PASS THROUGH EXEMPLES OF INSTRUCTIONAL DESIGN - II

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Abstract: *An essential act of teachers' profession is the design of curriculum and learning experiences. The paper, following the first part published in previous issue, presents different examples of instructional design models, applied by teachers into the learning process.*

Keywords: *Backward design model, Dick&Carey model, instructional design*

Backward design model

As we know, an essential act of teachers' profession is the design of curriculum and learning experiences to meet specified purposes. They are also designers of assessments to diagnose student needs to guide their teaching and to enable them and others (parents and administrators) to determine whether the learning outcomes have been achieved. Like other design professions, such as architecture, engineering, or graphic arts, designers in education must focused on their end users, and are strongly client centered. Clearly, students are teachers' subjects and teachers' concern in whole student centered learning, given that the effectiveness of curriculum, assessment and instructional designs is ultimately determined by their achievement of desired learnings. One of the instructional design models, used often in education for accomplish the desired results of learning is *Backward Design Model*.

If we want to find out the meaning of the „backward design" we can see the significance in Oxford English Dictionary as follow:
Backward - begin with the end in mind; develop a clear understanding of where you want to go; map out the steps to get you there.
Design - to have purposes and intentions; to plan and execute.

From this point, we can say that *Backward Design Model,* an instructional design originates from Wiggins & McTighe[1], suggests that learning situations, learning experiences, should start with the end of the process and be planned with the final assessment in mind, thus as the desired results to be in front of whole teaching, learning and evaluation process. In other words backward design is a process that focuses on assessment first and instructional activities last. It shifts teacher perspectives. In this situation the teachers, designers of entire educational process, will be able to avoid problem of planning forward from sequence to sequence of learning until final assessment of them, because they will look at the big picture with the end in mind.
The desire results, set up as objectives, goals, capacities, standards, competences must be taken into account for the entire curriculum design which will draw the way of teaching and learning process, determining the evidence of learning by students performances, proved into assessment

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[1] Grant Wiggins, Jay McTighe, (2005), *Understanding by Design,* Expanded 2nd edition, Published by Pearson Education and the Association for Supervision & Curriculum Development

stage. In the mean time, the desire results causes teachers' teaching needs to equip students to perform not only for the final assessment but also for everyday life.

In backward design teachers set the vision or the essential understanding of their curriculum, decide how students will provide evidence of their learning, and finally design instructional activities to help youngsters learn what is needed to be successful.

Therefore will be three stages to backward design:

Stage 1: *Identify Desired Results*; in this stage could be raised the following questions:
- • What "enduring" understandings are desired?
- - Enduring understandings:
- ➢ Backward design begins a vision of what all students should achieve.
- ✓ Set the vision.
- ✓ Focus on the big ideas.
- ✓ Create a shared vision.
- ➢ Core concepts, principles, theories, and processes that anchor curriculum.
- ➢ This is what we want students to remember.
- ➢ Students will actually understand and be able to use this long after they leave the school.
- • What should students know, understand, and be able to do?
- • What is worth understanding?

Stage 2: *Determine Acceptable Evidence of Learning*;
- • How will we know if students have achieved the desired results and met the objectives, goals, capacities, standards, competences?
- ➢ Determine how students demonstrate their knowledge, how demonstrate understanding throughout the sequences/modules, not just at the end.
- ➢ Focus on assessment before designing the learning activities.
- ✓ Criteria and performance objectives, goals, capacities, standards, competences are clearly stated and understood by all.
- ✓ Assessment answers the following questions:
- - How much did they learn?
- - How well did they learn it?
- - How well did we teach it?
- ✓ Assessment helps teachers evaluate their own work, success of their curriculum design.
- • What will we accept as evidence of student understanding and proficiency?
- ➢ Expand the assessment continuum.

Stage 3: *Design Learning Experiences & Instruction*.
- • Plan instructional activities.
- • Define the essence of what students will learn. What prior knowledge do students need in order to be successful?
- • Organize and focus learning. What instructional strategies are needed to lead the student to mastery?
- • Learning is spiraled. Students revise and reconsider ideas and skills.
- • Share best practice.
- • Build in collaboration.
- • Ensure success for all learners.
- ➢ Incorporate a variety of sources, more than a textbook.
- ➢ Cannot be answered in one sentence.
- ➢ Have no easy answers and can be examined from multiple perspectives.
- ➢ Allow students to think deeply.
- ➢ Allows students to be assessed in multiple ways.

> ➢ Are students friendly and easily accessible, publicly displayed?

The first and most important aspect of backwards design is to become familiar with the specific competences for the grade level and curriculum area being taught.

The next step, after the specific competences and benchmarks have been selected, is to design an assessment that will measure the students' understanding of them. We will need to decide how we are going to measure student understanding (test or quiz, self-assessment, performance, product) of the selected specific competences. Bloom's Taxonomy (*knowledge, comprehension, application, analysis, synthesis, evaluation*) is a nice tool to use to help design assessments or we can utilize the many „performance verbs" offered by Wiggins and McTighe (1999) under the following categories: *explanation, interpretation, application, perspective, empathy, and self-knowledge.*

Once we have selected the specific competences and determined the acceptable evidence that will demonstrate student achievement, then you can develop a lesson plan that will provide students with the opportunity to reach the desired objectives. In 1999 Wiggins and McTighe have proposed „WHERE" approach in this stage of the process.

W stands for students knowing Where they are heading, Why they are heading there, What they know, Where they might go wrong in the process, and What is required of them.
H stands for Hooking the students on the topic of study.
E stands for students Exploring and Experiencing ideas and being Equipped with the necessary understanding to master the standard being taught.
R stands for providing opportunities for students to Rehearse, Revise, and Refine their work.
E stands for student Evaluation.

The rewarding part of the process comes next with the implemation of the lesson plan in the classroom. Any necessary changes or additions can be incorporated into teacher's modified lesson plan.

After students have had the opportunity to learn the selected goals, the students will need to be assessed to determine if they have successfully reached the desired goal. The student assessment can also be used to modify the original lesson plan.

One criticism of this approach is that is appears to promote „teaching to the test". Yet despite the negative connotation that comes along with that phrase, argueable teaching to the test is exactly what the role of the educator should be. This does not mean teaching the test itself, of course. But if a known final test or assessment is required, then backward design can be a useful way to prepare learners to perform well on the final assessment.

References
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• Grant Wiggins, Jay McTighe, (2005), *Understanding by Design,* Expanded 2nd edition, Published by Pearson Education and the Association for Supervision & Curriculum Development
• http://www.wku.edu/library/dlps/infolit/documents/designing_lesson_plans_using_backward_design.pdf

Dick & Carey model

Walter Dick, Lou and James Carey made a significant contribution to the instructional design field by championing a systems view of instruction as opposed to viewing instruction as a sum of isolated parts. The model addresses instruction as an entire system, focusing on the interrelationship between *context, content, learning and instruction.* According to Dick and Carey „Components such as the instructor, learners, materials, instructional activities, delivery system, and learning and performance environments interact with each other and work together to bring about the desired student learning outcomes".[2]

Their work is based on the behaviorist view that there is a predictable link between a stimulus and the response it produces in a learner. It is the designer's responsability to determine the sub-skills a student must master in order for the behavior to be learned and choose the stimulus and strategy for instruction in order to assemble the sub-skills.

They developed the components of the Systems Approach Model, also known as the Dick and Carey Model, even since 1978 being a comprehensive and detailed instructional design model composed of nine (1996) and finaly ten (2011) components as shown below:

1. *Identify Instructional Goals* – Based on needs assessment and the learners requirements, describe what the learners are expected to do or perform at the end of the instruction.
2. *Conduct Instructional Analysis* – This step consists in analysing skills, knowledge and attitudes of the learners that are required to show them at the beginning of instruction not the entry behaviors. By the other hand, identify the steps the learner must be able to perform in order to accomplish the tasks that lead to the desired performance. This step identifies the exact performance gap between the present performance and the desired performance. Basically, a performance gap is the difference between the actual or present performance and the optimal or future performance.
3. *Identify Entry Behaviors and Learner Characteristics* – In this step learners' prior skills, preferences and attitudes are determined. In other words, identify the general characteristics of the learners, including skills, experience, motivation levels, and basic demographics which relate to the skills and topics that will be taught. The information should have enough detail to allow teacher to identify the correct starting point of the instruction so that they do not waste time reviewing material they already know and does not omit content they need to know.
4. *Write Performance Objectives* - Performance objectives consist of a description of the task or skills to be learned, the criteria for performance and the conditions that the task must be performed.
5. *Develop Assessment Instruments* based on criterion - Tests and evaluations are created that will:
    a) ensure the learners meet the necessary prerequisites for learning the new skills and knowledge,
    b) check the learner's progress in meeting the performance objectives during the learning process, and
    c) evaluate the learning process itself to ensure it is structurally sound.
6. *Develop Instructional Strategy* – Instructional strategy should cover pre-instructional activities, presentation of information, practice and feedback, testing and follow through activities. Instructional strategy must be developed taking in consideration the *current learning theories* (latest research) and *the interrelationship between content to be taught, learners' characteristics and the environment to which the instruction will be delivered*. It is necessary to create a blueprint of the learning activities that will transfer, develop and reinforce the skills and

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[2] Walter Dick, Lou Carey, James O. Carey, (2011), *The Systematic Design of Instruction*, Seventh Edition, Pearson Publisher

knowledge formulated in the performance objectives and in the order that will provide the best learning environment.

7. *Develop and Select Instructional Materials* - Using the blueprint in the previous step, fully development the instructional content and activities. Original materials should be created based on the content be taught while reuse existing material whenever possible as well as other materials.

8. *Design and Conduct Formative Evaluation* - Using one to one evaluation, small group evaluation, field evaluation, trials, instruction, and/or interviews with prospective learners, so as to collect data for identify areas in the instructional material that need improvement.

9. *Design and Conduct Summative Evaluation* - Judge the worthiness of the program after all activities and the first classroom iterations with the focus being on the outcome: Did it work as intended? Did we achieve the desire results? Continue the evaluation after each class or training activity.

10. *Revise Instruction*: Use the data from the two types of evaluations to examine the validity of the instructional strategy and revise as needed. Assumptions about entry behaviours and learner profile are validated again or must be refined whole or part of instructional design.

We can see, in the map bellow, all this components of Dick&Carey model:
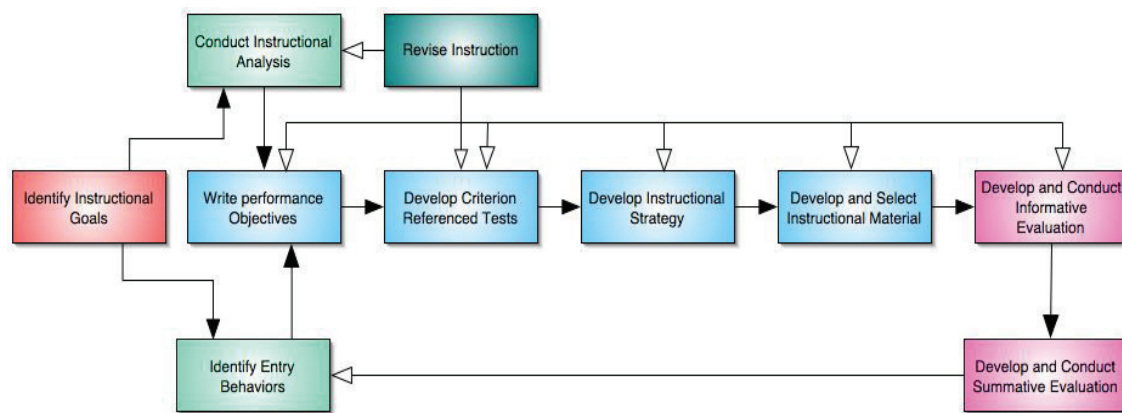
Dick and Carey Instructional Design Model

Source: http://www.nwlink.com/~donclark/history_isd/carey.html

On the other hand, we can find an other approach about the stages of Dick & Carey model:

Stage 1. Instructional Goals
- Instructional Goal: Desirable state of affairs by instruction
- Needs Analysis: Analysis of a discrepancy between an instructional goal and the present state of affairs or a personal perception of needs.

Stage 2. Instructional Analysis
- Purpose: To determine the skills involved in reaching a goal
- Task Analysis (procedural analysis): about the product of which would be a list of steps and the skills used at each step in the procedure
- Information-Processing Analysis: about the mental operations used by a person who has learned a complex skills
- Learning-Task Analysis: about the objectives of instruction that involve intellectual skills

Stage 3. Entry Behaviors and Learner Characteristics
- Purpose: To determine which of the required enabling skills the learners bring to the learning task
- Intellectual skills
- Abilities such as verbal comprehension and spatial orientation

- Traits of personality

Stage 4. Performance Objectives

- Purpose: To translate the needs and goals into specific and detailed objectives
- Functions:
✓ Determining whether the instruction related to its goals.
✓ Focusing the lesson planning upon appropriate conditions of learning
✓ Guiding the development of measures of learner performance
✓ Assisting learners in their study efforts.

Stage 5. Criterion-Referenced Test Items

- To diagnose an individual possessions of the necessary prerequisites for learning new skills
- To check the results of student learning during the process of a lesson
- To provide document of students progress for parents or administrators
- Useful in evaluating the instructional system itself (Formative/ Summative evaluation)
- Early determination of performance measures before development of lesson plan and instructional materials

Stage 6. Instructional Strategy

- Purpose: To outline how instructional activities will relate to the accomplishment of the objectives
- The best lesson design: Demonstrating knowledge about the learners, tasks reflected in the objectives, and effectiveness of teaching strategies, e.g. Choice of delivering system. Teacher-led, Group-paced vs. Learner-centered, Learner-paced

Stage 7. Instructional Meterials

- Purpose: To select printed or other media intended to convey events of instruction.
- Use of existing materials when it is possible
- Need for development of new materials, otherwise
- Role of teacher: It depends on the choice of delivery system

Stage 8. Formative Evaluation

- Purpose: To provide data for revising and improving instructional materials
- To revise the instruction so as to make it as effective as possible for larger number of students
- One on One: One evaluator sitting with one learner to interview
- Small Group
- Field Trial

Stage 9. Summative Evaluation

- Purpose: To study the effectiveness of system as a whole
- Conducted after the system has passed through its formative stage
- Small scale/ Large Scale
- Short period/ Long period

Dick and Carey (1996) pointed out the systematic characteristics of their model:

1. Goal-directed: all the components in the system work together toward a defined goal
2. Interdependencies: all the components in the system depend on each other for input and output.
3. Feedback mechanism: the entire system uses feedback to determine whether the goal is met.
4. Self-regulating: The system will be modified until the desired goal is reached.

References:

Walter Dick, Lou Carey, James O. Carey, (2011), *The Systematic Design of Instruction*, Seventh Edition, Pearson Publisher

http://www.nwlink.com/~donclark/history_isd/carey.html

http://www.umich.edu/~ed626/Dick_Carey/dc.html