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INSTRUCTIONAL PSYCHOLOGY
& TECHNOLOGY

Implementation and Instructional Design

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Instructional Design | New Designs | Difussion of Innovations | Implementation Factors

The diffusion of innovations is a process in which a product or service is implemented by an innovator. The diffusion process includes knowledge, persuasion, decision, implementation, and confirmation. The authors describe important factors of implementation using the five stages of the diffusion process: knowledge, perception, decision, and implementation. This article also reviewed characteristics of a design itself that can impact rates of adoption: relative advantage, compatibility, complexity, trialability, and observability. It is recommended that instructional designers consider the phases of innovation adoption as a framework for creating their implementation plans.

Editor's Note

This is a remixed version of an earlier chapter on implementation in instructional design that can be found at the ADDIE Explained website, and is printed here under the same license as the original.

Instruction is designed to be used. This seemingly obvious statement carries a rather significant implication: the work of an instructional designer should not end upon the final development of the product, but must include considerations for when, where, and how the instruction will be used by real learners in actual situations. This work is called implementation. It requires planning and attention to detail—the same as found throughout the rest of the instructional design process, in fact—to complete successfully. Without implementing an instructional design, all the design work would, in large measure, be wasted.

Implementation is a frequently-skipped step of the instructional design process, however. Designers are often (understandably) ready for their next exciting assignment, and often the client or other stakeholders want to be the

primary actors during implementation. The organization the designer works for may also not consider it within their scope to assign instructional designers to help in the implementation phase.

But even when someone else has the actual responsibility to implement an instructional design, the designer can (and should) still be involved, at least in some fashion. Often he or she will have information that no one else has about the design (what certain components are meant for, or how certain features behave), and that information is crucial to ensure it can be implemented successfully. Few people know the entire project as well as the designer does, and this expertise should be drawn upon during the implementation process.

The purpose of this chapter is to introduce considerations that need to be made during the implementation phase of the instructional design process. To organize our discussion we rely on the five stages of introducing a new design as described by Everett M. Rogers (2003). Additionally, it is imperative that instructional designers (or other change agents like teachers or stakeholders) are aware of how people typically use products or services as they are being implemented. So we also describe how adopters of new products or services commonly move through Rogers's stages.

Adopting New Designs

Gibbons (2013) described the importance of implementation as follows:

Implementation is a period of intense and important change. In addition, it is a period of high-stakes decisions that affect the judgment of continued use of your product. Your product is not only making its first impression on people during implementation, but it is gathering either support or censure from those most likely to determine its viability—students, instructors, and administrators. A careful implementation plan can help your product to be introduced with the best possible chances of success (p. 410).

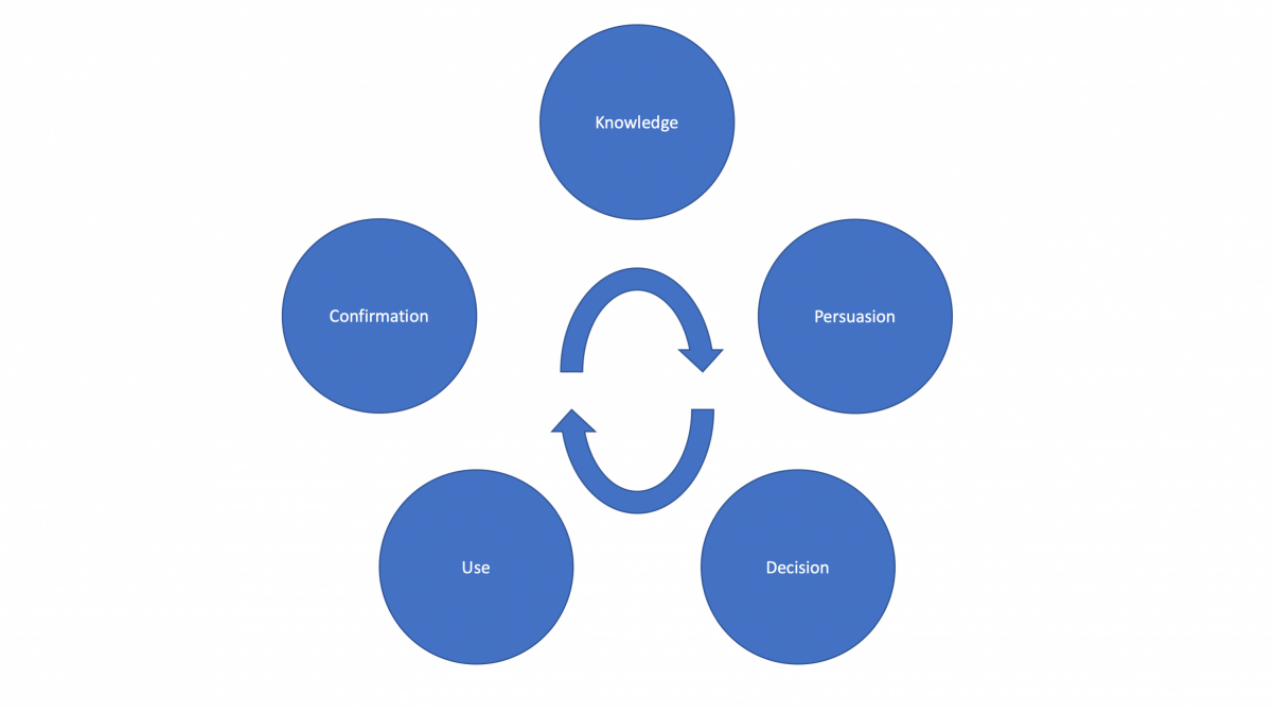
Similarly, Rogers (2003) suggested that, "the perceived newness of an innovation, and the uncertainty associated with this newness, is a distinctive aspect of innovation decision making" (p.161). As a result of this "uncertainty," understanding the design adoption process can help designers plan an instructional design implementation to maximize the chances it can have its intended effect with learners. To help instructional designers create a complete implementation plan, we recommend considering the phases of innovation adoption as a framework for creating their implementation plans (see Figure 1). The five stages in Rogers's model that will be discussed in this chapter are:

- Knowledge
- Persuasion
- Decision
- Use
- Confirmation

Note that the stage when people actually use the new material is stage four of this model! This should be evidence of how important it is to consider many factors that affect how someone will successfully use an instructional design, and encourage designers to not just complete the project and walk away.

Figure 1

The Stages of Roger's Implementation Model



Knowledge

The expectation within the knowledge stage is that the adopter becomes aware of the design to be implemented, and determines if a need for adopting (or implementing) the design is actually present. In the context of instructional design, this could mean the designer prepares (or helps prepare) material that is useful to decision-makers about why they should use the instruction. This could take the form of an information sheet, or be more sophisticated like a full marketing campaign. It can also be directed to the students themselves, or others who might be the primary adopter of the design who will then introduce it to students (like a teacher or a school district).

Persuasion

The persuasion stage occurs when the adopter begins to decide if they find the new design acceptable. During this process, the adopter "actively seeks information about the new idea, decides what messages he or she regards as credible, and decides how he or she interprets the information that is received" (Rogers, 2003). It is through this process that an adopter begins to decide if the design will be accepted. Instructional designers can facilitate the persuasion stage at the same time they provide knowledge about it. Why is it compelling? How does it fulfill real needs? What can be said about it that adopters will feel emotionally attracted to? (Do more than just provide the facts!) Like before, persuasion can be directed to both the student or other decision-makers.

Decision

The decision stage includes the adopter actively participating in tests that will assist them in determining if the design will be adopted or rejected. It is important to note that this process can justifiably lead to either of these results: adoption or rejection. If the design is adopted, it is evidence that it is seen as a solution to the problem or issue the adopter initially defined. If the design is rejected, it can be classified as either active or passive rejection. According to Rogers (2003), active rejection consists of considering adoption of an innovation and then actively deciding not to adopt it. Passive rejection is when no identifiable decision is made, but due to inaction the innovation is effectively rejected. Instructional designers can help with the decision phase by making it as easy as possible for students or decision-makers to try out the instruction before committing to it. Can the designer be on-site for a test of the materials? Can they demonstrate to students or decision-makers what it actually looks like when the instruction is being used? Can they give away a component for free that people can test?

Use

The next stage in this model is the actual usage of the new design. Using a new product is generally not a one-time endeavor. New design usage is generally considered a long-term process. While the definition of "long-term" can be ambiguous and is heavily determined by the context, it is important to know the use of a new innovation within instructional design is usually not simply "plug and play." There is generally a period of continued education and professional development associated with the adoption. The instructional designer might provide getting started materials so people begin using the materials successfully, or technical support to make sure problems can be solved as soon as they are apparent. They might have to train the person leading the instruction, or at the very least show students how to use all of the features found in the instruction.

As the design is implemented, it is likely that an event referred to as re-invention may occur. Re-invention is defined in this context "as the degree to which an innovation is changed or modified by a user in the process of its adoption and implementation" (Rogers, 2003, p. 180). It is important to note that re-invention is not necessarily a negative, as it can lead to improved results. For instance, an instructional designer may have intended that students complete an online module individually, but as it begins to be used throughout a company, the employees start to gather together in groups and complete the assignments together. Even though the designer did not intend for this kind of use, evaluations could show that it is more effective—students learn more and have deeper insights as they work together. An implication of this is that designers should make their designs flexible, so they don't break down during re-invention. They should also watch for re-invention because it might give them ideas for how they can design better in the future.

Confirmation

Confirmation occurs as the adopter evaluates the decision to adopt and implement the design. Are they satisfied with what they chose? During this stage it is possible that the design will be subsequently discontinued. The evaluation can be based on many measures: learner performance, ease of use, satisfaction, cost to maintain, etc. If discontinuance occurs, it is often a result of some kind of dissonance, or the gap adopters experience between what they expected to happen and what actually happened. It is important, then, for continued use of the design, that the instructional designer seeks methods to reduce or eliminate dissonance. Some methods to achieve reduction of elimination include helping adopters understand how to incorporate the design into their existing practices, continued support and training, and fixing problems the adopter may be experiencing with the instruction that interfere with its ability to achieve its intended outcomes.

Application Exercise

Consider an instructional design project you are either currently involved in, or one you are familiar with. Write a brief implementation plan for this project that uses all five of Rogers's implementation phases.

Prepare a brief presentation about this implementation plan, as if you were assigned to explain to your client why each phase is important to successfully implement the project.

Attributes of Designs That Lead to Successful Implementation

In addition to the innovation-decision process, it is important for the instructional designer to consider factors in the design itself that contribute to rates of adoption. Rogers (2003) identified five such attributes: relative advantage, compatibility, complexity, trialability and observability.

Relative Advantage

The concept of relative advantage refers to whether the design is actually an improvement over the current product or service the adopter has been using. If the adopter perceives that the design's value does not exceed that of the current

product used, the design is much less desirable and unlikely to be adopted. In contrast, a design that is determined to be of greater value is more likely to be adopted. Instructional designers should be considering the relative advantage of their instruction throughout the design process. How is what they are designing better than the status quo?

Compatibility

Compatibility is in reference to how well the design aligns with other aspects of the adopter's life and circumstances. This could include the adopter's professional, pedagogical, and sociocultural ideologies. Conflict with any of these schemas, whether directly impacting the design's actual use, could threaten adoption. As indicated by Rogers (2003), "any new idea is evaluated in comparison to existing practice. Thus compatibility is, not surprisingly, related to the rate of adoption of an innovation" (p. 249). Through careful attention to the adopter's (students or other decision-makers) beliefs, interests, needs, and concerns throughout the design process, designers can help prepare their instruction so it is more compatible with what adopters expect and need.

Complexity

Complexity is how difficult it is to comprehend, incorporate, and actually use the design. While complexity does not impact the rate of adoption to the same degree as relative advantage and compatibility, the complexity of a design can negatively impact how likely it is for adopters to use (or want to use) it. If a design is perceived to be too difficult to incorporate or use, it is less likely to be adopted in the first place or more likely to be discontinued if it is adopted. Good evaluation and testing of prototypes throughout the instructional design process can help minimize the complexity of their instruction. Designers, in fact, can consider how they can specifically test prototypes to help minimize complexity (such as through a usability test).

Trialability

Trialability refers to how readily a design can be tested or used with a limited commitment. For example, software is often introduced in stages, or "betas." These stages of progressively more complete versions of a product permit its testing on a limited basis. Such testing permits users to identify issues and helps increase adoption. Trialability has a positive impact on the rate of adoption for early adopters, but is less impactful on the rate of adoption for later adopters (Rogers, 2003). As is hopefully clear, the trialability of instruction is closely associated with the decision phase described above. Designers should prepare for the trialability of their instruction as early as possible in their design process. High fidelity prototypes might be an easy and low-cost way of doing this.

Observability

Observability refers to "the degree to which the results of an innovation are visible to others" (Rogers, 2003, p. 16). Designs that are more difficult to observe or difficult to explain and operationalize are less likely to be adopted. This can be especially difficult for instructional designers because so much of the learning process is invisible or hard to observe. It helps to make sure the learning goals of the instruction are as measurable and observable as possible. Regularly reporting the results of assessments of student learning can also help. While important, however, observability is the least impactful of the attributes Rogers identified.

Application Exercise

You are an instructional designer implementing a new computer-based learning tool in a K-12 classroom. The teacher is not technologically savvy and is hesitant to use this new tool. Explain what steps might be taken to support the teacher and mitigate their concerns.

Considering Rogers' five attributes that impact the rate of adoption of innovations, please explain how these attributes would affect implementation decisions that you, as an instructional designer, would make, for this teacher.

Conclusion

In this chapter, we discussed the implementation phase of the instructional design process. We described important factors of implementation using the five stages of the diffusion of innovations: knowledge, persuasion, decision, implementation, and confirmation. We also reviewed characteristics of a design itself that can impact rates of implementation: relative advantage, compatibility, complexity, trialability and observability.

Implementation is a phase instructional designers should begin planning for at the beginning of their project. By carefully reviewing the material we provide here, designers—and those they support—will be able to ensure the instruction they create is actually used by those it is intended for so the desired changes that led to its creation can be brought about.

References

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Dr. Jason K. McDonald is a Professor of Instructional Psychology & Technology at Brigham Young University. He brings twenty-five years of experience in industry and academia, with a career spanning a wide-variety of roles connected to instructional design: face-to-face training; faculty development; corporate eLearning; story development for instructional films; and museum/exhibit design. He gained this experience as a university instructional designer; an executive for a large, international non-profit; a digital product director for a publishing company; and as an independent consultant.

Dr. McDonald's research focuses around advancing instructional design practice and education. In particular, he studies the field's tendency to flatten/redefine educational issues in terms of problems that can be solved through the design of technology products, and how alternative framings of the field's purpose and practices can resist these reductive tendencies.

At BYU, Dr. McDonald has taught courses in instructional design, using stories for learning purposes, project management, learning theory, and design theory. His work can be found at his website: http://jkmcdonald.com/