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CHANGES IN ADULT INSTRUCTIONAL DESIGN PARADIGM

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Abstract: *Instructional design/ designing training activities for adults it is an activity that requires the anticipation of the steps that will be covered in the training process. The analysis of the main instructional design models highlights changes in training activities design paradigm, special for the adults, through changing from product-centered design models, to process-centered models and mixed models. Based on this categorization, this paper, in fact, covers the most common instructional models of design used in adult education. It, also, could be consider an answer for the imperious need which demands to develop a specific instructional design model for "blended learning" in the light of the new perspectives and challenges that Information and Communication Technologies bring. The term "blended learning" is used to describe a solution that combines several different delivery methods or the learning that mixes various forms of organizing activities such as face-to-face classrooms, e-learning, and self-paced learning.*

Keywords: *Instructional design, models of instructional design, adult education, blended learning, e-learning*

Training adults is now a priority direction in education throughout life. This requires laborious activities specific to the training process, with particular reference to its components: design, organization and implementation of educational activities for adults, assessing progress of learners. So, adult learning features should be considered such as: i. learning activity *objectives* - clearly established to be pursued by learner's ii. frequency and quality of *feedback*, iii. learning centered on *the addressed problem* not the content, proposed *learning experience* should be relevant to adults involved (applicability, utility of the things learnt) etc.

In this paper we will refer to the *design component* of adult instruction. This paper proposes an integrative approach of the design models for adult education, approach needed to educators but also to the educated, A quality training process could be considered as a complex process that seeks and rigorously. It means that designing training activity for adults refers to anticipating the steps which will be taken in the training process based on learning and instruction theories and learning and it benefits of its own set of indications of support. This process is based on a report of the learning needs analysis and training. Thus, it has the ability to design real finalities (objectives) which, in turn, it represents the real support for the design methodology of training (content, methods, techniques, specific means of learning and training, evaluation) which to be consistent with the objectives, namely with the need for training (Bernat, 2010). From this point of view, it is set a system of rigorous designed activities which, adequately implemented, monitored and evaluated properly, could ensure the success of training and learning. Their effectiveness is conditioned by a thorough preparation and the skillfulness of the teacher / trainer to adapt the design training models to the particular learning situations and students.

There are many **models of designing adult instruction**, in the specialized literature, that we classified (following direction of intervention, as criteria) as:

1. Product-centered design models (centered on the learning outcomes),
2. Process-centered models (centered on the components of the training process) and
3. Mixed models (centered on the learning outcomes but also on the pedagogical conditions in which they occur).

I. PRODUCT-CENTERED DESIGN MODELS (CENTERED ON THE LEARNING OUTCOMES)

Taxonomic models of the finalities of learning (Bloom, Anderson, Krathwohl, Simson so on) assume that any learning activity has a purpose, produces results / effects. Educational objectives, as expected learning outcomes, in relation to psychological nature of the capacity referred, were divided into three main domains:

- 1- Cognitive domain - objectives that refer to the acquiring of knowledge and the training of some intellectual capacity to work with this knowledge;
- 2- Emotional domain - objectives related to the formation of beliefs, attitudes or feelings;
- 3- Psychomotor domain - acquisition of motor skill.

1.1. Taxonomy of the cognitive domain

The best known cognitive domain taxonomy is the one proposed by Benjamin Bloom (1956) which uses, as a criterion for classification, the complexity of mental operations involved in each category of educational objectives, distinguishes six classes of behaviour:

1. *Knowledge* - refers to situations requiring the student only to recall from memory and explain some specific information: methods, procedures, classifications, theories;
2. *Understanding* - targets those objectives that seek: (a) the expression of information previously stored in another language ("translation"), (b) extrapolation of information to new situations, (c) interpretation of information;
3. *Application* - at this level, objectives require students to use abstractions (rules, formulas, so on.), beyond the context in which they were originally acquired;
4. *Analysis* - this class includes objectives involving surprising, through personal effort, of the premises (unexplained) from which was started in the design of a specific product, identification of a whole ("element analysis"), identification of logical and causal relations ("relations analysis"), surprising the principles of function or building of a category of products ("principles analysis");
5. *Synthesis* - involves objectives aimed to train the creative capabilities of students through: restructuring of ideas, capture new logic correlations, formulating personal conclusions, develop a personal work. A higher level in this class involves developing a personal research project of some phenomena or a personal plan of action in a field;
6. *Evaluation* - includes objectives that require students to make personal, motivated judgments of a work, referring to the accuracy, logical consistency, coherence, rigor ("assessment in relation to internal criteria"), as well as effectiveness, fitness for purpose or compliance with a model ("assessment by reference to external criteria").

An updated version of Bloom's taxonomy takes into consideration a large series of factors with a high impact on teaching and learning (Anderson, 1999). The revised taxonomy attempts to correct some of the original errors. The new taxonomy distinguishes between "knowing what", the content of thinking and "knowing how", the procedures used in problem solving. Knowledge dimension is represented by "knowing what" and has four categories: *factual* (definitions of concepts and knowledge about specific details), *conceptual* (classification and categories), *procedural* (methods and techniques) and *metacognitive* (knowledge about the thinking processes).

Size of Bloom's taxonomy, of cognitive processes reviewed, has, as the original, six capacities, from the simple to complex, expressed in verbs (not in nouns as in Bloom version): (a) recall, (b) understand, (c) apply, (d) analyze, (e) evaluate and (f) create.

According to this taxonomy, each level of knowledge could have a correspondent into a level of cognitive process, so that the learner can remember factual or procedural knowledge, understand conceptual or metacognitive knowledge or analyze metacognitive or factual knowledge. After Anderson and his colleagues, learning makes sense if it gives the learners knowledge and cognitive processes they need to solve problems.

1.2. Taxonomy of the affective domain

One of the best known taxonomy for the affective domain (Krathwohl 1964) starts from *the degree of introspection* of beliefs, attitudes and feelings. Here are five distinct classes of behaviour, each representing a step in the uptake and practice of a value:

1. *Responsiveness* - the objectives included in this class refer to the simple awareness of the existence of a value by students, these are relatively *passive* in relation to the value that is going to be internalized, they tolerate it, but do not show initiative to search for situations in which it occurs;

2. *Reaction* - educational objectives which aim to induce students' "willingness to respond", to express from their *own initiative*, the agreement, at least partially, with those behaviours that are based on a preference for a certain value;

3. *Valuing* - objectives which aim to help the individual to become an active participant in an activity to attract others in the practice of certain values;

4. *Organization* – inducing the need to order in a coherent system the values that he adheres to, to rank them, to determine the most dominant and stable in regard to others;

5. *Characterization* - objectives that aim to help the individual to become capable of shaping and expressing a *personal view* on a particular value universe.

1.3. Taxonomy of the psychomotor domain

Psychomotor domain taxonomy (E.J Simpson, 1966) includes four behavioural classes, ordered by the criterion of mastery level of the motor skills.

1. *Training* - education objectives aimed to help students to "*focus on task*", to know theoretically the operations needed to be carried out, their order, qualities of the necessary materials, the tools, the conditions needed to be fulfilled, so on;

2. *Trying* - objectives aim to making the student capable of doing the action step by step under the guidance of a teacher / master ("*guided response*");

3. *Ordinary performance* - automatization of skill, as a result of exercise, making the action, without the need to be aware of each component of the operation;

4. *Mastery* - students will be able to coordinate quickly and certainly more motor skills, previously formed, to carry out an activity with a higher degree of complexity.

These taxonomic models of the finalities of learning we consider particularly useful to design educational activities for adults from the perspective of the finalities pursued and the creation of appropriate learning situations. Designing a teaching approach based on e-learning can start from taxonomic models of the finalities of education. Depending on the learning objectives, the proposed activity can be designed algorithmic, following the classes of behaviour described.

II. Process-centered models (centered on the components of the training process)

2.1. ADDIE model

This model is often used by those who design and develop instruction and training. It is based on five phases: analysis, design, development, implementation, evaluation, which are benchmarks for developing and implementing learning activities.

Analysis phase requires training to clarify issues, establishing course objectives, identifying the learning environment, the current level of knowledge of students, initial skills and skills required to be obtained through training.

Design - stage of the synthesis and formulating learning objectives, establishing assessment tools, considering disciplines, selection of content units, planning lessons, establishing means of communication.

Development - stage of creation and assembling the pre selected content, of creating "scenario" of work, of writing the content, of creating / selecting images, graphics, animation, necessary sounds, of integrating teaching means (technology).

Implementation – stage in which the planned training is applied, the materials are sent and distributed to the learning group.

Evaluation has two main components: *formative evaluation*, presented in all stages of the program, which provides information on its development (the extent to which the proposed material is appreciated and its desired effect, participants feedback that can lead to modifications and adaptations of the program) and *summative evaluation* which consists of designing final evaluation instruments (e.g. tests for knowledge of students at the end of a course module).

2.2. Kemp's model

Jerold Kemp (1994) designed a model of oval form outlining that a frame of instruction is a continuous cycle that requires constant planning, design, development and evaluation to ensure effective training. Kemp identified nine key elements:

1. Identify training problems and specifying the objectives of the training;
2. Examination of the characteristics of learning that should receive special attention during planning;
3. Identifying content and analyzing activities that serves to obtain the specified objectives;
4. Establish learning objectives;
5. Setting the content for each instructional unit for a logical learning;
6. Designing instruction so that each student can master the objectives;
7. Planning instruction message and delivery of it;
8. Develop evaluation tools to assess achievement of objectives;
9. Selection of resources needed for learning and training activities.

III. Mixed models (centered on the learning outcomes but also on the pedagogical conditions in which they occur)

3.1. Merrill's model (2001) - First principles of instruction

Merrill assumes that the most effective learning environments are those that are focused on solving problems and involving the learner in four distinct phases of learning: activating prior experiences, practical demonstration of the competence, application of the competence, integrating these skills in real, everyday or professional work.

3.2. Gagne's model

The author assumes that learning is a change of operational schemes and intellectual behaviour, through processing of personal experiences. Thus, during learning activity it is important to specify a set of activities "*essential to any effective instruction*" (Gagne, R., 1975, as cited. M. Diaconu, 2004) and so, the trainer should conduct with the trainees. Making each is a "*training event*" which includes the following sequence of activities:

- (a) *focus attention on the new fact to be learned*,
- (b) *an indication of operational objectives to be achieved*, to assure the desired learning
- (c) *update prior knowledge* ("*anchors*" of learning),
- (d) *procurement of new information and materials needed* (they can be provided by the teacher / trainer),
- (e) *execution of learning tasks set by the teacher / trainer*,
- (f) *confrontation of the results in learning tasks with the feedback information received from the teacher / trainer*,
- (g) *evaluating the performance achieved*,
- (h) *carrying out application and transfer activities of new skills acquired through learning tasks* and
- (i) *carrying out activities for fixation in memory of the new knowledge*.

Robert M. Gagné proposes eight types of learning. Types of learning are assessed as "*adaptive and performance levels of the factors that condition learning*". The structure of the types of learning proposed by Gagne could be represented on a scale whose steps are: signal learning, stimulus - response learning, chaining, verbal association, discriminating learning, concept learning, role learning and problem solving. Gagne's theory shows us that the eight types of learning involve each other and can only be achieved in the sequence described. Any learning task that is not based on the previous one will not be performed properly. Therefore the teacher / trainer needs to develop in an analytical manner the learning situation and objectives.

3.3. Instructional design from the adaptive learning perspective

Adaptive training starts from the belief that people are different; therefore, training programs must accommodate their needs and characteristics.

Park & Lee (2003), (from Mihalcea, L., 2011) indicates three approaches to adaptive training:

- Instructional adaptation at macro level - allows those who benefit from training to choose the essential components of education: aims (general objectives) curriculum content and teaching means (Park & Lee, 2003);

- Interaction aptitudes - instructional interventions (ATI) (Cronbach & Snow, 1977) - means adapting instructional methods and strategies to the subjects personal characteristics;

- Micro level adaptation of instruction involves diagnosing specific learning needs and providing subjects' instructional prescriptions for meeting these needs".

Instructional systems adapted to micro-level, developed over time, were different: programmed instruction, application of artificial intelligence in the design of *intelligent tutoring systems* (Intelligent Tutoring Systems, ITS) with three main components (Lee & Park, 2008): (a) the content to be taught (*model / profile of the domain*), (b) teaching methods and instructional strategies used (*model / profile of the teaching / tutoring*) and (c) the mechanisms underlying the understanding of what I know or do not know subjects (*model / profile of users*).

IV. BLENDED LEARNING

Under the impact of information and communication technologies, the way in which learning occurs has changed. Current solutions try to combine current modalities of **e-learning** ("*the use of new multimedia technologies and the Internet to improve the quality of learning by facilitating access to resources and services, as well as remote exchange and collaboration*" (EC, 2001) and **traditional ways** of making education by mixing methods, techniques, models of instruction that facilitate an effective and fun learning. The solution found is called **blended learning**. Models of blended learning issued by the National Institute of Information Technology (NIIT) explain *how to combine e-learning with traditional ways* of teaching and learning:

- Skill-driven learning, which combines self-paced learning with instructor or facilitator support to develop specific knowledge and skills (uses discussion groups, course support for individual learning, emailing tutor for clarification, online labs and traditional learning in the classroom to demonstrate the ability step by step);

- Attitude-driven learning, which mixes various events and delivery media to develop specific behaviours (online seminars and conferences, group projects, simulations and role-play in traditional class);

- Competency-driven learning, which blends performance support tools with knowledge management resources and mentoring to develop workplace competencies (individual learning plans and online mentoring).

An efficient blended learning solution (Alonso, F., López, G., Manrique, D. and Viñes, J., 2005) includes a mixture of the three learning types with the following ingredients:

1. An instructor that directs learning;
2. Email and telephone assistance for personalised learner support;
3. Virtual classes by means of computerised videoconference, in which the instructor explains specific learning subjects to the group and learners, raise questions;

4. Interaction between learners and the instructor and between the learners themselves through the chat to stimulate group learning;
5. Support and query line for subjects related to learning management (enrolment LMS platform problems, etc);
6. Assessment examinations;
7. Certificate and diploma that certifies having taken or passed the course.

V. CONCLUSIONS

We can underline, based on the analysis of the information above, that the design of training activities for adult learners is a process which anticipate the steps to be taken over in the instructional process. Their effectiveness is conditioned on a thorough training which does not guarantee success. However, teacher / trainer skill in adapting the known design instructional models to the specific situations and students needs emphasizes his pedagogic mastery.

We believe that "today" and especially "tomorrow" computer and Internet use in education is not and will not be a new look and the use of *mixture* - the ideas, theories, models and methods will be a common aspect of the educational practices. We think ITC should be used more often in the instructional design of a program but bearing in mind that a good adult education program must meet two major features:

- Learning to produce in the opportune moment (just-in-time learning);
- Training to be relevant to personal needs of individuals (education-on-demand).

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