Constructivist Cautions

BY PETER W. AIRASIAN AND MARY E. WALSH

The authors point out the difference between the theory of constructivism and its practical application, and they argue that the consequences of implementing constructivism in the classroom will be considerably more challenging than might be anticipated from the simple slogans that advocates repeat.

RECENTLY, the concept of "constructivism" has been receiving a great deal of attention. At the conceptual level, constructivists debate such questions as, What is knowledge? What is teaching? What is learning? And is objectivity possible?[1] At the practical level, these complex issues have, in many cases, been reduced to catch phrases such as "Students construct their own knowledge" or the slightly narrower "Students construct their own knowledge based on their existing schemata and beliefs." Many efforts are under way to translate constructivist epistemology into classroom practices that will enable students to become "constructors of their own knowledge." While readily acknowledging that constructivism has made and will continue to make a significant contribution to educational theory and practice, we wish to sound a cautionary note about the euphoria surrounding constructivism.

What Is Constructivism?

Constructivism is an epistemology, a philosophical explanation about the nature of knowledge. Although constructivism might provide a model of knowing and learning that could be useful for educational purposes, at present the constructivist model is descriptive, not prescriptive. It describes in the broadest of strokes the human activity of knowing and nowhere specifies the detailed craft of teaching. It is important to understand at the outset that constructivism is not an instruc-

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tional approach; it is a theory about how learners come to know. Although instructional approaches are typically derived from such epistemologies, they are distinct from them. One of the concerns that prompted us to undertake this discussion is the rush to turn the constructivist epistemology into instructional practice with little concern for the pitfalls that are likely to ensue.

Constructivism describes how one attains, develops, and uses cognitive processes. Multiple theories, such as those of Piaget and Vygotsky, have been proposed to explain the cognitive processes that are involved in constructing knowledge. While constructivism provides the epistemological framework for many of these theories, it is not itself an explanation for the psychological factors involved in knowing.

In general, constructivists compare an "old" view of knowledge to a "new," constructivist view. In the old view, knowledge is considered to be fixed and independent of the knower. There are "truths" that reside outside the knower. Knowledge is the accumulation of the "truths" in a subject area. The more "truths" one acquires, the more knowledge one possesses. In sharp contrast, the constructivist view rejects the notion that knowledge is independent of the knower and consists of accumulating "truths." Rather, knowledge is produced by the knower from existing beliefs and experiences. All knowledge is constructed and consists of what individuals create and express. Since individuals make their own meaning from their beliefs and experiences, all knowledge is tentative, subjective, and personal. Knowledge is viewed not as a set of universal "truths," but as a set of "working hypotheses." Thus constructivists believe that knowledge can never be justified as "true" in an absolute sense.

Constructivism is based on the fundamental assumption that people create knowledge from the interaction between their existing knowledge or beliefs and the new ideas or situations they encounter. In this sense, most constructivists support the need to foster interactions between students' existing knowledge and new experiences. This emphasis is perceived to be different from the more traditional "transmission" model, in which teachers try to convey knowledge to students directly.

These fundamental agreements among constructivists are tempered by some important areas of difference about the process of constructing knowledge. These differences are reflected in two versions of constructivist theories of cognition: developmental and sociocultural. Developmental theories, such as Piaget's, represent a more traditional constructivist framework. Their major emphasis is on describing the universal forms or structures of knowledge (e.g., prelogical, concrete, and abstract operations) that guide the making of meaning. These universal cognitive structures are assumed to be developmentally organized, so that prelogical thinking occurs prior to concrete logical thinking in a developmental sequence. Within this framework, the individual student is considered to be the meaning maker, with the development of the individual's personal knowledge being the main goal of learning.

Critics of developmental theories of cognition point out that this perspective does not take into account "how issues such as the cultural and political nature of schooling and the race, class, and gender backgrounds of teachers and students, as well as their prior learning histories, influence the kinds of meaning that are made in the classroom."[2] Cognitive-developmental theories, it is claimed, divorce meaning making from affect by focusing on isolating universal forms of knowledge and thus limiting consideration of the sociocultural and contextual influences on the construction of knowledge.[3]

A second version of constructivism is reflected in the social constructivist or situated social constructivist perspective. As its name suggests, this type of constructivism puts its major emphasis on the social construction of knowledge and rejects the individualistic orientation of Piagetian theory. Within the sociocultural perspective, knowledge is seen as constructed by an individual's interaction with a social milieu in which he or she is situated, resulting in a change in both the individual and the milieu. Of course, it is possible for an individual to "reside" in many milieus, from a classroom milieu through a much more general cultural milieu. The point, however, is that social constructivists believe that knowledge has a social component and cannot be considered to be generated by an individual acting independently of his or her social context.[4] Consequently, recognition of the social and cultural influences on constructed knowledge is a primary emphasis. Because individual social and cultural contexts differ, the meanings people make may be unique to themselves or their cultures, potentially resulting in as many meanings as there are meaning makers. Universal meanings across individuals are not emphasized.

Critics of this perspective have pointed to the chaos that might be inherent in a multiplicity of potential meanings. While the social constructivists' concern with particular contextual or cultural factors that shape meaning enhances their recognition of differences across meanings, it limits their recognition of the universal forms that bring order to an infinite variety of meanings. Arguably, the critics of each version of constructivism exaggerate the positions espoused by these theories; however, they do set into relief the relative emphasis of each theory on the individual or the context.

This brief overview of constructivism omits many of the nuances and issues that characterize the debate over constructivist theory. However, our purpose is not to provide an in-depth portrait of constructivism, but rather to identify fundamental tenets that most constructivists would endorse and to point out that constructivism is not a unitary viewpoint. This latter fact is often overlooked in practice-oriented activities that derive from the slogan "Students are constructors of their own knowledge." The conflict between the two versions of constructivism is not merely "a matter of theoretical contemplation. Instead, it finds expression in tensions endemic to the act of teaching."[5] The particular version of constructivism one adopts — developmental or social constructivist — has important implications for classroom practices,[6] for the definition of knowledge,[7] for the relative emphasis on individual versus social learning,[8] for the role of the teacher,[9] and for the definition of successful instruction.[10]

Why Is Constructivism So Readily Accepted?

In the broad sense, constructivism represents a shift in the perspective of the social sciences and humanities from a view in which truth is a given to a view in which it is constructed by individuals and groups. There has been an inevitable spillover of this view from the social sciences and the humanities to education.

However, most educational theories and

innovations are adopted with high levels of uncertainty. The wisdom of their adoption and the range of their impact are rarely known in advance of their implementation. Thus the justification for adopting a theory or innovation must come from outside the theory or innovation per se.[11] Typically, the justification is supplied by the existence of a pressing need or problem that requires quick amelioration or by the moral symbolism inherent in the theory or innovation. This is as true for constructivism as it has been for all educational theories and innovations that have sought to make their way into practice. However, it is very important to emphasize that there is a crucial difference between evidence that documents the need for change and evidence that documents the efficacy of a particular strategy of change. The specific strategy selected to produce change must seek its own validation, independent of the evidence of the need for change of some kind.

To understand its rapid acceptance, we must examine both present educational needs and the symbolic aspects of constructivism. The pressing educational need that fuels interest in constructivism is the perception that what we have been doing in schools has failed to meet the intellectual and occupational needs of the majority of our students; schools seem not to be promoting a sufficiently broad range of student outcomes. In particular, "thinking" or "higher-order" skills are not receiving sufficient instructional emphasis. A large part of the explanation for the perceived deficiency in pupil learning is thought to be an emphasis on "reductionist" or rote outcomes and forms of instruction. Reorienting instruction to nonrote outcomes makes such skills as generalizing, analyzing, synthesizing, and evaluating very important. From an instructional point of view, it puts much more of the onus on the student to construct personal meanings and interpretations. There is a link, then, between an epistemology that focuses on students' constructing their own knowledge and an education system that seeks to promote higher-level learning outcomes.

Also linking constructivism and educational need is the current emphasis on bottom-up as opposed to top-down approaches to reform. Thus recent reforms have increasingly allocated discretion for reforming the educational process to individual schools, teachers, students, and parents. In particular, teachers are given more discretion to construct their own meanings and interpretations of what will improve classroom teaching and learning. Moreover, because constructivism is an epistemology of how people learn, its focus is logically on classroom practice. The increased teacher discretion over teaching and learning, combined with the classroom orientation and higher-level focus of constructivism, has sparked teachers' interest in the potential of constructivism for classroom practice.

Constructivism seems to pass the onus of creating or acquiring knowledge to the student.

Of course, it is not just increased teacher discretion and the classroom focus of constructivism that prompt interest. Constructivism is also appealing for other, more symbolic reasons. First, the rhetoric that surrounds constructivism is seductive. It plays off the metaphor of "lighting the flame" of student motivation (constructivism) against that of "filling the bucket" of students' heads with facts (present methods).[12] Constructivists claim that they emphasize autonomy as opposed to obedience, construction as opposed to instruction, and interest as opposed to reinforcement.[13] The implication is that, if one is opposed to constructivism, one is opposed to student autonomy, construction of meaning, and interest. Thus opponents are viewed as being against lighting the flame of student motivation. Such rhetoric plays a potent role in the reception of all innovations, including constructivism.

Second, since knowledge consists of what is constructed by the learner and since attainment of absolute truth is viewed as impossible, constructivism makes the implicit assumption that all students can and will learn — that is, construct knowledge. The vision of the constructivist student is one of activity, involvement, creativity, and the building of personal knowledge and understanding. This is an appealing symbol in an education system that is perceived to be inadequate for meeting the learning needs of many students. However, our consideration of constructivism should extend beyond process to an examination of the nature of the knowledge actually constructed.

Third, in a variety of ways and with a variety of potential consequences, constructivism symbolizes emancipation. From one perspective, constructivism can be interpreted as a symbol of the emancipation of teachers from the primary responsibility for student learning, since constructivism passes the onus of creating or acquiring knowledge from the teacher to the student. This notion is mistaken. The teacher will no longer be a supplier of information, but he or she will remain very much involved in the learning process, coordinating and critiquing student constructions, building his or her own knowledge of constructivism in the classroom, and learning new methods of instruction. Constructivism can also be interpreted as a symbol of the emancipation of teachers from the burden of dealing with the difficult issue of motivation, since many constructivists view the student's sense of ownership of and empowerment over the learning process as providing its own intrinsic motivation.[14]

Constructivism certainly is emancipatory and dovetails well with the agendas of many interest groups through its social constructivist emphasis on context as a critical feature of knowledge construction. When context becomes an important aspect of knowledge construction, it is logical to conclude that involvement in different contexts will lead to the construction of different knowledge, even if the same set of "data" is presented in the different contexts. Given a problem or an issue, a context — which is often designated in social, economic, racial, and gender terms — will influence the interpretations, conclusions, motives, and attitudes of individuals in that context. When confront-

ed with the same problem or issue, individuals in different milieus may construct different interpretations and conclusions. In this case, "truth" becomes what those in a given milieu construct. And since different milieus vary in their constructions and since there is no absolute truth to search for, knowledge becomes relative to the milieu one inhabits.

This view is certainly symbolically emancipatory for many disempowered groups, but with what effect on the classroom? It would be naive to ignore the sociopolitical agendas and potential consequences for education that constructivism can evoke, particularly those emanating from the social constructivist version of constructivism.

Thus there are strong forces that underlie the growing interest in and acceptance of the constructivist epistemology. These forces stem from the perceived need to alter educational practice from an associational approach to one that emphasizes the higher-level knowledge construction needed to cope with the rapid expansion of information. They also stem from symbolic features of constructivism, particularly the symbols associated with the rhetoric of constructivism.

Cautions

Despite the persuasiveness of the above forces, it is important to be aware that the application of constructivism in classrooms is neither widespread nor systemic. This is not to suggest that there are no successful applications of constructivism. In fact, a number of writers have described approaches to constructivist teaching in special education classrooms, in largely African American classrooms, and in afterschool programs.[15] With the exception of Ann Brown's Community of Learning schools, however, most applications of constructivism have tended to be recent, narrowly focused pilot studies. In discussing her ongoing work, even Brown indicates that, "for the past 10 years or so, my colleagues and I have been gradually evolving learning environments [to foster grade school pupils' interpretive communities]."[16] Accentuating the need for gradual development is important, because in simultaneously mounting constructivist teaching and endeavoring to remain faithful to constructivist tenets, teachers and administrators will be confronted with a number of obstacles and issues.

We turn now to some cautions that need to be kept in mind as teachers attempt to implement constructivism in their classrooms. Some of these cautions are pertinent to any classroom innovation. Others are specific to constructivism.

Do not fail to recognize the difference between an epistemology of learning and a well-thought-out and manageable instructional approach for implementing it. We do not have an "instruction of constructivism" that can be readily applied in classrooms. There are suggestions for methods that are likely to foster student construction of knowledge, primarily those that emphasize nonrote tasks and active student participation in the learning process (e.g., cooperative learning, performance assessments, product-oriented activities, and "hands-on" learning, as well as reciprocal teaching and initiation-reply-evaluation methods). However, it is not clear how such methods relate to learning in different content areas or whether these methods will be equally successful across all subject areas.[17]

It is even more important to recognize that the selection of a particular instructional strategy represents only part of what is necessary in the constructivist approach. Selection of a strategy does not necessarily lead to appropriate implementation or to the provision of individual feedback to students regarding their constructions. Implementing constructivism calls for a "learn as you go" approach for both students and teachers; it involves many decisions and much trial and error. Commenting on the relevance of this theory for contemporary practices and procedures in education, Kenneth Gergen writes:

> There is no means by which practical derivatives can simply be squeezed from a theory of knowledge. As has been seen, theories can specify neither the particulars to which they must be applied nor the contexts in which they may be rendered intelligible. There are no actions that follow necessarily from a given theory. . . . Thus, rather than seeking clear and compelling derivatives of constructionist theory, we should explore the kinds of practices that would be favored by the perspective within current conventions of understanding.[18]

Do not fall into the trap of believing that constructivist instructional techniques provide the sole means by which students construct meanings. This is not the case. Students construct their own knowledge and interpretations no matter what instructional approach is implemented and no matter what name is given to it. What teacher has not taught a didactic, rote-oriented topic or concept only to find that the students constructed a variety of very different meanings from those anticipated by the teacher? Thus no single teaching method ought to be used exclusively. One of the leading advocates of constructivism in education has compellingly argued that, from a constructivist point of view, it is a misunderstanding to consider teaching methods such as memorization and rote learning useless. "There are, indeed, matters that can and perhaps must be learned in a purely mechanical way."[19] One's task is to find the right balance between the activities of constructing and receiving knowledge, given that not all aspects of a subject can or should be taught in the same way or be acquired solely through "hands-on" or student-centered means.

Because students always make their own meaning from instruction, the important curricular and instructional choice is not a choice between making and not making personal meaning from instructional activities, but a choice among the ideas, concepts, and issues that we want our students to construct meaning about. It is in this area that states such as Kentucky, California, and Vermont, among others, are redefining the expectations for student learning and reinforcing those expectations through statewide assessments. Similarly, it is in this area that such organizations as the National Council of Teachers of Mathematics are promulgating and advocating newer, more performance-oriented goals in their subject areas. The issues addressed by states and professional organizations are much more focused on the outcomes than on the means of instruction.

Do not assume that a constructivist orientation will make the same demands on teaching time as a nonconstructivist orientation. Time is an extremely important consideration in implementing constructivist education in two regards.

1. *Time is needed for teachers and pupils to learn and practice how to perform in a constructivist classroom.* If criticisms of "reductionist" education are valid, then substituting another approach, whether in part or in toto, will call for a redefinition

of both teachers' and students' roles. In a constructivist approach, teachers will have to learn to guide, not tell; to create environments in which students can make their own meanings, not be handed them by the teacher; to accept diversity in constructions, not search for the one "right" answer; to modify prior notions of "right" and "wrong," not stick to rigid standards and criteria; to create a safe, free, responsive environment that encourages disclosure of student constructions, not a closed, judgmental system.

Students will also have to learn new ways to perform. They will have to learn to think for themselves, not wait for the teacher to tell them what to think; to proceed with less focus and direction from the teacher, not to wait for explicit teacher directions; to express their own ideas clearly in their own words, not to answer restricted-response questions; to revisit and revise constructions, not to move immediately on to the next concept or idea.

It is easy to *say* that constructivist teachers must create an open, nonjudgmental environment that permits students to construct, disclose, and expose their constructions to scrutiny. But listening and responding to student constructions will be difficult and time-consuming.[20] Teachers will have to become accustomed to working with quite different and more general goals, since the instructional emphasis will be on the viability of varied, idiosyncratic student constructions. Teachers will need to serve as initiators of activities that will evoke students' interest and lead to new constructions and as critics of the constructions that students produce. In a sense, much of the responsibility for learning will be turned over to the students through "hands-on" experiences and activities designed to spur their constructions of meaning. The more teachers become engaged in this process, the more the resulting constructions will be theirs, not the students'.

Finding a balance between teacher involvement or noninvolvement in the process of learning will be a challenge. It is legitimate to ask how well — and how soon — teachers will be able to create such an environment and reorient their practice. In this regard it is noteworthy that, with few exceptions,[21] there is considerably less discussion about the role and activities of the *teacher* in constructivist education than there is about the role and activities of the *students*. But changes in orientation for both teacher and students will not occur immediately, especially for those who have had a long time to become accustomed to the current norms of classroom practice. New ways of thinking, acting, organizing, and judging will always take time to develop.

2. *In the shift to constructivist teaching, considerable time will be required for responding to the individual constructions of students.* Student constructions have two important properties: 1) they are complex in form, and 2) they differ from student to student. Because constructions represent understandings and connections between prior and new knowledge, they cannot be conveyed in a word or a phrase. To convey one's construction of meaning will require an in-depth presentation about one's knowledge and how one arrived at or justifies that knowledge. If constructions are reduced to multiple-choice items or to some other truncated representational form, the richness and meaning of constructivism will be lost. Hence, to review, understand, and respond to student constructions will require substantial teacher time and perhaps the involvement of parents and community members as well.

Moreover, different students are likely to produce quite different constructions, making it difficult to apply the same frame of reference to the review of their constructions. Each construction and its underlying logic will need to be examined, understood, and reviewed. Hence, the amount of time needed to respond to these constructions will be further increased. Responding to student constructions will be more like reading essays or viewing oral reports than like scoring multiple-choice or short-answer tests.

Implicit in the need for increased time are other important time-related issues, such as the tradeoff between coverage and depth. It is likely that the quality of students' knowledge constructions will depend in part on the time they are given to construct. More time will mean richer and deeper constructions. Teachers and schools will have to face the question of whether it is better to cover a large amount of content at a rather shallow level or to cover a smaller amount of content in great depth. The constructivist approach fits much better with the latter choice, since it aims for personal meaning and understanding, not rote associations.

Do not believe that the opposite of "one-right-answer" reductionism is "anything-goes" constructivism. Implicit in any form of classroom instruction guided by any theory of learning is the need for standards and criteria of judgment. This matter is both important and challenging in constructivist thought and application. Among the questions that constructivist teachers will have to confront regarding standards and criteria are: On what basis should students have to justify their constructions? Can the teacher who facilitates the constructions also be an objective evaluator of them? What constitutes a "reasonable" or "acceptable" student construction? Should the teacher try to avoid transmitting standards and criteria that end up influencing or controlling the nature of student constructions? If so, how? Are evaluation standards and criteria independent of context or are they contextually bound?

A teacher who accepts the constructivist tenet that knowledge is constructed by individuals and that knowledge and experience are subjective must inevitably face the relationship between truth and meaning. In practical terms, the teacher must decide how much emphasis will be placed on the relative "truthfulness" of students' constructions or on their "meaningfulness" to the student. Since there is no one best construction and since people must construct their own meanings from personal experiences and understandings, there are many viable constructions.[22] Further, if it is assumed that knowledge is ego- and context-specific, the likelihood of agreeing on common standards of evaluation is diminished greatly. This perspective could create many problems when applied in classrooms.

A rejoinder to this view argues that the lack of one best construction does not mean that some constructions cannot be deemed better than others. Moreover, sole reliance on personal meaning to justify constructions leads to rampant relativism and potentially biased, self-serving, and dishonest constructions.[23] In this view, the role of the teacher is to challenge students to justify and refine their constructions in order to strengthen them.

At the opposite end of the spectrum from meaningfulness is truthfulness. Absolute certainty is alien to the tenets of constructivism. However, there can be intermediate positions between absolute and relative truthfulness. Thus it is possible to

evaluate some constructions as being more truthful (i.e., reasonable) than others. If a position of modified or relative truthfulness is adopted, as it inevitably will be in real classrooms, the teacher is directly confronted by the need to establish standards and criteria for evaluating the merits of students' constructions.

However, in facing this need, the teacher also faces an issue that should be approached with awareness and caution. In evaluating some constructions as being better than others, the teacher will find that the more explicit the evaluation standards and criteria, the greater the likelihood that they will be transmitted to and adopted by the students. When standards and criteria are constructed jointly by teachers, students, and parents, transmission and adoption become desirable. However, if the teacher is the sole determiner of standards and criteria, he or she is likely to have the primary influence on the nature of classroom constructions. Students may not construct meaning on their own, for they know that high grades derive from meeting the teacher's standards and criteria. Constructivism is thus compromised. The problem of guiding and evaluating students without undermining their constructivist activities is a thorny one. The development of standards and criteria that are clear but that allow variance in evaluation is paramount, and each teacher will have to find his or her appropriate balance, given that few external guidelines for defining such standards and criteria exist.

In the preceding discussion we have pointed out the difference between the theory of constructivism and its practical application. In particular, we have argued that the consequences of implementing constructivism in the classroom will be considerably more challenging than might be anticipated from the simple slogans that advocates repeat. But our comments and cautions should not be taken as criticisms of the constructivist viewpoint. Indeed, we recognize and appreciate the positive role that this orientation can play in changing educational practice. Rather, our comments are meant to illuminate and anticipate important issues that will inevitably arise in attempts to implement constructivism in practical. classroom settings. These are not reasons to avoid trying to implement constructivism; they are efforts to help readers know something about what they are adopting at a more substantive level. Knowing some of the nuances and problems of a theory or innovation makes one better able to move beyond rhetoric to consider the implications for one's own practice.

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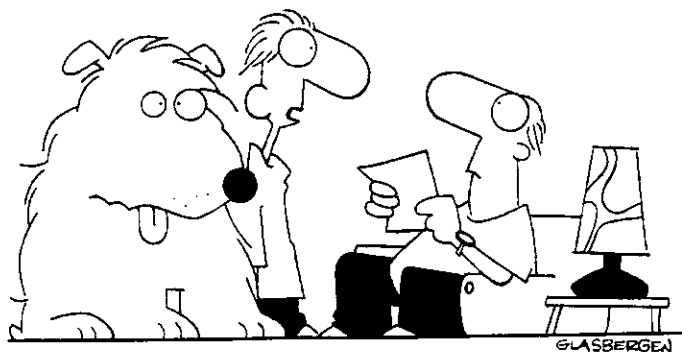
"No, it's not a typo. The dog ate my homeroom."