**Is there one road, more, or cross roads leading to learning?**

It is probable that most of the people who are interested in education or who wanted to reflect on it or learning came across the following Chinese proverb: “Tell me and I'll forget; show me and I may remember; involve me and I'll understand.”[[1]](#footnote-1) The similarities between this proverb and one of Benjamin Franklin`s sayings are interesting: “Tell me and I forget. Teach me and I remember. Involve me and I learn”[[2]](#footnote-2). It seems that the way each of us approach learning seems to have both such similarities and differences. Interestingly enough, learning theories themselves appear to carry the same type of similarities and differences as well. Consequently, it seems that we and theories approach the same phenomenon in either different ways or in the ways that combine with or separate from each other frequently. This is quite normal given the individual differences among us and the theories (these also come from individuals` points of views, of course). So, not all prescriptions are likely to address the needs of individuals but they are necessary to have a general sense and to address commonalities. After all, given the individual nature of the reflections on learning, not only where and what to go but how to go appears to be of great importance for instructional design. This seems to be important not only in terms of achieving better learning outcomes on the part of the learners but also for instructional designers to earn deeper insights into their jobs.

Despite all these differences, similarities etc. regarding the way we approach learning, the destination seems to be the same: learning. However, what kind of learning are we talking about? Needless to say, in educational circles, we generally talk about directed, guided or explicit learning not that much about implicit learning. In other words, be it individual, self-regulatory or classic in-class group learning or online learning, we tend to generally focus on explicit learning. An evidence for this would be metacognitive arguments that specify that people need to reflect on their learning processes and be aware of them. Based on this assumption, the purpose of the current paper is two-fold: 1) Reviewing the learning theories presented by Driscoll (2005) basically and by Ertmer and Newby (1993) with an attempt to diagnose possible weaknesses as well as points making an eclectic approach possible or not, 2) Discuss applications emanating from these theories from an eclectic perspective and question it. In what follows, this paper, first, briefly provides a general review of existing learning theories. As such, this part focuses on weaknesses of each learning theory in order to clarify whether theories should come in and provide a remedy, thus constituting an eclectic organization. In addition to this brief review of existing theories undertaken to clarify the need for more eclectic approaches, the paper also puts forward some implications of such an approach for practical applications addressing not only the construction of learning materials but also the overall instructional design. Finally, conclusions drawn are stated.

**A Collective Look at Learning Theories and Its Implications for Practical Applications**

An eclectic or, in my our terms, a hybrid/blended approach taken toward learning theories would be much more challenging than sticking to one or a few more learning theories. Additionally, considering the possible contrasting details existing among theories would make us be careful about having such an approach. Needless to say, such an approach would also make us adapt existing premises of learning theories to align them with premises of the other theories we would like to combine or implement together. Closely related, Driscoll (2005) claimed that all theories approach the learning from specific perspectives, which lead to limitations in that they are able to explain only a part of learning outcomes that can be examined (p. 411). This is also supported by Ertmer and Newby`s (1993) claim that “The major differences among theories lie more in interpretation than they do in definition.” (p. 53). Therefore, even though an eclectic approach does not seem to be that much easy to theorize and apply, it seems that it may help us more in diagnosing instructional problems exiting in a specific learning context and pertaining to a specific group of learners than trying to solve such issues based on one or few theories. The simple reason behind such an assumption is that just like life itself, learning does not seem to be as simple as it seems to the naked eye at the first glance. Accordingly, it is suggested in the present paper that decisions on instructional design that are informed by the learning theories should be based a thorough reflection on three main elements: 1) learners, 2) learning task(s), and 3) learning environment(s).

What both Ertmer and Newby (1993), and Driscoll (2005) discuss under behaviorism is basically operant conditioning with which Skinner is associated most frequently. As known, be it in the tradition of classical or operant conditioning, behaviorist ideas focus on stimulus-response chains and their frequency of occurrence that lead to stability of learning in a learning environment. This suggests instructional designers (referred to as IDers henceforth) be thoughtful about aspects of a learning environment that would encourage stimulus-response associations. In other words, analysis of the learning environment or context is of great importance, maybe, even before the creation of the instruction. Such an approach would put needs assessment on the table as well in order to make sure that there is a real need for instruction depending on the learning context in question. Since similar situations embedded in the same contexts are expected to promote transfer by behaviorism, arrangement of stimuli and their possible consequences should be made in similar contexts. As a result, as also stated by Ertmer and Newby (1993), behaviorist approach offers the following practical suggestions: analyzing task, analyzing learners, creating measurable learning objectives, ordering instructional elements from simple to complex, using reinforcements, providing corrective and reinforcing feedback to promote desired responses and rule out undesirable ones, repeated practice (this is in line with the spacing-effect),and directing learners in the desired learning path by means of prompts and cues. As the effect of all these may depend on learners, task and the learning environment, it is also important to add analyses of all these to the instructional model or path taken by IDers while constructing a learning environment.

All these are totally in line with behaviorist understanding of learning: stable change of the desired behavior over time. This seems to be beneficial for the following learning types: recall of factual or declarative information, reaching generalizations based on facts and concepts, building associations in that providing explanations for similar stimulus-response chains, and chaining information steps included in a learning task. Consequently, it seems to be appropriate for designing instruction when information to-be-learned is factual, explicit, and sequential, learning goals address lower level skills, and when learners have a relatively low level of prior knowledge on a given topic. All these appear to suggest that behaviorist strategies may be helpful at the very beginning while introducing the learning materials or tasks to especially novice learners to establish a background or foundation knowledge needed to do further higher level tasks.

As for instructional designers who may also be the instructor at the same time, they should provide the correct type of learning stimulus and try to make it guaranteed that stimulus-response associations are made correctly by the learners by providing: measurable and incremental goals and objectives to enhance shaping, structured presentation of information, reinforcement, corrective feedback, repeated practice situations in which cues or prompts are also provided, and desirable learning environment conditions. It is important to underscore once more that these are important to increase the frequency of desirable learning behavior for behaviorism. However, this approach seems not to be able to explain such possible scenarios as why some reinforcements may work while some others do not, why behavior itself does not constitute reinforcement for itself but we need extra reinforcements, and how learning is achieved without reinforcement based on intrinsic motivation. More important, the behaviorist perspective does not seem to explain how the phenomenon of learning itself occurs and what mechanisms an important role in this.

In total contrast to the passive role assigned to the learner by behaviorism, cognitive and information processing perspectives regard learners as active information processors who apply appropriate learning strategies. Consequently, it can be said that the main purpose of these approaches is to present learning material in as much effective and efficient ways as possible to learners so that their information processing is promoted. This is because learning is basically regarded as a mental or cognitive activity going beyond the task and environment. These are, of course, directly related to tasks to do and learning environment as well. As stated by Ertmer and Newby (1993), cognitivism supports similar claims to those of behaviorism. For instance, optimal environmental conditions should be provided in a variety of ways including examples, non-examples and the like and continuous practice with feedback should be provided so that encoding of information is enhanced. Accordingly, the main purpose of cues or prompts is to help the learner to employ or spark correct strategies to encode and transfer the information in question. After all, it is safe to claim that cognitive approach welcomes all behaviorist perspectives ranging from sequential instruction to repeated practice but apply them in order to enhance cognitive processing of information on the part of the learners. This implies that cognitivism also brings up an explanation of how learning process really occurs even though this explanation is limited to what is going on in an individual`s mind.

All these suggest that IDers should structure instruction in such a way that it encourages active participation of the learner in getting the objective knowledge existing out there. Ertmer and Newby (1993) list the following implications of the cognitive perspective for IDers: instigating learner control, providing chances to employ metacognitive strategies, determining cognitive aspects of tasks through cognitive task analysis, encouraging employment of learning strategies ranging from summarizing to figuring out main points, and tapping prior knowledge to make new information more relevant. Specifically speaking, each theory or paradigm under the umbrella of cognitivism appears to present deeper insights of the cognitive perspective.

As its name suggests, cognitive information processing regards learners as information processors. Needless to say, memory and appropriate encoding of information carry great importance for this perspective. To promote encoding of information, then, it must be organized and structured properly (e.g., chunking, mnemonics, concept or mind maps, cause and effect chains etc.), enough number of practice should be inserted into instructions to facilitate encoding information, strategies that tap prior knowledge, attention, encoding and retrieval of information should be included (cues, prompts, interesting questions, analogies, different sorts of text structures present in different colors, bold, italicized etc., learner control over learning should be encouraged by implementing interactive and appropriate activities such as elaboration and rehearsal. Interestingly enough, as you can remember, we have seen some of the strategies above while talking about behaviorism as well. For instance, rehearsal or repeated practice is one of them. It is clear that the same strategy can be suggested by different theories to promote learning from different angles.

As for meaningful learning and schema theory, they go one step further and explain how information can be encoded or learned more effectively: instruction should be meaningful to learners, which also includes tapping of prior knowledge, and related information pieces should be presented together to both increase the meaningfulness of the learning material and to ease schema construction. This can be achieved in different ways including advanced and comparative organizers, organizing information for it to make sense to learners, relating it to learners` own experiences. Moreover, learners should be given different chances to test their predictions and explanations, and to ask questions through self-teaching, teaching another student, finding possible mistakes and the like. Finally, learning material should be presented in such a way that it should decrease any amount of cognitive overload that may be imposed on learners` limited cognitive architecture. Different ways of achieving this include presenting information in more than one modality, presenting information pieces near each other in terms of both space and time, adding visual information to textual information no matter it is visual or verbal, eliminating redundant information, decreasing learning guidance as the expertise level of the learners increases, providing more guidance for the materials with a higher level of interacting elements and presenting information in a cohesive way. It seems that the addition meaningful learning and schema theory make to what information processing offers lies in how to facilitate information processing based on meaningfulness of input and to exceed possible limitations of our cognitive functions. In other words, processing of information is not an automatically guaranteed procedure but depends on characteristics of the information and the way in which it is presented to the learner. Turning back to task analysis put on the table by behaviorism, then, it is not only identification of subparts or information processing steps of a task but also how they interact with each other and possible prior knowledge, and how these are provided to the learners that make the total impact on learning outcomes.

Situated cognition seems to enlarge the concept of learning environment by “situating” learning into a context. Consequently, for situated cognition, learning cannot be separated from its context including activity or behavior, culture and language. In other words, learning does not include isolated discrete items to process and encode in memory only and its meaning does not only rely upon prior knowledge or the way in which information is presented but also on the context in which what is learned has a meaningful role in the overall meaningful, real life context. These imply that learning should be situated in socio-cultural contexts that promote transfer of information. As a result, instruction should also be situated in such real-life situated contexts in the form of learning communities or communities of practice and cognitive apprenticeships encountered frequently in graduate education. Anchoring instruction in such contexts is another way of promoting learning in that anchors (e.g., in the form of videos, stories etc.) situate learning in specific contexts that may make it meaningful for learners in real-life like situations. Such an approach would also base evaluation of learning on situations that can be provided to the learner. However, since to-be-learned information is continuously provided in relevant contexts, continuous diagnosis and assessment of learning is of great importance. This suggests that IDers should also reflect in assessment in situ as well. If we think about summative evaluation, then, it may important for IDers to determine during needs analysis part of the learning context whether learners would need to use the to-be-learned information in real-life contexts including communities in which they need to work collaboratively with others while determining whether to insert community practice or real-life situations into the instruction.

It is argued in the current paper that Gagne`s instructional theory and nine events of instruction functions more like a bridge between behaviorist and cognitive perspectives discussed so far. For instance, while repeated practice and review are suggested for intellectual and motor skills, building a meaningful context for verbal information is suggested for verbal information. Gagne`s types of learning outcomes may give IDers invaluable insights into what type of learning to-be-learned information constitutes and how to organize information in order to enhance learning outcomes in a given situation. Gagne`s nine events of instruction also appear to bear this blended nature of being cognitive-behavioral. To illustrate, setting objectives and informing learners of these appear to be more closely related to behaviorism, tapping prior knowledge and gaining attention seem to relate more to cognitive paradigm. It should also be noted that all these events have a corresponding internal phenomenon or process, which implies that Gagne`s theory favors instructional events that promote these internal, cognitive processes. All these have direct implications for how to design instruction. For example, encourage repeated practice and review through activities in such a way that it is not just a routine drill and practice but it increases the level of retention and transfer on the part of learners. Finally, it should be reminded once more that learning conditions specified by Gagne offer a clear guide to IDers while designing and analyzing learning environments based upon each learning category.

Furthermore, just like cognitive and cognitive-behavioral perspectives discussed so far, constructivism also assumes that learning is a mental activity. It is actually through such mental activities that we construct our own meaning out of learning materials. In other words, knowledge is not something static that exists somewhere out in the world and absorbed by our minds. Instead, it is actively constructed and assigned meaning by our minds. This also implies that already-constructed knowledge is not static in mind either suggesting that it is possible to change it through new experiences in new learning situations. Additionally, since both learners and the learning conditions are pivotal for learning, it is important to engage learners in authentic learning tasks embedded in real-life conditions that are naturally challenging. Needless to say, this further contributes to transfer of information into one`s own life. Based on these, it is safe to contend that the basic job of IDers is to provide learners with challenging real-life tasks and contexts in which they constantly construct knowledge by interpreting it from multiple perspectives in meaningful contexts. Likewise, Ertmer and Newby (1993) lists the following implications of constructivism for IDers: setting learning in meaningful contexts, engage learners in a constant use or application of what is learned, review information in different contexts and from different perspectives over time, let learners go beyond problem-solving and reach problem identification, and evaluate learning based on new situations or problems.

Even though Piaget himself did not talk about instructional insights of his perspective, there are a few instructional principles associated with Piaget`s cognitive development theory. These are stated by Driscoll (2005) as follows: 1) children (learners also) should be actively engaged in learning by means of learning environments that encourage this, 2) peer interaction should be encouraged, and 3) children or learners should be encouraged to notice the discrepancies existing in their learning in order to assimilate to accommodate new information. Consequently, I think that even though Piaget`s theory, especially stages, refer to cognition to some extent, in the light of the instructional implications derived from these, it would be more appropriate to place it under the umbrella of constructivism rather than cognitivism or in between. For instance, this theory appears to suggest that IDers provide learners with authentic and rich learning environments in which learners are also given the chance to construct and question knowledge through cognitive conflict. Further, IDers should provide learners with activities in which they can experience inconsistencies existing in the learning material and/or inconsistencies they can create, and peer interaction is supported.

Because Bruner`s idea of discovery learning also centers around individuals` discovery of knowledge through their own minds, it can be placed under constructivism. Needless to say, this is not letting learners get lost during their discovery or inquiry-based attempts. Then, the job of IDers is to provide learners with appropriate explorative activities through which they reflect on their learning and find contrasts based on their prior knowledge. It seems to be possible that through such discovery, learners may reach wrong, inconsistent, and incomplete conclusions. Then ,IDers` job appears to be not to prevent these but first to be aware of these based on analysis part of the instructional design and construct learning situations in which learners become aware of where the fault, inconsistency, and incompleteness lie, thus triggering further discovery and inquiry on the part of the learners. Likewise, Vygotsky suggested socio-cultural learning contexts in which social interaction is used as a means for learners to engage in internalization of learning materials that are within their zone of proximal development. Additionally, closely related to his idea of zone of proximal development, Vygotsky suggested the use of scaffolds while learners deal with learning activities that are slightly in advance of their developmental level. These imply that IDers should design collaborative and/or cooperative learning activities that engage learners in relatively challenging tasks and provide timely scaffolds for learners not to get lost totally during learning. Namely, activities should be designed in such a way that appropriate level of guidance is provided to learners for them to be able to transform from their existing knowledge level to the new one. All these suggest that instructional strategies undertaken by IDers should be appropriately supplantive or generative depending on prior knowledge of learners.

Going back to the parent framework of constructivism, then, it does not suggest leaving learners alone in their efforts of constructing knowledge totally but providing them with such independence incrementally. All these refer us back to the importance of the analysis phase of instructional design: learner, task, and context analysis. Consequently, these diagnostic tools should be planned and implemented carefully by instructional designers. Following constructivist perspective, IDers should also design learning environments including authentic tasks that are also embedded in learning contexts close to the real-life conditions where knowledge is assumed to be used. In other words, activities designed should be appropriately challenging, realistic and relevant to learners so that they can instigate meaningful learning. Additionally, IDers should provide learners with learning experiences in which they not only construct their own understanding but also negotiate it cooperatively and/or collaboratively through social interaction as well as supplying scaffolds that will guide learners while undertaking tasks that are appropriately challenging for them.

In summary, learning theories reviewed in the present paper appear to approach the complex phenomenon of learning from certain perspectives base on learners, tasks and learning environments. According to Driscoll (2005), this makes them inevitably “provisional and limited” (p. 411). It is claimed in the present paper that this further entails development of an eclectic/hybrid/blended approach to learning on the basis of learners, tasks and learning environments on the part of IDers. This is a huge endeavor making IDers have insights into different learning theories in order to diagnose instructional problems appropriately and come up with appropriate solutions to these problems. It is further suggested by the current paper that this is not only limited to the design phase of instructional design but also may penetrate into other phases, especially the analysis part. This further means that learning theories carry a high amount of practical applications or implications that both shape and get shaped by IDers` diagnostic capability.

**Conclusions**

Just like teaching, designing instruction or being an IDer appears to be an ill-structured profession. This partly emanates from the fact that learning is quite complex and may depend on three main factors – learners, tasks, and learning environments- all of which may be shaped by a lot of individual differences. This necessitates an eclectic/hybrid/blended approach to learning and having such knowledge of existing learning theories. However, some commonalities regarding learning can also be established through biological knowledge of learning and brain while designing instruction and trying to find solutions to possible instructional problems. At the first glance, all these may seem to refer to a huge amount of knowledge on the part of IDers. Needless to say, having such knowledge would not be very useful for IDers as long as they are not able to turn this knowledge into practical applications that may need to be made suddenly and immediately.

It is argued in the present paper that decisions of when and how to use insights from learning theories may depend on the characteristics of learners, tasks and the learning environment. To illustrate, if learners have a low level of prior knowledge it may be too early to try to engage them in problem-solving or bringing up new solutions to a designated problem through authentic tasks. No matter how much learners are ready to do a task or a task is one that is appropriately designed for a given group of learners, learning environment should also be ready to afford all the requirements made on learners. Each point of this delicate process is open to new and continuous adjustments informed by different learning theories.

Another argument made in the current paper is that learning theories have a potential to impact instructional design profession not only in the design and development phases but also in other phases as well. For instance, what to analyze regarding a particular task or learner group can be informed by learning theories (e.g., prior knowledge, affective and cognitive entry behaviors, amount of cognitive load a task imposes in its current form, what to evaluate during summative evaluation based on objectives, what to ask content or design experts to focus on during formative evaluation).

Going back to the Chinese proverb “Tell me and I'll forget; show me and I may remember; involve me and I'll understand.”, it seems that teachers and IDers` job of involving learners in learning itself seems to be challenging and that these people need to have a solid background or understanding of learning theories in order to achieve this. It is also interesting to observe that there seems to be a transition from behaviorism to cognitivism and then to constructivism from the first phrase to the third one of the proverb. It is clear that this does not mean IDers should take what learning theories offer as prescriptions that should be applied word by word. Depending on each learning context (including learners, tasks, and learning environment) IDers may also need to adapt what learning theories offer. Needless to say, this can be achieved through insights coming from learning theories again. All these mean that IDers need to undertake “systematical eclecticism” (Snelbecker, 1989, as cited in Ertmer & Newby, 1993, p. 70). This is simply because learning theory is a pivotal part of instructional design or theory that bridges learning outcomes with learning conditions. After all, the profession of instructional design seems to need IDers to involve themselves in what learning outcomes are achievable under what conditions in order to be able to design good instruction that fits a specific learning context through well-designed tasks, which refers to the existence of cross roads leading to learning.

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