UNDERSTANDING THE PRACTICES OF INSTRUCTIONAL DESIGNERS THROUGH THE LENSES OF DIFFERENT LEARNING THEORIES

(Sue) Siew Hoong Yeo

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Committee:

Dr. Terry Herman, Advisor
Dr. Paul Cesarini
Dr. Fei Gao
Dr. Terry Herman, Advisor

We are living in a wired and fast-paced world where we are surrounded with cutting-edge technologies that have consistently modernized and globalized society in many ways. How does this influence the destinies of the three primary learning theories—behaviorism, cognitivism, and constructivism—that were developed decades ago? Are the educators, trainers, and instructional designers on the same page with this modernized and globalized society to adequately deliver the knowledge and instructional materials to today’s learners? With this thesis, the researcher began to unfold the background information and key concepts in four learning theories—behaviorism, cognitivism, constructivism, and connectivism—and related these theories to the instructional design models in use today. As we know, the instructional designers play crucial roles in creating efficient and innovative courseware for both online and offline training/educational programs.

The problems above led the researcher to explore whether the four learning frameworks—behaviorism, cognitivism, constructivism, and connectivism—were being used by practicing instructional designers today and how they are being interpreted based on new and emerging technologies, learning theories, and models. Therefore, the purpose of this study was to find out how applicable and commonly used these four learning theories—behaviorism, cognitivism, constructivism, and connectivism—were by practicing instructional designers in the creation of learning design materials.
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CHAPTER I. INTRODUCTION

Context of the Problem

Today, we see a rapid growth of instructional designers (ID) in the educational system, creative services, and Information Technology (IT) industry (Tennyson, 1993). This is reflected in the Instructional Design Jobs website, which provides the most recent instructional design job postings (www.instructionaldesign.org/jobs.html). New developments in technology, social, and economic factors are some of the driving forces in these job demands, requiring qualified instructional designers to produce and deliver timeless, cost effective, learner-centered, and constructive instructional design materials. As the demand for instructional designers rises, individuals from all walks of life contribute their knowledge, skills, and experience in the creation of instructional design materials. Similarly, there is an increasing number of theories and models emerging since the 1970s to guide instructional designers creating their work (Reiser & Dempsey, 2012). The researcher sought to learn how applicable and commonly used these theories are associating with the design models in use by the practicing instructional designers in today's information age.

Although the practitioners can easily tap into the existing resources for the creation of instructional design materials, there are far too many theories and models in the field of instructional design creation with the intention of providing guidance to the practitioners at work. Reflecting on such overwhelming theories and models, Reigeluth (1999) has captured an estimate of 24 various instructional design theories and models, all targeted at helping practitioners navigate in the field of instructional design. According to the website Instruction to Instructional Design and the ADDIE Model by Kevin Kruse (2004), there are over 100 instructional system design models which are based on one or more theories, and each design
model is "rooted in the generic ADDIE model, which stands for Analysis, Design, Development, Implementation, and Evaluation (http://tinyurl.com/9gpgjrp). As Rita Richey (1986), the author of The Theoretical and Conceptual Bases of Instructional Design, puts forward her insightful input about models, she quotes "Models have been equated with theories in the literature" (p. 16). Richey further explains that “Models can be used in theorizing in various capacities. They can be used to organize knowledge from various sources and thus serve as a stimulus to hypotheses development and theory building” (p. 17). Similarly, we are unsure how contemporary these theories are in the course of technological advanced age. In their study titled Real World Instructional Design, Cennamo and Kalk (2005) describe the "risk that these individuals will ignore or be unaware of the solid knowledge already available and upon which they can build, and instead reinvent it at a great cost and time" (p. xii). The only way to find out about the above concerns and doubts is to put our available knowledge—theories and models—into the perspective of practicing instructional designers and by conducting qualitative research.

First of all, this paper provided background information and key concepts on four learning theories—behaviorism, cognitivism, constructivism, and connectivism—and related these theories to the instructional design models in used. Hence, the first three primary and broad learning theories—behaviorism, cognitivism, and constructivism—are considered the firmly established theories in the creation of instructional materials as they are widely recognized and are addressed in the Learning-Theories: Knowledge Base and Webliography website at http://www.learning-theories.com. These three broad theories, with the exception of connectivism theory, were developed a long time ago, and back then, digital technology did not play a vital role in the learning process. According to Ally (2008), some are doubtful about this "new learning theory," as they felt that the existing three theories are not only "well-established,"
but are successful in the implementation of instructional design (p. 18). In addition, Ally asserts "past learning learning theories have been adapted to address new and changing learning context" (p. 18). Some neither view connectivism as a theory nor a new theory that aligns with the modern technology because they feel that pen, paper, and pencil are already considered technologies of their own age and in their own rights. This sentiment is also shared by Mary Beth Hertz, a K-6 computer teacher and technology leader in Philadelphia, whose blog is titled Technology Integration: The Right Technology May Be a Pencil (http://tinyurl.com/cqp4ejc).

Despite the above strong opinions on the primary theories, connectivism is a new theory developed by George Siemens. As asserted in Siemens' E-Learning Space's website, Connectivism: A Learning Theory for the Digital Age, connectivism theory reflects the newer generation's learning experience and the concepts of constructing learning materials, which aligns with the wired technology and "networks" in today's world (http://tinyurl.com/cx8n3).

According to Siemens (2004), connectivism is considered a learning theory because it is able to explore, relate, and explain the complexity of how people access information and resources through the wired and networking system in today's world. Another reason, according to Darrow’s (2009) assertion based on Siemens' (2004) concept, is that when the theory is applied in a proper manner "it has the potential to significantly improve education through the revision of educational perspectives and generate a greater shift toward learner-centered education" (p. 4). Despite the different viewpoints about the new theory, Ally's (2008) interpretation is that there is no one "stand-alone" theory because different theories can be collaborated and implemented as a model to guide and construct the instructional design materials (p. 18).

Besides a literature review, a case study was conducted in a practical setting to support the purpose of this study, which was to find out how applicable and commonly used were these
four learning theories—behaviorism, cognitivism, constructivism, and connectivism—by the practicing instructional designers, in the course of information age. The above case study consisted of three practicing instructional designers. Every participant was asked to fill out survey forms and to answer eight Likert scale and open-ended questions.

**Statement of the Problem**

The problem of this study was to explore if the four learning frameworks—behaviorism, cognitivism, constructivism, and connectivism—were being used by practicing instructional designers and how they were being interpreted based on new and emerging technologies, learning theories, and models.

**Background and Significance**

This paper provides a contemporary viewpoint about the four learning frameworks in the real world. The target audience are instructional designers, developers, instructors, and current students in learning design.

In addition, this paper reinforces the need for students to not only learn how design actually works, but also be aware of how to apply theory in the real world which are similar to the viewpoints of Hergenhahn and Olson (1997), authors of *Introduction to Theories of Learning*, who state that we can avoid being "overly impressed" by glorified and verbose theory (p. 15). Based on Hergenhahn and Olson’s (1997) input, we should challenge the theories by checking their accuracy through empirical study.

The researcher brought a unique point-of-view to this study by having more than 10 years of experience working in various creative service environments. The researcher's breadth of experience includes positions such as multimedia specialist, document advisor, packaging designer, senior graphic/web designer, and a creative art and crafts teacher for kindergarten
through 6th grade students. When the researcher was working as a multimedia specialist, she worked on concepts and visualization and graphic/web media production and oversaw the project schedules. As a multimedia specialist, she worked hand-in-hand with the instructional designers, subject matter experts, programmers, graphic artists, and clients. Numerous military training programs and commercial and educational compact discs were produced. Since the researcher in this study is not an instructional designer, she provided an objective and non-biased perspective to this study.

Another benefit to this study is to help institutions of higher education foster a positive learning outcome so that when students graduate from their learning design or instructional design program, for instance, they will be more relevant, practical, and marketable in the job market. In addition, this study may help the practicing designers recap their knowledge of what they might already know and reuse their resources to define the creation of instructional design materials.

**Purpose of the Study**

The purpose of this study was to find out how applicable and commonly used these four learning theories—behaviorism, cognitivism, constructivism, and connectivism—were by the practicing instructional designers, in the course of information age.

**Objectives of the Study**

The following objectives were used to support the statement of problem and research issues:

1. To find out how the practicing instructional designers viewed learning theories and how they interrelated the theories in their daily routines.
2. To find out how contemporary and commonly used the four learning theories were, namely behaviorism, cognitivism, constructivism, and connectivism, in the course of emerging technologies, learning theories, and models. With this dedicated study, reviewing resourceful literature and conducting a qualitative research, the researcher hopes that the beneficial characteristics and overall objective of the study can be fulfilled.

Studies That Have Addressed the Problem

There are a number of studies that address the implementation of instructional design and ignore learning theories. Yet, there are other studies that focus primarily on the theoretical aspects of learning design.

Deficiencies in the Literature—Few Studies

Despite a rapid growth of instructional designers in corporations, the educational system, creative services, government sectors, and the Information Technology (IT) industry, there is little exploration on the perspectives of learning theories being utilized in a practical manner, such as the relationship to the instructional design models in use by instructional designers. In addition, there is little empirical research related to this topic. There are many books and articles that often disregard the importance of practical implications for the instructional designers. Although the book *Training Complex Cognitive Skills*, written by Van Merrienboer, provides a good foundation of theoretical and practical implications of instructional design principles, it does not cover in-depth the connection between the theories and practical applications (Seidel, Perencevich, & Kett, 2005). Similarly, Duffy and Jonassen (1992), the authors of the book *Constructivism and the Technology of Instruction: A Conversation*, agree that there is a lack of literature and research focusing on the interconnection between learning theory and the creation
of the instructional design process. Duffy and Jonassen assert "We find the lack of communication between these fields extremely surprising and puzzling" (p. ix).

Currently, there is a lack of research and literature among instructional design guides that have combined perspectives on the four learning theories—behaviorism, cognitivism, constructivism, and connectivism—and their relationship with instructional design models in use by the instructional designers at the technological advances age. The core idea of being well-informed and resourceful about the interrelationship between learning theories and instructional design is that it will help the instructional designer's decision making process and his or her conceptualizing process while working on the theoretical framework (Duffy & Jonassen, 1992, p. 19).

**Limitations**

There were limitations to this study. The first limitation was due to the short timeframe allocated for this case study. Secondly, since only three instructional designers were interviewed, this left out a broad range of approaches and unique styles employed by other instructional designers in the real world. The third limitation was caused by the lapse of memories of the learning designers due to human nature. As the practicing designers were not required to record their designing processes, there were bound to be errors in the findings as the participants might not be able to correctly or fully recall their decision making processes since they could only rely on their memories. The fourth limitation was that the case study interviewees were only instructional designers. Based on Reigeluth’s (1999) input, “The health of instructional-design theory also depends on its ability to involve all stakeholders in the design process” (p. 27).

Hence, if the interviews included programmers, graphic designers, and subject matter experts,
the findings would be able to achieve a broader perspective compared to information coming from one group, in this case, learning designers.

With the above limitations, future research areas can be improved with a few suggestions. First, the findings can be enhanced with further field studies of learning designers and those in the learning design industry. The benefits of doing field study research would allow the researcher to immerse oneself in the environment of the practitioners of learning design and other stakeholders, such as the clients, subject matter experts (SMEs), and other team players. Hence, the researcher would be able to gain a more insightful and cross-section perspective. In addition, the field study would allow the researcher to be able to observe the learning designer through the instructional design process. In addition, the perspectives of current learning design students should be heard as well.

Despite the limitations, this study shed light on the practical involvement of the four learning theories, through the inside perspective of experienced instructional designers. With the findings and analysis in this study, the researcher hopes that the reader has a better understanding of the practitioners’ views and the degree of usage on the different learning theories.
CHAPTER II. LITERATURE REVIEW

In order to lay the foundation for this study, this literature review provides the background of the four theories, their founders/developers, and key concepts, and links the instructional design models to each theory.

Definition and Scope

Many terms that are involved with learning theories and instructional design models are defined. This information helps readers better understand and identify the terminology; it provides a solid groundwork for this study.

Behaviorism theory is geared towards learning the knowledge and "facts" with the instructor delivering the sources to the learner (Ally, 2008, p. 20). Often, the test score system is used to determine the learner's capabilities.

Cognitive theory is mindful about the "process and principles" of the teaching methodology (Ally, 2008, p. 20). For example, the preferred method of instruction includes experimental, problem-solving, and situational exercises.

Constructivism theory is about the learner being able to digest the knowledge and thus, she/he is able to conceptualize and personalize the new information (Leonard, 2002). The following is Smith and Ragan’s (2005) reflection on the characteristic of constructivists' thinking:

1. Knowledge is constructed from experience.
2. Learning results from a personal interpretation of knowledge.
3. Learning is an active process in which meaning is developed on the basis of experience (p. 19).
This approach of teaching is appropriate for a higher level of institution education. As Ally (2008) asserts, this constructivist's concept allows "personal meaning, and situated and contextual learning" (p. 20). For example, the learner is "given control of the learning process (Ally, p. 31) and is situated in an "active" mode (Ally, p. 30). Additionally, she/he is given the time to digest, reflect, and personalize, and then construct the new information and knowledge.

*Connectivism theory*, developed by Siemens (2004), is about today's learner being able to integrate new technology in a social networking format. For example, the instructor will involve a lot of interactive and collaboration activities among virtual learners using new technologies. Similar to Ally's (2008) input, connectivist's teaching method is suitable for learners at college level, where learners have developed critical thinking and are capable of analyzing and conceptualizing complex context.

*Instructional design* is "the process of designing the environment, methods, and resources for effective learning of specified goals and objectives" (Boettcher & Conrad, 1999, p. 49).

*Learning theory*, as described by Reigeluth (1999), is “descriptive” and therefore it can explain “how learning occurs” (p. 12). Hence, Richey (1986) interprets learning theory as a "direction" navigator for lesson planning involving instructional design materials (p. 22).

*Model* is a visual chart that represents "structure and order" and breakdowns a complex workflow into a chunk of manageable units (Richey, 1986, p. 16). Often, a model aligns with some sort of theory to serve as its backbone and conceptual idea. In addition, it can serve as "a vehicle for translating theory into concrete terms suitable for application to practice or theory testing" (Richey, 1986, p. 17). There are various type of models. For instance, sub-models that are grouped under Instructional Design Models are Modern Prescriptive Models that are guided
by the learning in behaviorism and cognitivism. Whereas, Postmodern Phenomenological Models are grounded by constructivism theory (Richey, 1986). The fairly new connectivism theory, which is considered a social networking model, reflects the digital age.

**Theory** consists of framework that intertwines with "concepts and linkages" and allows the constructor/instructor to predict the outcome of a complex project or the learner's learning expectation to maximize the chances of success and reach the learning objective (Hoover, 1984, p. 13).

**The Importance of Knowing the Theories and Instructional Design Models**

It is important for the instructional designer to be knowledgeable of the learning theories and models, in order to construct the learning material in a systematic manner that will benefit the learners. In addition, the importance of theories in instructional design is reflected by Duffy and Jonassen (1992), as they assert that the knowledge will not only provide the designer a solid foundation, but it will also stimulate a pool of ideas for the designer to start working on the instructional design process and materials. Richey (1986) has identified the importance of theory and model as she quotes "These theory bases and models have guided academic inquiry and practitioner activities to a great extent" (p. 13). Among many advantages, the instructional designer users will be able to see the structure and the framework, and interpret the complexity of creating the instructional design materials. That being said, the core idea is to motivate the practicing instructional designers or learners in this field to produce meaningful and efficient instructional design materials.

The words *theory* and *model* will be defined and differentiated. Hence, a theory, according to Hoover's quote in his book *The Elements of Social Scientific Thinking*, "is a set of related propositions that suggest why events occur in the manner that they do. The propositions
that make up theories...consist of concepts and linkages or relationships between them" (as cited in Richey, 1986, p. 13). In addition, Hoover asserts four major functions of theory based on "social scientific thinking," listed as shown:

1. Theory provides patterns for the interpretation of data
2. Theory links one study with another
3. Theories supply frameworks within which concepts and variables acquire special significance, and
4. Theory allows us to interpret the larger meaning of our findings for ourselves and others.

(as cited in Richey, 1986, p. 13)

According to Richey, a model is not only associated with theories, but also depicted as "a representation of reality with a degree of structure and order" (Richey, 1986, p. 16). Another view of a model comes from Martin Ryder, a professor at University of Colorado, in which he feels that a model provides a sense of comprehensive meaning to a complex problem; as such, it depicts a structure and solution to the creation of instructional design. In addition, the model allows the instructional designer to visualize and look at a thorough picture of his/her creation with the different levels of task-taking and break it down to manageable units. Based on Ryder's insightful input, the implementation of a model should be applicable within the context of use and fulfill the purpose of its user with a center of focus on its design activity (http://tinyurl.com/yey4uct).

**History of Behaviorism Theory**

The history and development of behaviorism theory can be traced back to 19th century. The influential developers of behaviorism theory were Ivan Pavlov, Edward Thorndike, John Broadhus Watson, and Burrhus Friederich Skinner ("Behaviorism," n.d.). According to the
Psychologie Online website, Pavlov developed the "classical conditional" theory from a psychological viewpoint, indicating that behavior can be taught whereas thought cannot.

Thorndike put into perspective the way that learning is about the "Law of Effect," a principle of behavior in human beings that he conducted in numerous animal experiments. At Thorndike's biography website, The Law of Effect implies that:

a) Responses to a situation that are followed by satisfaction are strengthened; and
b) Responses that are followed by discomfort are weakened. Thorndike's Law of Exercise continued this line of thought: a) Stimulus-response connections that are repeated are strengthened, and b) Stimulus-response connections that are not used are weakened. (http://tinyurl.com/ybwsxrx)

John Broadhus Watson took Pavlov's theory of classical conditioning to the next level. Watson's famous human experiment known as "Little Albert" led him to discover that emotional reactions could be classically conditioned in people, thus, the effect of reinforcement will lead to stimulus generalization.

Another key player, Burrhus Friederich Skinner, had similar viewpoints to the above researchers, in that stimulus-response is the core of conditioned behavior. However, Skinner used operant conditioning in his experiment. "Essentially operant behavior is the person/organism response to consequences, and the way behavior is influenced by such" (http://www.wisegeek.com/what-is-operant-behavior.htm). That being said, Skinner believed that a person's behavioral responses can be shaped by punishment and reward methods; when the desired result is established, partial or no reinforcement is needed.

In general, behaviorist researchers believed that the mind is a "black box" meaning that a person's behavior can be taught but the mind cannot be interfered (Ally, 2008, p. 2). In the
educational system, the test score system is used to determine the learner’s capabilities. The reward will be going to a better school or compliments from the teachers or parents. Hence, the learner's learning process has been ignored. Reflecting on this reality, it is not uncommon to hear that students dislike going to school because they find the lessons boring and unstimulating.

The framework of behaviorism theory reflecting on online learning, according to Mohamed Ally, author of *Foundation of Educational Theory for Online Learning*, is shown below:

1. Learners should be told the explicit outcomes of the learning so they can set expectations and judge for themselves whether or not they have achieved the outcome of the online lesson.

2. Learners must be tested to determine whether or not they have achieved the learning outcome. Online testing or other forms of testing and assessment should be integrated into the learning sequence to check individual learner's achievement level and provide appropriate feedback.

3. The learning materials must be sequenced appropriately to promote learning. The sequencing could take the form of simple to complex, known to unknown, and knowledge to application.

4. Learners must be provided with feedback so that they can monitor how they are doing and take corrective action if required. (Ally, 2008, p. 20).

The behaviorist theory has its own identifiable strengths. First, the learner is filled with guidance and instructions from the teacher. Second, the teacher often provides a systematic learning technique. Finally, the knowledge and contents deliveries by the teacher, are specific
and concentrated. Hence, the contents are considered the center of learning, with extreme focus approaches.

In addition to its strength, the behaviorist theory has several weaknesses. One of the weaknesses is that the learner often find the teaching method lack of stimulation. Second, there is a lack of critical thinking from the learner. Finally, there is a narrow channel of sources, mainly coming from the teacher, as the centered of knowledge.

A model that is related to the behaviorism theory is Gagne's *Nine Events of Instruction*. Kevin Kruse, the author of *Gagne's Nine Events of Instruction: An Introduction* website, describes Robert Gagne as a behaviorist who is the "foremost researcher and contributor to the systematic approach to instructional design and training" (Kruse, 2008, p. 1). Similar to the concept of behaviorism theory, Gagne's model focuses on the outcomes from training which will alter one's behavior. The chart provided in Table 1 illustrates Gagne's nine-step process where the instructor creates modules on the left column that align with the learners' condition of learning.

<table>
<thead>
<tr>
<th>Instructional Event</th>
<th>Internal Mental Process</th>
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<tr>
<td>1. Gain attention</td>
<td>Stimuli activates receptors</td>
</tr>
<tr>
<td>2. Inform learners of objectives</td>
<td>Creates level of expectation for learning</td>
</tr>
<tr>
<td>3. Stimulate recall of prior learning</td>
<td>Retrieval and activation of short-term memory</td>
</tr>
<tr>
<td>4. Present the content</td>
<td>Selective perception of content</td>
</tr>
<tr>
<td>5. Provide &quot;learning guidance&quot;</td>
<td>Semantic encoding for storage long-term memory</td>
</tr>
<tr>
<td>6. Elicit performance (practice)</td>
<td>Responds to questions to enhance encoding and verification</td>
</tr>
<tr>
<td>7. Provide feedback</td>
<td>Reinforcement and assessment of correct performance</td>
</tr>
<tr>
<td>8. Assess performance</td>
<td>Retrieval and reinforcement of content as final evaluation</td>
</tr>
<tr>
<td>9. Enhance retention and transfer to the job</td>
<td>Retrieval and generalization of learned skill to new situation</td>
</tr>
</tbody>
</table>

*Table 1.* Nine-step Process. The above chart is adopted from Gagne's *Nine Events of Instruction: An Introduction* website (http://tinyurl.com/d7detlg).
Although Gagne's model is a typical behaviorist model where the instructor is the center of knowledge, it contains three important strengths for its teaching method. These three points, listed at the EduTech Wiki's website at http://tinyurl.com/ckwcj8a, are shown below:

- Presenting the knowledge or demonstrating the skill
- Providing practice with feedback
- Providing learner guidance (EduTech Wiki, n.d.)

**History of Cognitivism Theory**

The term "cognition" refers to all processes by which the sensory input is transformed, reduced, elaborated, stored, recovered, and used. It is concerned with these processes even when they operate in the absence of relevant stimulation, as in images and hallucinations.

Ulric Neisser was one of the key developers of cognitivism theory in the 1960s. In contrast to the behaviorism theory, cognitivists believe that learning is measured by the thinking process rather than behavioral responses. Neisser's ideas about "cognition" is that "all processes by which the sensory input is transformed, reduced, elaborated, stored, recovered, and used. It is concerned with these processes even when they operate in the absence of relevant stimulation, as in images and hallucinations" ("Cognitive Psychology," n.d.).

Similar to Ally's input about cognitivism, he comments that cognitivists treat "learning as an internal process that involves memory, thinking, reflection, abstraction, motivation, and metacognition" (Ally, 2008, p. 21). Referring to the Diagram 1, adopted from Ally's article, it shows the structure and process of information/knowledge in the memory (p. 21).
The framework of cognitivism theory in relation to online learning, as put forward by Ally, is that "The amount of information transferred to working memory depends on the amount of attention that was paid to the incoming information, and on whether cognitive structures are in place to make sense of the information" (Ausubel, 1960, in Ally's context). Thus, it is important for the instructional designer to structure the learning material in a cognitive manner in order for the learner to remember and process the information. For instance, Ally points out that, according to Miller's insightful solution, to strengthen a learner's memory is to group information into clusters or blocks of information (Miller, 1956, in Ally's article, 2008). Another media strategy point out by Ally is that the style of activities should be customized according to the capabilities of the learner.

The strength of the cognitivism theory is that there is a consistency in the learning material to guide the learner. In addition, the learning process is constructed from simple to complex and it breaks down chunks of information based on the importance of learning dogma.

Despite the strengths, there are weaknesses in cognitivism theory. For instance, the cognitivism theory doesn't personalize the learning process and take into consideration that each learner is different. In addition, the cognitivist researchers neglected to explain the learner's behavior even though the brain is connected to a person's behavior. Similar to the behaviorism theory, cognitivist learner sees the instructor as the main knowledge provider; therefore, the learner has limited connection on social context.

When we put cognitivism theory into perspective related to instructional design, there are several insightful viewpoints comments by Mohamed Ally (2008). For instance:

1. Online strategies that facilitate the transfer of learning should be used to encourage application in different and real-life situations (p. 29).
2. Learners should be motivated to learn.


Here is the Cognitive Design Model that reflects the core concepts of the cognitive theory (Cognitive Design Solutions, Inc., 2003). As described on the Cognitive Design Model website, "The model asserts that e-Learning products and activities are built from four interlocking elements: Information, Instruction, Media, and Delivery System" (http://tinyurl.com/cskbwse).

This model contains four main learning principles, listed below:

1. Multimedia learning
2. Cognitive load management
3. Interactive engagement
4. Problem-based instruction

Here, the website also addresses the cognitive information process model reflecting the learning issues: rehearsal, auditory & visual channels, attention, elaboration, mental models, schema, and metacognitive skills (including motivation).

**History of Constructivism Theory**

Constructivism was rooted in classical antiquity, based on "Socrates's dialogues with his followers, in which he asked directed questions that led his students to realize for themselves the weaknesses in their thinking. The Socratic dialogue is still an important tool in the way constructivist educators assess their students' learning and plan new learning experiences" (http://tinyurl.com/y95qcaa).
Jean Piaget and John Dewey were the founders of childhood development and education, also known as "Progressive Education," which started the evolution of constructivism (http://tinyurl.com/y95qcaa).

One of the strengths of constructivism theory is that the learning methodology is more personalized compared to the two objective theories—behaviorism and cognitivism. Constructivism theory has indeed shifted away from the teacher-centered teaching method and knowledge-focused teaching. As Ally echoes in his journal, a constructivist learner is able to control his or her learning process and remains in "active mode" (Ally, 2008, p. 31). Additionally, the learner is given the time to digest, reflect, personalize, and construct on the new knowledge. This viewpoint is similar to Jerome Bruner's viewpoints, whereby learning is an active, social process in which students can construct new ideas or concepts as they understand the meaning of information or subject matter (Bruner, 1960).

However, one of many weaknesses in constructivism theory is that although this open-ended learning experience is being emphasized, it is hard for the instructor to measure the success of each learner because each learner is unique and his or her learning is not predictable. In terms of implications in instructional design, Duffy and Jonassen (1992) point out that specific content and outcomes cannot be prespecified although a core knowledge domain may be specified; learning outcomes should focus on the process of knowledge construction and the development of reflexive awareness of that process; learning goal should be determined from authentic tasks with more specific objectives resulting from the process of solving the real-world task. (p. 6)

Merrill's Pebble-in-the-Pond Model is aligned with the constructivists' viewpoint and yet the initial progress can be tied to behaviorist-cognitivist in learning. The Pebble-in-the-Pond
Model is represented by six pebbles—whole problem, progression, components, strategy, interface, and evaluation. In the initial phase, the learner is depicted with a clear overall problem or activity. Also, the learner will be presented with a rich content delivered by the instructor. As the learning progresses, the learner will be given more responsibility to explore, test, and construct their own knowledge. This constructivist conception is reflected in Duffy and Jonassen's (1992) quote "learning is a constructive process in which the learner is building an internal representation of knowledge, a personal interpretation of experience" (p. 21).

This model depicts a clear, resourceful, and content-centered learning module. It allows the learners to be aware of the overall problem and task-taking. Thereby, the learner will dive into the pool of knowledge, where she/he will learn and master the subject matter and take charge of more responsibility. There will be less restrictions from the module strategy as the learning progresses. The Pebble-in-the-Pond Instructional Design Model consists of the following steps:

1. Specify a real-world problem or task.
2. Identify a progression of problems or tasks.
3. Analyze each problem for component skills.
4. Design a task-centered instructional strategy.
5. Design an instructional interface and navigation.
6. Develop a functional prototype of the course.
7. Evaluate the course. (Merrill, in press)

The first pebble is reflected in the problem status, listed in numbers 1 and 2. The second pebble is reflected in analyzing the problems as listed in number 3. The third pebble refers to the learner obtaining a higher level of understanding in the subject matter as listed in number 4 and beyond.
One distinctive characteristic of this model is that it allows the learner to view the overall problems/task and as she/he becomes more knowledgeable about the fact/subject matter, she/he will gain more responsibility in the learning strategy.

**History of Connectivism Theory**

The fourth theory is a learning theory based on the root of cognitivism, known as connectivism theory, which was developed by George Siemens. This theory is about today's learner being able to integrate and get wired up in the digital world. With Siemens' insightful input, he points out that "Connectivism is the assertion that learning is primarily a network forming process" (Siemens, 2006, p. 15). Although connectivism theory is different from the first two theories, behaviorism and cognitivism, which are objectivist models, it does overlap with constructivism theory. Both theories believe the learner can benefit from social learning and that the result of learning is not dependant on test scores or the knowledge context. Another similarity is both theories believe that learning outcomes cannot be controlled and that the thinking process of the learner needs to be fostered. Hence, Siemens (2004) presents connectivism as "a model of learning that acknowledges that tectonic shifts in society where learning is no longer an internal, individuals activity" (http://tinyurl.com/cx8n3).

Unlike behaviorism and cognitivism theories, connectivism theory, which is a fairly new theory, has some similarities with constructivism, such as it encourages socialization, independent learning, and a flexible learning environment. Both constructivism and connectivism theories are best for higher learning, such as the college level or the working world.

There are weaknesses in relation to constructivism theory. Since connectivism is a recent theory, it lacks research data to show its reliability. This is echoed by Suzanne Darrow, author of
Conversely, one of the many strengths related to connectivism theory is that connectivism learners will blend into a diverse learning environment to meet their different learning need and styles. In reference to this, Siemens mentions in his ebook *Knowing*

Knowledge about creating the "Personal Learning Environment" and the "Learning Ecology," two terms related to the process of creating network and developing critical thinking (Siemens, 2006, p. 39). The core of learning is rooted by attention and motivation, and therefore the extension of learning can be limitless and low cost. The connectivism learning dogma is able to match up with today's "shrinking half-life of knowledge" (Siemens, 2004).

Siemens emphasizes the importance of connectivism theory, by linking his reflection in the implications of learning design:

- Management and leadership. The management and marshalling of resources to achieve desired outcomes is a significant challenge. Realizing that complete knowledge cannot exist in the mind of one person requires a different approach to creating an overview of the situation. Diverse teams of varying viewpoints are a critical structure for completely exploring ideas. Innovation is also an additional challenge. Most of the revolutionary
ideas of today at one time existed as a fringe element. An organization’s ability to foster, nurture, and synthesize the impacts of varying views of information is critical to knowledge economy survival. Speed of “idea to implementation” is also improved in a systems view of learning.

- Media, news, information. This trend is well under way. Mainstream media organizations are being challenged by the open, real-time, two-way information flow of blogging.
- Personal knowledge management in relation to organizational knowledge management.
- Design of learning environments. (Siemens, 2004)

In terms of the connectivism model, Suzanne Darrow, author of *Connectivism Learning Theory: Instructional Tool for College Courses*, asserts that "connectivism provides an ideological framework that can impact how practitioners design and develop instructional tools for college courses. This framework places emphasis on building the learner's ability to navigate and connect current information beyond knowledge of the existing linear curriculum" (2008, p. 12).

**How Does an Instructional Designer Put Into Perspective the Four Theories?**

It is important for the instructional designer to be knowledgeable about the learning theories so that the designer is able to construct the learning material in a systematic strategy. Brenda Mergel (1998), who researches on the topic of instructional design and learning theory, claims that:

Behaviorists assess learners to determine a starting point for instruction, while cognitivists look at the learner to determine their predisposition to learning (Ertmer & Newby, 1993, in Mergel's context). With this in mind, the practice of instructional design
can be viewed from a behaviorist/cognitivist approach as opposed to a constructivist approach (http://tinyurl.com/h7m2n).

Mergel further states that at a behaviorism level, the designer will analyze the learning concept and set a goal:

Individual tasks are broken down and learning objectives are developed. Evaluation consists of determining whether the criteria for the objectives has been met. In this approach the designer decides what is important for the learner to know and attempts to transfer that knowledge to the learner.(http://tinyurl.com/h7m2n).

When the learner is comfortable at this level, constructivism and connectivism approaches can be brought in respectively. This applies to the fact that constructivism and connectivism approaches are for higher levels of learning. Besides the theoretical approach, Susan Husak (2001), who did a research on "Instructional Design Strategies for Diversity Training Programs," reflects on how an effective courseware should be. Below are some of the key values draw from Husak’s perspectives:

1. Identified the nature of learner's behavior and cultural context.
2. Unified and supportive team players.
3. The ultimate goal, purpose, and content of the learning material should be checked constantly.

Besides the above viewpoints, there is another crucial factor related to the quality of content, which is to monitor and control the production process. This process is known as “knowledge of solution processes” (Christianns and Venselaar, 2005, p. 217).

Conversely, in relation to the idea that all the theories developed are sufficient, authors Suz Cox and Russell T. Osguthorpe, in their article “How Do Instructional Design Professionals
Spend Their Time?,” feel that "the fundamental steps in analyzing a profession is to document how those who practice the profession spend their time" (Cox & Osguthorpe, 2003, p. 45). By doing so, it would help researchers define their theories. Similarly, Cox and Osguthorpe quote from Hansen's (2001) insightful viewpoint that "the practice of a profession is a living thing that needs to be nurtured. It is living because theories and models do not create instruction—people do" (p. 29). Based on Cox and Osguthorpe's perspective, there is insufficient research data to declare that theories are being used by the instructional designers. Their study shows that instructional designers' initial scope of tasks do not really reflect on their daily routine, such as teaching-training, marketing, and consulting, which occur in only a small percent in their daily routine; instead, designers from other practicing areas and skill sets can title themselves as "instructional designers" who can be involved in developing and designing and research work in the creation of instructional design materials.
CHAPTER III. METHODOLOGY

This chapter highlights the methodology of the case study used in this thesis. The problem is restated, as are the objectives of the study. The research design is explored and the requirements and characteristics of the participants are provided. The research instrument used and the data collection procedures are outlined. Finally, the timeline of the study is presented.

Restatement of the Problem

The problem of this study was to explore if the four learning frameworks—behaviorism, cognitivism, constructivism, and connectivism—were being used by practicing instructional designers and how they were being interpreted based on new and emerging technologies, learning theories, and models. Therefore, the purpose of this study was to find out how applicable and commonly used are these four learning theories by the practicing instructional designers, in the course of information age.

Restated Objectives of the Study

The following objectives were used to support the statement of problem and research issues:

1. To find out how the practicing instructional designers view learning theories and how they interrelated the theories in their daily routines.
2. To find out how commonly used are the four learning theories, namely behaviorism, cognitivism, constructivism, and connectivism, in the course of emerging technologies, learning theories, and models.

With a purposeful study, reviewing resourceful literature and conducting qualitative research, the researcher hoped that the above objectives could be fulfilled.
Research Design

A case study was selected for this study, because it is able to achieve an insightful and concise perspective for this research purpose. As reflected by Stake's (1995) viewpoint, the case study is "a strategy of inquiry in which the researcher explores in depth a program, event, activity, process, or one or more individuals" (as cited in Creswell's context, 2009, p. 13). The researcher selected three experienced instructional designers to participate in this case study. The participants were asked to answer a set of questions. Multiple sources of data are recommended by Creswell (2009), as he asserts that a single data source is not reliable and also contains bias. In terms of obtaining purposeful sampling, this research approach is reflected in Burke Johnson's web page, Educational Research, Chapter 12: Qualitative Research, where he asserts "they offer useful manifestations of the phenomenon of interest; sampling, then, is aimed at insight about the phenomenon, not empirical generalization from a sample to a population" (http://tinyurl.com/cpxrb6). To achieve a non-biased and resourceful case study, the researcher was aware of certain regulations and rules. For instance, Johnson (2008) points out that case studies are used neither for analyzing of cause and effect, nor making factual predictions (http://tinyurl.com/cpxrb6).

Participants and Demographics in Study

Three experienced instructional designers, in a business setting, served as study participants. The case study was conducted in the midwest region of the United States of America. The selected participants all have experience in creating a wide range of learning materials and multimedia courseware, and were proficient in online course design and management tools. The participants' identities have remained confidential. The participants' names, characteristics, and places of occupation are not disclosed, so as to safeguard the privacy
of these participants. The following outlines information requested from the participants in relation to their characteristics and demographics:

a) Gender:

The participant has to specify his/her gender identity.

b) Age:

The participant has to declare his or her age group. The age groups have a range of 20-29, 30-39, 40-49, or 50-59 years old. It was important to know the four diverse generations, as each has his/her own characteristics, perspectives, styles, and approaches in the creation of instructional design materials. The four generations classification is reflected in Robin Neidorf's book, *Teach Beyond Your Reach*, "Matures, Boomers, Generation X, and Millennials" (Table 2.1, 2006, p. 61). The following shows the events involved with the generations:

- Matures: WW2, Korean War
- Boomers: Civil rights, women's lib, Cold War
- Generation X: Aids, Persian Gulf War, latchkey kids, computers
- Millennials: Oklahoma City bombing, Columbine shootings, multicultural terrorism, Internet. (Neidorf, 2006, Table 2.1, p. 61)

c) Training background and educational level:

The participants have to state his/her qualifications, such as high school, Bachelor, Master, Ph.D, or other. Also, the participants have to clarify his/her field of study.

d) Years of experience in the instructional design field:

The participants have to state the category of their experience group. The years of instructional design experience have a range of 1-5, 6-10, 11-15, or 16-20.
e) Type of industry:

Identify the type of industry the participants are working on.

f) Type of products/projects designed—purpose and media platform:

The participants have to identify his/her latest product or project designed within a 1-year period. While the instructional designer still has a fresh memory of the work that he/she has done within a 1-year timeframe, the researcher has a better chance of catching the actual data.

**Research Instrument**

The research instrument for this case study was conducted by a survey tool to measure the information of interest. The survey consisted of eight questions, with a mix of Likert scale questions and open-ended questions. Each participant was asked to answer the same set of questions (Appendix C).

**Data Collection Procedures**

The primary method of data collection for this study was conducted by the researcher through e-mail. The researcher sent an initial e-mail (Appendix A) to invite the participants to participate in the case study. All the survey questions were reviewed and approved by the thesis committee and Bowling Green State University's Human Subjects Review Board. The approval letter was filed in Appendix B in this document. The qualitative method of gathering information allows for insights directly from the instructional designers. Questions for the case study were designed to reflect the purpose of this study. As reflected in *Research Design: Qualitative, Quantitative and Mixed Methods Approaches* by Creswell (2009), one of the advantages of this type of survey method is that the researcher has total control over the length of questions. Second, it is helpful when the participant's workplace is inconvenient to meet up. Third, the
participants can disclose to the researcher some background information regarding the products/projects (Creswell, 2009, p. 179).

With the data collected, the researcher would gather, consolidate and organize the data to get ready for the data analysis process.

**Timeline of Study**

<table>
<thead>
<tr>
<th>Dates (subject-to-change)</th>
<th>Task to complete</th>
</tr>
</thead>
<tbody>
<tr>
<td>May-August</td>
<td>- Proposal</td>
</tr>
<tr>
<td>September 5</td>
<td>- Defended proposal</td>
</tr>
<tr>
<td>October 29</td>
<td>- Approval of research questions from BGSU Human Subjects Review Board</td>
</tr>
<tr>
<td>October 29</td>
<td>- Started with research process</td>
</tr>
<tr>
<td>October 29-November</td>
<td>- Research process continued... data collection and data analysis</td>
</tr>
<tr>
<td>December 14</td>
<td>- Finalized chapters 4 and 5 and completed the study. Submitted to Committee.</td>
</tr>
<tr>
<td>December 26</td>
<td>- Feedback received from Committee</td>
</tr>
<tr>
<td>January 3</td>
<td>- Defend thesis</td>
</tr>
<tr>
<td>January 9</td>
<td>- Submit error-free thesis</td>
</tr>
</tbody>
</table>
CHAPTER IV. FINDINGS AND DATA ANALYSIS

Chapters 4 and 5 are focused on the data findings and the organizing of the raw data before drawing a conclusion about the information collected. In relation to this process, the researcher referred to Creswell’s (2009) approach that is reflected on his chart “Figure 9.1. Data Analysis in Qualitative Research” (p.185). This chart illustrates clearly how data analysis can be conducted in a systematic manner.

There were two portions to the survey tool. Part I of the questionnaire was created to collect the participants' background information. Part II was composed of questions relating to the instructional designers' use of learning theories in relation to their instructional design process. The original responses of the participants are presented to provide honest fact-based data, which allows the readers to form their own viewpoints and conclusions. Thereafter, the readers can compare their thoughts and read more as the researcher organized the information of interest into themes, followed by a series of interpreting, reflecting and summarizing. The researcher’s method of thematization was directed by the purpose of study and its objectives. Prior to this phase, the raw data was organized and prepared for data analysis. In relationship to this preparation work, the researcher “read through all data” to identify the values, key beliefs and practices encoded in the participant’s responses (Creswell, 2009, p. 185). Then, the researcher began the process of organizing the valid information into “meaning units” or themes (Creswell, 2009, p. 184). Hence, the objectives of the study and eight survey questions were used as a framework to classify the themes. The following are the four themes:

- Theme 1: The Degree of Usage on the Four Learning Theories in the Practitioners’ Daily Work.
• **Theme 2**: The Four Learning Theories—Behaviorism, Cognitivism, Constructivism, and Connectivism Theories, Viewed by the Practitioner as Useful. The Practitioners’ Interpretation of Theories as Framework, Foundation, Concept and Design Defense.

• **Theme 3**: The Barriers and Limitations Between the Theory and Practice.

• **Theme 4**: Companies are Inactive in Providing Knowledge Improvement for the Practitioners.

**Participants' Background Findings**

The following is the participants' background information, with the participants' names and identities remaining confidential:

1) Gender: 2 females participants and 1 male participant

2) Age:
   - 1 participant is listed in the age category of 20-29 years old
   - 2 participants are listed in the age category of 30-39 years old

3) Experience:
   - 2 participants have 1-5 years of instructional design experience
   - 1 participant has 6-10 years of instructional design experience

4) Education: All participants have Master’s Degrees in related fields

5) Type of industry: All participants work in the business sector

6) Type of instructional design materials created by the participants:
   - Technical training and e-learning software application for New Hire Programs
   - Medical training program for patients related to management of chronic disease
   - Online training/blended learning materials that include game components
**Questionnaire Responses**

The first questions, 1a-1c, were developed asking the participants to rank in order the degree of usage, understanding, and extent of use of the four learning theories, with the response choices being *not at all, not very well, to a limited extent, fairly well, and very well*.

**Question 1a:** How applicable or commonly used are these four learning theories—behaviorism, cognitivism, constructivism and connectivism by you, as an instructional designer?

- **Responses on behaviorism theory:** Two participants responded with *fairly well.* One participant responded with *very well.*
- **Responses on cognitivism theory:** Three participants responded with *very well.*
- **Responses on constructivism theory:** One participant responded with *fairly well.* Two participants responded with *very well.*
- **Responses on connectivism theory:** One participant responded with *to a limited extent.* Two participants responded with *very well.*

**Question 1b:** To what extent do you, as an instructional designer know about the meaning and scope of these four learning theories—behaviorism, cognitivism, constructivism and connectivism?

- **Responses on behaviorism theory:** Two participants responded with *fairly well.* One participant responded with *very well.*
- **Responses on cognitivism theory:** Two participants responded with *fairly well.* One participant responded with *very well.*
- **Responses on constructivism theory:** Two participants responded with *fairly well.* One participant responded with *very well.*
- **Responses on connectivism theory:** Two participants responded with *fairly well.* One participant responded with *very well.*

**Question 1c:** To what extent do you as an instructional designer, use the four learning theories to support your instructional design strategy during your decision making process while working on an instructional design project?

- **Responses on behaviorism theory:** One participant responded with *not very well.* One participant responded with *fairly well.* One participant responded with *very well.*

Responses on cognitivism theory: Three participants responded with *very well*.

Responses on constructivism theory: One participant responded with *fairly well*. Two participants responded with *very well*.

Responses on connectivism theory: One participant responded with *not very well*. Two participants responded with *very well*.

Table 2 shows the response count of Questions 1a-c.

<table>
<thead>
<tr>
<th>Questions 1a-c</th>
<th>Answer Options</th>
<th>Response Count</th>
<th>Response Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not at all</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>Not very well</td>
<td>2</td>
<td>6%</td>
</tr>
<tr>
<td></td>
<td>To a limited extent</td>
<td>1</td>
<td>3%</td>
</tr>
<tr>
<td></td>
<td>Fairly well</td>
<td>13</td>
<td>36%</td>
</tr>
<tr>
<td></td>
<td>Very well</td>
<td>20</td>
<td>56%</td>
</tr>
</tbody>
</table>

*Table 2. Response Count Questions 1a-c.*

Based on the response count, a high score of 56% on the skill level of *very well* reflects that the four learning theories are, in general, very applicable and commonly used by the practicing instructional designers. Only 36% of the participants felt that they applied the theories into the instructional design model *fairly well*, and 3% of the participants felt otherwise, which was *to a limited extent*, with 6% of the participants noting that they felt that the theories are *not very well applicable* in their work. None of the participants felt that the theories are invalid or non-applicable. In terms of ranking the extensive use of the four theories, the participants didn’t feel that one theory is more superior than the other. They preferred to incorporate these theories into each phase of their developing work. However, based on the response, cognitivism theory has the highest score in terms of extent of use among the four theories.

Question 2: The following five questions, 2a-2e, dealt with interpreting learning theory frameworks into a spiral model, which is rooted from the generic ADDIE model, which stands for Analysis, Design, Development, Implementation, and Evaluation (Kruse, 2004).
The five phases of instructional design and the description of each phase are adopted from a spiral model as illustrated by Cennamo and Kalk (2005, pp. 17–21). The response choices for questions 2a-2e were not at all, not very well, to a limited extent, fairly well, and very well.

Question 2a: Behaviorism Processes

How well did the behaviorism theory framework help you at the Definition Phase of the instructional design process? The Definition Phase "refers to gathering information about the goal of the project, target audiences, and the requirement from clients" (Cennamo & Kalk, 2005, p. 21).

Responses on Learners – Analyze data: One participant responded with not at all. One participant responded with fairly well. One participant responded with very well.

Responses on Outcomes – Set goal: One participant responded with not at all. One participant responded with fairly well. One participant responded with very well.

Responses on Activities – Outline context with client: One participant responded with not very well. One participant responded with fairly well. One participant responded with very well.

Responses on Assessments – Draft exercises to test the learners: One participant responded with to a limited extent. One participant responded with fairly well. One participant responded with very well.

Responses on Evaluation – Trial products for learner tryout: One participant responded with not at all. One participant responded with fairly well. One participant responded with very well.

Question 2b: Cognitivism Process

How well did the cognitivism theory framework help you at the Designing Phase of the instructional design process? Please rate the following five options.

Responses on Learners – Gain clarity on client's and SME's perception of needs: Two participants responded with to a limited extent. One participant responded with very well.

Responses on Outcomes – Present goals and outcomes to team members: Two participants responded with to a limited extent. One participant responded with very well.

Responses on Activities – Brainstorm and work closely with SME on the content: Two participants responded with fairly well. One participant responded with very well.
Responses on Assessments — Gather feedback for assessments:  
One participant responded with *to a limited extent.*  
One participant responded with *fairly well.*  
One participant responded with *very well.*

Responses on Evaluation — Make improvement from testing the modules by tryout learners:  
Two participants responded with *fairly well.*  
One participant responded with *very well.*

Question 2c: Constructivism Process

How well did the constructivism theory framework help you at the *Demonstration Phase* of the instructional design process? At the Demonstration Phase, the instructional designer "explains to client how materials will be appropriate for needs and characteristics of audience" (Cennamo & Kalk, 2005, p. 21).

Responses on Learners — Oversee the materials to make sure that it is effective and learner-center:  
One participant responded with *not very well.*  
Two participants responded with *very well.*

Responses on Outcomes — Monitor learners' obtainment of outcomes during prototype tryout:  
One participant responded with *to a limited extent*  
Two participants responded with *very well.*

Responses on Activities — Develop prototype of materials. Present to learners. Collect data on learners' response to prototype:  
One participant responded with *not very well*  
Two participants responded with *very well.*  
Two participants responded with *very well.*

Responses on Assessments — Monitor development of assessment instruments to ensure consistency with specifications:  
One participant responded to *a limited extent.*  
Two participants responded with *very well.*

Responses on Evaluation — Analyze data and develop recommendations for modifications:  
One participant responded with *fairly well.*  
Two participants responded with *very well.*

Question 2d: Connectivism Process

How well did the connectivism theory framework help you at the *Development Phase* of the instructional design process? At the Development Phase, the instructional designer looks out for data to improve "learners' needs during formative evaluation testing" (Cennamo & Kalk, 2005, p. 21).

Responses on Learners — Continue to monitor learner's process:  
Two participants responded to *a limited extent.*  
One participant responded very well.
Responses on *Outcomes – Monitor learner's development and outcomes*:

Two participants responded *to a limited extent*. One participant responded with *very well*.

Responses on *Activities – Modify needs and requirements based on*:

Two participants responded with *fairly well*. One participant responded with *very well*.

Responses on *Assessments – Use data to define the effectiveness of materials*:

One participant responded *to a limited extent*. One participant responded with *fairly well*. One participant responded with *very well*.

Responses on *Evaluation – Collect and analyze data to further improve the materials*:

Two participants responded with *fairly well*. One participant responded *very well*.

Question 2e: **Connectivism Process**

How well did the connectivism theory framework help you at the **Delivery Phase** of the instructional design process? At the Delivery Phase, the instructional designer 'presents learners' responses to evaluation” (Cennamo & Kalk, 2005, p. 22).

Responses on *Learners – Oversee the materials to make sure that it is effective and learner-centered*:

Two participants responded *to a limited extent*. One participant responded *very well*.

Responses on *Outcomes – Present learners' responses to evaluation*:

One participant responded *to a limited extent*. One participant responded with *fairly well*. One participant responded with *very well*.

Responses on *Activities – Present materials to client*:

Two participants responded with *fairly well*. One participant responded with *very well*.

Responses on *Assessments – Discuss suggested modifications to assessment instruments resulting from formative evaluation*:

One participant responded *to a limited extent*. One participant responded with *fairly well*. One participant responded with *very well*.

Responses on *Evaluation – Present learners' responses to evaluation*:

Two participants responded *fairly well*. One participant responded *very well*. 
Table 3 shows the response count of Questions 2a-e.

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<thead>
<tr>
<th>Answer Options</th>
<th>Response Count</th>
<th>Response Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all</td>
<td>3</td>
<td>4%</td>
</tr>
<tr>
<td>Not very well</td>
<td>3</td>
<td>4%</td>
</tr>
<tr>
<td>To a limited extent</td>
<td>17</td>
<td>23%</td>
</tr>
<tr>
<td>Fairly well</td>
<td>22</td>
<td>29%</td>
</tr>
<tr>
<td>Very well</td>
<td>30</td>
<td>40%</td>
</tr>
</tbody>
</table>

*Table 3. Response Count Questions 2a-e.*

Based on the response count, the skill level of *very well* has a high score of 40%. This reflects that the practicing instructional designers are comfortable dealing with interpreting learning theory frameworks into the spiral model or a similar model, which is rooted from the generic ADDIE model. Twenty-nine percent of the participants felt that they applied the theories into the instructional design model *fairly well*, and 23% of the participants felt that they could apply the theories *to a limited extent*. Only 4% of the participants selected the last option of *not very well*.

Question 3: How do you, the instructional designer, determine which theoretical frameworks to use while you are creating instructional design materials based on the generic ADDIE (Analysis, Design, Development, Implementation, and Evaluation) model?

- [ ] Behaviorism
  
  PARTICIPANT C: I do not use this often

- [ ] Cognitivism
  
  PARTICIPANT C: I use this fairly often – especially in the Analysis/Design stages

- [ ] Constructivism
  
  PARTICIPANT C: This is only used for specific instances/client needs… but not as often

- [ ] Connectivism
  
  PARTICIPANT C: I utilize this throughout the entire ADDIE process (although we rarely use the Evaluation phase unless a client is willing to pay money for it

- [ ] Other

PARTICIPANTS A and B did not provide responses for Question 3.
Question 4: This question is related to the above question. Please explain how do you interpret and apply the above theory into the design model that you have chosen to use during your designing process.

PARTICIPANT A: I do not pull out specific theories and apply them to any part of the process. However, given the definitions of the above four learning theories, the theory I consider to be is constructivism as our methodology utilizes questions that pull from the participant’s experience to create action steps to better manage their health.

PARTICIPANT B: I apply a combination of all the theories in most of the design work. I try to create a safe, informal training environment where participants are lead in instruction but also have the freedom to learn on their own. This encourages self discovery and problem solving/critical thinking. I also like to include group discussion and teamwork so that participants can learn from one another.

PARTICIPANT C: I use it as a framework - but I do not follow it closely. We work with a variety of clients, most of which are not familiar with these learning theories. So much of what I use it for is on the back-end to inform my decisions during the design phase and also to help support my reasoning/decisions when speaking with our clients.

In general all the participants interviewed thought that the theories provide some practical value, such as useful frameworks in the decision-making phases or the design developing phases. One participant expressed that he/she preferred a particular theory more than the others due to the company’s methodology and courseware requirement. Hence, he/she claimed that this particular theory fit best during his/her designing process. Interestingly, the participant who recently took his/her training program shows that he/she was able to make a strong connection between the four theories and his/her practical work process. Ironically, participants who graduated from their training programs longer ago seem to remember less details of the theories that they rarely use and instead rely on their intuition and draw reference to their experience. All the participants claimed that they didn’t follow the principles of theory blindly. As there were other factors to consider during the designing process.
Question 5: Do you think there are barriers between the theoretical aspects and practical implementation of instructional design material? Explain.

PARTICIPANT A: Yes, theories have limitations within a business environment. I employ generalized educational and behavioral theories inform design and development and to lend credibility to certain aspects of the final product. However, recognizing that every situation is unique, I base much of the final product upon input from first-hand research with SMEs and users. Such tailored research goes farther in rationalizing the final product to a given client in most cases.

PARTICIPANT B: There are barriers between theory and application. The main barrier I see is that it often takes more than one theory to create a meaningful, engaging learning experience. It's often a melting pot of theories and techniques that accomplish the most successful training programs. It's also hard to explain to clients why we've designed something a certain way. I've often had to leave academic terminology out of conversations because the client doesn't understand. Instead, I have to explain the theory in simple terms and how it will impact the learner. Once you can get a client to see the value in what you've designed, the rest of the process goes smoothly.

PARTICIPANT C: In our business, most clients do not want to talk about learning theories/methodology with us. They rely on our expertise and our experience - so after 6 years of doing this, I rely mostly on practical implementation (my experiences) rather than theories.

In general, all the participants felt that there are barriers and limitation between theory and application in their working environment. According to one participant, one of the barriers is the word “theory” which is alien to their clients and subject matter experts. The clients would rather rely on the practitioners’ expertise to develop the courseware/training materials then to listen to the principles of theory. Another barrier, based on the same participant’s input, is that the creation of the instructional design materials involved a myriad of theories, hence, not just one theory or technique is sufficient to accomplish the instructional design task. In addition, this participant felt that if he/she needed to convince the client and to reinforce the value of his/her work process, he/she would then explain the framework of theory in simple terms and make sure the client sees the value in what he/she has designed. Finally, another participant who has more than 5 years of experience in the instructional design industry felt that he/she mostly relies on
his/her intuition with reference to his/her experience to justify why this methodology was applied instead of other methods. Hence, he/she focuses on ideas that work practically rather than relying on the principles of theory.

Question 6: How often do you, the instructional designer, use theory in your daily routine creating instructional design materials or the development of instructional design courseware?

PARTICIPANT A: Again, on a daily basis, my framework for development is based on first-hand research with SMEs and users of a given product. While all products have basis within all four learning theories outlined by this study, I refrain from citing any specific learning theory as basis for a product. Using and citing the use of educational theories creates a disconnect between the product and the people. Meaning, the word “theory” carries a connotation that a given product is produced in a more academic or “laboratory” environment.

A given learning product in my line of business is supposed to achieve business objectives for the hiring client as well as educational objectives for the use. Neither population (client and user) is swayed by use of a learning theory. Therefore, I do not make it my priority to learn and develop according to any specific theories.

PARTICIPANT B: I use instructional theories 75% of the time during my daily work.

PARTICIPANT C: I utilize it when writing a new program or when working with our sales team to come up with a new solution for a client/audience. So I would say I use it about 4-5 times a week.

In general, all the participants felt that theory is a significant tool in the decision-making process, which they can which refer to as their foundation. As quoted by two participants, they use theories extensively during their work processes, approximately four to five times a week. Nonetheless, one participant felt that his/her use of theories depended on the interaction with his/her subject matter expert and target audience of that specific product. According to this participant, he/she would not be swayed by using any of the learning theories if the principles of theory did not fit into the business quota or the learners’ objectives. Importantly, he/she felt that the correct role of protocol as an instructional designer is to achieve the ojectives for the client, as well as to make the training program effective for the end-users.
Question 7: What are the driving forces in your decision making process creating instructional design materials, for example theories, models, intuition, or experience?

PARTICIPANT A:
- First-hand research of SMEs and representative population of a target population
- Experience
- Meta research of health and wellness behavior change practices
- User-experience design trends
- Intuition

PARTICIPANT B: Most of my driving force comes from the audience. I focus more on what the learner needs to be successful and learn the materials. Once I have a clear understanding of my audience, I match the appropriate theories/models. Some of it comes from intuition or experience (e.g., this type of interaction or activity has worked really well in the past so I'll use it now).

PARTICIPANT C: Primarily experiences at this point… but I would say that the theories/models that I learned during my Masters program are very much the basis for why my experiences are so strong. I could probably apply a learning theory/method to any one of my experiences as a base/foundational element - as so much of what we do relies on them (even if it is not directly intentional.)

In general, the factors behind the practitioners’ decision making processes, during their creation of the instructional design materials, are based on their subject matter experts’ insightful knowledge, targeted audiences, Internet trends, experiences, and intuition. One practitioner quoted that he/she would match the appropriate theories/models with his/her targeted audiences. Whereas, another practitioner claimed that the theories which he/she mastered in his/her training program acted as a foundation in the principles of learning design.

In summary, all the participants listed experience as one of key factors in their design decisions. That being said, none of the participants acknowledged that theories or models are the core reason in their design decisions as they didn’t feel the need to align their decisions with theory or models. Although they may use some theories and models at some point in time, no participants ever mentioned they have to refresh or review the theoretical aspect of handling the
instructional design materials. Indeed, the learning theory doesn’t have to deal with one of the many key people, subject matter experts as mentioned by one of the participants, who he/she often has to interact with.

While some participants would use the theory and models unintentionally, some would reference theory as an enhancer to convince their clients in order to strengthen their design value. Even so, they have to explain theory and models in simple terms so that their clients can understand the principles of their design creation.

Question 8: Rate your knowledge in regards to theoretical ideas related to instructional design?

One participant responded with not at all.
One participant responded with fairly well.
One participant responded with very well.

In general, one of the practitioners who has been in the instructional design industry for more than 5 years felt that his/her professional development is lacking. On the other hand, the participant who recently completed his/her training program, felt that his/her knowledge upgrade is in excellent condition. Another participant who has been in his/her instructional design industry between 1-5 years felt that his/her knowledge updates are fairly well.

Data Analysis

The data analysis is achieved by gathering and consolidating all the responses from the survey questions. The first approach aligns with Creswell’s (2009) viewpoint, that is to read through the responses, followed by defining the key beliefs and practices of the participants. Then the researcher grouped the related questions and responses into “meaning units” and matched the information to its particular theme (Creswell, 2009, p. 184). The meaning of each theme was addressed, with a reflection and summary. The following are the interpretation of the four themes:
Theme 1: The Degree of Usage on the Four Learning Theories in the Practitioners’ Daily Work.

As reflected in theme one, the practitioners seem to have applied these four theories, during their design process, at some point in time. None of them feel that these theories are non-applicable or not commonly used. According to the responses, all the participants claim that they are very skillful with using the cognitivism theory, and that this theory is used most often. In contrast, one of the participants feels that he/she can only use connectivism theory to a limited extent, whereas two participants feel that their degrees of usage of this theory is excellent.

Based on the responses, the cognitivism theory is preferred by practitioners in the industry which seems to echo the insightful input of Reigeluth (1999). His reflection on this is:

> Our current paradigm in education and training is based on standardization, much like the mass production of industrial-age manufacturing, which is now giving way to customized production in the information-age economy. We know that different learners learn at different rates and have different learning needs. Yet our current paradigm of education and training entails teaching a large group of learners the same content in the same amount of time. Why? One reason is that group-based learning represents logistical and economic efficiencies, even though it does not do a good job of meeting learners’ needs.

Therefore, Reigeluth (1999) is in favor of a customized methodology for the constructing of instructional design materials to fit today’s learners. Another characteristic about using theory is that there is no single theory that can fit perfectly into a learning design model. Incorporating all the theories in different phases of the learning design process should be the way to go, in order to meet the goal of the learning objectives.

As noted in theme two, generally, these practitioners view theories as useful. Although these practitioners reference the theories as a framework and foundation, they do not follow the principles of theory blindly. As there are other factors to consider during the designing process. These practitioners regard theory as a credible and convincing tool to persuade their clients or teamplayers if they were being challenged in their concept during the development of instructional design materials. However, the more experienced practitioners would use their intuition to justify how the ideas would work for them, rather than to rely on the theoretical aspect of the instructional design.

Theme 3: The Barriers and Limitations Between the Theory and Practice.

As reflected in theme three, generally, the practitioners feel that there are barriers and limitation between theory and application in their working environment.

One of the reasons is that the clients and colleagues are not familiar with the learning theories, therefore the practitioners must have the abilities to explain the theories in simple terms in order to utilize them in their design process or as a powerful convincing tool.

Second, the practitioners feel that there is not a one-size-fits all theory that can be use in the designing process.

Finally, there are other decision factors such as people related issues, company policy, software application and deadline restrictions. According to Participant A, “Using and citing the use of educational theories creates a disconnect between the product and the people” (cited on responses from question 6). Therefore, this participant does not feel that it was not his/her
“priority to learn and develop according to any specific theories” (cited on responses from question 6). In addition, the senior practitioners prefer to rely on their intuition rather than the principles of theories.

Theme 4: Companies are Inactive in Providing Knowledge Improvement for their Practitioners.

As theme four states, the practitioners’ knowledge on learning theories come to a standstill at their employment status. This is reflected on Participant C’s response, “After six years of doing this, I rely mostly on practical implementation rather than theories” (as cited in question 5’s responses). Or perhaps, there is not a fully equipped and practical advance instructional design training center for the company’s practitioners.

In summary, the practitioners seem to feel that theory-based knowledge enhancement is not necessary as experience plays a significant role in the structuring of the instructional design materials. This finding seems to run counter to Duff and Jonassen’s (1992) observations that the “impact of prior experience and human interpretation is seen as leading to partial understandings and biased understandings” therefore theory-based knowledge enhancement is important, as it allows one to “strive for the complete and correct understanding” (p. 3).
CHAPTER V. CONCLUSIONS AND RECOMMENDATIONS

The problem of this study is to explore if the four learning frameworks—behaviorism, cognitivism, constructivism, and connectivism—are being used by practicing instructional designers and how they are being interpreted based on new and emerging technologies, learning theories, and models. Therefore, the purpose of this study was to find out how applicable and commonly used are these four learning theories by the practicing instructional designers, in the course of information age.

Conclusions

There are several implications that interrelate with the findings in this study. The first implication is that the four learning theories and models are not strictly principles that have to be used blindly. In relationship to this, the participants felt that there were barriers and limitations of the theories/models existing in the practical environment of instructional design. One participant expressed that he/she felt a “disconnect between the product and the people” therefore, he/she avoided “citing any specific learning theory” (cited from Participant A’s responses on question 6).

Second, there are several factors in the practitioners’ decisions making process creating instructional design materials. For instance, the insightful and well-researched information from their subject matter experts (SMEs), the client’s objectives, their target audiences/learners, the company’s quota, the user-experience design trends and the practitioners’ intuitions. That being said, the application of theories were not part of the practitioners’ priorities.

Third, the practitioners must have the ability to explain the theories in simple terms. The definition of the theories and models can be alien to their clients and teammates. Therefore, all
the involved parties must reach a comprehensive and understanding level, if the practitioners are using the theory as a credible tool to iron out any doubts and challenges.

Four, these four learning theories—behaviorism, cognitivism, constructivism, and connectivism, are valuable and useful to the practitioners to a certain extent. As highlighted by the participants, the principles of the theories and models can be useful for their framework, foundation, and checklist during their design processes. However, these participants rely heavily on intuition and other factors.

Finally, the knowledge improvement is lacking and undesirable at the practitioners’ workplaces. Perhaps, there is not a practical-based and fully-equipped training institute for instructional designers where the employer can send their staff for knowledge enhancement courses. Therefore, the company would rather rely on the practitioners’ prior experience. It could also be because the majority of the practitioners are self-contented about what they have achieved at their educational level. As highlighted by one of the participants, he/she felt that he/she had already gained sufficient theoretical knowledge from his/her master’s degree program. In addition, one participant felt that he/she had already gained sufficient theoretical knowledge from his/her master’s degree program. As cited by this participant “….The theories/models that I learned during my Masters program are very much the basis for why my experiences are so strong” (cited from Participant C on question 7). Despite the fact that experience plays a significant role in the structuring of instructional design materials, Duff and Jonassen (1992) point out that new knowledge is important because “meaning is something that exists in the world quite aside from experience. Hence, the goal of understanding is coming to know the entities, attributes, and relations that exist” (p.2). In addition, the continuous improvement in education allows “our theory of learning” to embrace in our design, “and hence
one can come to a reasonable understanding of our beliefs about learning from an analysis of that design” (Duff and Jonassen, 1992, p. 1). In relationship to this, the practitioners should keep in mind the benefit of knowledge improvement. In this the way, the practitioners can strive for a thorough and clear understanding about the structuring of instruction in order to produce better, effective, and fun learning instructional design material benefiting the learners.

**Recommendations and Future Study**

The researcher hopes that the findings in this study can help to better prepare students and bring to their attention the gap between theory and practice. Hence, these students can look into additional skills they need as they pursue their degrees in learning design or instructional design. The following are questions that may concern them:

1. Do they know how to apply these four theories into the instructional design process?
2. If so, are they flexible enough to choose certain portions of the theories and fit them in the appropriate puzzles?
3. What is lacking in their training program that they need to look out for?

There is no doubt that the students need to be armed with both the theoretical knowledge and the practical skills in order to enhance their job prospects as learning designers or instructional designers. However, the researcher hopes that the issue about theory-practice in the instructional design environment can be enlightened and the gap between theory and its practical application be minimized if at all possible. This study allows the theorists to rethink principles of theories and whether any modifications are needed. Likewise for the educators of instructional design training centers, they need to consider whether their training modules and approaches are sufficient and effective. In addition, the researcher hopes that the reader has a better understanding of the instructional designers’ perspectives on the different learning theories.
Some considerations for future studies:

1. The participants for the case study can be broader. Besides, the instructional designers, other involved parties can include subject-matter-experts, graphic designers, programmers and account coordinators.

2. Interview can be conducted with the theorists, educators and students in order to get a better perspective on the theories-practice related issues.
REFERENCES


APPENDIX A. INVITATION TO PARTICIPATE

October 29, 2012

Dear (participant's name inserted):

Hello My name is Sue eo and I am a earning Design graduate student in the College of Technology at Owling reen State University. I am currently conducting a case study in relation to my Masters thesis to explore if these four learning theories behaviorism, cognitivism, constructivism and connectivism, are being used by practicing instructional designers and how they are being interpreted and applied, based on new and emerging technologies, learning theories, and models.

Therefore, the purpose of this study is to find out whether these four learning theories (behaviorism, cognitivism, constructivism and connectivism) are applicable and commonly used, by the practicing instructional designers. A list of definitions and examples of the four theories above are located at the beginning of the questionnaire document.

Communication with participants in this study will take place by email. Participants are being asked to answer a questionnaire that is broken up into two parts. Part I, titled “Participant background Information” which consists of gathering background information related to you the participant. Part II, titled “Questions Related to the Use of earning Theories in Instructional Design,” will consist of questions related to your use of learning theory in relation to instructional design. This process will take approximately two hours of your time.

The goal of this study is to find out the use of the four learning theories mentioned above (behaviorism, cognitivism, constructivism and connectivism) and their use in instructional design by practicing instructional designers. This project will benefit institutions of higher education and students by helping them to understand the practices of instructional designers and their use of the four learning theories above.

All participants’ names will remain confidential and all participants' identities will be kept confidential. However, the information that you provide on the questionnaire may be quoted in reference to the use of learning theories by practicing instructional designers. After completing the questions, please save the original document onto your hard drive before attaching it in an email back to me. The data you provide/your responses, will be gathered, analyzed and stored on my personal computer protected by a password known only by myself.
You must be at least 18 years of age or older to participate. Your participation is completely voluntary and you are free to withdraw at any time without penalty. There are no risks associated with your participation in this study, nor any impact in regards to your relationship with BGSU.

Completing and returning the survey/questionnaire indicates consent to participate in this study.

If you have any questions or comments regarding the study, or if you would like to see a copy of the results of the study, you may contact me at syeo@bgsu.edu or by phone at 419-787-9660. You may also contact my advisor Dr. Terry Herman at hermant@bgsu.edu or by phone at 419-372-7265. If you have any questions concerning the conduct of the study or rights as a research participant, please contact the Chair of the Human Subjects Review Board at hsrb@bgsu.edu or by phone at 419-372-7716. Thank you in advance for your participation.

Sincerely,

Sue Yeo
Graduate Student, Learning Design
College of Technology
Bowling Green State University
Email: syeo@bgsu.edu | Phone: 419-787-9660
CONSENT DOCUMENT

Hello My name is Sue eo and I am a earning Design graduate student in the College of Technology at owling reen St ate University. I am currently conducting a case study in relation to my Masters thesis to explore if these four learning theories — behaviorism, cognitivism, constructivism and connectivism, are being used by practicing instructional designers and how they are being interpreted and applied, based on new and emerging technologies, learning theories, and models.

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Sincerely,

Sue Yeo
Graduate Student, Learning Design
College of Technology
Bowling Green State University
Email: syeo@bgsu.edu | Phone: 419-787-9660
Please refer to the following list of definitions and examples for the four theories:

<table>
<thead>
<tr>
<th>Theory</th>
<th>Definition</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Behaviorism</td>
<td>is geared towards learning the knowledge and &quot;facts&quot; with the instructor delivering the sources to the learner (Ally, 2008. p.20). Often, the test score system is used to determine the learner's capabilities.</td>
<td>The instructor will create a learning environment that inspire the acquire behavior. The instructor expects the learner to adopt the knowledge/fact.</td>
</tr>
<tr>
<td>3. Constructivism</td>
<td>is about the learner being able to digest the knowledge and thus, she/he is able to conceptualize and personalize the new information (Leonard, 2002). The following is Smith and Ragan (2005) reflection on the characteristic of constructivists' thinking: 1. Knowledge is constructed from experience. 2. Learning results from a personal interpretation of knowledge. 3. Learning is an active process in which meaning is developed on the basis of experience (p.19). This approach of teaching is appropriate for a higher level of institution education. As Ally (2008) asserts this constructivist's concept allows &quot;personal meaning, and situated and contextual learning&quot; (p.20).</td>
<td>The learner is &quot;given control of the learning process (Ally, p.31) and is situated in an &quot;active&quot; mode (Ally, p.30). Additionally, she/he is given the time to digest, reflect, personalize and construction on the new information and knowledge.</td>
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</table>
Connectivism, developed by Siemens (2004), is about today's learner being able to integrate and new technology in a social networking format. For example, the instructor will involve a lot of interactive and collaboration activities among virtual learners using new technologies. Similar to Ally's (2008) input, connectivist's teaching method is suitable for learners at college level, where learners have developed critical thinking and are capable of analyzing and conceptualizing complex context. The instructor will involve a lot of interactive and collaboration activities for the virtual learners (Siemens, 2004).

PART I. PARTICIPANT INFORMATION

Please respond by placing an X as your answer for the questions below:

1. Gender

☐ Male  ☐ Female

2. Age

☐ 20  ☐ 29  ☐ 30  ☐ 39  ☐ 0  ☐ 9  ☐ 50  ☐ 59

3. How many years of instructional design experience do you have?

☐ 1-5  ☐ 10  ☐ 11  ☐ 15  ☐ 1  ☐ 20  ☐ 21  ☐ 25  ☐ over 25

4. What is your educational level?

☐ High School  ☐ Bachelor  ☐ Master  ☐ PhD  ☐ Others

(please indicate if you click Others)

5. Your occupation fits into what type of industry listed as below:

☐ Academic  ☐ Business  ☐ Government  ☐ Military  ☐ Others

(please indicate if you click Others)

6. What is the latest type of learning design product or project you have worked on within the past six months to one year.

(please indicate)
**PART II. QUESTIONS**

**Answering the following questions should take approximately 2 hours to complete:**

1a) How applicable or commonly used are these four learning theories—behaviorism, cognitivism, constructivism and connectivism by you, as an instructional designer?

<table>
<thead>
<tr>
<th>The degree of usage on the four learning theories.</th>
<th>not at all</th>
<th>not very well</th>
<th>to a limited extent</th>
<th>fairly well</th>
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<tbody>
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<td>Connectivism</td>
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1b) To what extent do you, as an instructional designer know about the meaning and scope of these four learning theories—behaviorism, cognitivism, constructivism and connectivism?

<table>
<thead>
<tr>
<th>The degree of understanding of the four learning theories.</th>
<th>not at all</th>
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<tr>
<td>Connectivism</td>
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1c) To what extent do you as an instructional designer, use the four learning theories to support your instructional design strategy during your decision making process while working on an instructional design project?

<table>
<thead>
<tr>
<th>The extent of use of the four learning theories.</th>
<th>not at all</th>
<th>not very well</th>
<th>to a limited extent</th>
<th>fairly well</th>
<th>very well</th>
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</thead>
<tbody>
<tr>
<td>Behaviorism</td>
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<tr>
<td>Cognitivism</td>
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</tbody>
</table>
The following five questions deal with interpreting learning theory frameworks into a spiral model, which is rooted from the generic ADDIE model, which stands for Analysis, Design, Development, Implementation and Evaluation (Kruse, 2004). The five phases of instructional design and the description of each phase are adopted from a spiral model as illustrated by Cennamo and Kalk (2005, p.17-21).

2a) Behaviorism Processes
How well did the behaviorism theory framework help you at the Definition Phase of the instructional design process? The Definition Phase "refers to gathering information about the goal of the project, target audiences, and the requirement from clients" (Cennamo & Kalk, 2005, p. 21)

<table>
<thead>
<tr>
<th>Definition Phase</th>
<th>not at all</th>
<th>not very well</th>
<th>to a limited extent</th>
<th>fairly well</th>
<th>very well</th>
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</thead>
<tbody>
<tr>
<td>Learners - Analyze data</td>
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<tr>
<td>Outcomes - Set goal</td>
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<tr>
<td>Activities - Outline context with client</td>
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<tr>
<td>Assessments - Draft exercises to test the learners</td>
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<tr>
<td>Evaluation - Trial products for learner tryout</td>
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</tbody>
</table>

2b) Cognitivism Process
How well did the cognitivism theory framework help you at the Designing Phase of the instructional design process? Please rate the following five options.
<table>
<thead>
<tr>
<th><strong>Designing Phase</strong></th>
<th>not at all</th>
<th>not very well</th>
<th>to a limited extent</th>
<th>fairly well</th>
<th>very well</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Learners</strong></td>
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<tr>
<td>- Gain clarity on</td>
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<tr>
<td>client's and SME's</td>
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<tr>
<td>perception of needs.</td>
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<td><strong>Outcomes</strong></td>
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<tr>
<td>- Present goals and</td>
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<tr>
<td>outcomes to team</td>
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<td>members.</td>
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<td><strong>Activities</strong></td>
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<tr>
<td>- Brainstorm and</td>
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<tr>
<td>work closely with</td>
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<tr>
<td>SME on the content.</td>
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<tr>
<td><strong>Assessments</strong></td>
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<tr>
<td>- Gather feedback</td>
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<td>for assessments.</td>
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<tr>
<td><strong>Evaluation</strong></td>
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<tr>
<td>- Make improvement</td>
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<td>from testing the</td>
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<td>modules by tryout</td>
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<tr>
<td>learners.</td>
<td>☐</td>
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</tbody>
</table>

**2c) Constructivism Process**
How well did the constructivism theory framework help you at the **Demonstration Phase** of the instructional design process? At the Demonstration Phase, the instructional designer "explains to client how materials will be appropriate for needs and characteristics of audience" (Cennamo & Kalk, 2005, p.21).

<table>
<thead>
<tr>
<th><strong>Demonstration Phase</strong></th>
<th>not at all</th>
<th>not very well</th>
<th>to a limited extent</th>
<th>fairly well</th>
<th>very well</th>
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</thead>
<tbody>
<tr>
<td><strong>Learners</strong></td>
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<tr>
<td>- Oversee the materials</td>
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<td>to make sure that it is</td>
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<td>effective and learner-</td>
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<tr>
<td>center.</td>
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</tbody>
</table>
2d) **Connectivism Process**
How well did the connectivism theory framework help you at the Development Phase of the instructional design processes. At the Development Phase, the instructional designer looks out for data to improve "learners' needs during formative evaluation testing" (Cennamo & Kalk, 2005, p.21).

<table>
<thead>
<tr>
<th>Development Phase</th>
<th>not at all</th>
<th>not very well</th>
<th>to a limited extent</th>
<th>fairly well</th>
<th>very well</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learners -Continue to monitor learner's process</td>
<td>□</td>
<td>□</td>
<td>□</td>
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</tr>
<tr>
<td>Development Phase</td>
<td>not at all</td>
<td>not very well</td>
<td>to a limited extent</td>
<td>fairly well</td>
<td>very well</td>
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<tr>
<td>Outcomes</td>
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<tr>
<td>Monitor learner's development and outcomes</td>
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<tr>
<td>Activities</td>
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<tr>
<td>Modify needs and requirements based on</td>
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<tr>
<td>Assessments</td>
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</tr>
<tr>
<td>Use data to define the effectiveness of materials</td>
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<tr>
<td>Evaluation</td>
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<tr>
<td>Collect and analyze data to further improve the materials</td>
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</tbody>
</table>

2e) Connectivism Process

How well did the connectivism theory framework help you at the Delivery Phase of the instructional design processes. At the Delivery Phase, the instructional designer "presents learners' responses to evaluation" (Cennamo & Kalk, 2005, 2005, p.22).

<table>
<thead>
<tr>
<th>Delivery Phase</th>
<th>not at all</th>
<th>not very well</th>
<th>to a limited extent</th>
<th>fairly well</th>
<th>very well</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learners</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Oversee the materials to make sure that it is effective and learner-center.</td>
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<tr>
<td>Outcomes</td>
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<tr>
<td>Present learners' responses to evaluation</td>
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<tr>
<td>Activities</td>
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<tr>
<td>Present materials to client.</td>
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<tr>
<td>Delivery Phase</td>
<td>not at all</td>
<td>not very well</td>
<td>to a limited extent</td>
<td>fairly well</td>
<td>very well</td>
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<tr>
<td>Assessments</td>
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<tr>
<td>- Discuss suggested modifications to</td>
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<tr>
<td>assessment instruments resulting</td>
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<tr>
<td>from formative evaluation.</td>
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<tr>
<td>Evaluation</td>
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<tr>
<td>- Present learners' responses to</td>
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<tr>
<td>evaluation.</td>
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</tbody>
</table>

3) How do you, the instructional designer, determine which theoretical frameworks to use while you are creating instructional design materials based on the generic ADDIE (Analysis, Design, Development, Implementation and Evaluation) model?
- Behaviorism ____________________________ (please indicate)
- Cognitivism _____________________________ (please indicate)
- Constructivism __________________________ (please indicate)
- Connectivism ____________________________ (please indicate)
- Other _________________________________ (please indicate)

4) This question is related to the above question. Please explain how do you interpret and apply the above theory into the design model that you have chosen to use during your designing process.
_______________________________________
_______________________________________
_______________________________________
_______________________________________

5) Do you think there are barriers between the theoretical aspects and practical implementation of instructional design material? Explain.
_______________________________________
_______________________________________
_______________________________________
_______________________________________
6) How often do you the instructional designer use theory, in your daily routine creating instructional design materials or the development of instructional design courseware?

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

7) What are the driving forces in your decision making process creating instructional design materials, for example theories, models, intuition, or experience?

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

8) Rate your knowledge in regards to theoretical ideas related to instructional design?

<table>
<thead>
<tr>
<th>Knowledge upgrade</th>
<th>not at all</th>
<th>not very well</th>
<th>to a limited extent</th>
<th>fairly well</th>
<th>very well</th>
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<tbody>
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</table>