

Instructional Design Approaches, Types and Trends: a Foundation for Postmodernism Instructional Design

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Abstract: This study will examine the approaches toward instructional design that have been applied to date. A summary of the diverse types of instructional models will be classified them into various categories of instructional design. The evidence from many researches and theoretical discussions show and supports the classification of these instructional design categories. This study also investigates which existing trends are present in current instructional models. The most recent models have been designed under constructivism, but some of these models are considered postmodernism philosophy. Due to these new and hidden considerations we have developed and would to suggest a new trend in this field. In addition, we mention some reasons for this new trend based on social movements. The mentioned movements have been effected by postmodern philosophy. We attempt to propose an instructional design trend based on postmodernism orientation that named postmodern instructional design.

Key words: Instructional design, Constructivism, postmodernism, postmodernism instructional design, ID, ISD, C-ID, P-ID.

INTRODUCTION

The majority of the literature on the application of new technologies in education focuses on the effectiveness of the technologies, such as web-based distance education or educational media and emphasizes structure (converting existing, traditional course materials to new formats) or a teacher's interaction with learners respectively, but they don't reflect the scientific approach necessary to separate which - and why - of the technologies are more effective, and how learning outcomes are different in each program. This requires consideration of the design materials, methods, and courses during the instructional process (Lee & Rha, 2009).

Instructional design is the process of planning instruction, delivering instruction, and assessing student learning (Skowron, 2006). Instructional design is broader than the instructional strategies that a teacher uses in the classroom. Ryder (2010) defines Models of instructional design as a visual representation or framework of the process.

Instructional design is often taught in a procedural manner, but a number of researchers and theorists view instructional design as a form of complex problem solving (Hardré, Ge, & Thomas, 2006; Jonassen, 2000; Perez & Emery, 1995; Silber, 2007).

A broadly used Instructional Design (ID) method for teaching, learning and training courses is an instructional system design (ISD) model designed or used as a practical guide. There are more than a hundred varied ISD models, and many of these models are based on the basic ISD "ADDIE" model. This model employed a linear procedure for designing, where each phase is engaged one at a time, and each phase is based on the earlier phase (McDonald & Mayes, 2007).

The ADDIE model or models assumed to be ADDIE, but their study in this field illustrated that instructional design processes are much more diverse and varied than the ADDIE model bases. It shows the designers usually follow old models without considering different conditions.

Furthermore, the ISD approach is a behavior-oriented model which insists that fixed abilities be learned and that the trainees' abilities show these qualifications. It shows that the ISD models fall under behaviorism and cognitivism learning theory (Elengold, 2001).

As opposed to behaviorism and cognitivism learning theories, designers have recently employed or created constructivism instructional design (C-ID) models, and updated the paradigm to achieve the predetermined educational results. The constructivism theory of learning and epistemology is used to cover and obviate previous learning theories like behaviorism and cognitivism. This paper, in first part, provides an overview of instructional design approaches, types and trends. An instructional design approach section will discuss the level of instructional design. Continually, instructional design types reflect the previous and current models that have been used in this field. Moreover, instructional design trends part investigate instructional design trends from the past, present and provide a foundation for future.

Instructional Design Approaches:

Models assist us in the understanding of a process or system, putting complicated real life situations into easy steps that are flexible in application. An instructional design model shows how people learn; it is a guide as to how an instructional designer develops the instruction (Gustafson and Branch, 2002).

Although the representation of many instructional designs in diagrammatic form may look inflexible and single-dimensioned, they are in fact interactive (Moore, Bates & Grundling, 2002). Most offer flexibility and allow options to decide on the nature of each step. Such flexibility and the available of options is one of the reasons why ISD has not only survived but prospered for such a long time without being significantly changed.

The type of model is determined by the personal theoretical beliefs of individual designers and such theoretical leanings - behaviourism, cognitivism, constructionism - are therefore reflected in their models.

As Gros *et al* (1997) describe it, Instructional design models are present or find a relationship between learning theories and the building instructional systems activity. On the other hand, taxonomy has been developed by Gustafson and Branch (2002) based on specific characteristics of models. These classifications explain models as being systems-oriented, product-oriented, or classroom oriented.

Systems-oriented models usually have an output of a curriculum or educational programs or course. models that are product-oriented generally have an output of an instructional and training tools or package; and Classroom-oriented models typically have an output of one or a few hours of classrooms activities and instruction; classroom, instructor, and students have been assumed as a piece of instruction process that needs to be improved in Classroom-oriented models. In comparison, Product-oriented models focus on educational procedure to make efficient productions. Systems-oriented models plan to present an inclusive instructional system for organizing learning activities and needs (Prestera, 2010). Three key aspects in the taxonomy are the grade of instructional design skills that needed to activate the model, the level of front-end examination, and the extent of determined assessment in a model.

Instructional design skills vary from model to model: a low level applies to classroom-oriented models; high levels are for models that are product-oriented and models that are system-oriented are at a very high level. The situation is similar to front-end analysis, with low levels of analysis for classroom-oriented models, medium analysis in the case of product-oriented models, with systems-oriented models demanding an extremely high level of skill analysis.

Finally, in the consideration of evaluation, the situation is somewhat different: there is low to medium evaluation level in the case of classroom models, a high level when it comes to the product-oriented and medium to high level evaluation in the case of systems-oriented models.

It is interesting to note that each of the discussed and compared models is matched by one of the described orientations of Gustafson and Branch taxonomy.

The Instructional Systems Design (ISD) process, commonly referred to as ADDIE, has become the guiding design process in instructional design and it presents steps in a prescribed sequence (Rossett, 1987). The linear sequence of ADDIE has been criticized and challenged due to the impact of computer technology coupled with evolving theories of learning and design (Bransford, 1991; Hakkinen, 2002; Hannafin & Hill, 2002; Jonassen, 1991; Kays & Sims, 2006). Bransford (1991) depicted traditional instructional design as based on objectivism while the major learning theory in education has been constructivism. Instructional designers and technologists have been grappling with how to design instruction based on the newer theory of constructivism (Jonassen, 1994).

The learning theory of constructivism is the dominant theory in education and it has had an impact on instructional design since objectivist designs focused on instructional objectives, task and content analysis, and criterion-referenced assessment (Jonassen, 1991). Although the ADDIE model has much strength, more sophisticated models of designing instruction have been called for that support the more open computer-based learning environments, emphasize deep, rather than surface knowledge, and focus on customized models that support teamwork (Hakkinen, 2002).

In addition to constructivism, other postmodern views have influenced instructional design models. Hakkinen (2002) suggests that the concepts of participatory design and cooperative design, as well as the value of user-designers, are indicative of a new, emergent approach to design. Kays and Sims (2006) present an emergent theory for designing courses in education that is an extension of learner-centered design and deals with complex problem solving using networked communities.

Hakkinen (2002) states that instructional design has a history of developing in isolation away from other fields of teaching, learning, and technology. Wilson (1997) argues that communication between the instructional designer and subject matter experts needs to move beyond the superficialities that occur with the extraction of information in traditional design processes to synthesis meaning.

Recent diversity and discussion of instructional theories and instructional design processes is necessary, but also a challenge for instructional designers (Jonassen, 1994).

Instructional Design Types:

The first models of instructional design are categorized as Instructional design models. But, integral to the instructional design shift is the direct contrast between linear models of instructional design and nonlinear dynamic models.

The development of instructional systems is a linear process in which authoring activities proceed with the output of one-step becoming the input to the next. It does not adjust the components to meet or respond to a need that may be occurring outside the process (Tennyson, 1997).

Tennyson (1997) notes that efforts to modify the linear approach can be seen in the rise of models during the 1980s that exhibited phases or layers to adjust the authoring activities, but that the practice continued as a linear method of instructional design.

Furthermore, Tennyson writes that a positive contribution of the phases approach has been the increased use of emerging technologies and the application of cognitive learning to the design of learning environments. The dynamics approach in ISD makes nonlinear and dynamic systems atmosphere. Thus, the systems dynamic approach extends the capacity of instructional design in the development environment.

According to Tennyson (1997: 413), instructional systems development is a means by which learning environments can be effectively designed and produced theories of learning, technology, measurement, and management. On the other hand, he also clarifies that the complexity of instructional systems design procedure may reduce instructional design's success and efficiency.

ISD is an instructional design concept to assist in the design, development, evaluation and delivery process of educational programs. An important technique provides verified methods for constructing practical training programs. The people who are engaged with the ISD method, including managers, designers & learners, must control the ISD model process. They shouldn't be controlled by ISD processes. Based on these assumptions, human resource managers in such organization must change the steps or process in ISD procedure when they face unexpected problems.

After these kinds of instructional models, other instructional models have come into existence following the learning theories. The last kind of instructional models, called Constructivist Instructional Design models, are shown by C-ID models.

Willis (1995) describes the next characters for constructivist- interpretivist consideration in instructional design model:

The ID procedure is non-linear, recessive, and sometimes chaotic.

Planning is reflective, systematic, developmental, and shared activity.

Objectives and aims appear among design and development steps.

There are no general ID specialists.

Learning in meaningful atmosphere has been emphasized in Instructional activities.

The critical evaluation is formative assessment.

One of the main important data is subjective data.

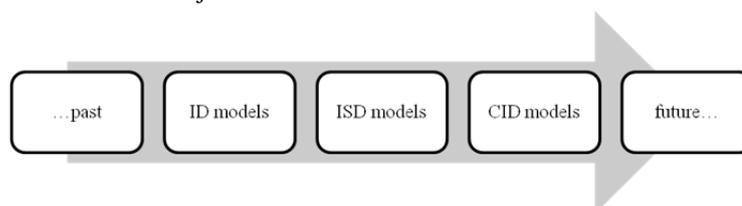


Fig. 1: Types of ID Models.

Willis (1995), referring to various kinds of instructional systems design models, claims that predetermined educational objectives do not lead educational and curriculum development; rather they emerge throughout the development process.

Overall, it is possible to summarize the ID types according to Figure 1:

Instructional Design Trends:

This section will explain the main three contemporary trends in ID. For this, an overview of the first decade of the twenty-first century is required. Three broad movements are active in areas known as Instructional Design or ID, and they are not all going in the same direction. The three movements are:

Traditional ID Scholarship Based on Positivist Epistemologies:

The most popular example of this movement is the Dick, Carey, and Carey (2006) ID model. The Dick and Carey ID model is the most popular example of a type of ID model repeatedly referred to as instructional systems design. Besides, a specific example of a generic ID model called ADDIE has five sequential phases: Analysis, Design, Development, Implementation, and Evaluation. A great many ID models in use today are variations of the ADDIE model.

The Design-Based Research (DBR) Movement:

This is an effort to integrate design and research in ways that advance both our basic or theoretical knowledge and at the same time create high quality educational resources. A book edited by a group of scholars at the Universities of Twente and Utrecht in the Netherlands Akker, Gravemeijer, McKenney, & Nieveen (2006) is one of the first book-length treatments of DBR. What sets DBR apart from other approaches to ID is that it tries to solve a local problem by designing effective instructional resources or procedures while making an effort to create knowledge that has a broader application than the local context. DBR is thus positivist in its view, and advocates typically remain optimistic that the positivist agenda of finding law-like truths about human behavior is possible.

Constructivist-ID Models (C-ID):

ID models based on interpretive epistemologies and constructivist theories of teaching and learning have begun to appear in the last two decades (Cennamo, Abell, & Chung, 1996; Cennamo, Abell, Chung, Campbell, & Hugg, 1996; Johari, Chen, & Toh, 2005; Lebow, 1993; Willis, 1995, 2000; Wilson, 1997).

These models tend to reject the idea that there are universal laws of teaching and learning that are applicable across educational contexts. C-ID models tend to emphasize the importance of understanding the local context and considering those when creating new educational resources.

C-ID models also tend to emphasize collaborative development procedures, and they typically take a nonlinear and iterative or recursive approach to development. That is, you do not necessarily follow a sequence of steps in which Step 1 must come before Step 2, which must come before Step 3. C-ID models generally adopt a process that involves jumping back and forth from one task to another throughout the development process. Constructivist trends have been affected by postmodern philosophy. Willis (2009) explained that the ID has changed over the past few decades. He drew Figure 2 to show the trends in educational design.

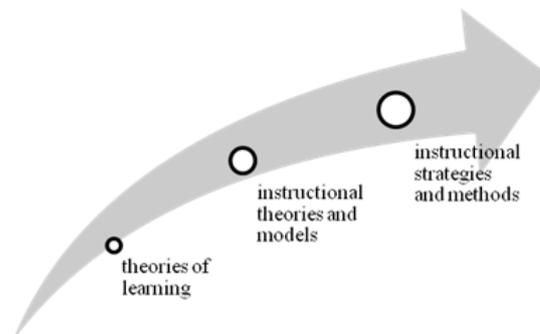


Fig. 2: Main Three Contemporary Trends in ID.

Discussion:

Instructional Design in Future:

Compared to behaviorism and cognitive learning theories, designers have recently employed or created constructive instructional design (C-ID) models, and have updated the paradigm to achieve the predetermined educational results. Willis (2011) said that the majority of constructivist instructional design models are not postmodern in their direction. For example, in psychology, Piaget and Vygotsky were modern in their constructivism orientation that reflected the thoughts of human beings. Some other popular instructional design models such as Spiro, Jonassen, Resnick, and Lesgold show varying levels of postmodern thought in their consideration under constructivism theory. It is feasible for instructional designers to have a constructivist standpoint in spite of their traditional or modern viewpoints about methods or learning theories.

Obviously, the constructivist instructional design models are affected by postmodern philosophy. But these types of instructional design models are combinations of previous learning theories and assume a postmodern viewpoint.

The last impressive social and cultural movement is postmodernism. Moreover, educational changes will be affected by these movements away from the modern era to postmodern era. Based on this, there is no doubt that the coming instructional design models will be postmodern instructional design models. Besides, it is possible to find some postmodern affects in instructional design field as mentioned before.

We call this kind of instructional design model postmodern instructional design models (P-ID) that will come after constructivist instructional design models (C-ID). The differences between P-ID models and other kinds of models will be the assumption of this new trend. P-ID models will reflect all postmodern thoughts in its procedure. Accordingly, we offer the following figure for instructional design trends from past to future.

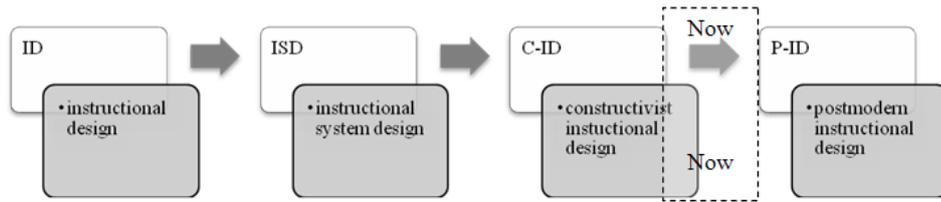


Fig. 3: Instructional Design Trends from past to Future.

Conclusion:

The paper has discussed instructional design approaches in three different domains. First, it shows that designers have to look at instructional design as a diagrammatic or theoretical process. Second, they determine the instructional design process according to their learning theory desires. The main learning theories are behaviourism, cognitivism and constructionism. Third, the instructional design process has been divided in three different orientations, which are classroom oriented, product-oriented, or systems-oriented. In addition, the types of instructional design types have been identified. The main types are instructional design (ID), instructional system design (ISD), and constructivism instructional design (C-ID). The instructional design process has been narrowed from the general to the situated perspective during its history. Finally, three trends of instructional design have been investigated. These trends are traditional ID scholarship based on positivist epistemologies, the Design-Based Research (DBR) Movement, and constructivist-ID models. Some of constructivist-ID models have been affected by postmodern philosophy in their process.

Base on progressive changes under postmodernism philosophy in the present day, we propose a new generation of instructional design methods and trends. It will be a postmodern instructional design (P-ID) that reflects postmodern ideas and assumptions rather than learning theories. We believe that postmodernism challenges educational and learning theories, goals and assumptions. Postmodern instructional design (P-ID) will discover new models for the new era in educational activities.

REFERENCES

Bransford, J., 1991. Some thoughts on constructivism. *Educational Technology*, 31(9): 16-18.
 Cennamo, K.S., S.K. Abell and M.L. Chung, 1996. A "Layers of Negotiation" model for designing constructivist learning materials. *Educational Technology*, 6: 39-48.
 Dick, W., L. Carey, and J. Carey, 2006. *The systematic design of instruction* (6th ed.). Boston: Allyn and Bacon.

- Elengold, L.J., 2001. Teach Smes To Design Training: American Society for Training & Development.
- Gros, B., J. Elen, M. Kerres, J. Merrienböer and M. Spector, 1997. Instructional design and the authoring of multimedia and hypermedia systems: Does a marriage make sense *Educational Technology*, 37(1): 48-56.
- Gustafson, K.L. and R.M. Branch, 2002. Survey of instructional development models (4th ed.). ERIC Clearinghouse on Information and Technology. Syracuse, New York: Syracuse University.
- Hakkinen, P., 2002. Challenges for design of computer-based learning environments. *British Journal of Educational Technology*, 33(4): 461-469.
- Hannafin, M. and J. Hill, 2002. Epistemology and the design of learning environments. In R.A. Reiser & J.V. Dempsey (Eds.), *Trends and issues in instructional design and technology* (pp. 70-82). Upper Saddle River, NJ: Prentice Hall.
- Hardré, P.L., X. Ge and M.K. Thomas, 2006. An investigation of development toward instructional design expertise. *Performance Improvement Quarterly*, 19(4): 63-90.
- Johari, A., C. Chen and S. Toh, 2005. A Feasible Constructivist Instructional Development Model for Virtual Reality. (VR)-Based Learning Environments: Its Efficacy in the Novice Car Driver instruction of Malaysia. *Educational Technology Research and Development*, 53(1): 111-123.
- Jonassen, D.H., 1991. Objectivism versus constructivism: Do we need a new philosophical paradigm? *Educational Technology Research and Development*, 39(3): 5-14.
- Jonassen, D.H., 1994. Thinking technology: Toward a constructivist design model. *Educational Technology*, 34(4): 34-37.
- Jonassen, D.H., 2000. Toward a design theory of problem solving. *Educational Technology Research & Development*, 48: 63-85.
- Kays, E. and R. Sims, 2006. Reinventing and reinvigorating instructional design: A theory for emergent learning. Paper presented at the proceedings of the 23rd annual ascilite conference: Who's learning Whose technology? Ascilite 2006 Conference, Sydney, Australia.
- Lebow, D., 1993. Constructivist values for instructional systems design. Five principles toward a new mindset. *Educational Technology, Research, and Development*, 41(3): 4-16.
- Lee, H.J. and I. Rha, 2009. Influence of Structure and Interaction on Student Achievement and Satisfaction in Web-Based Distance Learning. *Educational Technology & Society*, 12(4): 372-382.
- McDonald, J. and T. Mayes, 2007. The changing role of an instructional designer in the implementation of blended learning at an australian university. In M. J. Keppell (Ed.), *Instructional design: case studies in communities of practice*. London: IGI Global.
- Moore, Dermot, Bates, Annemarie, and Grundling, Jean., 2002. Instructional design. In Mishra, Arun K. and Bartram, John (Ed.) *Skills development through distance education [on-line]*. Available: <http://www.col.org/skills/>.
- Perez, R.S. and C.D. Emery, 1995. Designer thinking: How novices and experts think about instructional design. *Performance Improvement Quarterly*, 8: 80-95.
- Prester, Gus., 2010. Instructional Design Models [on-line]. Available: http://www.personal.psu.edu/users/g/e/gep111/html/M4/L1%20-%20ISD/M4L1P1.htm#m4l1p1_intro.
- Rossett, Allison., 1987. *Training needs assessment*. Englewood Cliffs, NJ: Educational Technology Publications.
- Ryder, M., 2010. Instructional design models. Retrieved from http://carbon.cudenver.edu/~mryder/itc_data/idmodels.html.
- Silber, K.H., 2007. A principle-based model of instructional design: A new way of thinking about and teaching ID. *Educational Technology*, 47(5): 5-19.
- Skowron, J., 2006. *Powerful lesson planning: Every teacher's guide to effective instruction*. Thousand Oaks, CA: Corwin Press.
- Tennyson, R.D., 1997. Planing and desicion making, introduction and overview. In S. Dijkstra, N. Seel, F. Schott and R.D. Tennyson (Eds.), *Instructional design: Solving instructional design problems (2)*: Lawrence Erlbaum Associates, Inc., Publishers.
- Van den Akker, J., S. McKenney, N. Nieveen and K. Gravemeijer, 2006. Introduction to educational design research. In J. Van den Akker, K. Gravemeijer, S. McKenney, and N. Nieveen (Eds.), *Educational design research* pp: 3-7. London: Routledge.
- Visscher-Voerman, I., and K.L. Gustafson, 2004. Paradigms in the theory and practice of educational and training design. *Educational Technology Research and Development*, 52(2): 69-89.
- Wilson, B., 1997. Reflections on constructivism and instructional design. Retrieved February 27 from <http://carbon.cudenver.edu/~bwilson/construct.html>

Willis, B.G., 2011. The postmodern paradigm. Retrieved 27 from <http://carbon.ucdenver.edu/~bwilson/postmodern.html>

Willis, J., 1995. A recursive, reflective instructional design model based on constructivist-interpretist theory. *Educational Technology*, 35(6): 5-23

Willis, J., 2000. The maturing of constructivist instructional design: Some basic principles that can guide practice. *Educational Technology*, 40(1): 5-16.

Willis, J.W., 2009. Constructivist instructional design (C-ID): foundations, models, and examples: IAP-Information Age Pub.