2. 교재 연구의 개요

참고문헌:
(1) 정보교육을 위한 교재의 이해와 활용 3판, 김미량, 허희옥, 김민경, 이옥화, 조미헌
교육과학사, 2018, ISBN 978-89-254-1265-8.
제1장

2-1 교재 연구의 의미

(1) 교재의 개념

- 개념
가르치고자 하는 내용을 보다 효과적으로 전달하는데 유용한 수단이 되는 것
교수-학습 상황에서 수업의 효과성, 효율성, 매력성 증진에 공헌하는 모든 매체 및 보조 도구들을 총칭

- 종류
교과서를 비롯한 각종 도서류
실험, 관찰, 연습, 내용 제시용으로 사용되는 실물 모형
괘도, 사진, 비디오, 텔레비전, 영사용 필름, 영화, 슬라이드
각종 실험 및 관찰용 시약, 재료
컴퓨터 기반 프로그램, CD-ROM, 각종 소프트웨어 및 멀티미디어, 인터넷 사이트 등.

교재 vs 교과서
교재는 교과서와 달리 교육 당국의 승인을 받지 않고 교수자의 재량으로 사용이 가능한 것이어서 수업 교재의 선정과 제작은 전적으로 교수자의 몫

(1-1) 교수자료

- 개념
교사의 수업 효과를 증대시키기 위해 도입, 활용되는 모든 자료
- 종류
교과서, 신문, 잡지, 괘도, 표본, 사진, 모형, 사전
환등자료, 영화, 라디오, 녹음기, television, video 녹음

교수자료 vs 교구
교수자료는 수업 활동을 위한 소재의 성격을 갖는 데 반해
교구는 도구적 성격을 가짐.

(1-2) 교구

- 개념
  교수의 수단 또는 방법으로서 교수를 용이하게 하고 교수 효과를 높이기 위하여 사용되는 도구의 총칭

교구 vs 교재
 교재가 교수-학습과정을 성립시키는 직접적인 매개물인데 비해 교구는 간접적인 매개물이라고 할 수 있음.
교재는 그 자체 안에 교육적 가치를 내포하고 있는데 반해 교구는 교재와 결부됨으로써 비로소 교육적 가치를 갖게 됨.

(1-3) 교수 보조물

- 개념
  교수자가 교실에서 전통적인 수업을 전개하는 과정에 교수효과를 증대시키기 위하여 도입하여 활용하는 여러 가지 매체 및 보조물

- 교수보조물 vs 교수매체
  교수자를 돕고 보충적인 자료를 제시하는 장치이며 교수매체와 달리 독립적으로 사용하기 어려움.

 - 종류
   정적 사진이나 그림에서 시작하여 녹음기, 라디오, 영화, 교수기계를 포괄하는 이른바 '시청각 기재'를 교수보조물이라고 부름.

 (1-4) 교수매체

 - 개념
  수업상황에서 효과적, 효율적, 매력적 수업을 위해 필요한 사항들을 학습자들에게 조직적으로 제공하고자 사용되는 도구
  AECT (Association for Educational Communication & Technology): 조직하는 것, 보는 것, 듣는 것, 읽는 것, 말하는 것이 가능한 것 및 그것들을 가능케 하는 기구
  교수매체가 단순히 전자적 또는 그 이외의 교재, 교구로 한정될 수 없고 교육의 메시지와 불가분의 관계를 가짐을 의미

- 기능
  교수를 위해서는 도구가 되고, 학습을 위해서는 지침이 되는 매체로서, communication을 더 명확히 하는데 도움을 주고, 교수방법을 여러 가지로 제시하여 학습자의 흥미를 자극하고 효과적인 학습을 하도록 하는 기능.

(2) 교재 연구의 중요성

- 왜 교재연구가 필요한가 ?
- 교재는 교수-학습이라는 전달과정에서 학습내용을 전달하는데 핵심적인 요소
- 교재를 잘 활용하면 우선 학습자의 주의 집중을 도와 더욱 재미있는 수업을 전개할 수 있음.

많은 양의 정보를 짧은 시간에 효율적으로 전달할 수 있음.

교재의 내용만으로도 전개될 수업의 질을 예상할 수 있으므로, 교재가 잘 연구되고 준비되면 학습자나 교수자 공히 만족스러운 수업을 경험할 수 있음.

2-2 교재

(1) 교재의 종류

- 매체와 자료, 교구, 보조물 등을 포괄

교재 선택의 문제
교수자가 설계하는 수업의 목적에 따라 적절한 교재를 선택하는 것이 중요하며, 이러한 교재 선택의 문제는 내용과 밀접한 관계가 있음.

(2) 좋은 교재의 특징

학습자의 특성과 출발점 행동, 사전 학습의 정도 등이 고려되어야 한다.
학습자의 흥미와 동기를 유발할 수 있도록 설계, 개발되어야 한다.
제공하는 정보의 질이 총체적으로 관리되어야 한다.
교재로 전달되는 내용이 정확하고, 시의적절하며 신뢰할 수 있어야 한다.
상호 작용적인 교수-학습이 가능할 수 있도록 구조화 되어야 한다.
내용 전달에 소요되는 시간을 효율적으로 관리할 수 있어야한다.
교수 활동의 질을 관리하고 표준화하는데 도움이 되어야한다.
내용을 쉽게 이해하고 실제로 활용할 수 있도록 안내되어야 한다.
가치 중립적이고 객관적인 내용이 포괄적으로 제시되어야 한다.
수업과정에서 다양한 학습활동이 포함될 수 있어야한다.
보충, 심화 학습의 기회가 제공되어야 한다.
탐구 및 문제해결과 같은 고차적인 사고활동을 촉진시킬 수 있어야한다.

(3) 교과서

- 개념
  전통적인 인쇄매체를 대표하는 교재로서 초.중.고등 학교 교육에서 교수-학습활동의 중추적인 역할을 하는 자료
  교과서 발행 및 승인절차는 관계 규정으로 명시

국정도서: 교육부 장관 심의.발행, 교육부가 저작권을 가짐
검정도서: 교육부 장관의 검정, 저작자가 저작권을 가짐
인정도서: 교육부 장관이 시도교육감에게 위임하여 심의, 인정

일반교과서
  고등학교 일반 계열에서 선택교과로 운용되고 있는 교과에서 활용되는 교과서
전문교과서
  특성화고 즉 산업계열, 공업계열, 과학계열에서 사용되는 교과서

(4) 전자교재

- 개념
  기존 교재의 모든 기능과 역할은 물론 그 외에도 컴퓨터 환경의 강력한 파워를 이용하여 다양한 기능들을 제공하는 새로운 형태의 교수-학습자료
  문자, 그림, 소리, 동영상 등 다양한 디지털 자료를 결합한 형태의 정보와 내용을 전달할 수 있음.

장점
-전자교재가 다루는 정보의 양과 내용은 유동적이어서 수정 및 첨가가 용이
-학습자가 자신의 생각이나 의견을 반영하는 등의 적극적인 참여 가능
-비순차적인 내용의 제시가 가능하여 학습자 중심의 학습환경을 구성할 수 있음.
-교수자와 학습자, 학습자와 다른 학습자, 학습자와 교재 내용간의 원활한 양방적 상호작용을 가능하게 할 수 있음.
-멀티미디어를 통한 입체적, 동적인 교수-학습의 내용을 전달 할 수 있게 되면 학습자의 동기유발을 초래하여 수업의 효과에도 긍정적인 영향을 미칠 수 있음.

2-3 교재의 활용

(1) 교재 선정시 고려할 요인

<표 1-1> 교재 선정시 고려해야 할 요인들

1	권위성	16	최신성	31	사용자의 첫인상
2	정확성	17	유명도/평판	32	타당성
3	객관성	18	호감도	33	심미성
4	현재성/시의성	19	인용의 정도	34	풍요성
5	포괄성	20	가치중립성	35	일관성
6	충실성	21	다양성	36	가독성
7	적절성	22	전문성	37	유용성
8	실제성	23	유연성	38	접근성
9	목적성	24	완성도	39	유의미성
10	대표성	25	용이성	40	이해가능성
11	명확성	26	가치성	41	창의성
12	관련성	27	비용효과성	42	맞춤법
13	조직성/구조화	28	형태의 적합성	43	신속성
14	신뢰성	29	사용성	44	매력성
15	차별성	30	저작권 준수	45	합리성

(2) 교재의 수정

주의해야할 중요한 시안
저작권과 관련된 문제에 대한 각별한 주의가 요망
타인이 애써 개발한 교재나 자료를 자신의 것으로 둔갑시키기 보다는 원 출처를 밝히고, 원 교재의 개발권자 또는 지적 소유권자에게 사용허가를 구하는 과정이 반드시 요구됨.

교수자의 전문적 판단에 따른 교재의 수정과 재구성
교재를 수정하여 사용할 때 여러 출처가 다른 교재들이 한 번에 편집되면 그 흐름과 맥락이 일치하지 않고 대상 학습자의 눈높이에 적절하지 않을 수 있음.

(3) 교재의 개발

매체와 관계없이 교재 설계 및 개발의 기초가 되는 대표적인 모형

- ADDIE 모형 (1997)
- Dick, Carey & Carey 모형 (2014)
- Alessi & Trollip 모형 (2000)
- Kemp 모형 (1983)
- Smith & Ragan 모형 (2004)
- Leshin, Pollack, Reigeluth 모형 (1992)
- Gagné et al. 모형 (2004)

- Reiser & Dick 모형 (1995)
- Gerlach & Ely 모형 (1980)
- Gentry 모형 (1994)
- Seels & Glasgow 모형 (1998)
- Diamond 모형 (1989)
- Bergman & Moore 모형 (1990)
- ASSURE 모형 (Heinich et. al., 2002)

web의 특성 감안한 모형
- McManus 모형 (1996)
- NBISD 모형 (1999)
- Lee & Owens 모형 (2004)
- Driscoll 모형 (2002)

이들의 모형은 양질의 교재를 설계, 개발하고자 할 때 유용한 절차와 지침을 제공.
교수설계 개발자, 내용 전문가, 프로그래머 (컴퓨터 기반 교재의 경우), 조정자 (coordinator), 최종사용자 (학습자)등이 하나의 팀으로 작업

(3-1) ASSURE 모형의 절차

A: Analyze Learners
  학습자 분석: 일반적인 특성, 출발점 행동, 학습양식, 요구 분석 등 포함.
S: State Objectives
  목표 진술: 명확성, 구체성
S: Select Methods, Media, Materials
  교수방법, 매체, 자료선택: 적절성
U: Utilize Media and Materials
  매체와 자료의 활용: 다양성
R: Require Learner participation
  학습자 참여 유도: 능동성, 상호작용성
E: Evaluate and Revise
  평가/수정: 객관성, 피드백, 효과성

(1) 여러가지 ASSURE Model Template
https://study.com/academy/lesson/assure-model-lesson-plan-template.html

ASSURE: Instruction Design Model
https://educationaltechnology.net/assure-instructional-design-model/

Branch & Kopcha say that "instructional design is intended to be an iterative process of planning outcomes, selecting effective strategies for teaching and leaning, choosing relevant technologies, identifying educational media and measuring performance" (p. 77).

참고문헌
Branch, R. M., & Kopcha, T. J. (2014). Instructional design models. In Handbook of research on educational communications and technology. Springer New York.

(2) ASSURE: Instructional Design Model
by Serhat Kurt

ASSURE is an instructional design model that has the goal of producing more effective teaching and learning. "ASSURE" is an acronym that stands for the various steps in the model. The following is a breakdown of each step.

A - Analyze Learners

The first step in the process is that the teacher should analyze the attributes of her learners. There should be a focus on those learner characteristics which are associated with the learning outcomes desired. The information gathered will help you in the decisions that you make with respect to the other steps in the process. When you determine the character of the learners, it will guide you in choosing specific strategies and resources to aid the learning process.

The analysis of your learners should include:
- The general attributes of your learners, such as age, academic abilities, gender, interests, etc.
- Prior competencies
- Learning styles, such as auditory, visual, and tactile

S - State Standards and Objectives

After the analysis of the learner attributes, the teacher must state standards and

objectives for the learning module. This statement consists of a specification of what the learners will be able to do as a result of the instruction.

To be more concrete about things, this statement will focus on what the learner will know or be able to do as a result of the instruction. An example of this is with medical students. The learners will be able to name at least two databases and two search techniques that they can use to locate medical evidence for particular cases.

The objectives can be used in assessing the success of the students, perhaps for the grading process. Also, you can use them to let the learners know what they will accomplish through the class.

The mark of a good set of learning objectives is conformity to the ABCDs of well-stated learning objectives. They are as follows:

- Audience - For whom is the objective intended?
- Behavior - What is the behavior or performance to be demonstrated?
- Conditions - What are the conditions under which the behavior or performance will be observed?
- Degree - To what degree will the knowledge or skill be mastered?

The objectives statement should be formulated with verbs that pinpoint the learning objective. A useful guide to the appropriate verbs to use is contained in Bloom's Taxonomy. Remember that assessment can only be based on your learners' behavior. A learner may know some material backwards and forwards but may not be able to perform well on a test.

S - Select Strategies, Technology, Media, and Materials

The second "s" in the acronym stands for select strategies, technology, media, and materials. Given what your learning objectives are, it's necessary to pick instructional strategies, technology, and media that will bring about the results that you want.

First, you should figure out what which delivery method will be best for your instruction. For instance, what proportion of your instruction will be instructor-centered and what proportion of will be student-centered? The first of these are strategies such as lecture, demonstration or showing a video. The second are strategies such as group discussion or cooperative group work.

Common sense weighs in on the side of learner-centered strategies. Learning becomes more exciting when there is more class participation. Ultimately, it's the

learner who must gain mastery over the material, not the teacher. However, there will be a certain amount of crucial information and technique that the teacher must give over and demonstrate.

Learning is at its best when the teacher merely leads the student into discovering the correct answer to a problem themselves. An effective teacher is merely a facilitator to the process of learning.

Once you select your teaching strategy, then it's time to figure out which technology, media, and materials best support the method of teaching that you're using. This ranges from simple tools such as chalk and blackboard to more sophisticated ones such as power-point presentations. What must be remembered is that the instructor is the essential ingredient in giving over the material. Fancy tools are useful, but it ultimately boils down to having someone who knows more than what the textbook contains.

U - Utilize Technology, Media, and Materials

This step in the ASSURE process concerns making a plan as to how you will utilize the technology, media, and materials that you have selected. As with all of the instructional steps, you must make sure that your plans contribute towards producing the objectives that you have laid down.

It's important to follow the "five p's" process to achieve this:

Preview the Technology, Media, and Materials

This means that it's important to plan ahead of time just how you're going to use them. It's good to do a dry run of your lesson before you actually teach it. Make sure that the whole lesson will go smoothly and seamlessly.

Prepare the Technology, Media, and Materials

You need to gather together all of the things that you will need to teach your lesson. They must be working properly. For example, if you are making a power-point presentation, then you'll need to create the text and graphics for each screen.

Prepare the Environment

There is some minimal preparation required to set up the learning environment.

Simple things like making sure that you have enough desks are important. Also, if you have control over the situation, you should make sure that there are no sources of noise that will disturb the students.

Prepare the Learners

First, you need to clearly inform the learners as to what the learning objectives are. This will help the learners create a mental map of what they need to absorb. Next, it's important to tell the students how they will be assessed. You need to tell them what their assignments will be, how they will be graded, if there are tests, etc. Also, you should explain to the students what the benefits of learning the material are.

Provide the Learning Experience

You then actually carry out the lesson. This is where all of your planning takes effect. You should be prepared to carry out the lesson with every prior step of the process in mind. This will insure your success as a teacher.

R - Require Learner Participation

This step actually belongs within earlier steps. It requires that you make plans to how you are going to actively engage your students in the material that you are teaching. This needs to be figured out both at the class level and the individual level.

The most basic step that you can take is requiring participation of the students in class discussions. A more sophisticated approach would require that students prepare questions and comments at home to bring into the class. You might try even allowing individual students to lead classes or discussions in the style of a seminar.

Beyond this, you need to plan exactly how the students will participate in the learning process generally speaking. How will they learn the information and techniques included in a lesson? This plan needs to be more specific than just saying that they will listen and absorb the material. Maybe you will encourage a specific kind of note-taking or other learning strategies.

E - Evaluate and Revise

The final step in the ASSURE process is just as crucial as all of the others. In this

step, you evaluate the impact of your teaching on student learning. This includes an evaluation of your teaching strategies and the technology, media, and materials that you used. The following questions are useful to ask during this evaluation:

- Did your lesson meet the learning objectives that you planned? How will you determine whether the students reach the objectives? Is your way of assessing the students in line with your learning objectives?
- Can this lesson be improved? How? How are you going to assess the weaknesses in your presentation?
- Was your choice of media and materials a good one? How will you assess the effectiveness of these tools?
- Is it possible that other technologies, media, and materials would have done a better job?

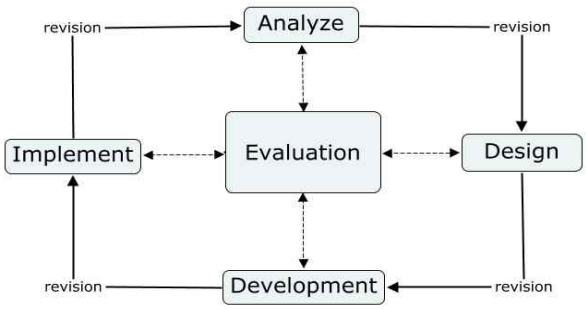
The final step in your evaluation should focus on feedback from your students. Was their experience positive overall? Do they feel that they have reached your objectives and their own personal objectives? How will you determine whether or not your performance was effective?

In conclusion,
the ASSURE process is really just a matter of common sense. However, it is good to follow a regimented guide to improve your teaching technique. Any effective teacher knows that the perfection of their technique does not come overnight, and there is always room for improvement. By following the ASSURE process, you will be sure to improve your teaching for many years to come.

(3-2) The ADDIE model

ADDIE Model: Instructional Design
by Serhat Kurt

For many years now, educators and instructional designers alike have used the ADDIE Instructional Design (ID) method as a framework in designing and developing educational and training programs. “ADDIE” stands for Analyze, Design, Develop, Implement, and Evaluate. This sequence, however, does not impose a strict linear progression through the steps. Educators, instructional designers and training developers find this approach very useful because having stages clearly defined facilitates implementation of effective training tools. As an ID model, Addie Model has found wide acceptance and use.

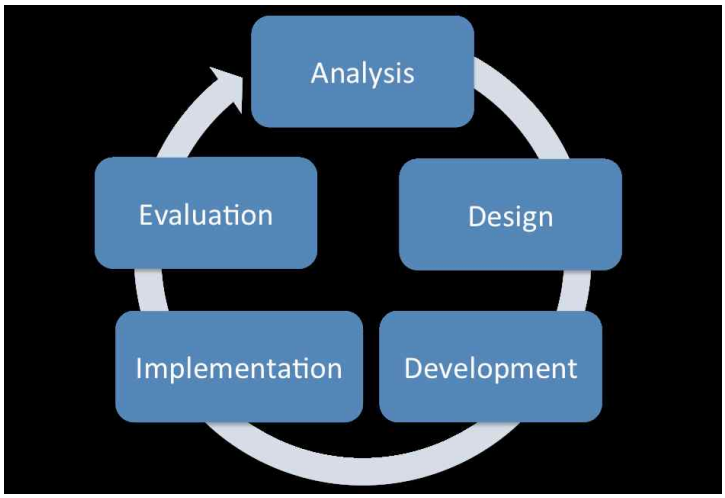


Most ID models are variations of the ADDIE model.

The concept of Instructional Design can be traced back to as early as the 1950s. But it wasn't until 1975 that ADDIE was designed. Originally developed for the U.S. Army by the Centre for Educational Technology at Florida State University, ADDIE was later implemented across all branches of the U.S. Armed Forces.

The ADDIE model was based on an earlier ID model, the Five Step Approach, which had been developed by the U.S. Air Force. The ADDIE model retained this five-step feature, and included many sub-stages within each of the five broad phases. Due to the hierarchical structure of the steps, one had to complete the process in a linear fashion, completing one phase before starting the next.

Practitioners over the years have made several revisions in the stages of the original hierarchical version. This has made the model more interactive and dynamic. It was in the mid-1980s that the version similar to the current version appeared. Today, the influence of the ADDIE method can be seen on most ID models being used.
Addie: Stages



The five components of the Addie Model are:

Analysis

The Analysis phase can be considered as the "Goal-Setting Stage." The focus of the designer in this phase is on the target audience. It is also here that the program matches the level of skill and intelligence that each student/participant shows. This is to ensure that what they already know won't be duplicated, and that the focus will instead be on topics and lessons that students have yet to explore and learn. In this phase, instructors distinguish between what the students already know and what they should know after completing the course.

Several key components are to be utilized to make sure analysis is thorough. Course texts and documents, syllabi and the internet are to be employed. With the help of online materials such as web courses, a structure can be determined as the primary guide for the syllabus. At the end of the program, instructional analysis will be conducted to determine what subjects or topics are to be included.

The Analysis Phase generally addresses the following issues and questions:

1. What is the typical background of the students/participants who will undergo the program? Personal and educational information such as age, nationality, previous experiences and interests should be determined. What is the target group? What are the educational goals, past knowledge levels, experiences, ages, interests, cultural background etc. of the learners?
2. What do the students need to accomplish at the end of the program? What are the learner's needs?
3. What will be required in terms of skills, intelligence, outlook and physical/psychological action-reaction? What are the desired learning outcomes in terms of knowledge, skills, attitudes, behavior etc.?
4. Determining popular methods being used around the subject and taking a look at what needs to be developed and improved. Review of existing instructional strategies employed. Are they adequate? What aspects need to be added, clarified and improved upon?
5. Determining target objectives of the project. What instructional goals does the project focus on?
6. Determining the various options available with respect to learning environment. What is the most conducive learning environment? A combination of live or online discussions? What are the Pros and Cons between online- and classroom-based study? What delivery option is to be chosen? What type of learning environment is preferred? Does one opt for online or face-to-face or a

blend of both? If online is preferred what will be the difference in learning outcomes between classroom-based learning and web-based learning?

7. Determining limiting factors to the overall goal of the project. What limiting factors exist with respect to resources, including technical, support, time, human resources, technical skills, financial factors, support factors?

Design

This stage determines all goals, tools to be used to gauge performance, various tests, subject matter analysis, planning and resources. In the design phase, the focus is on learning objectives, content, subject matter analysis, exercise, lesson planning, assessment instruments used and media selection.

The approach in this phase should be systematic with a logical, orderly process of identification, development and evaluation of planned strategies which target the attainment of the project's goals. It should follow a very specific set of rules, and each element of the instructional design plan must be executed with attention to detail. Being a stickler for the details is crucial to the success of the design stage. This systematic approach makes sure that everything falls within a rational and planned strategy, or set of strategies, that has the ultimate goal of reaching the project's targets. During the design stage, the IDs need to determine:

1. Different types of media to be used. Audio, Video and Graphics are prime examples. Are third party resources going to be utilized or will the IDs create their own? Will you prepare the teaching learning material?
2. Various resources at hand required to complete the project. What are the available resources at your disposal for completing the project?
3. Level and types of activity to be generated during the study. Is it going to be collaborative, interactive or on a per participant basis?
4. Using a teacher's style approach, how will you implement the parts of the project (i.e. behaviorist, constructivist, etc.)?
5. Time frame for each activity. How much time is to be assigned to each task, and how will learning be implemented (per lesson, chapter, module, etc.)? Do the topics require a linear progression in presentation (i.e. easy to difficult)?
6. The different mental processes needed by the participants in order to meet the targets of the project. What are the prescribed cognitive skills for students to achieve the project's learning goals?
7. Knowledge and skill developed after each task. Do you have a way of determining that such values have indeed been achieved by the students? What is the method adopted by you to determine the acquisition of desired

competencies by the students?

8. The roadmap of how the study or project will appear on paper. Will it be advantageous to the ID to create a map of the different activities to see if they are in line with the goal of the project?
9. If the project is web-based, what kind of user interface will you employ? Do you already have an idea on how the site will look like?
10. The feedback mechanism you will use to determine if the participants are able to digest the lessons. What is the mechanism designed by you to obtain the learners' feedback on material learnt?
11. Given the wide variety of student preferences and learning styles, what method will you implement to make sure that the program fits their wants? How will you design your project activities so as to appeal to diverse learning styles and interests of students? Will you opt for variety in delivery options and media type?
12. Pinpoint the main idea of the project (training activity).

Development

The Development stage starts the production and testing of the methodology being used in the project. In this stage, designers make use of the data collected from the two previous stages, and use this information to create a program that will relay what needs to be taught to participants. If the two previous stages required planning and brainstorming, the Development stage is all about putting it into action. This phase includes three tasks, namely drafting, production and evaluation.

Development thus involves creating and testing of learning outcomes. It aims to address the following questions:

1. Is the time frame being adhered to in relation to what has been accomplished in terms of material? Are you creating materials as per schedule?
2. Do you see team work across various participants? Are the members working effectively as a team?
3. Are participants contributing as per their optimal capacity?
4. Are the materials produced up to task on what they were intended for?

Implementation

The implementation stage reflects the continuous modification of the program to make sure maximum efficiency and positive results are obtained. Here is where IDs strive to redesign, update, and edit the course in order to ensure that it can be delivered effectively. "Procedure" is the key word here. Much of the real work is

done here as IDs and students work hand in hand to train on new tools, so that the design can be continuously evaluated for further improvement. No project should run its course in isolation, and in the absence of proper evaluation from the IDs. Since this stage gains much feedback both from IDs and participants alike, much can be learned and addressed.

Design evaluation is done in the implementation phase. Designers play a very active role in this stage, which is crucial for the success of the project. Developers should consistently analyze, redesign and enhance the product to ensure effective product delivery. Meticulous monitoring is a must. Proper evaluation of the product, course or program, with necessary and timely revisions, is done in this phase. When instructors and learners actively contribute during the implementation process, instantaneous modifications can be made to the project, thus making the program more effective and successful.

The following are examples of what can be determined:

1. Advise on your preferred method of record keeping, as well as the actual data you would like to mine from the experience of students interfacing with the project.
2. What is the emotional feedback given to you by teachers and students during initial demonstration of the project? Are they genuinely interested, eager, critical or resistant ?
3. As the project proceeds, do you see that IDs are able to grasp the topic immediately or do they need help ?
4. Explain how you are going to deal with any possible errors during testing. What will your response be if, after presenting activities to students, things do not go as planned ?
5. Did you prepare a back-up tool in the event of initial failure of the project ? When technical and other problems arise do you have a back-up strategy ?
6. Will you go for implementation on a small scale or a large scale ?
7. When the student group gets the material can they work independently, or is constant guidance required ?

Evaluation

The last stage of the ADDIE method is Evaluation. This is the stage in which the project is being subjected to meticulous final testing regarding the what, how, why, when of the things that were accomplished (or not accomplished) of the entire project. This phase can be broken down into two parts: Formative and Summative. The initial evaluation actually happens during the development stage. The Formative phase happens while students and IDs are conducting the study, while

the Summative portion occurs at the end of the program. The main goal of the evaluation stage is to determine if the goals have been met, and to establish what will be required moving forward in order to further the efficiency and success rate of the project.

Every stage of the ADDIE process involves formative evaluation. This is a multidimensional—and essential—component of the ADDIE process. Evaluation is done throughout the implementation phase with the aid of the instructor and the students. After implementation of a course or program is over, a summative evaluation is done for instructional improvement. Throughout the evaluation phase the designer should ascertain whether problems relevant to the training program are solved, and whether the desired objectives are met.

While often overlooked due to time constraints and monetary reasons, Evaluation is an essential step of the whole ADDIE method as it aims to answer the following questions:

1.Determine the categories that will be established to evaluate the effectiveness of the project (i.e. improved learning, increased motivation etc.) On what factors or criteria will the effectiveness of project be determined ?

2.Determine the way you will implement data collection, as well as the timing at which it will be effectively made. When will the data related to the project's overall effectiveness be collected and how ?

3.Determine a system for analyzing participant feedback.

4.Determine the method to be used if some parts of the project need to be changed prior to full release. On what basis will you arrive at a decision to revise certain aspects of the project before its full implementation ?

5.Determine the method by which reliability and content validity can be observed.

6.Determine the method by which you will know if instructions are clear. How is the clarity of instructions assessed ?

7.Determine the method by which you can analyze and grade the response of the participants on the project.

8.Determine who gets to receive your final output regarding the project. Who will prepare this report on the results of the evaluation ?