

Instructional Design Concepts

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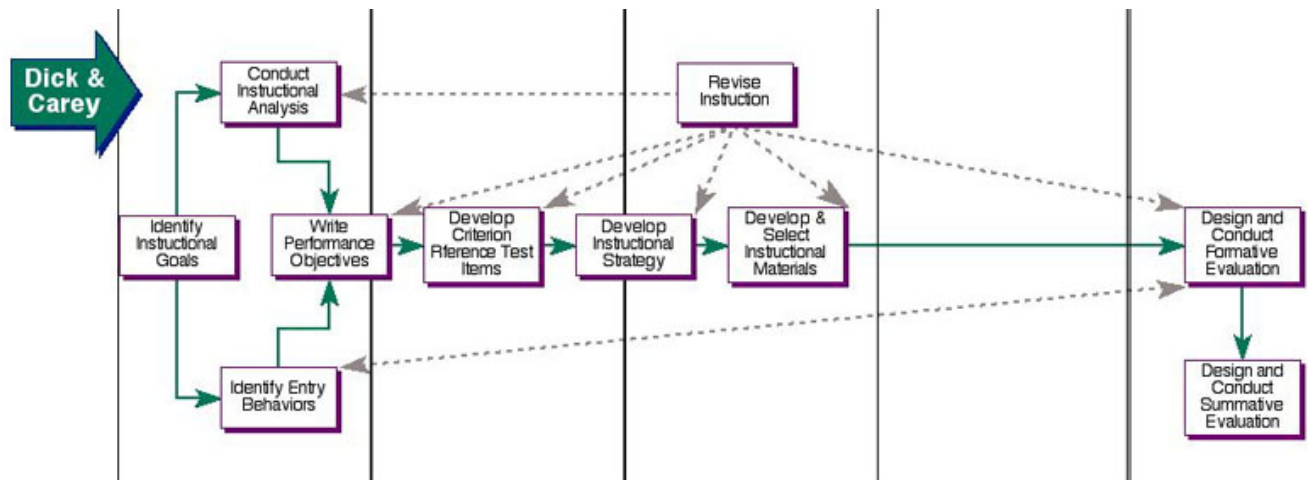
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Confidence in your instructional material can make the teaching experience a good one for both you and your students. This workshop will present one instructional design model (Gagne's Instructional Events) that is easy to use and will help you plan and deliver your content in a way that facilitates student understanding. Faculty attending this workshop will be able to identify the instructional events and understand how to apply these events to their own content and teaching situations. This model can be applied to both live, classroom instructions and to computer-based learning situations.

Instructional Design

What is Instructional Design? It is a systematic approach to constructing instructional activities to bring about the desired learning outcomes. You might be thinking, well duh, isn't that all instruction? Yes and no would be our response. There are naturally gifted speakers that can tell stories or describe situations and this does frequently result in a desired learning outcome be it new knowledge, a changed attitude or a behavioral skill. But story telling is just one instructional method, and not every teacher is a good story teller. Instructional design provides systematic approach to analyzing the instructional goals and for designing learning activities to ensure a successful learning encounter.

A general model frequently seen in instructional design textbooks is below (Dick & Carey, 1996).



Needs Analysis

The first step to take in any instructional design model is to identify what it is you want the learner to be able to do at the end of the instruction. Without knowing what your end goal is, it's impossible to develop a strategy to get you there. Depending on the situation, you may want the learner to develop a specific skill or proficiency in operating a piece of equipment or be able to successfully pass a standardized exam. In each case you know what the desired end result is and what you want the learner to be able to do.

Instructional Objectives

As you probably know, when writing objectives or goals you want to be sure to write them so they're measurable in some way.

Something like, "given a 3-dimensional model, the learner will be able to name and identify all of the cranial nerves" or "given a tissue sample and microscope, the learner will be able to properly prepare the wet mount and identify the tissue sample".

You will want to refer back to the needs analysis to make sure you have objectives for each of the specific needs you, on in some cases the external testing/certification body, has decided are necessary. You will use the objectives to help you generate test items, or other measures of performance to evaluate how well the learners have mastered the knowledge or skills. Last year, Kathy Day wrote a series of short tips on developing assessment tools for the JEFFLINE Forum, we've collected them all into one site: <http://jeffline.tju.edu/SML/helpaids/educ-series.html> if you would like to review them.

Gagné's Learning Outcomes

Before prescribing a potential learning process, the teacher or designer examine the desired objective of the learning event – that is the learning outcome. Gagné categorized these outcomes based on how they are demonstrated.

Category	Demonstrated by	Example
Verbal Information	Stated	
Motor Skills	Physical performance	
Attitudes	Performance, change in	
Intellectual Skills: Concepts	Labels, language, symbols	
Intellectual Skills: Discriminations	Identify differences, classify, group like items	
Intellectual Skills: Rules	Applying rules to solve standard problems	
Intellectual Skills: Problem Solving	Analyzing and generating new solutions	
Cognitive Strategies	Self-management behaviours, meta-cognition	

Next in the model is to construct the actual learning activity – lecture, PBL, computer-based activity, etc.

Learning Activity	Examples	Appropriate When...
Listening/Reading	Lecture, home work readings	Informational content is verbal, such as learning new terms, concepts, rules
Self-Reflection	Practice questions, personal journals, small group debriefing sessions	Learner needs to assimilate new information and fit into their existing mental models
Case Study and PBL	Individual or small group work with case studies or problem scenarios; may include discovery/exploratory learning	Learner needs to analyze information and make a decision or recommendation. May encourage deeper understanding of content by extending transfer to other examples/situations.
Simulation	Learning by actually doing real world activity	Mastery of content may be required to prevent harm or injury to self or others

Finally, when all of the elements of the learning activity are complete, we'll use Gagne's instructional events, below, to go through what should happen in the live session.

Gagné's Instructional Events

Instructional Event	Example
1. Gain attention	Identify start of activity (opening screen, may include sound and animation)
2. Inform learners of objectives	List learning goals and why these are important to the learner (source of goals and how the learner will apply these goals in clinical practice)
3. Stimulate recall of prior learning	Provide an example learner is likely to already be familiar with (relate the new learning materials to something the learner is already familiar with, providing a foundation to build on)
4. Present the content	Begin actual lesson, tutorial or case study (the main body of the instructional content)
5. Provide learning guidance	Support instruction with examples and explanations (provide different examples that will appeal to the different learners and to different learning styles)
6. Elicit performance	Allow learner to apply new knowledge or skills (allow the learner to use new knowledge and skills in solving new problems)
7. Provide feedback	Give appropriate feedback to learner's performance (provide detailed, corrective feedback to the performance, relate back to objectives and real world application)
8. Assess performance	Provide learner opportunity to perform again and evaluate that performance (usually the final, evaluated performance that counts towards the course grade)
9. Enhance retention and transfer	Review what knowledge and skills were presented and provide additional discussion of how this knowledge or skill is applied in real-world applications

Exercises & Examples

Write an objective for each below:

- Measure blood pressure
- Determine appropriate drug dosage
- Name the bones of the hand
- Identify a nerve
- Advise a patient on treatment options

Describe a classroom activity you might use to learn about

Describe an online activity you might use to learn about

Tips for using with lectures

- When presenting new concepts or skills, provide a linking relationship to something the learner already knows. This is most important for learners new to that subject. Cognitive scientists believe that long-term memory is best achieved when new content is linked to one or more existing memories.
- Story telling is an extremely effective learning technique. Some education researchers believe that humans have a natural tendency to be able to remember details when related through a story. Consider how well you remember passages in a book, movie or TV show, likely all were portrayed to you using this method.
- Frequently check the class's understanding of the content your covering, in small classrooms a show of hands works, in a large room consider using the Audience Response System – this allows students to answer anonymously so they're not embarrassed to reveal they may not understand.

Tips for using with Pulse

- Short quizzes or self-assessment activities can easily be constructed and used in Pulse. Either not assigning any course credit at all, or assigning credit only for completing them, not based on score, are ways you can allow students to frequently evaluate their knowledge and understanding of content.
- Use the Pulse discussion board as a means of soliciting questions.
- Use the Pulse discussion board as a means for answering all questions – even those sent to you by email. Simply remove the identifying student's name, and post the questions along with your answer. By using the discussion board, all of the students can benefit from seeing the question and having the answer reinforced (even if they also knew the answer.)

References

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Gagne, R., Briggs, L, Wagner, W. *Principles of Instructional Design* (Third Edition) New York: Holt, Rinehart and Winston, Inc., 1988

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Dick and Carey model from

<http://www.personal.psu.edu/faculty/s/j/sjm256/portfolio/kbase/IDD/dick&carey.html>