Instructional Design Methods

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An instructional design method refers to the approach a designer takes when developing a new system of instruction. Though the designer's approach may vary from case to case, many of the established methods of instructional design are similar in their fundamental nature.

The inexperienced designer may start developing a product without deliberately taking an approach. This decision can paralyze the design process (Nelson & Stolterman, 2012). Designers who take adequate time for analysis in the early stages of a project will not be as likely to face design paralysis when they receive opposition from clients, stakeholders, and peers. Having a clearly defined approach can lessen other complications in the later stages of design. If a designer adequately considers their design strategies and core learning theories early on, the product will likely have greater continuity throughout (Gibbons, 2013). The designer who puts an emphasis on the desired outcomes of a product will be more likely to design a product that meets the needs of the client. Therefore, it is strategically advantageous for a designer to have an approach or a method when beginning a new project. Novice designers should try out the approach that they feel best meets their design needs. Experienced designers should be able to implement established methods automatically and alter these methods in order to create custom solutions for various situations.

The following sections outline different methods to design: ADDIE, waterfall, rapid prototyping, ASSURE, AGILE, design thinking, and design layers. Each method is unique in its purpose and history. Each section contains a brief explanation of the method and, when necessary, a diagram and a brief history of the method. These sections are thorough enough to give the designer a basic understanding of each method, however, more reading is required on each method in order to best implement them during the design process.

ADDIE

In 1975, the Center for Educational Technology at Florida State University created the ADDIE model for the U.S. Army (Clark, 1995). The ADDIE model outlines five steps to instructional design: analyze, design, develop, implement, and evaluate. Until the mid-1980's, ADDIE was generally seen as a linear model, meaning that the designer would not move from one step to another until the previous step was completed. Nowadays, ADDIE is often referred to as less of a step-by-step process and more of a design mentality. It has a wide range of applications and forms the basis for many of the design models that are used in instructional design today (Clark, 1995).

Waterfall

Waterfall is an adaptation of ADDIE that is sequential and linear. It follows these six steps: feasibility, analysis, design, implementation, testing, and maintenance. "In a true Waterfall [design] project,

each [step] represents a distinct stage of … development, and each stage generally finishes before the next one can begin" (Lotz, 2013). Once a step is completed the designer generally does not return to that step. This application of the ADDIE model is very useful in environments that are bureaucratic in nature (like the military) where learning through failure and prototyping is not a viable option.

Rapid Prototyping

Rapid Prototyping is an adaptation of the ADDIE model that combines the design, develop, and evaluate phases. The mentality of rapid prototyping is that you need to "fail fast to succeed sooner" (Krissilas, 2012). The goal is to create prototypes quickly, gain feedback, evaluate, and create more prototypes until you have achieved your design goals. This model is useful because it is faster than the traditional ADDIE model, but it is generally weak in up-front analysis (Siemens, 2002). Rapid prototyping is useful in the business world. However, it is not the best fit in K-12 and higher education where it is often deemed unethical to intentionally prototype flawed or unfinished products on human learners.

ASSURE

The ASSURE model was developed by Dr. Sharon Smaldino, a former president of AECT. She realized that there were many aspects of the ADDIE model that would be important for teachers in the field. This model is most widely used by teachers in K-12 and higher education who have the need to adjust and design individual lessons rather than entire programs. The ASSURE model consists of the following steps: (1) analyze learners, (2) state objectives, (3) select method, media, or materials, (4) utilize media and materials, (5) require learner's participation, (6) evaluate and revise. Each step of the process is intended to focus back on the learner's experience. This model is extremely helpful with curriculum mapping for teachers (Grant, 2013).

AGILE

The AGILE model is an adaptation of the ADDIE model that focuses around meeting deadlines. The goal is to produce a working piece of the project with every sprint and to hit a milestone in the project at least every three months. This method encourages designers to consistently produce and discourages stagnancy in design (Agile methodology, n.d.)

This method is similar to the rapid prototyping method in that the designer develops, produces, evaluates, and repeats the process in order to create the best product available. It has similar elements as the waterfall method in that designers don't make changes to their direction once they have started a sprint. All energy and effort is to be focused on achieving desired outcomes during the sprint. After the sprint period, designers are free to evaluate, analyze, and change their direction as needed.

Design Thinking

Design Thinking follows similar steps as the ADDIE method, but it is fundamentally different in mindset. For example, the first step to Design Thinking is to empathize rather than analyze. Before designers define what is trying to be accomplished, they need to understand their users as much as possible. The second step is to define or to pinpoint the needs and desired outcomes for the user. The

third step is to ideate or to be as creative as possible in finding possible solutions or approaches to the problem. The fourth step is to prototype the ideas from the third step. Finally, the fifth step is to test; give the prototype to the original user and accept their feedback and recommendations.

This method, like rapid prototyping, has a preference toward active experimentation instead of overly detailed planning. It is encouraged in areas where designers have to be deliberate. This model is linear, like the ADDIE model and the waterfall method, and designers are discouraged to jump to the next step before they have completed the previous step.

Design Layers

Design layers is an approach that is fundamentally different than any of the methods previously mentioned. Instead of looking at design in terms of a step by step process, this method looks at a product as being made up of many different layers. This method assumes that “a designer organizes constructs within several somewhat independent layers characteristic of instructional design” (Kearsley, n.d.). In his book, An Architectural Approach to Instructional Design, Gibbons (2013) states that design layers are conceptual tools, generally invisible to the naked eye, and extremely useful if the designer can spot them. Gibbons outlines 7 layers in design: content layer, strategy layer, message layer, control layer, representation layer, data management layer, and media-logic layer. The designer needs to be able to conceptualize each layer and clearly understand how each layer feeds into the others.

- Content layer: This layer deals with database structure. It is the layer that “supplies knowledge elements during instruction” (Gibbons, 2013). The designer decides on the nature and structure of knowledge that needs to be learned. Also, designers decide on appropriate knowledge content for the desired outcomes.
- Strategy layer: This layer illustrates the strategy for interactions between the content and the participants. The primary “design concerns of the strategy layer [are]: goal, time, and activity” (Gibbons, 2013). Strategic goals outline what the designer and learner do to help learners reach desired outcomes. Activities and time constraints are designed strategically in order to help learners reach their maximum potential within the classroom.
- Message layer: The message layer deals with the “structure of knowledge,… [and] carries out strategic plans through conversational exchanges” (Gibbons, 2013). The message layer communicates the strategy layer and the content layer to the learner through meaningful conversation.
- Control layer: This layer “expresses the learner’s side of the conversation” (Gibbons, 2013). In this layer, learners take action by communicating back to the instruction and moving forward. The designer creates a way for the learner to take control of their learning, communicate constructively with their instructor, and collaborate with other learners.
- Representation layer: The representation layer “provides information and meaning in sensory form” (Gibbons, 2013). It is the only tangible layer of design. All other layers are intangible. In this layer the designer decides how to best represent the course and learning material in a way that appeals to the senses of the learner. This layer is one of the most important, because it impacts the intellect and the emotional state of the learner.
- Data management layer: This layer “records, analyzes, reports, and stores learning data” (Gibbons, 2013). The data management layer is vital to measuring the success and impact of the program on the learners. The designer creates the data management layer in order to provide feedback to learners, stakeholders, and developers.

- Media-logic layer: The media-logic layer “executes the operations of all other layers” (Gibbons, 2013). The media-logic layer constantly determines ‘what comes next’ during instruction. This can occur through the instructor, online media, or some other means thought of by the designer.

Conclusion

Each method of instructional design is created for a unique purpose. Designers must learn about methods, experiment with them, and decide on the method that best fits their project. Once a designer has chosen a method, more exploration will be necessary in order to fully implement the method during the design process. Experienced designers will adjust and re-think their method in order to best meet the needs of their project. A well-implemented approach can help designers increase the continuity of the product, increase the success of the product in meeting desired outcomes, and avoid design paralysis. Designers should seriously consider which of these methods (or other methods not mentioned above) best fits their project before they begin.

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