Firms need an appropriately skilled workforce for maximum effectiveness, and many increasingly use in-house development and training programs to meet this need (Barlow, 2006). However, managers often have difficulty in creating such programs. Analysis, design, development, implementation, and evaluation (ADDIE) is a framework useful for examining, creating, and implementing development and learning programs.

The ADDIE model is more a development process umbrella than specific steps for creating a training program (Molenda, 2003). However, ADDIE has become an extremely popular framework for training-program creation. A Google Scholar search finds over 7,000 articles and books discussing ADDIE, and nearly 400 articles and books on ADDIE in the business field alone. These numbers are especially impressive considering the first ADDIE discussion was in 1996 (Molenda, 2003). Despite its relatively recent emergence among learning models, ADDIE is being used by many instructors, trainers, universities, and even the American Society for Training and Development. This widespread acceptance shows the model’s utility as a development and learning framework.

Perhaps ADDIE’s most valuable aspect is in providing developers with a consistent process to follow. This road map aids planning and reduces uncertainty (and anxiety) when creating new instructional modules. With repeated use, designers can anticipate potential problem areas across different learning modules – thus reducing each application’s learning curve.

ADDIE is also an iterative process, where each phase can suggest improvements in earlier phases. This attribute encourages designers to monitor instructional development and evaluate whether results fulfill learning goals. The model’s iterative nature also lends itself to rapid prototyping. A learning model can be deployed, feedback gained from learners, adjustments made at the appropriate ADDIE stage, and the module updated to better match instructional goals.

Using ADDIE also facilitates collaborative development. Designers using ADDIE have a common understanding of development steps, and communicate better – it promotes a shared creation process. Additionally, ADDIE’s iterative nature aids distributing creation tasks; different members can take specific creation phases rather than requiring all designers to participate in each step. In this way, each member’s strength is best utilized.

Details on each ADDIE phase are as follows.

**Analyze**

In this stage the designer sets learning goals. Results from prior learning modules’ evaluation stages should be used for this phase’s input. A major outcome from this phase is specific learning goal targets – what skills, knowledge, and abilities participants must gain. This phase also requires determining available resources for learning module deployment, participant learning characteristics, and alternate delivery methods’ trade-offs. This stage
provides clear guidelines on what is needed and possible for the module. When some learning goals cannot be met, new resources must be secured, or learning goals must be altered.

Design
In this phase specific learning objectives are identified. Additionally, instructional methods, materials, and delivery system types are selected. This phase sets the training's strategy – how instructional methods will accomplish specific learning goals. The design phase is used to gauge whether learning objectives meet learning goals, and whether instructional methods accomplish the learning objectives. It is much easier to alter generic learning plans during this stage than redeveloping specific instructional activities created later.

Development
In this phase, developers create the learning content. This content includes the overall learning framework (such as an e-learning system), exercises, lectures, simulations, or other appropriate training material. This phase generates the tangible output used in training. It is the last chance to make necessary corrections before delivering the learning module. A helpful tactic in this phase is to make a training test run to determine if learning goals are met, and aligned with the design phase's strategy.

Implementation
This phase is the realization of the previous phases. Materials are given to learners, and the learning module is utilized for its intended purpose. This phase’s main utility is in implementing the learning process. However, it is also significant in identifying discrepancies (such as a gap between desired knowledge development and actual development) for future improvements.

Evaluation
During this final phase, creators assess learning goal achievement, training efficiency, technical problems that hinder learning, and any new learning opportunities identified during the implementation phase. This phase is vital because – when taken seriously – it provides information for improving the training program’s next iteration, and may suggest new training avenues for further development (Allen, 2006; Molenda, 2003).

To better illustrate the ADDIE process, it is presented graphically (along with questions a developer can answer at each stage) in Figure 1, and through an example in the following paragraphs.

To demonstrate ADDIE, a quality management training program example is presented. Developers in the analysis phase decide participants should gain a basic understanding of quality management. The training’s major restriction is being limited to a three day seminar. Participants are line workers and first-line supervisors without formal exposure to quality methods. In the design phase, specific learning goals are set as having participants understand Deming’s 14 key principles, how to measure output variation, and team methods for developing quality improvement ideas. In this example, the development phase is partially predetermined – the training will take place through a face-to-face program in an
off-site facility with only basic audio-visual equipment. Beyond these strictures, the designers decide that each topic will be covered on a separate day. The training will be a combination of lecture, hands-on demonstrations, and peer feedback. Needed materials and evaluation methods are also created during this phase.

Training is conducted during the implementation phase, and the designers note discrepancies between planned and actual training. The designers discover that most participants had exposure to quality methods, and more training goals could have been set. It is also decided that less time is needed on variation testing training and more on Deming’s principles. These insights are used in the evaluation phase, where the designers examine the training’s effectiveness. Overall, the training was deemed successful, with participants meeting previously established learning metrics. However, evaluations also indicate that – to maximize learning – variation testing needed less time and Deming’s principles needed more. Additionally, the information covered could be increased, and the developers will work with management to select possible new topics.
In conclusion, the ADDIE model is a valuable framework for developing all types of training and development programs. It offers a structure that aids individual and collaborative instructional development, and each phase provides a foundation for building upon and refining learning goals. Finally, it promotes a learning cycle where knowledge gained in one training module improves the creation of another.

**References**


**Corresponding author**

Milton Mayfield can be contacted at: mmayfield@tamiu.edu