Eclectic Instructional Design Model

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Figure 1. Jerry Salmon and Georgie Perigny’s Eclectic Instructional Design Model
Explanation of Instructional Design Model and Inclusion of Theories

The purpose of instructional design (ID) is to create lessons that assist learners as they develop new competencies with knowledge, skills or attitudes in an efficient manner. Our ID model (fig. 1) draws on several classic instructional design theories. It includes four phases that are fundamental to developing effective and engaging instruction: analysis, design, developmental and implementation. These phases are similar to the steps of Dick and Carey’s Systems Approach model. We have, however, discarded the linear sequence of their model in favor of a more cyclical approach.

Each phase consists of two to four processes. These phases are situated around a centerpiece of reflection and formative assessment of the design process. This is to show that the phases can occur in cycle or in any order. For example, a designer could begin creating instruction with the analysis phase and move through the design, developmental and implementation phases; or an instructional designer could move from the implementation stage back to the design stage, if reflection or formative evaluation of one of the design processes has occurred and the designer desires to make an adjustment.

Each phase consists of processes that need to be completed in order for the phase to be effective. The processes are encircled by revision and summative evaluation arrows. These phases and arrows will be described here.

**Phase 1) Analysis** – In the analysis phase, the need, learner and task all need to be closely investigated. A needs analysis is used to determine the problem. It answers the question, “What is currently not occurring properly or at all to achieve the goal (knowledge, skill or attitude)?” It could be a lack of knowledge or skills; or it could be a lack of motivation. This analysis allows for baseline data to be collected and compared to new data at the end of the ID process.

It is also vital to analyze the individuals that will be receiving the instruction. Knowledge of several aspects about learners would increase the ability to create quality instruction. It is important to know the background and experience of students. This would allow an instructor to plan learning
situations that will activate previous knowledge and then provide experiences that will assist the learners as they build their knowledge. Knowing this information about each student will also allow a teacher to understand the typical entry characteristics and readiness of the students. Smith points out that age and grade level are not good indicators of student readiness. She argues that it would be better to group students according to prerequisite skills that can be successfully completed (2005). An instructor with this familiarity of students will be able to plan lessons that will challenge their students without being too difficult.

An instructor may wish to learn about students’ learning styles. Gardner states, “Educators who thoughtfully use the theory to support their larger educational goals find that it is a worthy partner in creating school excellence” (1997). Teachers that know the major learning style in the room and that of each student can create effective large group instruction and purposefully adapt instruction for one-on-one instruction. Gardner promoted the use of “individualize and pluralize.” Individuate means that knowing each student allows an instructor to teach to learners’ strengths and strengthen their weaknesses. Pluralize refers to teaching each concept using many learning styles (Toh & Gan, 2010). This will effectively assist many students in a short time period. The learner analysis answers, “Who is trying to achieve the goal?”

A task analysis may be the most important process of instructional design. This step answers, “What is needed to be done to achieve this goal?” The content to be learned is broken down into smaller components (cognitive, psychomotor, affective, or a combination) in this process. A designer can work with a subject matter expert to create an outline of steps that need to be taken to achieve the goal. This outline of steps can then be grouped into related concepts, principles, procedures and attitudes to assist in the later design of objectives. A vital part of task analysis is to determine the common context in which the content is put to use (Morrison et. al., 2010).
(Phase 2) Design – This phase includes the intense planning of instruction so that it is both
effective and engaging. There are four elements that need careful preparation: objectives, summative
assessment of learning, situated learning opportunities and formative assessment opportunities.

Objectives are clear statements that describe what a successful learner will master in order to
complete the task. Objectives are derived from the outline created in the task analysis. Objectives are
usually written with a knowledge, skill or attitude focus, and there are several methods used for writing
the different types of objectives (Morrison, 2010).

There are various methods used in determining objectives. In educational settings, objectives
are often determined in a curriculum. In other settings, objectives could be negotiated with the learners
or the designer could write them in consultation with a subject-matter expert. Regardless of how the
objective is developed, it is important that they contain action verbs that describe how content is to be
used (Morrison, 2010). These verbs can correlate with different levels of taxonomies of learning, such as
Bloom’s taxonomy, and provide guidance on the depth of learning and level of application required.

Once objectives are written, they can be grouped based on related topics and then organized
into a logical sequence for instruction. The sequence created from the task analysis may be useful at this
step. There are more than a few techniques to sequence objectives. A common method used for
sequencing orders the objectives according to the following categories: learning prerequisites,
familiarity, difficulty, interest level and lastly according to a developmental theory that describes when a
learner is ready for certain content (Posner & Strike, 1976).

A designer must then determine what a successful completion of the objectives looks like and
establish assessment techniques to determine if the standard has been met. It is important to allow for
more than one means of showing learning. This gives students control and promotes the individual to
take ownership of the demonstration of learning. Morrison et. al. points out that a common error is to
write objectives according to one level of Bloom’s taxonomy and then instruct and assess the objective
according to a lower level. A designer must be careful to make sure that both the assessment and instruction match the objective.

The next process in the design phase of instructional design is to plan the learning situations that students will be engaged in. The ARCS model of instructional design by Keller can guide a designer to consider four areas of motivation when creating instruction. By using topics of interest to learners, a designer can gain attention. It is important to be careful not to stimulate hyperactivity. Showing the relevance of content to a student’s life is also an effective manner of holding the attention that has been gained. Students will produce high quality work if these two aspects are in place and if they perceive that they will have success. Self-confidence and a feeling of control over their learning add to their motivation. For example, a student that perceives little chance of succeeding will likely put forth little effort. Huett et. al. conducted a study with distance learning students using the ARCS model as a guide. Students in the treatment group consistently received emails intended to influence them by increasing interest, connect the content to real-life or increase self-confidence. The students reported that there was no change in their self-confidence over time, but they performed considerably higher than the students in the control group (2008).

The task analysis should have revealed content that a student must know before the content of the instruction being designed can be properly understood. This pre-requisite knowledge should be taught and mastered before moving on to the current lesson.

One of the most effective ways to show a student the relevance of material is to provide them with opportunities to discover knowledge or a skill in a safe but realistic environment and then apply it in the context that experts would use it. Brown, Collins and Duguid describe a method of teaching content to learners in the same context in which they or experts would use the content in their situated cognition model. This real-life situated learning has several effects. Knowledge and skills are better understood when they are learned in proper context. This prevents the separation of knowledge from
doing and teaches learners when and in what environment to use their acquired learning. This generalization can occur because when students learn content in context, the change from the learning situation to the application situation is not that great. When learning is applied to real situations, it leads to creativity in problem solving. When a model shows how to properly execute a skill or use knowledge in context, learners also see appropriate behaviors and attitudes towards the content. A positive model is the most effective way to teach affective objectives.

Darvin completed a study in which she compared a problem-solving assignment based on situated cognition with a similar problem based solely on a cognitive approach. She came to two conclusions. First, students continued to think about the situated problem long after the exercise had been completed. This will lead to creative and critical solutions. Second, Darvin learned that situated experiences involved emotion in learning, which will deepen how well it is remembered (2006).

If situations are set up to allow learners to work in collaboration, additional benefits can be gained. Students will learn skills to work with other people and allows a built-in method of confronting ineffectiveness. As collaboration occurs, students can learn from observing each other.

Most of the discussion in the design phase thus far has provided a foundation on which to build a lesson. Gagne and Brigg’s Nine Elements of Instruction model shows the practical value of providing steps of a lesson. Although we have not directly used their steps, they had direct influence on ours. An actual lesson built following this model would include the following elements:

1. Gaining attention through a demonstration of the objective successfully completed in context
2. A cognitive overview of the entire big picture of learning
3. A focus on one part of the overview, which begins with activating any previous knowledge on the subject
4. Learner control of generative strategies used in a real-life situation suited to learning styles and type of content and performance
5. Learner control of time and amount of practice of the content with feedback
6. A review of the overview
7. Steps 3 through 6 repeat until entire overview has been taught in detail
8. The lesson finishes with an opportunity to demonstrate what has been learned.
In addition to Gagne and Brigg’s influence, steps two through six incorporate major principles from Reigeluth’s Elaboration theory. This element will allow students to see the big picture and zoom in on the details of the content they are learning. It also provides for built-in review.

Merrill has provided us with three ideas to think about. In one study, he described that stating objectives has little influence when compared with the effect of demonstrating them. For this reason we have incorporated this into the first step. We have integrated two thoughts from his Component Display theory in our ID model. CDT emphasizes how the content will be used (either recall or application) and urges learner control of number of practices needed and amount of time needed. A designer must be careful to ensure that content is applied according to the objective statement. The second element from CDT has been integrated as step five (Merrill, 2002).

The last process that needs to be included in the design phase is formative evaluation. It is important to build opportunities for learners to assess themselves and make corrections. Feedback from peers or the instructor can help a learner know where to make adjustments. These opportunities must be deliberately planned and not just left to chance.

**Phase 3 Developmental** – This phase takes the lesson that has been created in the design phase and makes it presentable. It is vital that any information presented, including assignment instructions, is clear. The challenge for the learners should be to learn the content, not to determine what they are supposed to do. Another way to make sure the instruction doesn’t add difficulty to learning is by controlling the step size of jumps in concepts and using pacing that suits the learners (Morrison, 2010).

Any strategies that were chosen in the design stage are put together in the “organize” process. The designer needs to be careful to balance between providing too much structure, which reduces the real-life context, and providing too little structure, which may remove focus from the content and place it on trying to determine what the instructor wants. In this developmental stage, lectures are produced,
instructions for large or small group activities are clarified, and transitions are inserted to allow a lesson to flow as smoothly as possible.

Any materials that are needed for instruction are found, developed or adjusted in this phase. This phase may also include organizing trips away from the normal place of learning and making contact with experts to ensure knowledge and skills are gained in context.

(Phase 4) Implementation – The final phase of our ID model is the implementation phase. In this phase the instruction is tested. This can be done by discussing the instruction with other designers or with a subject-matter expert. In an educational setting, where it is not likely possible to test each lesson, the test comes with the students in the classroom as a lesson is taught. It is important for the designer to collect feedback about the lesson from those that were present. As feedback is reflected on, it will result in formative evaluation of the process and adjustments can be made if necessary.

Revision and Summative Evaluation Arrows – Around the outside of the phases and processes of the ID model are two arrows. These represent revision and summative evaluation of the design process. The revision arrow goes around the outside of the model and close to the processes, as opposed to the phases, to show that revision is ongoing and most likely to happen in the details of the processes. Summative evaluation also surrounds the entire model to show that the assessment of the effectiveness of the instructional development is affected by each of the processes that occur.

Reasons Some Theories Were Not Used

One theory had little to no influence on the ID model discussed within this paper. That theory is Vygotsky, Leont’ev, and Engestrom’s Activity Theory. Although similar terms and processes may exist within this ID model and the Activity Theory model, this ID model has been mostly based on the previously explained theories.
Although the activity model has aspects that we find valuable to instructional design, such as how it shows the interrelatedness of various factors in the learning process, it was left out of our model for a couple of reasons. Our model focuses on designing instruction that will help each individual student become competent in applying content. The activity theory acknowledges the individual, but has a strong focus on the group that does not fit well into our model. The aspect of the theory that does focus on the individual student discusses the role of the individual in the group to achieve an overall goal. Our model focuses on teaching an individual the entire concept or skill, not just a faction of it (Activity Theory website).

**Limitations of this Instructional Design Model**

A limitation in this instructional design model is the large size of the design phase. Other ID models divide this step into two areas: deciding strategies and planning the lesson. In practical terms, these two areas occur simultaneously and dividing them into separate phases would limit the application of the model.

Another limitation of this model exists in step four of designing the detailing of a lesson. Step four says, “Learner control of generative strategies used in a real-life situation suited to learning styles and type of content and performance.” In a practical application of this step, it is difficult to ensure that strategies teach the content in a realistic situation while considering how the content will be performed (recall or apply), the learning style of students, and still include generative approaches.

While acknowledging the difficulty of integrating all the various aspects important to good instruction, it is significant that all of the aspects are included in the model. The model provides an ideal of instruction and although ideals may never be completely met, the existence of all of these positive aspects of instruction gives an example to work towards.
Generalization of this Instructional Design Model

This model has been set up in general terms to allow it to be applied in various settings. It would work in educational or business settings. We have left flexibility in the phases to allow it to be applied to different types of content, whether performance, cognitive or affective tasks. The detailed lesson planning steps in the design phase were formulated with a constructivist approach in mind, but permit other learning theories to be used as a foundation if desired.

Macro or Micro Theory – mostly macro (description includes micro)

We have attempted to effectively provide a macro-theory ID model, and include a detailed description of how to plan instruction (micro-theory) in the explanation of the model. The illustrated model provides an explanation of how the major aspects of instructional design are interrelated. This part of the model shows the importance of each phase in the process and explains why each must exist. The steps to be used when making a lesson that were provided in the description of the model were included to allow for practical application of the model. This micro-theory section provides a method of narrowing the wide focus of the macro-theory.

Evolution of the Model

Our model changed over the past few months and is likely to continue to evolve as more knowledge is gained about instructional design. Our main phases, however, has remained constant throughout our learning. Our initial model showed that each of these phases is interconnected with each of the other phases. The new model continues to confirm the influence of each phase on the others, and it adds to this idea by showing that the phases are connected through reflection of the phases and processes and the formative evaluation done by the designer.
Within the phases, many of the processes from the initial model remained the same, some of the processes were moved to a different phase (e.g. sequencing moved to design from developmental), new processes were added (e.g. task analysis) and detail was added to all processes.

Rather than having the processes inside the phases, we moved them to the outside of the phases and closer to the revision process. The purpose of this is to show that when revision occurs it is normally in the processes, and not an overhaul of an entire phase. The current ID model has separated the encompassing process of evaluation and revision into the two separate processes of summative assessment of process and revision. This shows that the two processes do not serve the same purpose and occur independently.

**Conclusion**

If instructional design is to effectively serve its purpose of providing a systematic method to create instruction that will efficiently teach learners, then it is necessary that a balance is made between the useful models that exist. This ID model combines the functional elements of many classic theories so that they can be practically applied to create meaningful instruction. The theories are combined to provide a strong foundation for the design process and are also used to provide detailed steps in determining strategies when developing specific content lessons.
References


