

Is There One Best Learning Theory for Instructional Design?

Why bother with Theory at all?

A solid foundation in learning theory is an essential element in the preparation of ISD professionals because it permeates all dimensions of ISD (Shiffman, 1995).

Depending on the learners and situation, different learning theories may apply. The instructional designer must understand the strengths and weaknesses of each learning theory to optimize their use in appropriate instructional design strategy. Recipes contained in ID theories may have value for novice designers (Wilson, 1997), who lack the experience and expertise of veteran designers. Theories are useful because they open our eyes to other possibilities and ways of seeing the world. Whether we realize it or not, the best design decisions are most certainly based on our knowledge of learning theories.

An Eclectic Approach to Theory in Instructional Design

The function of ID is more of an application of theory, rather than a theory itself. Trying to tie Instructional Design to one particular theory is like school vs. the real world. What we learn in a school environment does not always match what is out there in the real world, just as the prescriptions of theory do not always apply in practice, (the real world). From a pragmatic point of view, instructional designers find what works and use it.

What Works and How Can We Use It?

Behaviorism, cognitivism and constructivism - what works where and how do we knit everything together to at least give ourselves some focus in our approach to instructional design? First of all we do not need to abandon the systems approach but we must modify it to accommodate constructivist values. We must allow circumstances surrounding the learning situation to help us decide which approach to learning is most appropriate. It is necessary to realize that some learning problems require highly prescriptive solutions, whereas others are more suited to learner control of the environment. (Schwier, 1995)

Jonnassen in *Manifesto for a Constructive Approach to Technology in Higher Education* ([On-line]) identified the following types of learning and matched them with what he believes to be appropriate learning theory approaches.

1. Introductory Learning - learners have very little directly transferable prior knowledge about a skill or content area. They are at the initial stages of schema assembly and integration. At this stage classical instructional design is most suitable because it is predetermined, constrained, sequential and criterion-referenced. The learner can develop some anchors for further exploration.

2. Advanced Knowledge Acquisition - follows introductory knowledge and precedes expert knowledge. At this point constructivist approaches may be introduced.

3. Expertise is the final stage of knowledge acquisition. In this stage the learner is able to make intelligent decisions within the learning environment. A constructivist approach would work well in this case.

Having pointed out the different levels of learning, Jonassen stresses that it is still important to consider the context before recommending any specific methodology.

Reigeluth's Elaboration Theory which organizes instruction in increasing order of complexity and moves from prerequisite learning to learner control may work in the eclectic approach to instructional design, since the learner can be introduced to the main concepts of a course and then move on to more of a self directed study that is meaningful to them and their particular context.

After having compared and contrasted behaviorism, cognitivism and constructivism, Ertmer and Newby (1993) feel that the instructional approach used for novice learners may not be efficiently stimulating for a learner who is familiar with the content. They do not advocate one single learning theory, but stress that instructional strategy and content addressed depend on the level of the learners. Similar to Jonassen, they match learning theories with the content to be learned:

... a **behavioral approach** can effectively facilitate mastery of the content of a profession (knowing what); **cognitive strategies** are useful in teaching problem-solving tactics where defined facts and rules are applied in unfamiliar situations (knowing how); and **constructivist strategies** are especially suited to dealing with ill-defined problems through reflection-in-action. (Ertmer P. & Newby, T., 1993)

Behavioral

... tasks requiring a low degree of processing (e.g., basic paired associations, discriminations, rote memorization) seem to be facilitated by strategies most frequently associated with a behavioral outlook (e.g., stimulus-response, contiguity of feedback/reinforcement).

Cognitive

Tasks requiring an increased level of processing (e.g., classifications, rule or procedural executions) are primarily associated with strategies having a stronger cognitive emphasis (e.g., schematic organization, analogical reasoning, algorithmic problem solving).

Constructive

Tasks demanding high levels of processing (e.g., heuristic problem solving, personal selection and monitoring of cognitive strategies) are frequently

best learned with strategies advanced by the constructivist perspective (e.g., situated learning, cognitive apprenticeships, social negotiation).

(Ertmer P. & Newby, T., 1993)

Ertmer and Newby (1993) believe that the strategies promoted by different learning theories overlap (the same strategy for a different reason) and that learning theory strategies are concentrated along different points of a continuum depending of the focus of the learning theory - the level of cognitive processing required.

Ertmer and Newby's suggestion that theoretical strategies can complement the learner's level of task knowledge, allows the designer to make the best use of all available practical applications of the different learning theories. With this approach the designer is able to draw from a large number of strategies to meet a variety of learning situations.

在教学设计中有最好的一个学习理论吗？

* 是什么限制着学习理论的呢？

一个坚实的学习理论基础是 ISD 专业人士的设计准备过程中的一个必要的元素，因为它渗透于 ISD 的所有细节 (Shiffman, 1995)。根据学习者及其学习情况，可以才采用不同的学习方法和理论。

教学设计者一定要了解每个学习理论的优点跟缺点，使用适当的教学设计策略，从而使教学达到最佳化。包含在教学设计中的一些原则可能对那些缺乏经验的教学设计新手有很大的帮助 (Wilson, 1997)。学习理论是有非常用的，因为它们可以开阔我们对其他可能性的想象还有改变我们看待世界的方法。不管我们是否认识到这一点，最好的设计方案大多是建立在我们对学习理论的知识上的。

* 一种基于心理学上的教学设计理论

教学设计的功能不仅是理论的应用，而是高于理论的本身，有着更大的用处。尝试将教学设计与一个具体的教学理论等同起来就象把世界跟学校等同起来一样，都是片面的。我们所在学校中学习到的知识的并不总是与外面真实世界的一样，正如同理论知识并不就能顺利应用在实践中的一样。从实际的观点来看，教学设计者就是寻找那些适合的理论并应用它。

* 什么样的理论起作用？我们又如何能使用它？

行为主义，认知主义和建构主义——哪一个理论起作用和作用在哪里？我们又是如何把所有的因素结合起来，至少使我们在我们的教学设计方式中认识一些观点。首先我们不必抛弃系统的方法，而是应该修正它使它适应建构主义价值观。我们一定要让各种方式环境围住学习过程，以帮助我们决定哪一个方法最适合学习的。认清学习中产生的问题是要求很高的解决方法来解决，这是很必要的，从而知道是否还有其它的方法更适合学习者控制学习环境。(Schwier, 1995)

Jonnassen 在研究高等教育中有建设性的教学方法的宣言中定义以下的学习类型，还为之配套他认为合适的学习理论与方法。

1. 介绍式的学习 - 学习者有非常少直接的可转移超前的关于技巧和内容领域的知识。他们是在设计计划的汇编和整合的开始阶段。在这个阶段经典的教学设计是最适当的因为它是被预定、强制、继续的和以标准为参考的。学习者可以通过更深的探索进一步发展这些方法。
2. 进一步的知识的获得 —— 顺着介绍性的知识而且在内行的知识之前。建

构主义者可能更容易介绍这个方面。

2. 请求专长的意见是知识获得的最后阶段。在这个阶段中，学习者可以在学问环境里面做出聪明的决定。建构主义方式在这情况会做得的很好。

指出学习的不同层次水平后, Jonassen 强调推荐任何的特殊的学习论之前考虑上下文的仍然是很重要的。

Reigeluth苦心研究的理论，这个理论组织了逐渐增加指导的复杂程度，还有对学习者的先决的教学设计，因为学习者能被介绍到主要的课程观念然后对更多继续行进自己的指示了对这里理论是意义深长的他们和他们的特别前后问题的研究。

在把行为主义、认知主义 和建构主义进行比较后, Ertmer 和 Newby (1993) 感觉新手用的教学方式可能不能有效率的激励一个熟悉内容的学习者。他们不主张一个单一学习理论,但是教学设计的策略和内容演说的压力取决学习者的水平。类似 Jonassen 的理论，他们使教学理论与所学习的内容想匹配。

一个行为主义的教学方式能有效地帮助学生掌握内容;认知主义的策略在教学的问题方面是有用的；解决方法是把定义了的那些应用了的不熟悉的事实和规则中。；而且构成主义者的策略尤其被适合地处理一些经过反映或仍不清楚不清楚的问题。(Ertmer P. &Newby, T., 1993)

行为主义

工作任务需要低调的处理（举例来说，基本配对的协会、差别、机械式的背

诵凭记忆)像大部分是被策略帮助的,而且时常与行为主义的观点想联系(举例来说,刺激-回应,接近回应/增强).

认知主义

工作任务的解决需要逐渐增加水平的处理(举例来说,分类、规则或程序的实行)在强大的认知主义的强调中,主要地与有关策略相关(举例来说,概要的组织,推论,算法问题解决).

建构主义

工作任务的解决要求更多的高难度的处理(举例来说,由於启发式的问题解决,认知策略中的个人的选择和监控)是时常用到的。

Ertmer 和 Newby(1993)相信从不同的学问理论发展而来的新的教学策略(不同的方法理论产生的不同策略)和那个学问理论策略是关于不同的学习理论的精华部分的- 认知主义处理水平是要求认识的。理论上的策略能补助学习者的工作知识的水平。

Ertmer 和 Newby's 提议,允许设计者制造不同的学习理论的所有可得的实际申请的最好使用。借助这种方法,设计者能够从很多的策略拉出经常遇见的多种学习情形。