**Instructional Systems Design Basics**

*Introduction*

Whether you’re a seasoned veteran in the field of education or a first-year teacher, this reference will provide you with the basics of Instructional Systems Design, or ISD for short. But first, what is ISD?

Instructional Systems Design (ISD) is a systematic and reflective process intended to translate content and learning tasks using research-based principles of learning (e.g., learning strategies, cognitive theories, and assessment techniques) into instructional materials, activities, and information resources.

This definition probably sounds pretty familiar. That’s because there are certain areas in which the ISD process overlaps with classroom lesson planning and development.

*Instructional Systems Design: The ADDIE Model*

The ISD process is commonly referred to as the ADDIE model. It consists of five iterative phases: analysis, design, development, implementation, and evaluation. The following table provides an overview of each of these phases.

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<th>ISD Phase</th>
<th>Description</th>
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<td><strong>Analysis</strong></td>
<td>Instructional designers (IDs) typically begin an instructional project with a few analyses. In this phase, IDs seek to determine if instruction is needed to solve performance problems, to identify various learner characteristics, and to identify what learners should be able to do once they have completed the instruction.</td>
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<td><strong>Needs Assessment</strong></td>
<td>The ID seeks to compare the learners' current performance to the desired performance in order to identify the performance gap. The ID must determine if new instruction must be developed to close the gap.</td>
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<td><strong>Learner Analysis</strong></td>
<td>The ID gathers information about target learner characteristics such as demographics; cognitive, affective, and social characteristics; and details of the learning environment.</td>
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<td><strong>Task Analysis</strong></td>
<td>The ID examines the task the learner must be able to do in order to close the performance gap. She identifies the type of knowledge (e.g., problem-solving, procedural, or conceptual). She also describes the prerequisites and</td>
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may begin to develop learning objectives.

**Design**  
The ID selects strategies that are appropriate for the type of knowledge expected in the learning outcome. She also determines the mode of delivery (e.g., CD-ROM, online, or classroom) and how the content should be organized. She writes lesson/course learning objectives and assessment items that are directly tied to the learning objectives.

**Development**  
During the development phase, the instructional materials that have been designed go into production. At most businesses and other institutions, there are technology and multimedia and creative units that do the bulk of the development. The ID’s primary involvement in this phase includes creating storyboards, participating in pre-production meetings and video shoots and audio recording sessions, and writing job aids or student/instructor guides.

**Implementation**  
During the implementation phase, the instructional materials are piloted or introduced on a larger scale. Often introducing new instructional materials will have a large impact on the target audience. The ID develops an implementation plan to ensure a smooth adoption process by all of the stakeholders, including the target users.

**Evaluation**  
All instructional design projects should go through many rounds of evaluation and revision. There are two kinds of evaluation: formative and summative. Ideally, an evaluation plan involving both types should be developed in the early stages of the project cycle.

**Formative**  
The purpose of formative evaluation is to check the instructional materials for accuracy, consistency, reliability, and validity throughout the ID process. There are a number of different kinds of formative evaluation including:

- Design reviews - IDs frequently evaluate their own work and the work of other IDs.
- Expert reviews - The subject matter experts (SMEs) frequently evaluate the content for accuracy.
- One-to-One evaluation - The ID meets with two or three members of the target audience on a one-to-one basis to get feedback from the learner.
- Small group evaluation - The ID meets with a small group of members of the target audience to observe how they perform using the instructional materials.

Each of these types of formative evaluation is typically done before the
instruction has been fully developed.

**Summative**

Summative evaluation typically occurs after the instructional materials are fully developed. Its purpose is to gather specific information about the appeal and ultimately the effectiveness of the instruction. This information is presented to the client so that a decision regarding the continued use of the product may be made. A popular summative evaluation model is Kirkpatrick's Four Levels of Evaluation. The four levels of evaluation are:

- Reactions: What were the participants’ reactions to the instruction? Did they like it? What might they change?
- Learning: Did learning actually take place?
- Transfer: Do the learners do what they're supposed to do correctly now that they've had the training?
- Results: What impact has the learning had on the business or organization? In other words, what is the return on investment?

**The ADDIE Model: A Graphic Representation**

The figure below is a visual representation of the ADDIE instructional systems design process that depicts its iterative nature.

![ADDIE Model Diagram](image)

**References**