tool become clearer: it serves as a signal for setting the thematic context for learning, experience, and application. Once the thematic context is established, the stage is set for the teacher to guide the process of learning as the reorganization of the learner's IKB into a "thematically organized body of domain-specific solutions gained after many years of domain-relevant problem solving" (Iran-Nejad, 1994, p. 73).

Metaphor and the Educational Process

The Piecemeal Assumption

Some assumptions of teaching and learning are firmly rooted in our daily metaphors for memory and communication. Reddy's (1979) conduit metaphors, discussed already, are a prime example. The workplace metaphor is another example. Iran-Nejad (1994) argues that these metaphors imply piecemeal approaches to learning and teaching and that these metaphors play a dominant role in the research and practice of schooling. This means that, in the world of the school, teaching and learning focus on surface-level (Brown, 1989), dimensional (Smith, 1989), and part-level as opposed to deep-level, global, or wholetheme experiences, isolated from the rich contextual arena of the world (Iran-Nejad, 1990, 1992). When viewed through the lens of the piecemeal assumption, learning becomes incremental internalization of knowledge, the processes of learning are externally regulated, and the focus is on attention, memorization, and rehearsal. Also, teachers often conceptualize their roles as subject-matter experts and deliverers of knowledge, and students tend to

view learning as remembering. Learners, who were actively involved and inherently interested in learning before school, become passive recipients in a process largely controlled by others. Learning, in this fashion, day in and day out, year in and year out, becomes a chore, and boredom and anxiety soon replace curiosity and interest. Learning like this, piecemeal and other-regulated, remains separate from its biological foundations which have developed over million years of evolution. One first grader (Marshall, 1988) upon completing a worksheet, summed up the effects of piecemeal learning in this comment, "I did it, but I don't know what it means" (p. 11). This same child, before entering school, acquired language as well as a functional knowledge of his/her world (Iran-Nejad, 1994), because, in the context of the real-world, learners are highly adaptive, learning is spontaneous and dynamic, and the process of learning is wholetheme.

Bearing witness to the effects of piecemeal approaches to learning and evaluation, Benjamin Bloom (1984) states that twenty-five years after the publication of his taxonomy and the sale of over one million copies of the book, most teaching and testing is still on the knowledge level. Our personal experiences with measurement and evaluation test construction projects supports this assertion. It is difficult to guide students to write test questions that measure learning at any level other than mere recall of isolated facts. Many students state time and again that virtually all the tests they have taken throughout school are on this level. Piecemeal assumptions are firmly rooted throughout education.

On Design of Effective Instruction

Whether at the kindergarten or college, it is difficult to find evidence of instruction that departs from the piecemeal assumption. Teachers at all levels generally follow the traditional practice of simplification by isolation (Iran-Nejad, 1994), a practice which, at its heart, is the result of the piecemeal assumption. One of the major problems associated with simplification by isolation is that learning becomes separated from the real-world. Bransford calls this problem, the problem of "inert" knowledge, the learning that lies dormant even when learners encounter new problems similar to

those they originally mastered. Bransford, et al (1989) reported, for example, that even when students are well-acquainted with the problem-solving model, IDEAL, many times they are unable to use the model in real-world problem-solving (p. 471). In Bransford's summary of many research studies (1989) instructional techniques are implicated as the primary factor in creating this problem.

The Wholetheme Assumption: The Role of Metaphor

As an alternative to the piecemeal approach, Iran-Nejad (1994) discusses the wholetheme approach. One of the most important teaching tools in the wholetheme perspective are thematic organizers. By constructing and providing a thematic organizer before and during instruction, a teacher can facilitate learning by engaging the entire realm of the learner's intuitive knowledge base to be available as a rich context for the solution of the problem at hand.

Recent educational research (Bullough & Stokes, 1994; Pineau, 1994) claims that the metaphors created by teachers to make their roles explicit also can enhance or limit student opportunities to learn. Teachers' own language may the be most appropriate vehicle for analyzing the underlying assumptions on which practice is based, and can provide a coherent concept of how things are supposed to be.

Looking at the thinking of teachers from the perspective of the teachers themselves (Munby, 1986) suggests that the concepts teachers form of the learning process, of their roles, and of the role of students are revealed in the metaphors they use in describing teaching, learning, and classroom practice. Since teachers "see" their teaching metaphorically (Munby, 1986, p. 206), there is the possibility of identification (and modification) of the assumptions that govern their practices. For example, Munby's (1986) analysis of the phrases one teacher (Alice) used to describe her work, suggests that although she conceptualizes her teaching and the students' learning in a complex fashion, her very frequent use of spatial (particularly, movement) metaphors, such as "they were following along, but got lost" (p. 205) "may be construed as representing a significant feature of how Alice constructs her world of teaching, and of how she thinks of a lesson and the success of her teaching in

terms of where the children are" (p. 206). Since there is most likely no awareness of the influence metaphor may have on conceptions of learning and teaching, there is reason to believe that guided practice in the identification of personal teaching metaphors (Bullough & Stokes, 1994; Pineau, 1994) can be of potential benefit in teacher education.

Reaching, Revealing, and Reorganizing Assumptions about Teaching and Learning with Personal Teaching Metaphors

The creation of metaphoric characters could be one way in which teachers might reach the contents of their intuitive knowledge base. Recent scholarship and research (Bullough & Stokes, 1994; Pineau 1994) suggests that metaphor may be a tool for generating insight into teacher beliefs (and thereby generating change). One such use is argued for by Pineau when she makes a compelling argument for the use of performance as a metaphor for teaching and educational research. Rather than the commonly held meaning of performance as theatrical, the reconceptualized performance metaphor is one which "acknowledges the interconnectedness of diverse roles played out by teachers and students, and, furthermore, the necessity of engaging the whole person, rather than disembodied intellects" (p. 18). In other words, performance is realized as a whole experience which has the power to reach the level of the intuitive knowledge base. An illustration of this assertion is conveyed through a microteaching assignment for undergraduate education students. These teachers to be, by creating a metaphoric character and extending this character in performance, realized "in crystalline, experiential, and immediate ways what a week of lecture/discussion on educational theory had failed to achieve" (p. 13). It may be argued that this sort of use of metaphor encourages reflective teaching (Schon, 1990), an acknowledged goal of teacher education and practice.

In a fashion similar to Munby's (1986) Alice, who organized her teaching practices around a-lesson-is-a-moving-object metaphor, implying deeply held structural assumptions , Pineau's teachers created two alternative ways of organizing theory and practice. One using the metaphor of midwife and the other the metaphor of tour guides/conductors.

By contrasting the two sets of metaphoric characters, some compelling assumptions are made. On the one hand, the metaphor of teacher as midwife suggests that the role of the teacher is to help learners to bring to bear from within themselves the ideas that have already been nourished and grown within them. It encourages images of the learner as struggling through a painful process for the ultimate reward of having a valued product. And it encourages images of the teacher making a painful experience as pleasant as possible. These roles suggest a shared responsibility for learning, "where students were given much freedom in determining the focus, pace, and style of instruction. . . and emphasis was on personal development rather than content mastery" (p. 13).

On the other hand, what does the metaphor of tour guide produce with regard to teacher/student roles and the nature of learning? There is a sense in which this metaphor suggests teacher as facilitator, but Pineau's report, based on the students' own analyses, is that tour guides are basically more oriented toward direct instruction as opposed to student inquiry, and some measure of "authority based on . . . content and instructional expertise" (p. 13).

It is not as though an incisive (and clearly objective) identification of underlying theoretical assumptions can be made through the analysis of these metaphors created by teachers. However, the choice of metaphors enables the teachers themselves to look at their own assumptions (some of which are naive) and reorganize their learning through reflection on their choices.

A First-Hand Experience in Creating Teacher Metaphor

Since preservice education would be the natural place to use the concept of the personal teaching metaphor, we have begun doing this with students in educational psychology classes. At the beginning of the term, after introduction to the concept that metaphor can be revealing and empowering, each of the students chooses a metaphor which s/he believes will serve as a focal point for conceptualizing teacher/student roles as well as the nature of knowledge and of learning. Each student keeps a weekly journal, using the metaphor as a starting point, and as a means for evaluation of theory and practice. Through this process, students begin to redefine, reshape, or perhaps,

discard, their original choices, while others find their first choice to be one that is useful. One such redefinition occurred when Diane, a secondary English and history major, wrote the following, "I think maybe my metaphor as a second mother could hinder my students creativity....I know that I have to allow my students to be creative and experience things for themselves". Another student, Sharon, in an examination of the role that her teacher metaphor, builder, created for her pupils, was somewhat equivocal when writing about encouraging personal responsibility for learning. She states, "As a builder, I have some control over the materials my students will use, but I need to find ways to let them select their own materials, too." She finds herself wavering between the builder's need to ensure a quality product and her desire to encourage her future students to take risks and responsibility for their own knowledge.

Reorganization of Knowledge Through the Teaching Metaphor

Two of the promising benefits of the creation of personal teaching metaphors are the possibility of reaching and revealing the deep-level intuitions (or the intuitive knowledge base, IKB) and as a tool for "optimizing conditions for personal growth and understanding" (Iran-Nejad & Ortony, 1984). It follows that if such benefits are realized, the reorganization of one's IKB into a knowledge base that is more sound, more refined, and of better real use in today's classrooms is possible within the scope of existing curriculum for preservice teachers. By using the personal teaching metaphor as a thematic organizer for an educational psychology course, it appears that at least some students reorganized their intuitive knowledge base in a fashion that was more theoretically integrated and potentially useful. The narratives that students wrote each week provided them with the opportunity to read current research and theory from educational psychology and to reorganize their existing knowledge within the thematic framework of the personal teaching metaphor. It was suggested that as new theory and research was encountered, that they "test" their understanding against their conception of the role of teacher and/or learner. Illustrations of their thoughts are presented in Table 1.

Insert Table 1 about here

Although, it has been reported (Kagan, 1990) that the personal beliefs that students bring to education courses are resistant to change, these students have demonstrated a willingness to reflect upon, and modify their assumptions in light of exposure to theory. Bullough & Stokes (1994) suggests that as teachers reflect on these metaphors during the first years of their careers, many "discovered, there is more to teaching than being one who knows" (p. 221). Personal teaching metaphor may be one of the tools that will enable educators to discard some of the assumptions that support piecemeal, nonauthentic, learning and teaching, and reframe theory and practice so that teaching and learning are relevant, whole-theme experiences.

Conclusion

In the world of college teaching, especially in the courses for teacher preparation, there is a real need to search for practices which set the theme for learning. A wholetheme approach to learning is supported by the use of the personal teaching metaphor and reflective journal writing in an undergraduate educational psychology course. The creation of the personal teaching metaphor is a viable tool which establishes the theme for the various theories and practices which one encounters in an educational psychology course. Because metaphoric creation reaches the contents of the IKB, teachers have the opportunity to examine intuitive assumptions about teaching and learning, and to reorganize these assumptions from the perspective that a wholetheme approach affords.

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Table 1.

Examples of Reorganization of IKB Through the Use of Personal Teaching Metaphor in an Educational Psychology Class.

I am pleased with the way my metaphor worked out for me this quarter. It went along with the information learned in Educational Psychology. I saw the role of teacher as gardener. . . . The gardener metaphor can be related to several theories, some of which include the work of Vygotsky, Erickson, and Piaget. It was reassuring to know that the aspects contained in my metaphor were already theories from professionals. (Roger).

I had originally selected mother as the metaphor I most readily associated with teaching. Unless things change drastically in the classroom, I am sure I will exhibit some of those same characteristics of which I first wrote. I do hope to carry it off, however, in a constructive manner and not smother anyone's creativity or independence with my nurturing nature. (Leah).

I would like to start by saying that my metaphor as a coach and motivator would hold water, however, I do not think it grasps all of what I want. After taking this course, I would now like to change mine to that of a set of bridges that cross many streams, with a gate at the end. I say bridges because I hope to be active in what the students learn and to provide a platform to cross when they reach a point that they cannot cross alone. . . . I say a gate at the other end because I want to give them a motivation, a goal to reach. (Donnie).

The metaphor I chose was coach. Strengths of being this type teacher include emphasis being placed on students to do their very best, stressing for students to never give up, and by placing value on teamwork. A weakness of being a coach-like teacher may be that the teacher may focus on the achievement of a few select "winners", ignoring the needs of the average and below average students. (Britt).

I feel the metaphor (tour guide) could be used in the classroom. The tour guide has several strong points such as beginning with the whole and breaking it down into different steps. If I had to choose again, I would probably add new ideas to it. (Cal).

TM022799

MSERA ANNUAL MEETING, NASHVILLE, TN, NOV. 9-11, 1994

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