

The Epistemology of Hegel: An Underlying Approach to Learning

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Abstract

In this paper we argue that research on learning in education is not a disparate set of unrelated theories and models, but rather there is an underlying unifying understanding of what learning is, based on a conception of epistemology, which can be distinguished from work done in experimental or cognitive psychology. Our argument centers on the idea that how researchers conceptualize epistemology (how one knows) determines to a large extent how they conceptualize learning and therefore teaching. We argue that many of the models and approaches in Learning Sciences are ultimately based on a Hegelian conceptualization of epistemology, whereas in experimental (and cognitive) psychology conceptualizations of epistemology are derived largely from empirical philosophies, especially those of the British Associationists. This basic difference in how the two fields conceptualize 'knowing' leads to essential differences in how we think about learning, ask questions, build models and do research.

1. Introduction

To a large extent this paper has its roots in a series of discussions that we have had with colleagues in psychology departments over the proper, scientific ways of researching issues of learning. In those discussions, it became clear that educational psychologists and cognitive psychologists differ not only in their traditions of research, but that they differ also fundamentally in how they think about what learning is.

In this article we argue that this difference in conceptualizations of learning derives, in large part, from important foundational differences in how one thinks about what philosophers call 'epistemology', how one arrives at knowledge. Specifically, we argue here that the underlying epistemology in use in large swathes of educational psychology and the Learning Sciences is derived not from the empirical tradition of the British Associationists (including John Locke, Bishop Berkeley, David Hume, and J.S. Mill) in which knowing is understood in terms of the associations of perceptions made by the individual's mind, which has driven much of the work in experimental psychology, from Pavlov to Watson and Skinner, too much of cognitive psychology, including modern versions of connectionism. In contrast, the epistemology underlying much of the work in educational psychology and the Learning Sciences is derived from theorists such as Vygotsky and Dewey, and is ultimately based on the epistemology of Hegel. We argue that it is this fundamental understanding of what knowing means that determines how we think about learning, which in turn drives

the kinds of questions that we ask and the kinds of data that count as evidence for those of us in research on human learning.

We argue that an examination of the methodologies and approaches that are common in education research reveals that they largely share a common epistemology of learning, one that can be traced back to the work of Hegel. On the other hand, the understanding of what constitutes knowledge – and thereby learning -- in psychology departments in North American tends to be derived from the empirical concepts of epistemology, especially those of the British Associationists.

2. Epistemology

One of the central questions in any philosophy is how one can know something to be true. In this paper, we will briefly discuss and contrast two competing epistemologies that grew out of the enlightenment, and rejected the views of earlier philosophies such as Platonism and Rationalism. The metaphysics and arguments for these views are beyond the scope of this paper, so we will restrict ourselves to the broadest outline of these two ways of understanding how it is that we know things. Other epistemologies do exist (such as the nativism of Fodor and Chomsky), but we will restrict ourselves to these two influential ones.

2.1. The Associationist Epistemology

British Associationism was a particular specification of the larger empiricist school of thought that argued that all knowledge was a posteriori, that is, the result of experience. In his 1690 *An Essay Concerning Human Understanding*, Locke argued that the mind began as a blank slate (a *tabula rasa*) on which experience wrote [1]. In this formulation, knowledge is the result of sensory experience on the mind. In 1865, J.S. Mill's argued that matter is, for the mind, *the Permanent Possibility of Sensation* [2]. Mill argues that the mind has mechanisms based on association of stimuli in time and space, which give rise to our knowledge of the world through our experience. In the Associationist epistemology, knowledge is the result of experience, we perceive and understand the world through individual experience of it. Although the behaviourist schools of psychology (Pavlov, Watson, Skinner, Bandura) are most closely linked with these Associationist ideas, more recent neural network and connectionist models are just as strictly Associationist in their approach to knowing and therefore learning.

Furthermore, cognitive models are largely Associationist in their epistemology. They begin by positing information entering the system, undergoing some processing and being retained. What is clear is that in these models, knowledge is understood to be the result of the individual's' experience, they differ from the behaviourist school mainly in the mental processing of this input.

2.2. The Constructivist Epistemology

Kant broke with earlier philosophers on the question of epistemology. In particular, he rejected the empiricist idea that it is our direct experience with the world gives rise to our understanding of the world. Instead Kant argued that our experience does not directly lead to knowledge, but rather the mind interprets the experience through structures that the mind imposes (such as cause and effect, real or hypothetical), and thus the mind takes the input from experiences and *constructs* an understanding of it [3]. A few psychologists have taken this Kantian Constructivist approach, the most important of whom is the Swiss developmental theorist, Jean Piaget. In Piaget's epistemology, children construct a schema (or mental representation) of a phenomenon, based not solely on their experience with the world, but also on the structures imposed by the mind at their stage of development [4].

Hegel added two key components to the Kantian idea of construction of knowledge: The first, laid out in his 1807 *Phänomenologie des Geistes* (usually translated as *Phenomenology of the Mind* [5] or *of the Spirit* [6], neither of which precisely captures the meaning of *Geist*) is that of the *Volkgeist* (roughly the spirit of a people) which we can largely interpret as what we mean today by 'culture'. We come to our knowledge by means of the culture in which we find ourselves. Our interpretation of experiences is influenced, when not determined, by the categories and understanding provided by the culture. The second is the dialectic method for arriving at truth. The classic formulation of this is Fichte's: Thesis, Antithesis, Synthesis [7] (although Hegel himself used the formulation abstract – negative – concrete). That is, that an assertion is put forward, it is examined and problems found and a counter-proposal is formulated, with the result that a synthesis of the first two is developed and then accepted. This dialectical method has been attacked by empiricists (most famously by Popper [8]) not only for allowing the acceptance of contradictions, but also for political reasons.

Thus we have the three basic components of the Hegelian epistemology: a) that knowledge is constructed by the mind rather than simply copied from the world, b) that this knowledge construction takes place within a cultural context that determines (to some extent) the form of the knowledge, and c) that the mode for this construction takes the form of a dialog (i.e. it is dialectic) – which can be an internal dialog as well as an interpersonal dialog of the form thesis – antithesis – synthesis.

A useful exercise here might be to contrast two epistemological approaches to the same real world phenomenon. Let us take the case of classroom dialogue. An Associationist epistemology would take the learning as the

reception of an input, with a check to see if the input had been received, such as the IRE analysis [9]"

The teacher Initiates usually by asking a question

The student Responds to the question

The teacher Evaluates the response

Using a more Hegelian epistemology, the instructional dialogue would be seen as the teacher initiating a discussion by posing a problem or issue, having the students discuss or engage in inquiry about it, and finally arriving at a consensus (guided by the teacher); that is, it has the form: thesis, antithesis, synthesis.

3. Hegel and Theories of Learning

Hegel's epistemology had a revolutionary influence on educational theorists both on the European continent and in North America, especially in how they thought about learning. In rejecting the realist notion that the mind simply recorded or recognized the world, Hegel opened up the idea that learning was an active process rather than one of passive perception, with significant implications for learning.

3.1. Dewey, Peirce and Hegel

Although Dewey is now best known for his work on education, he was well-known in his time as one of the proponents of a school of philosophy – along with William James and Charles Peirce – called Pragmatism. Pragmatism was essentially an attempt to produce a more American philosophy based on Hegel's criticisms of Kant, while rejecting some of the claims of some (mainly British) neo-Hegelian philosophers. Central to our argument is that while Dewey and the Pragmatists argued against some parts of the Hegel's metaphysics, they largely accepted Hegel's view of epistemology. Analyses of the recently discovered Dewey's lectures on Hegel [10] have made it clear that Dewey never rejected Hegel, and crucially, accepted Hegel's constructivist view of epistemology. This can be seen in Dewey and Peirce's idea of science as a community of inquiry -- that science advances not through individual effort of isolated scientists, but rather through communication and cooperation among members of a scientific community, which Dewey then expanded in discussions of how students learn within an educational community.

Dewey's philosophy of progressive education, therefore, is based almost entirely on a Hegelian epistemology: that knowledge is constructed on the basis of experience, which is shared within a community, and that this construction occurs largely through instructional dialogue. Dewey's idea of experiential learning, including the social and dialectic construction of meaning, led to the development of explicitly Constructivist pedagogies such as Inquiry-based Learning [11] and Problem-Based Learning [12], which both take a strongly Hegelian perspective on epistemology and learning by designing learning that is authentic to the culture, and is a) supportive of learners' construction of understanding, b) within a specific cultural context, and c) relies on student-student as well as student-teacher dialogue to support student construction of knowledge.

Among current models of pedagogy that have led to active research programs, perhaps the most explicitly based on Dewey's theory has been in distance education. The Communities of Inquiry model of Garrison, Anderson and Archer [13] maps out a pedagogical model for distance and online education that concerns itself with not simply the transmission of information over the internet, but also with the building of an online community of learners that are actively engaged in inquiry by ensuring that the online classroom supports not only teaching presence (as in a more Associationist framework), but also the social presence of members of the class, as well as the learners' cognitive presence online as they construct and co-construct meaning.

3.2. Hegel, Marx and Vygotsky

Perhaps the most influential of the descendants of Hegel has been Marx. Marx made a number of revisions to Hegelian philosophy (such as interpreting culture as occurring within a neo-Darwinian historical evolution of culture from tribal to monarchic to capitalist to socialist, with intervening steps, and reformulating the Hegelian dialectic as the materialist dialectic) most of which are irrelevant to our argument. Marx recast Hegel's arguments in political and economic terms [14] and produced a political philosophy which was adopted by many of the socialist movements around the world.

One such movement within the Roman Catholic Church, which rejected Marxian atheism but accepted its concern with social justice as well as its Hegelian epistemology, was that of Liberation Theology. This in turn greatly influenced an important – and still influential – theory of pedagogy in Latin America, whose main proponent was Freire. In his *Pedagogy of the Oppressed* [15], Freire argued strongly against an Associationist epistemology and its instantiation in the classroom, which he termed the banking model of instruction. Instead he argued that pedagogy needed to be responsive to the students' need to a) construct rather than receive knowledge, b) within the framework of their own culture and language, c) through the use of respectful dialogue. Freire's theory of pedagogy, with its central message of social justice through education, inspired the critical pedagogy movement in North America, which frames central issues of education in terms of the issues of social justice that inspired the Liberation Theology movement.

4. Vygotsky

Within education theory and research, one of the most influential approaches using a Hegelian epistemology (via Marx and Engels) has been Vygotsky. Working in the early years of the Soviet Union, Vygotsky developed a Hegelian model of pedagogy [16]. His most important and influential insight was that of mediation between the learner and the object of the learning: that what distinguishes human from animal learning was the use of concrete but more importantly, psychological tools [17].

The process of constructing knowledge involves the use of a series of culturally specific and appropriate mental artefacts,

the most important of which is language. Vygotsky argued that thought and language were not identical, but rather initially separate processes for understanding and communication (respectively) that grew to influence each other as the child matures, such that language influences thought by (for example) providing concepts through words, and that thought influences language, as when novel sentences are created to express a thought. This inter-relation between language and thought provides the structure for how Hegel's dialectic form of knowledge construction can take place. Since language is by its nature rooted in a specific culture (or *Volksgeist*), the cultural specificity and authenticity of learning is built in to the dialectical process.

Bruner. Probably no educational theorist has been as influential in promulgating Constructivist ideas and pedagogy in the English-speaking world. Jerome Bruner took key ideas and concepts and spelled out their implications for pedagogy from a number of related sources: Kantian Constructivism, Piaget's structuralism, Vygotsky's mediation, as well as his own work on Discovery Learning [18]. Perhaps most significantly, by building on 'construction' as metaphor, he popularized the term 'scaffolding' to describe what the teacher does from a Constructivist perspective: providing supports for the learners as they construct meaning.

Building on the idea of Discovery Learning, but including the Hegelian social and dialectic construction of meaning, led to the development of Constructivist pedagogies including Inquiry Learning and Problem-Based Learning, which both take a strongly Hegelian perspective on epistemology and learning by designing learning that is authentic to the culture, and is a) supportive of learners' construction of understanding, b) within a specific cultural (or subcultural as in PBL in medicine) context, and c) relies on student-student as well as student-teacher dialogue to support student construction of knowledge.

Activity Systems Theory. Building on Vygotsky's theory of learning, including his student, Leont'ev's exploration of the concept of learning activity, Engeström developed an explicitly Vygotskian model of the process of learning, called Activity Systems Theory (AST) [19]. In AST, a learning activity is composed of three central components: the subject (or learner), the object (produced by the learning activity), and the community (typically the class, including the instructor). Each pair of these components is related through a culturally specific set of mediators. As in Vygotsky's original formulation, the relationship between the learner and the object is mediated by a set of tools, including psychological tools, the most important of which is language. The dialectical relationship between the learner and the community is governed by a set of social norms or rules that prescribe the manner of the instructional dialogue between the learner and the community. Finally, the relationship between the community and the learning object is governed by the division of labour, or roles that community members adopt in order to complete the activity. This AST framework is firmly grounded in the Hegelian epistemology in that a) knowledge (the object) is seen as constructed by the learner, b) through culturally specific and appropriate mediators, and c) takes place through dialog between the learner and the other members of the community.

Apprenticeship as Model. Coming from an anthropological viewpoint, Lave and Wenger in their seminal work, *Situated Learning*, described how learning naturally takes place outside of formal schooling [20]. In it, they describe, using Vygotsky's theory of learning, how apprenticeships lead the novice from periphery of an occupation towards full membership in that community of practice under the guidance of an expert in the craft.

Taking a more pedagogical approach, Collins and his colleagues have developed an instructional model based on Constructivist epistemology, drawing on Lave and Wenger's studies of apprenticeships, which they call *Cognitive Apprenticeship* [21]. Collins and Kapur outline the four components of their model of Constructivist pedagogy: identification of the kinds of knowledge in the tasks to be taught, determination of the sequencing of those tasks, the set of instructional methods, with emphasis on dialog and active construction of knowledge, and finally, the cultural context (which they call the 'sociology') [22]. Although Collins and his colleagues do not refer directly to epistemology of knowledge, nor to theories of learning, in their foundational paper, they reject the Associationist transmission models of learning (and implicitly the epistemology) and argue for a pedagogical model that includes direct reference to the learner's construction of knowledge, tool use, dialog, and the situation of learning within a cultural context, as well as building on the explicitly Vygotsky-based work on apprenticeships of Lave and Wenger.

We could add to this list a set of models and pedagogical proposals are described as student-centered as opposed to teacher-centered (see Neumann for a critical review [23]). However, while some of these refer expressly to Constructivist ideas, many take great pains not to make any theoretical position on learning or epistemology. Nonetheless, we would argue that these student-centered models tend to follow a more Hegelian epistemology, while the teacher- or instruction-centered pedagogies they oppose tend to be more Associationist.

In the above, we have described a set of models and theories in use in education research today that have adopted (often via Dewey or Vygotsky) a Hegelian epistemology of knowledge, and Constructivist concept of teaching and learning.

5. Implications for research in adopting the two epistemologies

These two different understandings of what knowledge is leads to researchers asking different questions about learning, and subsequently different methodologies being used to address those questions. We present here a series of tendencies in research strategies contrasting researchers adopting Associationist versus Hegelian Constructivist epistemologies. These are general trends rather than absolute differences. For example, some researchers have adopted approaches that incorporate both epistemological approaches (see especially the work on distributed cognition [24]).

1. A tendency towards reductionism in Associationism versus a holistic approach in Constructivism. The Associationist epistemology understands learning to

be composed of basic mechanisms, which can then be combined to explain more complex phenomena, whereas a Constructivist approach understands the process of learning to be complex in its very nature, simultaneously incorporating, *inter alia*, language use, social interaction, construction of schemas, use of those schemas and cooperation. In a Constructivist epistemology, these cannot be studied in isolation of each other, as learning requires all of them.

2. The Associationist tendency to study the learning of de-contextualized information versus Constructivist focus on knowledge for use (e.g., with authentic tasks). For the Associationist, the internal mental processes remain the same no matter what is being learned, research can focus on the learning of knowledge or skills that can be controlled for confounding by being novel and about which it can be assumed that the participants will not have prior knowledge. For the Constructivist, the to-be-learned material must be situated within a cultural context in which it has meaning and use.
3. A tendency in Associationism to study learning in isolation versus Constructivists studying learning in authentic contexts. For the Associationist researcher, social interaction and communication during learning represents a confound which is difficult to control, and is seen as contaminating the results, whereas for the Constructivist researcher, this social interaction and dialog is seen as a necessary component of learning.
4. A tendency towards studying the individual versus emphasis on group/community¹. The Associationist epistemology sees knowing, and therefore learning, as a mental process occurring within an individual's mind, whereas the Hegelian Constructivist view sees knowing, and therefore learning, as occurring as a part of a dialectic inter-personal interaction.
5. A tendency in Associationism to focus on the outcome of learning versus the Constructivists' focus on the process of learning. Since the internal mental processes involved in learning for the Associationist are not directly observable, there is a focus on measuring whether learning occurred or not. For the Constructivist, the social processes are observable, and learners can be asked about the process of their construction as it occurs.
6. Because outcomes are more readily quantifiable than complex and interactive processes, there is a greater tendency for Associationists to use quantitative

¹ A related, but less common and weaker tendency is for researchers working within an Associationist epistemology to assume the generalizability of their results across cultures, whereas those working within a Constructivist epistemology tend to assume that processes and results will differ across cultures.

methods and for Constructivists to use more qualitative approaches.

7. A tendency for Associationists to see classroom and instructional dialogue as transmission of information and feedback versus the Constructionist seeing instructional dialogue as meaning construction.

6. Conclusion

In this paper, we have argued that what drives research into human learning is the shared conceptualization of epistemology: how we know things. It is this concept that determines how we think about and operationalize learning and thereby what we think worth studying. We have argued here that in research on learning in education and the Learning Sciences there is a unifying understanding of what it means to know, based on a shared Constructivist epistemology. This is one which stands in opposition to the epistemology of much of cognitive psychology, which is derived from British Associationism. This shared view of how we know things is manifested in a number of theories, models and approaches to studying teaching and learning, all of which can be traced back through various lineages to the work of Kant and especially Hegel.

Researchers on learning may have been reluctant to deal with Hegel's epistemology for two reasons: the underlying metaphysics, logic, and complex philosophical arguments are daunting (Bertrand Russell described Hegel's as the most difficult philosophy to understand), and the political associations of Hegel with Marxism are off-putting to many (although Hegel was no Marxist). However by limiting our discussion to the question of what constitutes knowing, the epistemology, we can identify what unites seemingly disparate models and approaches in the learning sciences and the study of learning in education, and which distinguishes our research from colleagues in cognitive psychology.

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