Print Copy of Site Textual Information

This document contains the textual information for the following topics from the "My Constructivism" site:

Constructivist Theory and ID

All the educational partners in an educational institution are interested in one contextually broad goal: to educate their students. But what does the term "to educate their students" mean? Students come to an educational institution to learn. They learn various knowledge, skills and abilities in various subject matters. A student in computer science gains the knowledge of computer control structures to develop ability for correctly applying them to solve programming problems (and their subsequent solutions).

But how does a student acquire the knowledge, skills and abilities? What goes on in the mind of a student during the learning? Can certain types of instructional strategies enhance the development of learning? These are some of the types of questions psychological and educational researchers have been struggling with for numerous years. They are attempting to construct learning theories based on quantitative and qualitative research methods.

Constructivist Theory

A learning theory that has been gaining attention amongst educators purports its philosophy of learning as an individualistic process linked to a person's own ability to construct schema using perceived experiences as the building blocks (Wilson, et. al, 1995). Why is this theory gaining attention? Researchers and teachers have noted persistent shortfalls in students' understanding and a great deal of passive knowledge across all grades, including the university (Garder, 1991 as told by Perkins, 1999). This new philosophy advocates active knowledge building by a student in a way that can be contextually meaningful. It recognizes the importance of tacit knowledge within a student. Theorists describe this philosophy of learning as "Constructivism." Jonassen (1994) states the philosophy of constructivism as:

"Learners construct their own reality or at least interpret it based upon their perceptions of experiences, so an individual's knowledge is a function of one's prior experiences, mental structures, and beliefs that are used to interpret objects and events."

In other words, the philosophical view of constructivism believes students construct (in their minds) knowledge, skills and abilities by actively experiencing contextual objects or information.

Schwier (1999--as derived from the work of B. Wilson, J.Teslow, and R. Osman-Jouchoux) summarizes the constructivist theoretical background as:

- Knowledge is constructed from experience
- Learning is a personal interpretation of the world
  Learning is an active process of meaning-making based on experience

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- Reflection is a key component of learning to become an expert
- Like instruction, assessment should be based on multiple perspectives
- Learners should participate in establishing goals, tasks, and methods of instructions and assessment

Notice how the term "philosophy" has been linked to the description of constructivism. Constructivism is an underlying philosophy or way of seeing the world. It is not a strategy (Wilson, et. al, 1995). How then, does an instructional designer take the constructivist philosophy and build practical models? Should they even bother? If each student constructs their own knowledge, skills and abilities individually, is it even possible (or appropriate) to build practical models to suit a group of learners?

Constructivist ID Theory

Instructional Design theories provide recipes for doing designs, specify how-end product should look, and serve as guides to professional practice. They are really less theories and more models for action (Wilson, 1993).

The traditional instructional design theory subsumes many models for action. An analysis of the learner's needs for the context in which the instructional strategies will take place. To design a typical course, analysis could include outlining the goals and objectives for the course, the determination of student's current knowledge, skills and abilities, and then the development of instructional strategies for meeting the course objectives. The determination of how much control (from full control to no control) the user has over their learning could be an instructional strategy. After the analysis comes the development stage. Instruction and evaluation materials are developed based on the instructional strategies derived from the analysis. Once the materials are developed the designer evaluates if the instructional strategies and developed materials have met the course objectives.

This traditional type of instructional design model is rooted in the objectivist learning theory of ID. The instructional designer imposes both content and strategy on the student (Winn, 1991). This design directly conflicts with the constructivist philosophy of how people learn. Constructivists contest that specific learning objectives are not possible--that meaning is always constructed by, and unique to, the individual--that all understanding is negotiated (Merrill, 1991).

The conundrum that constructivism poses for instructional designers is that if each individual is responsible for knowledge construction, how can we as designers determine and insure a common set of outcomes for learning, as we have been taught in the traditional (objectivist) design (Jonassen, 1994). If we are to apply constructivism in its true essence each design should be unique. This is obviously not cost viable. Also, it seems instructional designers have been reluctant to abandon their traditional assumptions, and particularly the procedures of instructional design, to accommodate the new ideas about learning. The evident autonomy of learners in knowledge construction makes it difficult if not impossible to predict how they will learn or to plan instructional activities (Winn, 1991). So, what is an instructional designer with constructivist beliefs to do? As a designer, if you believe learners construct their own understandings through their experience then that is your philosophy of learning and as a designer you will take that philosophy and try to apply strategies that facilitate this philosophy (Wilson, 1993).

Given the belief that the constructivist theory of learning is applicable, are there any constructivists ID theories an instructional designer can apply to design? There are numerous ID theories brought forth my numerous researchers. The majority of them have a few shared ID principles. Jonassen (1994) encapsulates the tenets of the Constructivist ID models in the development of learning environments which:

- provide multiple representations of reality, thereby:
- avoiding oversimplification of instruction by representing the natural complexity of the real world;
- focus on knowledge construction, not reproduction;
- present authentic task (contextualizing rather than abstracting instruction);
- provide real-world, case-based learning environments, rather than pre-determined instructional sequences;
- foster reflective practice;
- enable context-dependent and content-dependent knowledge construction; and
- supporting collaborative construction of knowledge through social negotiation, not competition among learners for recognition.

These are essentially principles that can aid the instructional designer in developing strategies for applying constructivism to a design project. They are not the practical models designers are used to, such as in the case of objectivist design models. Much of the literature pertaining to constructivist ID consists of discussions on how one might apply these principles to instructional design but not much effort has been put on practical model building. It could be due to the fact that constructivists are not "system builders" (Wilson, et. al, 1995). They feel it is a philosophy, not a systems approach that a designer can take and produce "canned procedures" for its implementation (Petraglia, 1998).

However, for the constructivist movement to move "out of the theoretical clouds" there needs to be more emphasis put into practical model design using the philosophy of constructivism in the proper setting and context. Designers of these models will be walking on slippery ground. Users of these models might have to suspend judgement while considering these models. This is a relatively new territory for instructional designs and mistakes will undoubtedly be made. But if we don't start somewhere, the noble principles of student-centered, resource-based learning may not be fully actualized.

The key to developing practical constructivist models is to design environments which supports and encourages the natural processes by which learners explore or in essence to provide the learners a measure of control over the construction of content (Savory & Duffy, 1995).

Constructivism is not the panacea for all the instructional problems in education and training, any more than other theories and technologies are. Yet all applications of constructivism are designed to make learning a more realistic and meaningful process (Jonassen, 1994).

My Constructivism

First, and foremost, constructivism is a philosophical view on how we come to understand or know (Savery & Duffy, 1995). Turning this philosophy into practical instructional design is a major challenge for developers. The term "instructional design" focuses on designing instruction which has a predetermined outcome and intervenes in the learning process to affect the processing of the learner in order to map that predetermined conception of reality onto the learner's knowledge (Jonassen, 1991). Constructivism believes that learning outcomes are not always predictable and that instruction should foster, not control the processing of the learner. Constructivist instruction is, from a theoretical perspective at least, an oxymoron (Jonassen, 1994).

In this section I argue for a more pragmatic stance to constructivism and its implementation to instructional design. The tone of the discussion is somewhat postmodernist, in that, it is a narrative documentation on my beliefs about the application of constructivism to instructional design. It is my own epistemology based on my own experiences. In keeping with the philosophy of constructivism, the discussion is "My Constructivism."

What attracts me to the topic of constructivism is how its philosophy is actualized in the current Saskatchewan CORE curriculum with its onus on student-centered, resource-based learning. As an online instructional designer for the Correspondence School it is my job to actualize the CORE curriculum

philosophy in the courses I develop. The constructivist ID ideology believes a designer guides or coaches the student as the need arises, but does not impose a particular way to learn. The result is that instruction and performance is de-emphasized by constructivists. The student is given much of the responsibility for deciding what to learn and how to learn it. The function of the teacher or instructional designer is to support what the student decides to do (Winn, 1991).

Putting the responsibility on the learner to decide what to learn instinctively seems problematic particularly when a designer must apply a curriculum as the design aid. Poorly implemented design could lead to educational chaos and confusion (Wilson, et. al, 1995). Potentially, students might construct the wrong knowledge, skills and abilities as intended. Also, how can we be sure the student is motivated to be a self-learner? Some students just want to be told what they need to learn instead of keeping it a secret (Perkins, 1999). Then there is the matter of assessment and evaluation. It is challenging to apply the entire philosophy of constructivism to evaluation because current educational bureaucracy is structured in an objectivist style (e.g. grades, scholarships etc.).

With some of the potential risks to applying constructivism to instructional design there are also many advantages. Wilson, Teslow and Osman-Jourchoux (1995) list some of the possible advantages:

- more meaningful learning outcomes that are likely to be used in relevant contexts
- more meaningful participation of the learner in the learning process
- more independent problem-solving capability
- more flexibility in design activities
- more flexibility in instruction activities
- more acknowledgement of social and motivational factors in learning

Can an instructional designer apply the advantages of constructivist ID and minimize the disadvantages? I believe so--which leads to the point of this section--the application of pragmatic (or common sense) constructivism to ID.

I agree with the ideology of constructivism but find putting it into practice requires pragmatic constructivism. Pragmatic constructivism, to me, means an instructional designer does not have to throw out the objectivist ID theory they are comfortable with in favor of the constructivist ID theory. It means a designer can apply both ID theories in the proper setting and context. In a training setting, the learner typically has no previous experience with the knowledge, skills and abilities contained in the instructional design. In this case emphasis on objectivist ID may be appropriate. However, at the same time the instruction can try to cope with the differences in perceptions of their roles and functions in relation to the knowledge, skills and abilities (Wilson, 1997). This design can also apply to an educational setting. In contrast, if the learner is acquainted with the instructional materials more emphasis on constructivist ID theory may be appropriate. ID theories, such as, reflective practice and knowledge reconstruction can be implemented.

"My Constructivism" principles and ID theories resemble ID researchers such as Wilson, Teslow, Savery, Duffy, Perkins and Jonassen. After reading numerous articles by them and other researchers (which have been included in the reference section) my reality of ID based on my own experiences as a designer resemble these researchers. You may have noticed numerous references to their research throughout the "My Constructivism" site. I like their stance on where they see constructivism along the objectivism/constructivism paradigm. They take a somewhat pragmatic view of constructivism.

Using their views of constructivism ideology and ID theory to help me construct my own, the following principles apply to "My Constructivism":

- Pragmatic approach to instructional designing. Apply objectivism and constructivism ID in the correct setting and context.
- Support the construction and reconstruction of knowledge, skills and abilities by providing the learner with the tools/resources they need to guide them to the instructional objectives.

- Consider ID strategies that provide multiple perspectives and that encourage the learner to explore their understandings.
- Anchor all learning activities to a larger task or problem.
- Minimize both pre-determined content and strategy within the design.
- If a particular design approach does not work, try another--more structured, less structured, more discovery oriented, less discovery oriented, whatever works in the given setting and context.
- Provide authentic "real-world", case-based problem-solving learning environments to support and challenge the learner's thinking.
- Provide collaborative environments.
- Evaluate the learner processes and well as products in the formative evaluation of the learner.
- Embed objectivist evaluation within the learning task.

These are noble principles; however, principles that don't lead to practical models will not lead to better-designed instruction. It is up to all of us as instructional designers to make the attempt in practical model building based on the instructional setting and context. The models should support and encourage the natural processes by which learners explore or in essence to provide the learners a measure of control over the construction of content (Savory & Duffy, 1995).

I could be completely wrong. However, it is "My Constructivism" epistemology reflecting on my constructed reality of ID based on my own experiences--so it can't be all wrong now can it?

Future Study

The specific literature review findings and the nature of the "My Constructivism" site lead to the following thoughts/recommendations/questions for future studies:

- First and foremost, continue development of practical constructivist model building. The greater the number, the greater the understanding of their application in contextual settings.
- As the teacher and designer of the computer network model I am able to see both ends of the development spectrum. In many educational settings this is not the case. Further study into how "content specialists" and instructional designers can develop constructivist instruction is recommended.
- A pragmatic stance in applying constructivism still imposes the content and strategy on the learner by the designer. As Instructional Designers we need to "push the envelope" in order to develop more ideological constructivist models.
- How does age play a role in designing models? Can young people appreciate constructivism? Do we start at objectivism with young students and then slowly move them over to constructivism as they get older and maturer (i.e. as they are able to grasp/articulate what is going on).
- As instructional designers, how can we address the notion that constructivist learning experiences can exert high cognitive demands on learners and not all learners respond well to the challenge?
- Constructivist ID theory rarely addresses the learner whom may have motivations other than those presumed by the educator. Instructional designers must attempt to design models that address this issue.
- More socially negotiated (Socratic) content. The online (Web) world and its numerous (asynchronous and synchronous) communication tools should strengthen this notion.

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