

INTEGRATING TECHNOLOGY INTO CLASSROOM: THE LEARNER-CENTERED INSTRUCTIONAL DESIGN

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ABSTRACT

In this study, to present an instructional model by considering the existing models of instructional design (ARCS, ADDIE, ASSURE, Dick and Carey, Seels and Glasgow, Smith and Ragan etc.) with the nature of technology-based education and to reveal analysis, design, development, implementation, evaluation, and to revise levels with lower levels of the instructional design model were aimed. The ASSURE model is extremely learner centered. Unlike many design models, it was created using cognitive theories of learning as its foundation. The directions of Assure Model are characteristic features of learners, getting stated objectives and selecting the best media and materials for the instruction program. In this study, document analysis method were used. As a result, two example lesson plans given can be updated according to all grades and lessons. With the use of these example plans are expected to perform more effective learning.

Key Words: Technology, integration, instructional design.

INTRODUCTION

To integrate the technology with education is a well accepted need. A great of technology policies have been put in place recently so as to fulfill the need. The most important of all attempts is likely FATİH Project. Within the scope of FATİH Project planned to accomplish until 2016, it has been planned to supply with 620.000 interactive boards for classrooms and a tablet computer for each teacher and student. It is indicated that the Project carried out jointly by a lot of agencies and institutes is not only a software and hardware providing project but also it has also four components, "E-content", "In-service Training", "Curriculums" and "Safe Information and Communication Technology Usage" (Republic of Turkey Ministry of National Education [MNE], 2012). The effective and productive usage of technology reached to the schools within the scope of FATİH Project is one of the basic conditions for success in the Project. In terms of most teachers, technologies such as interactive boards and tablet computer distributed for schools, teachers and students are new and not known well. For teachers, the usage of these technologies for education is a subject known less. When viewed from this aspect, to provide convenient support so that the teachers can use these technologies efficiently and productively is an obligation more than a necessity. In this process, concrete steps for how teachers integrate the technology into their lessons must be taken. One of these steps is to organize activities enabling teachers acquire information about how to design the lessons integrated with technology. It is thought that within its limits, the diversified usage of information and plans for teaching lessons presented in this article will be useful to carry out the learning activities more efficiently and productively.

The Technology Integration Policies in Turkey

From past to present, various in-service training applications have been put into practice to integrate the technology with educational environment and to give opportunities for teachers' career development. However, it is seen that these in-service training organized by MNE focus on basic computer training mostly (MNE, 2008). The trainings are generally given by means of face to face education activities in summer season. It can be said that the efforts to give such education using various technology via distant education. On the other hand, it appears that the practices are not completely different from the activities carried out in classroom. Related research reveals that it has not been succeeded at accomplishing the expected objective for in-service training, in other words, the practices are far from effectiveness, productiveness and attractiveness (Akbaba-Altun, 2006; Çağiltay, Çakıroğlu, Çağiltay and Çakıroğlu, 2001; Kayaduman, Sırakaya and Seferoğlu, 2011; MNE, 2004; Usluel, Mumcu and Demiraslan, 2007).

On the other side, in integration process, whether the teachers approve of the technology or not is extremely substantial has been indicated (Alrafi, 2005; Avcu, 2011; Hardy, 1998; Owre, 2006). In this perspective, some models have been developed with the purpose of examining why the individuals exhibit some behaviours. The theory being a resource for most of these models is Theory of Reasoned Action – TRA. TRA focuses on the behaviour examining acceptance or rejection. This theory explains that a person's behaviour depends on his/her intent and intent is determined by attitude and subjective norms. The most well-known model of all the models being adapted from TRA is likely Technology Acceptance Model – TAM. (Kourakos, 2006). TAM developed by Davis (1989) is a model measuring the individuals' desires and intents to use technology on the basis of three basic factors. These three basic factors are (1) perceived usefulness, (2) perceived ease of use and (3) the individual's behaviour oriented intent. TAM asserts that perceived benefit and perceived ease of use determine the individual's behaviour oriented intent. While *perceived usefulness* is defined as "the degree to which a person believes that a particular information system would enhance his or her job performance _i.e., by reducing the time to accomplish a task or providing timely information", *perceived ease of use* is "the degree to which a person believes that using a particular system would be free of effort" (Davis, 1989). On the other hand, it has been criticized due to its being limited by some researchers and suggestions to make it more powerful have been presented by adding various factors. Venkatesh ve Davis (2000), improved the model by adding new dimensions (Subjective Norm, Image, Professional interest, Output quality, Willingness, Demonstrability of results) and they gave Technology Acceptance Model 2 - TAM 2 name for new model. According to TAM 2, factors such as the technology's ease of use and usefulness, the persons cared by the individual judging it necessary, its enhancing the individual's social status, its being related to his/her profession, its giving an opportunity for performing a duty successfully and its nonnecessity of use have influence on the individual using the new technology (Venkatesh and Davis, 2000).

As is seen from the related research, a new technology being used effectively in educational environment requires that the teachers have information about this technology and their benefit and easiness perception levels related to the technology are high. It can be said that these two conditions have direct effects on the success of FATİH Project which is the recent project brought into force by MNE so as to integrate the technology and education. However, that the teachers' literacy levels related to technology being high will not be enough single-handedly can be said. The important thing is that the teachers can make more contribution on their students' learning by integrating the technologies with their lessons. When viewed from this aspect, it is expected that teachers can design teaching efficiently.

Instructional Design

Instructional design (ID) is a systematic process that is employed to develop education and training programs in a consistent and reliable fashion. ID is a complex process that is creative, active and iterative. Although the exact origins of the ID process can be debated, the writings of Silvern (1965) represent an early attempt to apply general systems theory (Bertalanffy, 1968) and systems analysis an approach to solving instructional process. Silvern was particularly interested in how general systems theory could be used to create effective and efficient training for aerospace and military training and published what some consider the first ID model.

In the 1960s, the ID process was applied in some higher education settings (Barson, 1967). Instructional designers believe that the use of systematic design procedures can make instruction more effective, efficient and relevant than less rigorous approaches to planning instruction. The systems approach implies an analysis of how its components interact with each other and requires coordination of all design, development, implementation and evaluation activities (Gustafson and Branch, 2007).

Although a variety of systematic ID processes have been described (e.g., Dick, Carey & Carey, 2005; Gagne et al., 2005; Morrison, Ross & Kemp, 2004; Smith & Ragan, 2005) all descriptions include the core elements (also referred to as phases) of analysis, design, development, implementation and evaluation (ADDIE) to ensure congruence among goals, objectives, strategies and evaluation and the effectiveness of the resulting instruction (Gustafson and Branch, 2007). The phases of the ADDIE model is seen in the following figure.

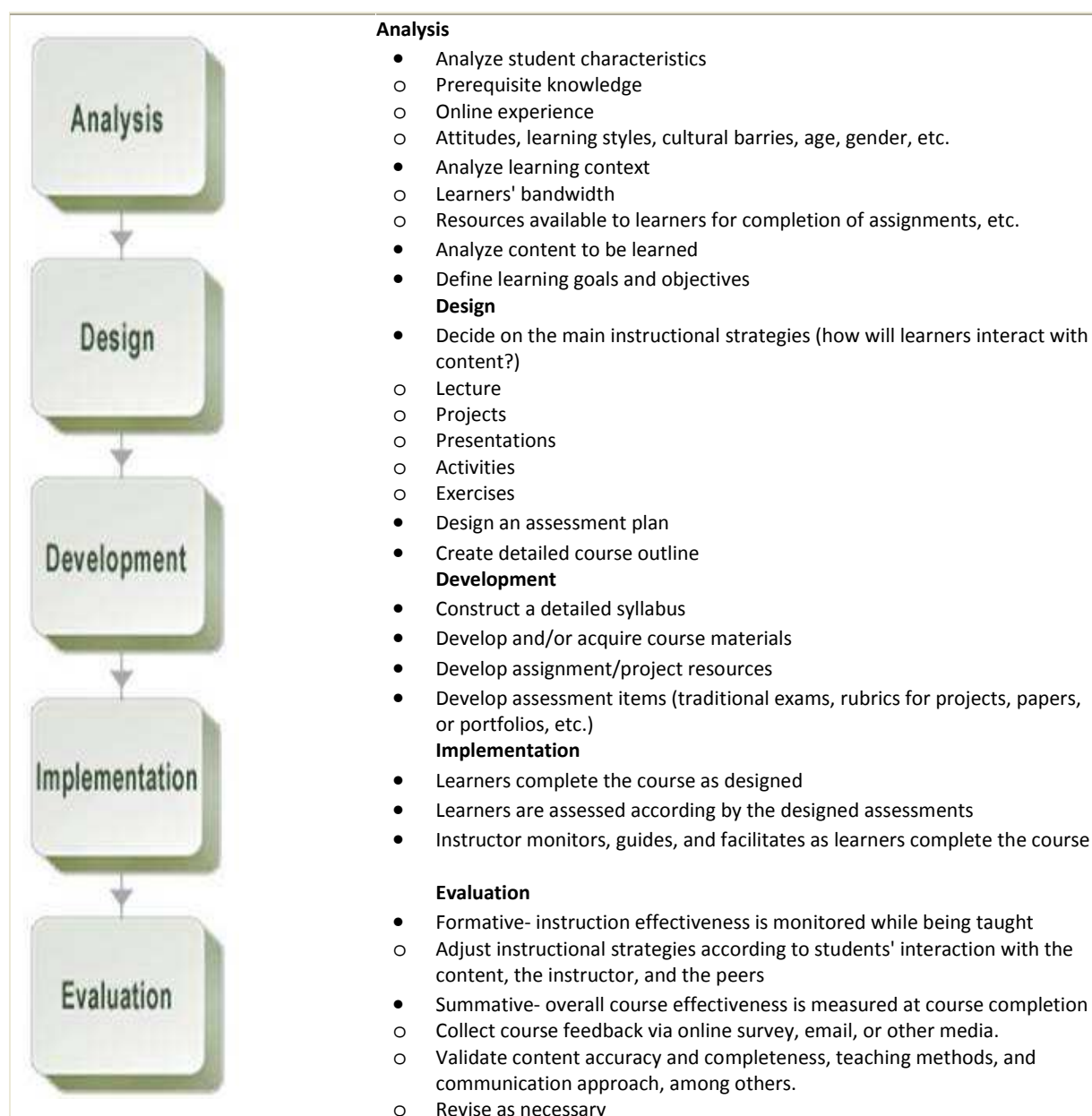


Figure 1: Phases of the ADDIE Model

Although the ADDIE activities mentioned earlier represent the fundamental concepts of the ID process, there are several characteristics that should be evident when the process is employed. These include the following:

1. ID is learner centered.
2. ID is goal oriented.
3. ID focuses on meaningful performance.
4. ID assumes outcomes can be measured in a reliable and valid way.
5. ID is empirical, iterative and self-correcting.
6. ID typically is a team effort.

Learner-centered instruction means that learners and their performance are the focal points of all teaching and learning activities. Teaching and other forms of instruction are simply means to the end of learner performance. Thus, there may be no initial assumption that a live teacher is even needed for the learner to achieve the stated objectives. Self-and group study, technology-based instruction and teacher-based strategies are all options to be considered, with the result often being a mix of all these and other strategies. Learners may also be given opportunities to select their own objectives or learning methods in some circumstances. This change in perspective from teaching to learning represents a paradigm shift of immense power when planning for effective educational environments (Gustafson and Branch, 2007). At this point, ASSURE Model emerges.

ASSURE Model

As stated in the previous parts, some variables such as teachers' perception of usefulness for technology, the teachers' thoughts that the use of technology is easy, teachers setting the technology to work by planning it efficiently have been important on the use of technology effectively. Integrating the technology with education requires the systematical use of technology. Heinich, Molenda, Russel and Smaldino (1996) developed a planning model called ASSURE model concerning the use of technology systematically in lessons. ASSURE is a abbreviation formed with the capitals of model's steps. The model is a sequence of operations developed for planning of technology use that helps teachers to design and improve the most convenient educational environment. We can say that the model aims at the solution of problems regarding enabling the use of technology effectively in educational environment and systematizing the steps of lesson plan preparing. The steps of the model is seen in the following chart (Heinich, Molenda, Russel and Smaldino, 1996).

Chart 1: The Steps of ASSURE Model

Analyze learners
State objectives
Select methods, media and materials
Utilize media and materials
Require learner participation
Evaluate and revise

According to Megaw (2006), ASSURE model is the most convenient model for integrating the theories of education technology and research with practice. The first step of ASSURE model is the analysis of the learners. To determine all of the properties of the learners is not practical and essential. Learner analysis means determining the more operational properties such as general qualities, preliminary information level, learning styles. The second step of the model is to state the objectives. It is to determine which information and skills be gained at the end of the related education. The third step is to choose the convenient method, environment and material to achieve the objectives defined in the previous step. The fourth step is to benefit from the method, environment and materials defined previously effectively and productively. The fifth step is to enable the learners benefit from learning opportunities in educational environment. The last step of the model is to evaluate all learning components so as to achieve qualified learning outputs. ASSURE model has the assertions not only supporting technology's educational potential but also minimization the problems. On the other hand, by using the model effectively, the students will be more active, technology will integrate with education, alternative evaluation methods will be used, apart from traditional methods, democratical learning methods

will be used. In this context, two different sample lesson plans grade six using ASSURE Model approach appear below.

Sample 1

Subject: Healthy Living

Grade: 6

Age: 12-13 years

Duration: 80 minutes

Number of Students: 25

Analyze Learners.

The class consist of 25 12-13 year old seventh graders who attend ABC Middle School in Ankara County Public School. Socioeconomically they are for the middle class with at least two parents having a college education. None have a serious mental or physical impairment. The students are already proficient in the basic computer skills need for this lesson. Most have their own computer at home and have high-speed Internet access.

State Objectives

- 1) Student will participate in a class discussion.
- 2) Students will read and take notes on the eight types of healthy living, and use these notes in their analysis.
- 3) Students will locate six healthy living posters from the links provided and copy them into a Word document.
- 4) Following the criteria set by the teacher, students will create six analysis sheets, one for each poster to be analyzed.
- 5) Students will correctly analyze each poster accurately complete each of the analysis sheets in a timely manner.
- 6) Students will demonstrate their knowledge of healthy living by answering a short essay question on the unit exam.

Select Methods, Media and Material

Methods

- 1) The lesson will start with an all class discussion, led by the teacher, about current examples of healthy living. This will be followed by the teacher leading the class in an example of poster analysis.
- 2) The teacher will show some videos about healthy living. Student participation will be ensure by aid of anchored learning method.
- 3) Students will use the Internet (on their tablet computer)to research the information needed to complete the analysis sheets.

Media

- 1) Interactive whiteboard will be used to record students responses during the opening discussion.
- 2) Students will have photocopy of one healthy living poster supplied by the teacher and to be used during the example analysis. The teacher will have an overhead of the same poster.
- 3) Interactive whiteboard will be used to show the class the webquest site. 4) The Internet will be used to gather the six posters.
- 5) The student created analysis sheets will be used to present the students information on the posters.

Material

- Interactive whiteboard
- Posters
- Class set of poster handouts
- Internet access in the classroom
- Access to color printer
- Tablet computers.

Utilizing Media and Material--Requiring Student Participation

Note: this is the heart of the lesson plan and these two components work together to carry it out.

Day 1: Teacher leads the class in a discussion about healthy living in today's society. Questions could include the following:

- What is your favorite food? Why?
- What are some of the best known food advertisements?
- Why do food companies advertise? Do advertisements work?
- Does anyone besides businesses use advertising?
- Do you do sports? Which kind? Why?
- How many hours do you sleep at nights?

Record student answers on the interactive whiteboard. This should take about 8-10 minutes. Next, give each student a copy of the sample healthy living poster. Try to find one with an easy to understand message and symbols students may be familiar with. Have the students point out the symbols involved, who would have created the poster and why.

Use the copy of the poster to point out any significant omissions. This is similar to what they will be doing with the webquest. This should take 10-15 minutes. Finally, show the students the webquest site via the tablet computer. Make sure this is already prepared to go prior to the lesson starting. Use the remaining class time to show the students each part of the site.

Day 2: These days will be used by the students to locate their posters and create the analysis sheets. Your role is as a helper and you should be ready to assist any student who is having trouble. It is vital that you check students' tablet computers prior to class everyday to be sure they are working and that the color printer has ink. The main areas of concern are:

- *Are the students only using the websites provided by the webquest? *Are the students on task?
- *Are the students working independently?

You should strictly monitor the room until you see that all students have created at least one analysis sheet in the proper format. Remind the students to save their work. With 5 minutes remaining in class, have the students wrap up their work for the day. If students seem to be finishing quickly, you could limit them to two days in the school lab, and have them do some of the work at home.

Evaluate and Revise

It is critically important to know if the students have learned anything from this lesson. First of all, the teacher should be monitoring the students progress each day in the classroom. You may need to spend some time one-on-one with students until they understand what you asking them to do. Second, you must fairly and consistently grade their analysis sheets. By including a poster to analyze in the unit test, you know that the concepts have been remembered and that they can do the analysis on their own.

Revising this lesson could be accomplished in several ways. First, the time in the classroom can be shortened or lengthened if appropriate. If the assignment is taking too long, the number of posters to analyze could be cut. Second, students could work in pairs if you make sure they are compatible. You could also give students analysis sheets ready to fill in.

Sample 2

Subject: Healthy Living
Grade: 6
Age: 12-13 years
Duration: 80 minutes
Number of Students: 25

Analyze Learners

The class consists of 25 students: 15 girls and 10 boys. The students generally participate in classes that are highly interactive and settings where the teacher uses role play, anchored learning, brain storming and guided discovery methods. The female students portray a more business like personal while the boys tend to be more talkative and playful and need an extrinsic factor to keep them working. The students tend to be more visual, auditory and kinesthetic learners. The aim of this lesson is to introduce students to the topic of healthy living.

Entry competencies: The students are able to use the tablet computers. Students also are fascinated by the computer and all the entertainment it provides, thus making learning via this medium fun and exciting.

Learning Styles: With the advent of technology and all its advantages students are more driven and fascinated by the computer. There are different learners in the class: visual, auditory and kinesthetic. Therefore, it is believed that by using the computer, the students will be keener to learning as it will be a medium that they enjoy.

Select Objectives

Cognitive

Students should be able to:

- List the various healthy food.
- Differentiate among the various kinds of food.

Psychomotor

Students should be able to:

- Describe the various food used in the Office.

Affective

Student should be able to:

- Demonstrate awareness of the various types of food used in the office.

Selected Media, Materials and Methods

Tablet Computers: All of students have tablet computers with internet access and will complete various activities. Some students will be required to work in pairs if some tablet computers are faulty.

Headphones: The students will be provided with headphones so that they could listen to the sounds throughout the some videos. This will allow students to engage in their activities without disturbing each other.

Interactive Whiteboard: The teacher will use the interactive whiteboard to introduce the activity to the class. The interactive whiteboard is available in the classroom.

Utilize Media and Material

Preview the Materials: Prior to the class the teacher created the watching video activity on the various food. The teacher will ensure that there is internet access, and that all tablet computers are functioning properly which will aid in the effectiveness of the delivery of the lesson.

Prepare the Materials: The teacher selects videos before lesson. Teacher sends a video link to all of tablet computers. Students will be required to complete all the activities on the aforementioned link. Students will know where exactly the information is and it would not allow them to deviate from the topic.

Prepare the Environment: The teacher will arrange the seats to allow each student at each computer. The interactive whiteboards will only be used for the first and last ten minutes of the lesson. Students will maintain their groups for the remainder of the lesson.

Prepare the Learners: The teacher will inform the students of the intervention before the lesson to ensure that they are familiar with video and they understand the importance of the material which will be used. Students will see the importance of the topic by viewing healthy food power point presentation. They will also be informed of the activities and evaluation exercises that they will be given.

Provide the Learning Experience: The teaching strategies that will be used are guided discovery and anchored learning. Student will explore and discover the content required for the activities. The teacher will supervise and move around the classroom providing assistance to groups that require further explanation. The interactive whiteboard will also be used to provide further explanation to groups experiencing difficulties.

Require Learner Participation

The students will be divided into groups. They will be placed in groups of threes. The group will be allowed to navigate through the site in order to familiarize themselves with the tasks, after which they will be allowed to commence the activities.

Evaluate and Revise

To evaluate the students' knowledge on the topic, the students will be evaluated based on classroom participation. At the same time they will be allowed to post their answers to the interactive whiteboard on the their tablet computers.

RESULTS AND DISCUSSION

The process integrating the technology with education is complex and multidirectional. In the process, there are a lot of factors such as teachers, students, background, school administrators, policy determiners, parents. The greatest responsibility of the shareholders is teachers' responsibility. In this process, the important thing is not the usage level of technological resources, but the usage of technology in educational environment with convenient pedagogical approach properly. Instructional design is to develop functional learning systems with resources to fulfill the educational requirements of target group. Instructional designer is not the person only having competences for instructional design process. Instructional designer is the domain expert knowing area's history, progress and current condition; in this way developing sensitivity in paralel with the improvements and foretelling about these. When viewed from this aspect, it can be said that the teachers are not designers. However, teachers need to use the technology systematically to integrate the education with technology. Regarding the use of technology in lessons systematically, Heinich, Molenda, Russel and Smaldino (1996) developed a planning model called ASSURE model. We can say that the model aims at the solutions of the problems using the technology effectively and systematizing preparing steps of a lesson plan. When viewed from this aspect, carrying out a education based on ASSURE model focusing on the student and technology rather than traditional education is a need rather than an obligation. Example lesson plans given before can be updated according to all grades and lessons. The important thing in this stage is teachers applying the process steps in the model selflessly. When considered that all teachers and students of all degrees will have tablet computer and all classrooms will have electronic environment such as interactive board, internet, the application of lesson plans will be easier. It is thought that when the information and the plan presented in this article within its limits are taken into consideration for various lessons and grades, it helps growing up the persons technologically literate which is one of the must of an education system resulting in qualified and meaningful learning.

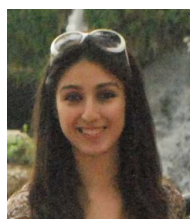
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