Philosophical Perspectives

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ABSTRACT

Philosophical perspectives are worldviews that define the nature of the world, the individual’s place in it, and the possible relationships to that world and its parts. Learning and instructional theories are developed with respect to a particular set of assumptions regarding what it means to know and learn. It is our contention that when situational variables require some decision on the part of the educator (and we believe this is always the case), an underlying set of assumptions (whether they be tacit or explicit) will, and should, drive the decision. In this chapter we provide overview descriptions of five psychological perspectives, contrasted in terms of epistemology, ontology, unit of analysis, and whether they suggest dualist relationships. These theories (behaviorism, cognitivism, cognitive constructivism, sociocultural/historicism, and situativity theory) provide frameworks for describing learning and designing instruction. It is the goal of this chapter to clarify these distinctions and the underlying assumptions so instructional designers, teachers, and researchers may make pedagogical decisions more explicitly.

KEYWORDS

Behaviorism: An objectivist and monist perspective with regard to individual actions and decisions.
Cognitive constructivism: A form of realism that stresses the reorganization of mental structures of an individual making sense of the world.
Cognitivism: An objectivist and rationalist perspective with regard to individual cognitive structures.

Dualism: When two apparently related items are treated as separate and distinct (e.g., mind/body or individual/environment).
Empiricism: An epistemology that states that knowledge comes from experience and through the senses.
Epistemology: How we come to know about what exists.
Idealism: A view of reality as mental, implying that the world is not separate from the mind.
Objectivism: An ontological and epistemological view that contends that reality exists outside of the individual and consists of specific entities.
Ontology: What exists in the world.
Pragmatism: The view that knowledge is derived from interaction among groups of individuals and the artifacts in their environment, which together create a reality.
Rationalism: An epistemological view where reason is the principle source of knowledge.
Realism: A form of objectivism that assumes that there is some sort of reality that is separate from the mind and that knowing involves a correspondence between the world and the mind.
Relativism: A general principle that places the meaning of experiential and physical events in the relationships that exist among them.
Situativity theory: A form of realism that stresses an individual’s direct perception of events and phenomena.
Sociocultural/historicism: A relativist perspective that emphasizes relations and processes between the individual and society.
Unit of analysis: Boundaries of the phenomena of interest.
INTRODUCTION

Theoretical perspectives such as behaviorism, cognitivism, cognitive constructivism, sociocultural/historicism, and situativity theory provide frameworks for describing learning and designing instruction. Finding roots in philosophy, these perspectives differ with respect to their ontological and epistemological assumptions. Learning theories and instructional theories are developed and linked to a particular set of assumptions, supposedly consistent with one of the theoretical perspectives. Duffy and Jonassen (1992) argued that instructional strategies and methods are clearly influenced by the philosophical assumptions and that theories of knowing and learning are implicit in the instructional design. If not implemented entirely by a cookbook approach, then when situational variables require some decision on the part of the educator an underlying set of assumptions (whether they be tacit or explicit) will drive the decision (Barab and Duffy, 2000). It is inconceivable that a teacher or instructional designer would advocate a particular lesson or activity without at least a tacit theory of how students think and learn.

In the literature, we see various classifications for these different perspectives; for example, Greeno et al. (1996) described behaviorist/empiricist, cognitivist/rationalist, and situative/pragmatist-sociohistorical perspectives. Prawat and Floden (1994) used worldviews to define their classifications: mechanistic (including information processing approaches), organismic (including radical constructivism), and contextualist (including social constructivism). Wood (1995) grounded his categories in the application of learning theory to technology: Skinner and neo-behaviorism, Piaget and constructivist theory, Vygotsky and social constructivism and situated cognition.

Unfortunately, when considering theoretical perspectives and the learning theories that have developed within them, it is not always clear what the underlying philosophical roots are. In fact, it becomes confusing when considering the descriptions from authors distinguishing differently among theoretical perspectives. Driscoll (1994), for example, stated that Piaget’s developmental theory and constructivism were interpretivist based. Cobb (1994), when distinguishing among the cognitive and socioconstructivists, aligned the cognitive constructivist with the views of von Glasersfeld (1989), who used Piaget as his example; yet, von Glasersfeld described the basis as pragmatist. Greeno and colleagues (1996), Cobb (1994), and Driscoll (1994) placed the socioconstructivist or sociohistorical perspective under the roots of pragmatism as well, calling on the views of Vygotsky. Phillips (1995) distinguished among the various sects of constructivism, placing the perspectives by Piaget and Vygotsky together based on the unit of analysis. Greeno and colleagues (1996) classified constructivism along with cognitivism, finding roots in rationalism. Ertmer and Newby (1993) located cognitivism and behaviorism within the objectivist perspective, with constructivism as well as constructivism being rationalism.

To further confound things, Garrison (1995) equated contemporary social constructivism with what he defined as pragmatic social behaviorism based on the work of Dewey, indicating a relationship between constructivism and adaptations of behaviorism. Garrison also stated that situated cognition (classified within the situative/pragmatist-sociohistoric category by Greeno et al., 1996) has made an important contribution to social constructivism. Greeno (1998) stated that the situative perspective could subsume both the behaviorist and the cognitivist perspectives. Whereas Prawat and Floden (1994) combined social constructivism and situativity perspectives, Derry (1992) distinguished between constructivist and culturally situated learning views. Among situated perspectives, Lave (1997) further divided what she termed cognition plus, interpretivist views, and her situated social practice view.

What factors are being used to distinguish the above theoretical perspectives? Epistemological or ontological assumptions? For seasoned theorists in the field, these distinctions may be trivial to sort out, or maybe some believe that these distinctions have little practical significance. For those beginning their scholarship in the field, confusion seems to reign. Further, for those interested in designing practical applications of instruction and seeking the grounding that a theoretical foundation can provide, it may be difficult to understand the foundation on which they are building.

It is in response to these questions, and with the goal of providing sharper boundaries among these categories to inform learning architects, that we have written this chapter. We describe theoretical perspectives as subsumed under five categories and clarify these categories by defining the mind/body relations, epistemology, ontology, and the unit of analysis. Then, we turn to the instructional implications of these five categories. It is important to recognize that these distinctions are situated within the context of providing sharper boundaries and stimulating discussion. As such, we have drawn lines among perspectives that may seem overly defined and may not even exist within other contexts and for other purposes; for example, some theorists would not separate situativity and constructivist perspectives or would not build connections between objectivism and constructivism. In writing this paper, therefore, we have made epistemological and
ontological commitments—a process that we suggest is useful for instructional designers and educational psychologists to undertake.

This is not to imply that we have simply constructed these distinctions based on our fancy; in fact, we have aligned each conjecture with citations from colleagues in the field, stacking our allies if you will (Latour, 1987). Our hesitancy in forwarding these categories is that readers will take these brief and overly simplified categories as fixed and rigid rules or, even worse, as substitutes for involved study of the particular philosophical works discussed. It is our intention that these categories should not be used for compartmentalizing but should serve as a backdrop for continued discussion and for broader discourse among our colleagues.

**BACKGROUND**

**Epistemology**

Epistemology and ontology are within the foundational realm of philosophy and mutually support one another (Lombardo, 1987; Reber, 1995). Epistemology addresses the “origins, nature, methods, and limits of human knowledge” (Reber, 1995, p. 256), focusing on questions about knowledge and the nature of knowledge (Everitt and Fisher, 1995). Those interested in learning and instruction thus have an epistemological purpose (i.e., supporting learners in coming to know) regardless of the perspective with which they choose to be aligned. Understanding how a learner comes to know and how that process can be facilitated forms a basis for research in learning and instruction.

**Ontology**

Ontology is a branch of philosophy (within metaphysics) that addresses the nature of being and reality (Lombardo, 1987; Reber, 1995); in other words, an ontology defines what is real in the world, whether physical or abstract structures. Those interested in learning and instruction indicate their ontological preference by specifying what are considered truths about knowledge, information, and the world. To be redundant, yet succinct, ontology refers to “what exists” while epistemology is concerned with “how we come to know about” what exists (Barab et al., 1999; Jonassen, 1991).

**Unit of Analysis**

The unit of analysis, from an assessment perspective, refers to the phenomenon of interest or, more specifically, the boundaries of the phenomenon that one is attempting to measure (Young et al., 1997). Salomon (1991), for example, distinguished between the analytic approach, in which units are studied in isolation because they are considered to be discrete, and the systemic approach, in which the units are considered to be interdependent and inseparable. Units of analysis are not objective features that are selected independently of a theoretical perspective; rather, the boundaries of the phenomenon that one is attempting to measure are influenced by a theoretical perspective (Barab and Duffy, 2000). If one views knowledge as structures existing in the brain, then a viable unit of analysis would be to examine the individual (or the cognitive structures of that individual) in isolation, whereas one who views knowledge as situationally constructed would pay more homage and would necessarily expand the unit of analysis to include the surrounding context in which thinking is occurring. This is not to imply there is a one-to-one correspondence between unit of analysis and philosophical assumptions; instead, the unit of analysis is influenced and constrained by underlying ontological and epistemological assumptions. In this chapter, we describe what is an appropriate (viable) unit of analysis given a particular set of assumptions.

**Dualisms**

The Cartesian dualism, in which the mind is considered distinct from the body, has been talked about in philosophy and psychology since the inception of these two disciplines. Turvey and Shaw (1995) identified four dualisms that have been central to psychology: mind–body, symbol–matter, subjective–objective, and perception–action. They claim that the organism–environment dualism subsumes these other four. In this dualism, the organism or knower is considered to be independent of the environment or what is known. Nowhere have these dualisms been more apparent than in theories regarding perception (Barab et al., 1999; Reed, 1996). Various theories have been forwarded in an attempt to explain how the mind perceives objects based on the meaningless points of light reaching the eye; for example, in addition to the dualist theory of the structuralists and the monist theory of the materialists, functionalism has been forwarded in which it is postulated that mental states exist as a function of a system. In other words, the way the system is put together is what is critical, rather than the material that the system is made of, thus allowing that a system, and not necessarily the human brain, can give rise to mental states (Fodor, 1994). From a functionalist lens, the mind and brain are viewed as one, with “the mind being viewed as
‘the brain looked at from the inside’ and the brain as ‘the mind looked at from the outside’” (Turvey and Shaw, 1995, p. 146).

Categories Summarized

It is these categories that will provide a basis for distinguishing among philosophical perspectives. Table 7.1 provides a summary of these categories.

PHILOSOPHICAL PERSPECTIVES

Philosophical perspectives reflect certain assumptions with respect to the nature of the world and how we come to know about it; however, these are sets of beliefs and are not open to proof in the positivist sense of the word: “There is no way to elevate one over another on the basis of ultimate, foundational criteria” (Guba and Lincoln, 1983, p. 108). This does not mean that we submit to a radical relativist posture (Bereiter, 1994a; Guba, 1992). These perspectives represent certain sets of assumptions and commitments with respect to world-views, and advocates of a particular perspective must rely on persuasiveness, assemblage of allies (other colleagues) (Latour, 1987), and utility rather than proof in arguing their position (Bereiter, 1994b). In this section, we present our interpretations (again, citing our colleagues to ground and add credibility to our conjectures) on the defining characteristics of these categories.

Objectivism

Objectivism is described as both an ontology and epistemology (Lakoff, 1987). Ontologically, “all reality consists of entities, which have fixed properties and relations holding among them at any instant” (Lakoff, 1987, p. 160). The world consists of these entities, their properties, and the relations that exist among them. Reality exists through the structures of these entities and is independent of any human understanding (Lakoff, 1987); thus, the world is real and exists outside of the individual (Bednar et al., 1995; Driscoll, 1994; Jonassen, 1991; Jonassen et al., 1993). Epistemologically, the mind functions as a mirror of nature, creating representations of the real world that require a correspondence to the external world. To know is to have these correct representations (Lakoff, 1987).

Realism

Realism is an ontological view of which objectivism is one form (Lakoff, 1987). Both realism and objectivism support the existence of a real, physical world that is external to individuals and includes human experience. Although objectivism provides a specific description of what the real world must be, in terms of entities and properties, realism “merely assumes that there is a reality of some sort” (Lombardo, 1987, p. 159). From this point of view, the physical world is a separate reality from perception and the mind (Mackay, 1997; Reber, 1995) and truth or knowledge is ascertained as having a correspondence between the structures of the mind and what is present in the world (Prawat, 1995).

Empiricism

As “typified by Locke and Thorndike, [empiricism] emphasizes consistency of knowledge with experience” (Greene et al., 1996, p. 16). It is an epistemological perspective that holds that knowledge builds from experience, more specifically, from the senses (Driscoll, 1994; Ertmer and Newby, 1993; Gardner, 1985; Lombardo, 1987; Reber, 1995; Traiger, 1994). Empiricism rejects the notion that the human mind enters the world with a priori ideas and concepts that exist independently of personal experience (Reber, 1995); thus, what is learned comes from interactions with the environment (Ertmer and Newby, 1993). An empiricist would choose actual data over theoretical conjectures and would formulate an argument based on the evidence of experience.

Rationalism and Idealism

Rationalism is generally discussed from an epistemological view. From a rationalist perspective, reason is the principle source of knowledge (Lombardo, 1987; Reber, 1995; Traiger, 1994). This reasoning power imposes upon the sensory experience that arises in the world, thus creating the world itself (Gardner, 1985). Early versions of rationalism posited that everything existed in one’s mind a priori, and a learner’s task was to discover what was already there, as in Plato’s Meno (Plato, 1977). The ontological base of idealism, more pronounced than what might be implied by rationalism,
holds that reality is psychological and all knowledge and experience are formed by these mental representations (Reber, 1995); thus, a separate world of physical entities or matter is not supported (Lombardo, 1987).

**Relativism**

Relativism, a general principle rather than specifically a philosophical perspective, puts the meaning of experiential and physical events in the relationships that exist among them. In this, there is no intrinsic meaning that is independent of other events (Reber, 1995). Reality from this perspective is socially and experientially based, being local and specific to observer and context (Guba and Lincoln, 1983). There is no absolute truth to the world; instead, there are individual constructions that are highly dependent on the individual building the constructions.

**Pragmatism**

Based on an Aristotelian heritage, a line of thought emerged that challenged the analytic, static, and segmented thought of absolute dualism. This was particularly evident in the natural sciences, where “the structures and capacities of animals were described relative to their ways of life within an environment; in turn, the environment was described relative to the ways of life of animals” (Lombardo, 1987, p. 5). In psychology, the pragmatists (also called functionalists) were less concerned with the inherent structure of the mind than with what the mind could do. The central focus of pragmatists (C.S. Peirce, William James, and John Dewey) was on what adaptive purposes justify the existence of mind (Turvey and Shaw, 1996). Rorty (1991) stated that pragmatism requires neither “a metaphysics [ontology] or an epistemology. They [pragmatists] view truth as, in William James’ phrase, what is good for us to believe” (p. 22, emphasis in original). The truth, or knowledge, is equivalent to the consequences that derive from these interactions (Reber, 1995). What makes a particular stance count as a truth is not some correspondence with the real world but its appropriateness in terms of whether it is progressive (functional) (Barab and Squire, 2004; Bereiter, 1994b).

**Philosophical Views: Summarized**

The above by no means accounts for all philosophical perspectives. We have chosen to define those that will be most salient to our discussion of psychological perspectives as they relate to learning and instruction. Table 7.2 contains a summary of these philosophical perspectives.

### Table 7.2: Philosophical Perspectives Summarized

<table>
<thead>
<tr>
<th>Philosophical Perspective</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Objectivism</strong></td>
<td>Ontological and epistemological view that contends that reality (the world) exists outside of the individual and consists of specific entities; to know is to have a mirroring of this world</td>
</tr>
<tr>
<td><strong>Realism</strong></td>
<td>Form of objectivism that assumes that some sort of reality is separate from the mind (ontology); to know is to have a correspondence between the word and the mind (epistemology)</td>
</tr>
<tr>
<td><strong>Empiricism</strong></td>
<td>Epistemology that states that knowledge comes from experience and through the senses</td>
</tr>
<tr>
<td><strong>Rationalism</strong></td>
<td>Essentially an epistemological view where reason is the principle source of knowledge</td>
</tr>
<tr>
<td><strong>Idealism</strong></td>
<td>Defines reality as mental, meaning that the world is not separate from the mind (ontology)</td>
</tr>
<tr>
<td><strong>Relativism</strong></td>
<td>A general principle that places the meaning of experiential and physical events in the relationships that exist among them</td>
</tr>
<tr>
<td><strong>Pragmatism</strong></td>
<td>Neither an epistemology or an ontology; knowledge is derived from interaction among groups of individuals and the artifacts in their environment, both of which create a reality</td>
</tr>
</tbody>
</table>

**Psychological Perspectives Distinguished**

Considering ontological and epistemological assumptions, units of analysis, and the mind–body relation, we propose a classification model that includes five main categories of current psychological perspectives which have provided a foundation for learning and instructional theories. It is not our intent to add to the myriad of terms used to describe theoretical categories; consider, for example, the many names of various types of constructivism: information-processing constructivism (Prawat and Floden, 1994), cognitive information processing, (Derry, 1992), radical constructivism or cognitive constructivism (Cobb, 1994; Derry, 1992; Duffy and Cunningham, 1996; Prawat and Floden, 1994; von Glasersfeld, 1995), and sociocultural constructivism (sociohistorical) (Cobb, 1994; Duffy and Cunningham, 1996; Prawat and Floden, 1994).

With that in mind, we have chosen the following categories: behaviorism, cognitivism, cognitive constructivism (to keep in the forefront the focus on individual mind), sociocultural/historicism (to keep in the forefront the focus on interactions among individuals and among individuals and society), and situativity theory (to keep in the forefront the focus on interactions...
among individuals and the situations in which they are acting). As Greeno and colleagues (1996) stated about the boundaries for the three perspectives they outlined, boundaries are, of course, relatively arbitrary. The categories we discuss are not intended to define single boundaries among perspectives but rather to illuminate distinctions that become clear only by looking at the jigsaw that emerges as one variable (ontology, epistemology, unit of analysis, dualism) provides a distinction among two perspectives while another variable suggests their similarity.

**Behaviorism**

Behaviorism was the predominant psychological school of thought during the first half the 20th century. Proponents of the field were Pavlov, Thorndike, Watson, Tolman, Hull, and Skinner.

**Ontology/Epistemology**

There seems to be much agreement that behaviorism’s ontological roots are objectivist (Driscoll, 1994; Duffy and Jonassen, 1992; Ertmer and Newby, 1993; Greeno et al., 1996; Jonassen, 1991). The world is real and exists outside of the individual. To come to know something within a behaviorist framework is to come to engage in specific behaviors in the context of particular stimuli. Burton et al. (1996) summarize three types of learning through which this can occur: respondent learning (e.g., use of classical conditioning where involuntary actions are elicited), operant conditioning (development of a relationship between a stimulus and response), and observational learning (change of behavior brought about by experience of observing others, of which Bandura’s work is an example). Thus, the epistemological framework for behaviorism also finds roots in empiricism (Ertmer and Newby, 1993; Greeno et al., 1996).

**Unit of Analysis**

To illuminate the focal point of knowledge, from a behaviorist perspective the unit of analysis is the behavior of an individual and the stimuli that elicit it. The mind is considered beyond inspection and not relevant to explaining behavior—no need to open up the black box (Gardner, 1985).

**Dualism Perspective**

Because of its objectivist ontological roots, behaviorism supports a type of dualism that distinguishes between knower and world; however, behaviorism is considered an anti-Cartesian school of psychology, as “all mentalist terms can be redefined in terms of observable, physically describable behavior” (Garfield, 1995, p. 336), thus nothing can have a mental property without a physical property. Rather than dualism, behaviorism is a form of monism.

**Cognitivism**

Cognitivism, as we describe it here, is that which initially emerged with the cognitive revolution during the 1950s, stressing a renewed focus on mind. As described by Bruner (1990, p. 1), the “revolution was intended to bring the ‘mind’ back into the human sciences after a long cold winter of objectivism.” They “were not out to ‘reform’ behaviorism, but to replace it” (1990, p. 3). Cognitivism grew from structuralism, where mental states are viewed as the computational states of a Turing machine or as the time-evolving states of a connectionist (neural network) machine” (Turvey and Shaw, 1995, pp. 146–147). This focus on mind, in which the mind was viewed as an information-processing system as exemplified by the mind-as-computer metaphor that emerged, sought an understanding of the organization, encoding, and retrieval of knowledge. We consider symbolic information processing as described by Greeno et al. (1996) and cognitive symbolic processing (Derry, 1992) to be synonymous and exemplify this view.

**Ontology/Epistemology**

Although, as Bruner (1990) stated, the cognitive revolution was a reaction to the cold winter of objectivism, cognitivism still finds roots in objectivism as an ontological base. As stated by Ertmer and Newby (1993), behaviorism and cognitivism are both primarily objective, and the world is real and external to the learner. Duffy and Jonassen (1992, p. 3) stated that much of the information-processing view in cognitive psychology is based on an objectivist epistemology, supporting this statement by citing the “independent existence of information and the acquisition of that information.” A direct mapping of the world, a knowledge base of expert information, can be accomplished through learning. Although this acquisition of a knowledge structure does underlie the cognitive perspective, we feel that a rationalist epistemological base provides the distinction required to define a meaningful boundary between behaviorism and cognitivism (Ertmer and Newby, 1993). Greeno and colleagues’ (1996) theoretical conceptualization is based on issues about the nature of knowing, essentially epistemology, as well
as learning, transfer, motivation, and engagement, and describes behaviorism as objectivism and cognitivism as rationalism as well.

Unit of Analysis
Like the behaviorists, the unit of analysis remains with the individual; however, rather than behavior, it is an analysis of an individual’s mind structure and the representations developed.

Dualism Perspective
With cognitivism’s roots in rationalism, mind and environment would not be separated, the world existing only through mind; however, this is an extreme interpretation of rationalism as applied to cognitivism. Bredo (1994) itemized a number of dualisms that arise within this view: language and reality, mind and body, and individual and group. For our discussion, we align more with Turvey and Shaw (1995), who described cognitivism as growing out of 19th-century structuralism, where the mind and body are seen as separate and interactive.

Cognitive Constructivism
Cognitive constructivism is generally aligned with the work of Piaget. This link to Piaget synthesized the various names that had been applied to this perspective: radical constructivism (Derry, 1996; von Glasersfeld, 1995), cognitive constructivism (Cobb, 1994; Duffy and Cunningham, 1996), psychological constructivism (Prawat, 1995), and constructivism (Bednar et al., 1995). This view, we believe, has emerged as an entity separate from cognitivism and social constructivism based on ontological differences on the one hand and the unit of analysis on the other.

Ontology/Epistemology
From the cognitive constructivist perspective, there is a real world that we experience (Duffy and Jonassen, 1992), thus appearing to find an ontological base in objectivism; however, this world cannot be directly known (Derry, 1992; von Glasersfeld, 1995), which broadens the nature of the ontology to realism. That reality exists is not denied; however, what we know of the world is only an interpretation based on our experiences (von Glasersfeld, 1995). As such, cognitive constructivism is subjective and relativist, providing for no absolute in what is right or wrong and also has a base in empiricism (Bednar et al., 1995). Cognitive constructivism also finds its epistemological basis largely in rationalism (Greeno et al. 1996). The emphasis in knowing is in the cognitive activity of an individual as they make sense of the world (Cobb, 1994).

Unit of Analysis
The unit of analysis within the cognitive constructivist perspective remains with the individual as in cognitivism but focuses on the conceptual reorganization of one’s knowledge rather than on the extant structure of an individual’s knowledge. Looking at the cognitive self-organization of the individual, Cobb (1994, p. 15) stated that “constructivists are typically concerned with the quality of individual interpretive activity.”

Dualism Perspective
As described by Cobb (1994), the cognitive constructivist perspective places the mind in the head of the individual. Culture and context play a role in the meaning making of each individual. The individual mind, although influenced by social context, is not one with the social context (Bereiter, 1994b); thus, mind is separate from environment (Prawat and Floden, 1994).

Sociocultural/Historicism
Socioculturalism is often distinguished from cognitive constructivism (Cobb, 1994; Duffy and Cunningham, 1996; Phillips, 1995; Wood, 1995). Generally, this distinction is noted either through the name of constructivism as socioconstructivism, sociocultural constructivism (Cobb, 1994), social constructivism, or sociohistoricism (Strauss, 1993) or by distinguishing among the proponents of the perspective. Socioconstructivism, as we will identify it, has traditionally been aligned with the views of Vygotsky.

Ontology/Epistemology
Distinguishing among the forms of constructivism is largely an epistemological distinction (Cobb, 1994; Phillips, 1995). In this perspective, knowing is distributed in the world, among objects and individuals. Knowledge creation is a shared rather than an individual experience (Prawat and Floden, 1994) and evolves through social negotiation (Savery and Duffy, 1995). Phillips (1995) described this emphasis on sociopolitical processes or consensus as a tendency toward relativism, where meaning was only incurred with respect to relationships, thus providing an epistemological distinction among constructivist
theoretical perspectives. Prawat and Floden (1994) discussed socioconstructivism from a contextualist worldview, supporting the notion that from this perspective knowledge by verification is linked to actions and events that occur. Thus, ontologically, as with the cognitive constructivists, reality exists through interpretations; however, from the sociocultural perspective, society and an individual’s relationship to society have a primary role in the shaping of that reality (Prawat and Floden, 1994).

**Unit of Analysis**

Socioculturalists are distinctive in their insistence that knowledge creation is a shared rather than an individual experience (Prawat and Floden, 1994). It is this process, rather than the mental structures of the individual or the environment, that is the unit of analysis (Strauss, 1993); thus, the mind is placed in society, and the individual’s cognitive structure as a unit of analysis is essentially meaningless.

**Dualism Perspective**

To understand the view on dualism from this perspective, we find Bakhurst’s description on the nature of thought as cited in Cobb (1994, p. 14) to be helpful:

> [T]hought should be viewed as something essentially “on the surface,” as something located … on the borderline between the organism and the outside world. For thought … has a life only in an environment of socially constituted meanings.

Thus, a type of dualism is supported between individual and environment. Although a thought may only exist in the socially constructed world, the individual and environment are not one and the same.

**Situativity Theory**

Young (1993) and Greeno (1998) have discussed the ecological tenets of situativity theory—that is, the notion of direct perception without the need for mediating variables that exist in one’s head. Other roots to situativity theory can be found in the work of various anthropologists such as Lave and Wenger (1991), describing learning and cognition in the everyday world (Kirshner and Whitson, 1997). For our discussion, we will not distinguish among these perspectives of theory, choosing features of each which, to us, clarify the essence of situativity theory and distinguish it from the other psychological perspectives discussed above.

**Ontology/Epistemology**

Lombardo (1987) described the ontological roots of ecological psychology as ecological reciprocity, the dynamical relationships that occur among aspects of the environment. The environment, in this perspective, is not distinct from the individual; the individual is merely a part of a highly interconnected system of relationships (Barab and Roth, 2006). Within this environment, we perceive and act based upon the affordances and constraints of the environment and the situations that arise within it. The epistemological basis of situativity, although seemingly not distinguishable from its ontology, was described by Lombardo (1996) as direct realism, which was foundational to the work of Gibson. Rather than viewing experiences as constituting the mind, the issue becomes what adaptive purposes exist to justify the existence of the mind (Turvey and Shaw, 1995).

A fundamental notion for the situativity theorist from the anthropological view is that “cognition must be viewed as an integral part of the physical, social, and cultural contexts to which it belongs” (Barab and Plucker, 2002; Derry, 1996, p. 416). Learning, or coming to know, has a defining characteristic of an individual involved in legitimate peripheral participation within the practices of a community (Lave and Wenger, 1991). From this perspective, knowing, identity, and context stand in dialectic, not dualistic, relations and are all constituted in the learning process (Barab and Duffy, 2000; Lave, 1997). Not only does this learning take place within the practices of the community, but also the social practices of the world are developed through this process. Thus, a reciprocity emerges as also defined from the ecological view.

**Unit of Analysis**

The unit of analysis in this perspective is the “socio-cultural setting in which the activities are embedded” (Kirshner and Whitson, 1997, p. 5). More so, it is the ecosystem that exists of which the learner is one part, and it is the individual–ecosystem interactions that must be captured from this perspective (Barab and Kirshner, 2001)

**Dualism Perspective**

The situative perspective requires unification of cognition and nature (Turvey and Shaw, 1995). In this, there is not a dualism of mind and environment; instead, there exists, as described by Turvey and Shaw, organism–environment mutuality and reciprocity. Thus, we find a distinction between the situative perspective and
the social constructivist perspective. Situativity theory defines no borderline between an organism and the environment as did Bakhurst; instead, from a situativity perspective they are one.

Psychological Views: Summarized

We have outlined five categories of psychological perspectives that provide a basis in describing learning and instruction. Epistemology, ontology, unit of analysis, and the position on mind–environment relationships define these categories as we see them. Table 7.3 provides a summary.

### IMPLICATIONS FOR LEARNING THEORY AND INSTRUCTIONAL METHODS

Theoretical perspectives have been used as a foundation for learning theories and, in turn, instructional theories and their associated methods. Learning theories are descriptive (Prawat, 1992; Reigeluth, 1999b), describing how learning occurs within a particular instance. An example of a learning theory within the cognitive perspective is schema theory, which describes how learning occurs through accretion, tuning, and restructuring (Rumelhart, 1981). In contrast, instructional theories are prescriptive and provide guidance about how to design instruction to facilitate learning. An instructional theory identifies methods to be used and, more importantly, identifies situations in which these methods should or should not be used.

The elaboration theory (Reigeluth, 1999a) is an example of an instructional theory identifying how instruction should be sequenced so the learning process can be meaningful and motivational for learning, allowing for simplification of content without deconstructing the learning task into meaningless, decontextualized pieces. An instructional theory is probabilistic, rather than deterministic, increasing the chances of achieving learning goals rather than guaranteeing them. The methods identified within an instructional theory provide specific ways in which to support and facilitate learning. The simplifying conditions method provides a means to analyze, select, and sequence the content of what is to be learned for an instructional designer who is subscribing to the elaboration theory in designing a learning activity (Reigeluth, 1999a).

Instructional theories and their associated methods are based on learning theories, providing an important linkage between how learning occurs and how to facilitate that process. Learning theories reflect the theoretical perspective, defining learning in terms of the nature of knowledge of the world and how one comes to know about these; however, the linkages among psychological perspective, learning theory, and instructional theory and associated methods are not necessarily simple and direct. Historically, learning theories may have been confined to a single psychological perspective (C. M. Reigeluth, pers. comm., August 24, 1998); for example, there is little question that operant conditioning is aligned with behaviorism. Yet, this clear distinction may not be the norm as psychological perspectives are further delineated and new and existing theories are considered in light of those perspectives; for example, Reigeluth (pers. comm., August 24, 1998) stated the following about his theories:

> While the cognitive perspective provides rationale for many of the prescriptions in the elaboration theory, constructivism provides rationale for others, and behaviorism could even provide rationale for some. Also, the elaboration theory can be used in different ways depending on the philosophical orientation of the user. For example, it could be a central part of self-directed, problem-based learning, or it could be used to sequence behaviorist instruction. I think we often do a disservice by trying to pigeon-hole particular methods into different philosophical and descriptive-theoretical orientation. I find that the real world is a bit more complex than such simplistic categorizations.
We agree with Reigeluth’s concern about categorizing particular theories and methods with particular philosophical perspectives; however, we also believe that those who are designing instruction (instructional designers as well as classroom instructors) will benefit from a discussion of the differences in learning theories and instructional theories. What these theories imply about the nature of the world, knowledge, and the learning unit that is of interest provides a theoretical basis for designing instruction.

In the following paragraphs, we discuss the learning and instructional implications of each of the five identified theoretical perspectives. For each theoretical perspective, we identify a learning theory and instructional theory or method that we feel is an exemplar given our description of the psychological perspective. The description provided of each exemplar is brief, allowing the reader to rely on his or her own resources for a more involved description of the theories. It is important, again, to keep in mind the fragileness and contextual nature of the boundaries we have defined.

Behaviorism

Because of its objectivist roots, those basing instruction on the behaviorist theoretical perspective find it appropriate to define the learning that will occur, describing specific observable outcomes that are indicative of the learning. Because of the role of knowledge as a mirror of the world, instructional content can be preplanned, organized, and programmed with specific outcomes defined. An exemplar learning theory that aligns with this perspective as we have described it is Skinner’s operant conditioning. In this theory, learning is viewed as conditioning where behavior that is followed by a reinforcer will increase in frequency or probability. Ways of arranging the contingencies between the desired behavior and the reinforcer as well as schedules for determining the effects of reinforcers are specified (Barker, 1994; Goetz et al., 1992).

From this learning theory, programmed instruction provides an example of an instructional method that facilitates learning by utilizing reinforcement and feedback. The content is analyzed and preplanned based on an objective ontology, providing the learner with a direct map of what specifically is to be learned. Teaching machines and computer-aided instruction, descendants of programmed instruction, provide technological vehicles to facilitate this reinforcement process. Although technology has facilitated the process of this instructional method, the important aspect of these methods is the “arrangements of the materials so that the student could make correct responses and receive reinforcement when the correct responses were made” (Saettler, 1995, p. 294). Given the focus of mapping correct responses to the learner, this theory and method align well with behaviorism’s objective tradition. The behavior of the learner, that of providing correct responses, provides the unit of analysis we have identified.

Cognitivism

Cognitivism retains the objectivist ontological look at the world, thus having some of the same design goals as behaviorism. Material is analyzed and sequenced, again often in a simple to complex or hierarchical type of organization (Gagné et al., 1992). The rationalist epistemology guides the focus on the study of learners’ knowledge structures, thus providing for their cognitive structures as a meaningful unit of analysis. With this focus on rationalist knowledge building, it is possible to detach the learner from the environment, thus supporting a dualist view.

Learning theories within this perspective focus on the organization of the information to facilitate its acquisition by the learner. In his discussion of meaningful reception learning, Ausubel (1977) described a cognitive structure in learners where ideas were organized hierarchically and which contained inclusive concepts under which were subsumed subconcepts and other information. The cognitive structures were existing, were organized for stability and clarity, and influenced learning and retention (Ausubel, 1963), and learning was the process of subsuming new meaningful material into this structure. Instructionally, content was presented in its final form (Ausubel, 1961), and “the learner [was] required to internalize the information in a form that will be available for later use” (Driscol, 1994, p. 115), thus aligning with the objectivist ontology while at the same time acknowledging the role of cognitive structure as needed for the rationalist epistemology.

Gagné’s (1985) theory of instruction provides an exemplar within the cognitive perspective. In his Conditions of Learning, he described five types of learning capabilities: intellectual skills, verbal information, cognitive strategies, motor skills, and attitudes. Within these comprehensive categories he defines the conditions by which learning can be facilitated; for example, within cognitive strategies, internal conditions for the learner require an encoding strategy. As with the behaviorists, the resulting learning objective or outcome can be made explicit and objective. The instructional process is designed to align with the components and stages central to an information-processing type of learning theory, an early learning theory in the cognitive perspective.
Within this theoretical perspective encoding and retrieval strategies align with the rationalist epistemology, the objective ontological view found in the explicitly defined skills and knowledge that the learner will produce. Although the learning outcome may be a behavior, the unit of analysis is the learner’s knowledge structure formed through a mapping of well-structured information to the learner.

Cognitive Constructivism

With its realist roots, cognitive constructivism supports that the world exists, with learning proceeding from an individual's uniquely and individually constructed interpretation of that world. As with the cognitivist, the rationalist epistemology provides for the importance of the development of cognitive structures; however, in contrast to the cognitive view, information is not prestructured and presumed to be mapped into an individual’s mind.

Von Glasersfeld (1995) identified Piaget’s work as providing a learning theory that is consistent with the cognitive constructivist perspective as we have described it. Von Glasersfeld (1989, p. 125), describing Piaget as the “most prolific constructivist in our century,” stated that Piaget’s schemes were adaptable conceptual structures and could never be representations of the real world, always being based on the individual’s experiential world. Piaget’s scheme provided a means for individuals to construct their world using assimilation, a process by which an individual fits an experience into an existing conceptual structure. Should the experience and scheme not fit together well, perturbation develops, and the new experience will not be assimilated into the existing structure. Accommodation then occurs, and a new scheme is developed. In Piaget’s scheme, both assimilation and accommodation are based on subjective experiences where the individual is constructing a personal interpretation of the world (von Glasersfeld, 1995).

Instructionally, sense-making opportunities are provided for learners to experience and thus construct new understandings. Teachers take a more interactive, less directive role in the instructional process of learners (Greeno, 1998). Discovery methods of instruction provide for this type of learning. Ausubel (1961) described the difference between reception learning and discovery learning; in the former, all the content is given to the learner, whereas in the latter the learner is to rearrange the information to integrate it into his or her own existing cognitive structure (i.e., discover it). Bruner (1961) described discovery learning in his early work. He included in discovery not just “finding out something that was unknown to mankind, but … [to] include all forms of obtaining knowledge for oneself by the use of one’s own mind” (Bruner, 1961, p. 22). His view of learning was that it was an “active process of imposing organization or order on experience” (Goetz et al., 1992, p. 313). From this, discovery learning was intended to support the experience that allowed learners to explore new concepts and develop new skills. The realist ontology provided that what was discovered or made sense of did exist, and a correspondence was developed between the world and the mind. Of interest was the development of the structures of the learner, the order that a learner imposed upon the experience, thus supporting the restructuring of cognitive structures of the learner as a unit of analysis.

Sociocultural/Historicism

The unit of analysis provides the most informative distinction between cognitive constructivism and socioculturalism. Seeking to understand learning from this perspective required a look at the process by which it occurred among individuals. Although other perspectives also support interaction and peer collaboration as ways of constructing or acquiring knowledge, socioculturalism requires that this process occur; thus, the knowledge developed is not with the individual but in the interactions among individuals.

For a learning theory within this perspective we draw on the work of Vygotsky. According to Vygotsky (1978), learning, in particular good learning, takes place in advance of development in what he termed the zone of proximal development. The zone of proximal development is the distance between the actual developmental level of the learner and what he or she is capable of performing with the assistance of an adult or more capable peer. Learning was also not an individual endeavor, relying on the interactions in which the child participates (Vygotsky, 1978, p. 90):

[L]earning awakens a variety of internal developmental processes that are able to operate only when the child is interacting with people in his environment and in cooperation with his peers. These processes are internalized, they become part of the child’s independent developmental achievement.

Knowledge exists in the interactions between the learner and adult, although the interaction is internalized by the learner, becoming a new function for the learner. This internalization of knowledge from interaction is termed appropriation (Wertsch, 1998).

An instructional strategy within this perspective that focused on the zone of proximal development is
the use of instructional scaffolding as described by Collins et al. (1989). The idea is that instructional supports are provided that allow the learner to develop increasing competence, at which time the extra supports can be removed. It is in this way that the learner can engage in activities at the upper limit of his or her zone of proximal development. This support allows the tasks to remain complex and motivating yet still within the learner’s level of functioning.

Situativity Theory

The learning theory that we identify for the situativity perspective draws on the work of Lave and Wenger (1991). In contrast to the internalization process, which was evident in the other perspectives, learning, from this perspective, involves the whole person and the role of that person as he or she becomes a fully participating participant of a community (Barab et al., 1999). Based on a theory of social practice, the emphasis is on “the relational interdependencies of agent and world, activity, meaning, cognition, learning, and knowing” (Barab and Duffy, 2000, p. 50). Learning as a legitimate peripheral participant is an evolving form of membership where the learner also reproduces and transforms the community of practice of which they seek membership. The unit of analysis is thus the entire system of which the learner is a part, with knowledge residing in the dynamic relationship of the system. Becoming knowledgeable skillful involves appropriating the practices of the community, emphasizing community-defined practices that wed individuals to a community, instead of cognitive processing.

Instructionally, the situated perspective is often grouped with the sociocultural view. In fact, Garrison (1995) described situated cognition as making an important contribution to social constructivism. For our purposes, we draw on the work of the Cognition and Technology Group at Vanderbilt (1993) to provide an instructional theory (method) for this perspective, focusing on characteristics that distinguish it from socioculturalism. Anchored instruction situates learning activities in information-rich video environments. Within the environment, learners are presented complex, realistic problems that they solve using information that is embedded within the anchoring story presented. To solve the problem, learners will engage in a number of problem-solving activities such as mathematical problem solving as presented in the Jasper Woodbury Problem Solving Series.

As an example of ecological realism, the anchor on which the instruction is built is viewed in terms of affordances as described by Gibson; the anchors are designed to support certain types of teaching and learning activities. That is, the learning opportunities emerge as a result of the learner’s problem-solving role within the instruction; the anchor is designed to set up a rich macrocontext in which conceptual tools can be used to address the anchor problem (CTGV, 1993). Although the Jasper series lacks the authenticity of a problem-solving encounter that exists in the real world, it provides the opportunity for the learner to participate in a simulated type of world. Thus, even in this technology-based world, the unit of analysis rests not with the learner but with the learner as a part of the system in which the problem solving takes place.

Implications for Learning Theory and Instructional Methods: Summary

We have identified an exemplar learning theory and instructional theory or method that captures the characteristics of each of the five theoretical perspectives outlined above. Within each perspective there is ample room for debate and discussion about the merits of including these theories within a perspective as well as what other theories and methods might better exemplify the characteristics. Table 7.4 provides a summary of the learning theories and instructional theories or methods used in our discussion.

<table>
<thead>
<tr>
<th>Psychological Perspective</th>
<th>Learning Theory</th>
<th>Instruction Theory or Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behaviorism</td>
<td>Skinner’s operant conditioning</td>
<td>Programmed instruction and computer-aided instruction</td>
</tr>
<tr>
<td>Cognitivism</td>
<td>Ausubel’s meaningful reception learning</td>
<td>Gagné’s conditions of learning</td>
</tr>
<tr>
<td>Cognitive constructivism</td>
<td>Piaget’s scheme theory</td>
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</tr>
<tr>
<td>Sociocultural/historicism</td>
<td>Vygotsky’s zone of proximal development</td>
<td>Reciprocal teaching or scaffolding</td>
</tr>
<tr>
<td>Situativity theory</td>
<td>Lave and Wenger’s legitimate peripheral participant</td>
<td>Anchored instruction</td>
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CONCLUDING REMARKS

Philosophical perspectives are worldviews that define the nature of the world, the individual's place in it, and the possible relationships to that world and its parts. These perspectives form the foundation for any line of inquiry, including those associated with a particular discipline. As such, it is essential before beginning a line of inquiry or the profession of teaching that individuals examine their ontological and epistemological commitments. In this article, we presented five main categories of philosophical perspectives and contrasted them in terms of epistemology, ontology, unit of analysis, and whether they suggested dualist relationships.

In terms of the domain of psychology, we have seen the emergence of psychological perspectives arising from varying philosophical commitments. It is important to acknowledge that philosophies with respect to epistemological and ontological assumptions are not instructional methods and that methods are not philosophies. It has been argued, however, that instructional strategies and methods are clearly influenced by the philosophical assumptions and that theories of knowing and learning are implicit to the instructional design (Barab and Duffy, 2000; Duffy and Jonassen, 1991; Reigeluth, 1999b). We find it inconceivable that a teacher or instructional designer would advocate a particular lesson or activity without at least a tacit theory of how students think and learn. In this article, we have differentiated among philosophical perspectives and suggested alignments between assumptions associated with various perspectives and learning and instructional theories. Obviously, these alignments only scratch the surface and may not be consistent with those advanced by others; however, we have found these alignments useful in that they begin to capture some of the relationships and serve as beginnings for discussion.

We hope this chapter pushes educators to examine and question their ontological and epistemological assumptions and whether or not their instructional practices are consistent with those assumptions. If there is incongruency between philosophical assumptions and instructional practices, then, we argue, it is important to ask oneself “Why the inconsistency?” and “How do I best resolve it?” We have found this reflective practice to be most useful in terms of our own teaching and research. At times, this has meant changing teaching practices and at other times challenging philosophical assumptions (see Glaser and Strauss, 1967, for a discussion of grounded theory development). Some educators have advocated for eclecticism in which one draws from various philosophies and learning and instructional theories depending on the task at hand (Ertmer and Newby, 1993; Reigeluth, 1999b; Sfard, 1998). In spite of the merit of not getting trapped and closed-minded, we have found it useful in moving forward with a research and teaching program to make ontological and epistemological commitments. From here, we as researchers and reflective practitioners can then empirically examine the merits of such a commitment; that is, we can consider how our theoretical assumptions align with empirical observation and adjust accordingly.

We have noted that the categories and descriptions forwarded in this article are not hard and fast rules or socially negotiated truths agreed upon by the community; rather, they are based on our understandings and on a review and interpretation of the literature and were written in the context of this paper. There is no way to prove, in the conventional positivistic sense, that one theory is better than another. This is partly because the methods one would use to make such arguments are based on a set of ontological and epistemological commitments as well (Greeno, 1997). As such, we expect theoretical debates to remain an important practice in the field. We have aligned our categories with colleagues in the field and, at the very least, argue that much of our conjectures are consistent with some of the socially negotiated meanings and inconsistent with others. But, again, our goal is for this chapter to provide a springboard for discussion and to prompt educators to question the relationships among philosophical assumptions, psychological perspectives, learning and instructional theories, and instructional practice, not to suggest indisputable facts.

References


* Indicates a core reference.