

## PROVIDING EFFICIENT ACTIVE LEARNING ON E-TELEVISION: Case of "Open Class"

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### ABSTRACT

This study was undertaken with an aim to understand whether the effective use of the blackboard, one of the teaching aids utilized by Anadolu University's distance learning program in the e-television Open Classroom, has a positive effect on focus and concentration. Gagné's Theory of Instruction was utilized during this research. Knowledge of the efficient use of the blackboard and the efficient viewing on the television screen is required.

The results of the research show that the frequency of use of blackboards in the Open Classroom is low. It has been determined that information that could be written on the board is instead spoken by the television teacher. The 3-8 seconds of silence required for thought while writing on the blackboard is to a large extent achieved. The information written on the blackboard was found to be partially legible. This shows that the blackboard is not being efficiently utilized during teaching. When it comes to whether off-topic writing on the board is the cause of a distraction, it was found that a distraction was caused even though the information on the board was not used. When the board was erased to continue with another subject, it was found that the board was generally not erased entirely. The legibility of the writing written over the partially erased board was found to be insufficient and therefore showed that the blackboard was not being used efficiently.

**Keywords:** Distance education, Television, E-Television, Blackboard, Teaching, Learning, Robert Gagné

### INTRODUCTION

In today's society with an aim at lifelong learning sees education as not something just limited to school but as something that is constantly developing planned system. From this perspective, distance education is an education model that gives equal opportunity to students, offers flexibility in time and place and is easily updated allowing the use of different technological tools. As such it is a model that is in high demand both in our own country and in the world.

One of the important forms of distance education is open learning. The name "Open" highlights the fact that it is designed for students who can not participate in a traditional campus program, with an enrollment policy that allows those that have completed secondary education to participate in the programs (Evans, 1993).

Various communication tools are used in both traditional and distance education to offer more effective teaching and achieve teaching goals more easily. These tools are called teaching aids.

The main purpose of using teaching aids is to be able to get the information to the students in the most clear, direct and easy to understand way possible using as many sensory organs as possible and in this way make the learning process easier. This however can only take place with correct communication and proper use of these teaching aids (Doganay, 2008).

By using teaching aids, educators are able to speed up the flow of information thus making the information more tangible, make the information and processes more understandable and easy to learn, increase the level of students' attention, increase their interest in the subjects by making learning more fun, offer individual or group study opportunities, offer interactive learning and an opportunity to put what they have learned in to practice, increase interaction among students and by bringing visual richness in to the learning environment provide an opportunity to experience global education (Doganay, 2008). If we were to list the teaching aids used by educators these would be: blackboard, mock-ups and models, printed materials, overhead projectors, slide machines, televisions, VCD, Video and DVD players and computers.

Anadolu University has been offering open education services in the Turkish higher education system since 1982 and uses textbooks as the main teaching aid.

The textbooks are supported by television programs, academic counseling, e-learning environments and video conferences. All materials used in this system are complementary to each other and are designed to work with printed material. They are prepared in accordance with the requirements of distance education. Students are able to view the television broadcasts over the internet at any time and are able to watch the programs they have recorded on their computers.

The technology used must be supportive of the teaching process and designed to make learning easier by encouraging attention and perception. In other words, learning environments must be designed according to the theory of learning. Therefore, the theory of learning also has an effect on the design of the environments from which educational television is offered. This is why it is so important for these educational television broadcasts to be evaluated and improved upon.

This subject of this study is the evaluation of e-television programs used in student-centered distance education programs. E-television programs prepared by Anadolu University Open Education Faculty which are broadcast at set times on TRT OKUL and are also available online for students to watch or record to watch later will be evaluated according to Gagné's theory of instruction. In the Open Classroom model, a group of Open University students along with the instructor of the course participate in a lesson in a studio environment. During the lesson first of all a summary of the lesson is given to offer the viewers and participants a run-down on what will be covered in the class, this is followed by a short introductory video about the instructor.

The students that are participating in the class will from time to time ask questions, receive answers and in general create a virtual classroom environment. The viewers themselves are not able to participate.

The decor, color scheme, lighting, camera angles, camera movements, charts, blackboard and participation of expect guests are designed specifically for the use as an open classroom.

The subject of this study is to see how often and in what way the blackboard -a teaching aid used in the open classroom television programs -is used to increase attention, provide stimulating material, evoke memory, support expression and enrich the content of the program.

## AIM

The main purpose of this study is to see how the blackboard - a teaching aid used on educational television under the Open Classroom format of e-TV, can be used effectively and efficiently and whether it helps to achieve greater focus and attention. In order to achieve this, the answers to the following questions have been sought.

- Was the board used?
- What was the board used for?
- Was the board used in a productive, attention grabbing and effective way?

## SIGNIFICANCE

This research is an important as a guide to the effective and efficient use of the blackboard in instructional television. Knowing what to consider when using the blackboard - without doubt one of the most basic teaching aids used by educators in every classroom, is important not only for the educators themselves but for the educational television design group and director so that they can know how to effectively and efficiently use the board. The study is also important as a source for other similar studies.

## METHOD

This study is in the form of a screening model. The screening model is used to describe a situation as it was in the past and today (Karasar, 2005). The scope of this study includes 16 courses with a total of 176 programs screened between the dates of 09.01.2012-01.06.2012 on the Anadolu University Distance Education system. The sample selection for the study was conducted as follows: a complete list of Anadolu University Open Education Faculty Television Production Center class programs that are broadcast on TRT OKUL channel and available online was obtained, all programs



were watched and a list made of those utilizing blackboards. 60 programs were found to utilize blackboards and all of them were analyzed.

The open classroom classes were determined as follows:

Course Name	Programs Utilizing Blackboard
Financial Management	6
General Mathematics	11
Introduction to Economics	11
Economic Theory	7
Statistics	11
Fiscal Policy	2
Cost Accounting	3
Accounting Practices	1
Turkish Tax System	8
Total	60

### **Data, Gathering and Interpretation**

In order to achieve the objectives of this study it had to be seen if the blackboard was used during Open Class TV programs and if it was, what it was used for - whether to just write definitions and headings or if it was used to write terms, formulas, abbreviations, graphics, tables, mathematical equations and example questions. Data was also gathered on whether the blackboard was utilized in a way that encouraged effective and efficient learning while collection the attention of the students. To gather data questions were developed using Gagne's theory of learning and answered while watching the programs. The questions answered when collecting data to ascertain whether the blackboard is being used in a way that encourages efficient and effective learning are as follows:

- Is the statement first said out loud before being written on the blackboard?
- Is a 3-8 second silence allowed for thought while the information is being written on the blackboard?
- Are keywords, diagrams and examples relating to the subject written on the blackboard?
- Is off-topic information on the board visible, is there any distracting sound/dialog heard, are there any unnecessary camera angles or frames etc used?
- Is the blackboard erased before moving on to another topic? Is the new information written on the board legible?

Grading was in the form of "yes" and "no" for the question of whether the blackboard was used in the program. The second question is asked to determine what the blackboard is used for in the program. For this question a two-way rating scale was utilized. For other questions a three-way rating scale of "Yes, No, Partially" was utilized. If the characteristic is seen during the entire course then "Yes", if it has never been seen then "No", if it is seen from time to time then "Partially" has been marked.

## THEORETICAL INFRASTRUCTURE

### Teaching Activities According to Robert Gagné

Robert Gagné's theory is the best known of all educational theories based on cognitive principles. The theory mentions the conditions of learning, or in other words, the elements necessary for learning to occur.

There are two very important steps in implementing the theory. The first is to determine the outcome of learning - the complexity of the learning process and the different range of skills the students have cause different outcomes. There are five types of learning outcomes. Rational skills, verbal information, cognitive strategies, psycho-motor skills and attitudes. These 5 groups are all acquired by learning and take place under different conditions. These conditions are divided into internal and external conditions. Internal conditions are comprised of the retention and ability of the student. External conditions are environmental stimulants which support the student's cognitive process (Schunk, 2009).

Gagné emphasizes that the terms teaching and instruction are different concepts but that both concepts are guides for an individual's learning. He refers to the term teaching as "the external factors required for the student to begin, continue and finalize learning". Gagné uses the term learning for when a teacher is present. He refers to other forms of teaching such as television, programmed learning, audio-visual aided teaching as "instruction". This is why a detailed plan and design is required in the process of guiding that is referred to as instruction. (Fidan, 1997).

Education theorist Robert Gagne identified 9 events of instruction in his model based on cognitive theory. The 9 events he defined were: drawing attention, informing students about learning objectives, remind students of pre-requisites, providing stimulus material, providing a learning guide, ascertain performance, get feedback, evaluate performance, enhance retention and transfer. (Gagné, Wager, Golas, & Keller, 2005).

### Gain Attention

"Attention is the selection of a particular stimulus from the entire stimulus through sensory mechanisms" (Aydin, 2005). There are two types of attention. The first is the type of attention that filters stimulus from the outside world. It is constantly processing stimulus to find the stimulus most suited to you. The other type of attention is selective attention. In this form of attention there is a particular object which is the focus of attention. At this point selective perception and perceptual rules come in to play. In general, size, density, color, whether a stimulus is new or not affects attention (Bacanli, 2007). The level of attention and focus of the learner on the subject along with the effort to continue learning is effective in increasing the level of learning. Therefore, the events that take place during instruction direct both attention and selective perception and increases both intentional and unintentional learning (Senemoglu, 2010).

For example, novel, story, storytelling, animation shows, raising or lowering the volume to ask questions, movement in the classroom, gestures and facial expressions, adjusting the questions to be asked according to the student's area of interest (Gagné, Wager, Golas, & Keller 2005), graphics, video displays, use of blackboards, addressing a student by name, use of verbal stimuli such as "this is very important, pay attention" etc.

### Describe the Goal

In order to make it easier for the students to understand the information, it is important to first tell them what they can expect to learn during the class and what the learning goals of the class are. The class performance reporting tactics according to Gagné (Gagné, 2002) can be listed as; specifying the required performance, specifying the standard by which the required performance is measured, specifying criteria for student's standard performance.

Hearing the learning goal of the subject starts the learning process and aids in the formation of expectations, stimulating the recall of prior knowledge and focusing on the subject. Knowing the learning objectives also helps the student to find out what methods and strategies they should use to achieve these objectives (Fidan, 1997).

### Simulate Recall of Prior Knowledge

Gagné emphasizes the importance of teachers reminding their students of prior knowledge, bringing this back in to short-term memory, before providing the new stimuli to learn. The association between old and new knowledge must be made (Senemoglu, 2010) and the teacher must establish the student's prior knowledge by asking questions, making them make statements and holding discussions (Fidan, 1997). Thus, the prior knowledge the student's possess will help them understand the new information covered in the new subject.

### Present The Material To Be Learned

The use of stimulating material is the use of stimuli regarding the information to be learnt to make selective perception easier. Strategies must be used when presenting the course content to enable more efficient and effective teaching. According to Gagné the ways of presenting the course content are as follows: (Gagné, 2002):

- Presenting the course
- Supporting with examples
- Giving tips
- Offering advice

At this point in the lesson stimuli is presented relating to what is to be learnt. The stimuli can differ according to the course. According to Gagné, if verbal information is to be learnt then the stimuli can be books, notes and audio. If it is a mental skill to be learnt then representative symbols, objects, models, examples and even real life events can be offered. Auditory, visual and other sensory stimuli can also be presented. If a cognitive strategy is being taught then while it can also be taught verbally, it can also be taught with a step-by-step walk-through offered by the teacher. When teaching behavior, the stimuli can be in the form of interesting heroes being used to give the message (Senemoğlu, 2010). The selective perception of the students can also be drawn to the topic on hand with a single stimulating sentence. For example: "Please pay attention to the name and adjectives in this sentence" etc.

### Provide Guidance for Learning

The guide is where the students will find the information on what they need to study and from where, to enable them to learn the subject. The aim of the guide is to help the student decode the information correctly and transfer it to long-term memory. It also guides the student on how to store and recover the information they have learned.

According to Senemoğlu, the guide should enable the students to encode the information and recover the information from long-term memory with verbal expressions, statements and emphasis or even graphics, charts, tables, diagrams or pictures. (Senemoglu, 2010).

### Elicit performance

Whether the subject has indeed been learned can be understood by whether the students display the behavior or not. In this sense, the process of revealing behavior relating to the subject at hand is eliciting performance. By revealing the behavior, the student can see that they have learnt the subject and the learning are successfully completed. (Fidan, 1997).

### Provide Feedback

"Feedback is the information given on the results of learning" (Senemoglu, 2010). At this stage, information is given to the student on the accuracy of the behavior learnt. Thus, the correct behavior is reinforced and communication with the student enables mistakes to be corrected without delay.

### Asses Performance

It is the process of determining the level and degree of learning achievements relating to information, skills and behavior (Gagné, 2002). It is the result of an evaluation done at the end of the course. The degree of learning is ascertained and information is given to the students, if necessary a summary is provided.

### Enhance Retention And Transfer

This stage requires additional exercises and examples for students. It is effective in recalling prior knowledge and using it with new information, glancing at the information at intervals. It makes recall and learning easier by helping the students gain their own tips and develop (Fidan, 1997).

As a result, if every teaching activity that includes external stimuli is developed to support one or more internal learning process, learning effectively takes place and there is a permanent change of behavior.

## HOW DO WE LEARN?

According to Schunk learning encompasses the acquisition and changing of knowledge, skills, strategies, beliefs, behavior and attitudes. (Schunk, 2009).

All the events surrounding the learner have a great affect on the learning process. The surrounding stimuli plays a large role in the selection of information and the move from long-term to short-term memory. Memory can be defined as the accumulation of experience. If the learner was lacking a memory, no knowledge or skill could be acquired permanently. Therefore, memory constitutes prior experiences as a prerequisite preparation for more complex learning experiences (Aydin, 2005). Scientists emphasize the fact that there are 3 types of memory.

Sensory memory,  
short-term memory,  
long-term memory.

**According to Senemoğlu, with sensory memory stimuli from the environment affects the learner's sense organs and is transferred to the nervous system via the sensory memory. Sensory memory is responsible for the first perception of all stimuli coming to the sense organs. Information can only remain there for a short time. According to Moates and Schumacher (1980; cited by Senemoglu, 2010), visual information can remain in sensory memory for approximately one second while auditory information can remain for up to four seconds. While the duration that information can remain in sensory memory is limited, the capacity is unlimited and it is thought that there are separate storage areas for each sense. If the information is not acted on immediately, it is lost very quickly. Information that is perceived and paid attention to is transferred from sensory memory to short-term memory.**

Short-term memory has two related functions. The primary function is to store a certain amount of information temporarily within a given period of time. Scientists have observed that an adult is able to store five to nine units of information without mental repetition for only up to 20 seconds, studies have also shown that after 3 seconds only 62% of the information can be recalled, dropping to 15% after 18 seconds. The second important function of the short-term memory is performing mental operations.

This is why short-term memory is also called working memory. The process of transferring information in to long-term memory-in other words recalling old information, comparing with new information, re-organizing, encoding and transferring the information back to long-term memory; is performed at short-term memory. Because of the way the short-term memory functions teachers should instead of making continuous, fast explanations allow time for students to process information in their short-term memory by making explanations in a more spaced out way using different teaching techniques and tools. In addition to this, periodic revisions, summaries and emphasis on important subjects can help the information to be processed by short-term memory and transferred in to long-term memory (Senemoglu, 2010).

*"Many studies have shown that the two hemispheres of the brain process different information. The left hemisphere is more suited to processing verbal, mathematical and sequential information whereas the right hemisphere is more suited to processing perceptual, spatial, complete and artistic information. However, both hemispheres are connected by the corpus callosum and both contribute to any learning. Neither hemisphere is superior to the other. We need both of them... While the student listens to the teacher speak with their left hemisphere, at the same time they are interpreting facial expressions, emphasis given with the tone of the voice and pauses and using what they see to interpret the information..." (Senemoglu, 2010).*

In short, both hemispheres play a role in a student processing all information. The use of both hemispheres in the learning process has increased the importance of utilizing teaching aids to provide a visual stimulus. The effective use of the blackboard in particular increases the efficiency of learning.

The most important advantage of using a blackboard is being able to create new material in an instant.



The importance of the blackboard in demonstrating operations, emphasizing main points, summarizing, providing visual stimuli and in particular getting feedback and making corrections is great. The blackboard is used: as a notebook, for descriptions, for pictures, for drawing figures, as a common work area, as a game board, for summarizing, for problem-solving exercises, as a notice board etc. (Yanpar, 2009).

Scientists have stated that the efficient and effective use of a blackboard can help simplify many complex concepts and encourage the use of the right hemisphere. When using the blackboard teaching aid if certain points are taken in to consideration then it can mobilize both hemispheres of the brain. The points to be considered are:

#### **State the Information Before Writing It on The Board**

This principle is based on three basic premises. First of all it is faster to say something than to write it. In this way the individual can use their left hemisphere to start processing the information before it has been written. Second, the student is prevented from seeing the beginning of the word being written and making a wrong prediction. Because the individual will be attempting to complete the partial message while writing. Third, the three to eight seconds of silence while something is being written on the blackboard gives the opportunity to do mental repetition and store the information in short-term memory. If information is given one after the other, the new information can cause the loss of the first information. A one or two minute interval can allow the information to be transferred from short-term to long-term memory.

#### **Use keywords, simple shapes and draw diagrams...**

Thus, the student will process what you say with their left hemisphere while processing what they see with their right hemisphere. As a result, by utilizing both the left and right hemispheres of the brain, the quality of learning and recall will increase.

#### **Write In A Way That Shows The Relationships Between Concepts And Ideas**

The blackboard allows the right hemisphere to perceive the relationship between ideas and concepts according to their placement... By using the blackboard you can show parallel ideas, contrasting ideas, cause-and-effect relationships, comparisons and groupings easily and thus made use of the right hemisphere of the brain.

#### **Before Writing Something New, Erase All Old And Irrelevant Information...**

If what was written previously is not relevant to what is to be taught next then the blackboard must be erased entirely and the new information must be written on a clean board. Erasing only enough space as required to write the new information can cause the ideas and concepts to become confusing. By causing a distraction, this can prevent the right hemisphere from processing the information correctly..." (Senemoglu, 2010). Although it may seem that using a blackboard is simple, it is a skill that develops over time. What one needs to be aware of is providing the information in an effective way to the learner. As a result, if teaching aids are used effectively and correctly then they will enable the students to use both hemispheres actively and learn effectively.

### **EFFECTIVE USE OF EDUCATIONAL TELEVISION IN TEACHING**

While the communication tools and environments used in distance education contribute to the development of the quality of education, they also provide different learning options for students and by increasing motivation make learning more efficient and effective.

However, different learning environments bring the need for different designs. It is important for the efficiency and effectiveness of this process for both the instructors and the educational designers to be familiar with both the environment and the tools to be used. When the information to be given is formatted according to the learning environment and the tools used in the environment, the student is better able to utilize the tools and learning will be successful and effective.

The television as a learning tool is preferred because of the high number of students in distance education and also the fact that it is easily accessible by students. By providing audio-visual and verbal symbol systems together, the television increases the individual's willingness to learn, continuity, activity and motivation and as such is a preferred teaching medium. Television educational programs have the following characteristics: support and enhance the value of learning, teaching, describing, explaining, better summaries, increasing speed of study, reaching a wide audience, creating a change in behavior, able to offer students events and information that would be unattainable (Ozgur, 2005). Nowadays, the use of digital publishing has extended the dimensions of interaction with the television.

Audiences are able to participate in live broadcasts, participate in programs and communicate at least partially. In addition, as the programs are offered online as part of e-television, the student is able to repeat and recall the information as often as desired. The extensive use of the television in this system has increased the importance of formatting the content and the images to be used on the screen. How to effectively render and present the image on the screen must be known.

Like all learning, educational television programs must begin by focusing attention on the subject to be learned. The first and most important step is to regulate the internal and external factors that affect attention and utilize cues according to the level and interest of the students (Yuksel, and others 2010).

The teacher and producer must show the information to be presented in a planned fashion from simple to more complex.

The characteristics of an effective television educational program are as follows:

- Educational television designers and producers must first determine what it is they want to say, to whom, and with what objective. This determination will reveal the structure and presentation elements to be used in the program.
- To attract the attention of students, videos, photos, electronic graphics, animations, maps, blackboard, music and other visual and auditory tools relating to the subject can be used.
- The program could start with an interesting question to attract the attention of the students to the subject. Thus, the student's attention will be drawn and they will have an incentive to learn.
- Interesting events and people relating to the subject can be used in the design.
- Educational television programs should aim to give the essence of the subject, not just superficial information. All concepts relating to the lesson must be explained individually. However, due to the limited duration of the television show, the classes can be divided in to chapters. Therefore students will be able to store what they have watched in their memory without being overloaded.

- Giving prior information on the content and structure of the educational television program to the student is important in terms of the student's readiness to learn. In addition, a repetition and recall of prior knowledge will help the student better understand the new information?
- Summaries should be given frequently on educational television programs. A final summary must be given at the end of the program. References should also be made to previous programs and programs to follow. This will keep the recall and perception processes running and increase the efficiency of learning.
- The television teacher is someone who is; an expert on the subject, presents the program, gives continuity to the program and communicates with the students through the television screen. The elocution, verbal expression, body movements and suitability for the screen of the television teacher is very important when it comes to attracting and keeping the attention of the students.
- The use of stimulating material in an educational television program can make selective perception easier. The stimulus to be used must be designed to be suitable for the studio environment and must be arranged to be effective visually.

### EFFECTIVE VISUALIZATION

The "composition" is the organization of the objects and people in the shot in an appropriate manner which is pleasing to the eye.

[http://megep.meb.gov.tr/mte\\_program\\_mod\(2011\)](http://megep.meb.gov.tr/mte_program_mod(2011)).

The audience is told what they should look at and in what order through the composition. The person's reaction to what they have seen can be controlled and directed.

There are three main factors when it comes to practical arrangement:

- planning the composition
- arranging the composition
- selecting the composition

Planning the composition is valid only when the person is able to move completely freely... Arranging the composition is placing the objects in a particular way before the camera can generate pleasing, meaningful results... Selecting the composition is the placement of the camera at a specific angle chosen by the producer" (Cereci, 2001).

In arranging the composition, the framing of what needs to be shown is a prerequisite. "A frame is essentially a two-dimensional design. Two-dimensional design can direct the attention of the audience in a planned way to reveal the meaning that is being conveyed" (Brown, 2008). Movement within the frame is not important only for the composition but also for the order in which the audience perceives what is in the frame and plays an important role in the perception of the content (Brown, 2008). When framing or organizing the sequence of a shot, a choice is made by considering what the audience would want to see first and what you want to show them. When the framing of a shot is being designed, the effect of the line and color on the audience is also considered. The framing of the shot not only affects the balance of the composition but also the interpretation of the subject by the audience (Cereci, 2001). For example if the shot shows disinterested participants in the studio instead of a problem being solved on the blackboard, this can lead to the viewer drifting away from the subject and getting bored.

A balanced shot must have a planned, designed look. Balance combines objects in a shot. The balance of a shot can be designed in different ways to attract attention to another subject or to change the effect of the shot. The balance of a shot is affected by the following factors:

- the size of an object within the frame
- the color of an object
- the relationship between objects in the frame
- d) the position of an object within the frame. ...

Balance is very subjective, it is impossible to measure. There are however some guiding principles:... When a subject shifts from the center of the image, the shot appears increasingly unstable.

- This effect is more striking with larger or darker colored objects.
- An object or mass of color on one side of the frame generally requires a counterpart on the other side to create a balance. This could be an object of equal mass or a series of smaller areas.
- Color has an effect on visual weight; darker objects look heavier and smaller than light colored objects.
- A small dark area can offset a wider and brighter area further from the center of the shot.
- Despite the fact that the horizontal positions determine the outcome of the balance, balance is affected more by vertical positions.
- Warm colors (red, orange) look heavier than cold colors (blue, green); bright colors look heavier than matte colors..." (Cereci, 2001).

For example, the studio, decor, blackboard and background all being the same color could mean that the object being focused on is not seen or perceived. Depth and dimension can be lost for the audience.

Largely as a result of cultural conditioning, the eye is prone to scan from left to right. This event has a grading effect on the visual weight of the objects in the shot. The order of perception and the movement in the composition are important depending on how the eye scans the shot (Brown, 2008). When planning a shot it is important to avoid mechanically breaking up the scene in to regular pieces. Dividing a scene in to half or quarters can lead to dullness and monotony. The main objects should be at the intersection of horizontal and vertical lines dividing the scene in to three equal parts (Cereci, 2001). Thus, the attention of the audience can be drawn to the desired event, person or object. The people or objects in the frame should be arranged according to the order in which attention should be placed on them. For this, the "golden scale" - a scale which determines the best and most appropriate balance between objects, must be used.

When 3/4 of the television screen is divided equally, the objects which should dominate the composition should be placed upon these lines. For example; if a blackboard to be used on a television program is to the left or right of the camera angle then the writing will appear to get progressively smaller and the information will not be perceived. To avoid this blackboard should be placed in such a position that it can be seen full screen and if necessary close-ups can be easily shown. This rule is valid for balancing shades too. In this way, certain strong points in the frame can reveal the importance of objects (Ankara, 2011).

Other factors which affect how the information in the frame appears to the audience are the camera angles and the scale of the shot.

"The camera angle is the angle at which the camera looks at an object. In the visualization process, this relates to how the producer wants to show a particular object" (Kilic, 1994).

The angle can be chosen as eye-level, high angle or low angle. Eye-level is used in close-ups of the object or subject or when the image is preferred to be at the eye-level of a normal person (Kilic, 1994).

The angle usually preferred on educational television is eye-level. The audience are able to make eye-contact with the television teacher. Additionally, if teaching aids such as blackboards are seen at eye-level then it is easier to see what has been written clearly.

The most often used scales in educational television are close-up, medium close-up, medium shot, medium long shot and long shot (Hart, 2007). The scale must be chosen that will best transmit the object or text to the audience. For example, a high-angle or long shot of a blackboard to show the entire board can lead to the audience being unable to see the board clearly.

If two objects are moving, the human eye is drawn to the object moving the fastest or the object moving towards them. If the background is moving and the image itself is fixed then it will appear as if a stationary point is moving.

If this situation, the background will serve the purpose of coordinating a stationary system. If a person has been following the movement of an object in a certain direction and then looks at a stationary object, it will seem as if the object is moving in the opposite direction (Cereci, 2001). In this sense, fast camera movements or moving images in the background will cause distraction and make comprehension more difficult by distracting from what is being taught.

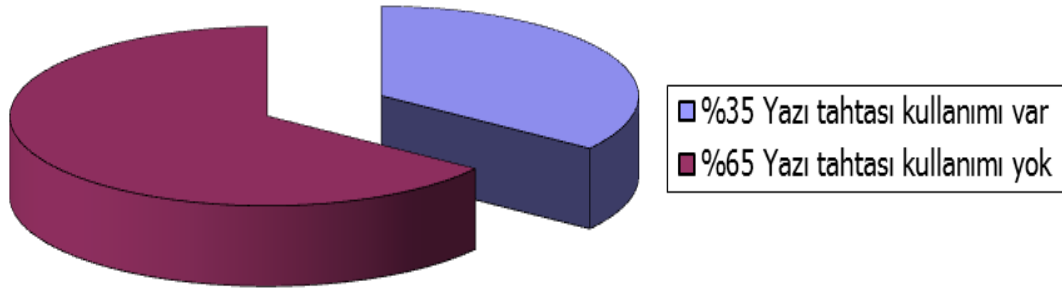
In summary, effective educational television depends on the information and image being designed and utilized properly.

An effective image is only possible through successful team work. Designers and producers of educational television must design the set, teaching aids, composition-balance-color usage, framing, camera movements, angle and scales in a purposeful way.

#### **RESULTS AND INTERPRETATION: Use of Blackboard**

This research was done to determine whether blackboards - teaching aids used during e-TV programs called Open Class, have an attention gathering function and how to utilize them efficiently and effectively.

The results show that of 176 programs for 16 different courses, a total of 60 programs utilize blackboards and 111 programs do not. It has also been seen that blackboards have been used decoratively and not functionally in 5 programs. Hence, 35% of programs have utilized blackboards, 65% have not.



**Şekil 1 - Yazı tahtası kullanımı**

**Figure: 1  
Usage of blackboard**

In programs where the blackboard has not been used, electronic texts, graphics and example solutions were used to support the narrative. In 100% of the programs watched, the blackboard has been used to support the subject with terms, words, formulas, figures, abbreviations, graphics, rules, tables, mathematical equations and example solutions.

While drawing the student's attention and selective perception to the subject and helping the student continue to make an effort, it also teaches directing attention and selective perception.

In this sense, the correct usage of blackboards during educational television programs can help to simplify many complex concepts and help both the students in the audience and participating in the actual program to learn.

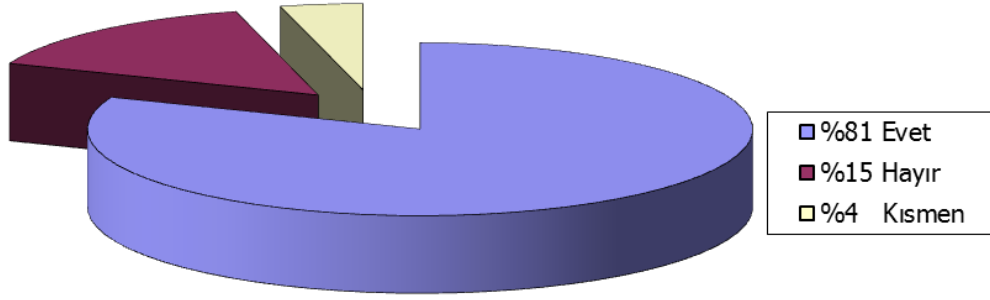
It has been seen however that blackboards are not used sufficiently in Open Class television programs (at 35%).

It is thought that the blackboard should be used more to attract students attention and direct selective perception.

**EFFICIENT AND EFFECTIVE USE OF BLACKBOARD:  
Information said about loud before written on blackboard**

For students to understand and take in the information easily it is important that before beginning teaching the content of the course should be told to the students and the teacher should say out loud anything that is going to be written on the blackboard before it is actually written.

The question is the information spoken out loud before being written on the blackboard was answered with 81% yes, 15% NO and 4% partially.



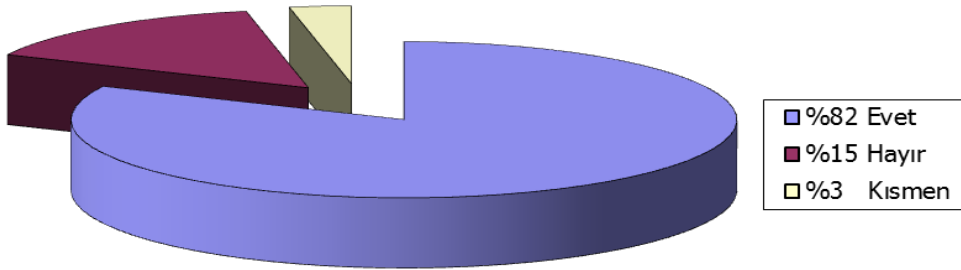
**Şekil 2 - Bilginin yazı tahtasına yazılmadan önce söylenmesi**

**Figure:2**  
Expression of the information before Writing on the board

In terms of learning and the importance of saying the information out loud before writing on the blackboard, the high number of YES responses show that attention is attracted to the subject and students are prevented from seeing the beginning of the writing and incorrectly predicting the continuation.

### **3-8 Seconds of Silent Thought While Writing On Blackboard**

When information is given in quick succession, the information given first is lost to what comes next. The 3-8 second silence while writing the information on the blackboard enables the information to be stored in short-term memory and with repetition move to long-term memory. The results of the research show 82% yes, 15% no, 3% partially



**Şekil 3 - Bilginin yazı tahtasına yazılması sırasında 3-8 saniyelik düşünme için sessizlik**

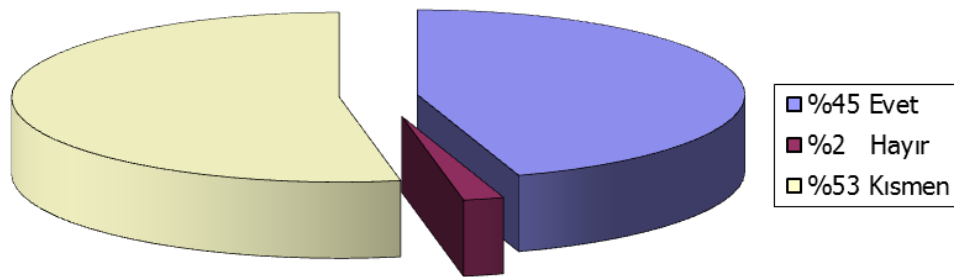
**Figure: 3**  
3-8 seconds silence before for thought writing information on the board

The yes result shows that transfer information between different memories is being supported, in other words old information is being stored and new information storage is also being facilitates. Thus, the student is given every opportunity to store the information in their memory.

The NO result means that during a 40 minute program information has been written on the board without being said out loud first, Partially means that sometimes it is said and sometimes it is forgotten (because too much information has been crammed in to the class) because there is not enough time.

#### Legibility of Information Written on Blackboard

Because the information written on the blackboard will be seen on the television and computer screens, the placement of the blackboard in the studio, the angle, the scale, the size of the writing and the legibility is important when it comes to attracting attention and perception. When one considers the fact that the television screen is a two-dimensional design, the producer has to direct the eye and attention of the audience in the order that is required. This is important for comprehending the content. If the lighting is insufficient, the director has chosen incorrect camera angles or the teacher has written illegibly then the blackboard will not be used effectively and efficiently. In this respect, when questioning the legibility of the writing on the blackboard, 45% was yes, 2% was no, and 53% was partially.



Şekil 4 - Yazı tahtasına yazılan bilginin okunaklılığı

Figure: 4  
Legibility of Information Written on Blackboard

The ratio of yes being lower than partially shows that the writing is not particularly legible. In addition it is thought that there are many reasons for the high no result. First of all, the blackboard is not at the intersection of the horizontal and vertical lines when dividing the screen in to 3 equal parts.

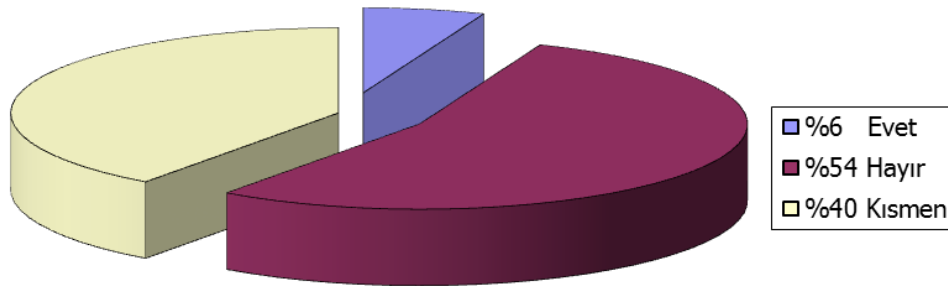
The perspective of the blackboard is incorrect and the writing appears to be getting smaller. Because of cultural conditioning the eye tends to scan from left to right.

Appropriate visual effect is not created by having a perspective starting from the left. The scale is also used mainly with medium or long shot which makes is distant from the writing on the board. Having a close-up with the camera panning as the text is written will attract attention. The students will not be distant to the subject being taught, they will be in the subject itself. Another factor is the writing of the television teachers, not using characters and a style suited to the blackboard, not writing fast and being untidy. Because of a lack of time during the class, television teachers are seen to try to fit information in to small spaces on the board without erasing the board. This makes the writing difficult to see on the screen.



### Presence of Distracting off-Topic Information on Blackboard

In this question, off-topic information given by the television teacher, inappropriate camera movement by the director, incorrect scale and frame were evaluated. The results show 6% yes, 54% no and 40% partially.



Şekil 5 - Yazı tahtasında konu işlenirken konu dışı dikkat dağıtıcı unsurların varlığı

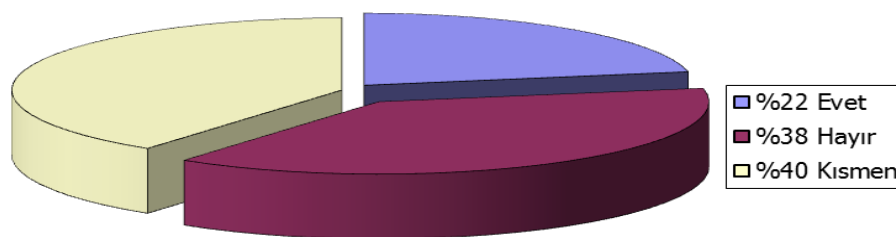
Figure: 5

Presence of Distracting off-Topic Information on Blackboard

The factors included in Yes and Partially were the camera angles, inappropriate frame and scale. The high level of 40% Partially may have a negative effect. In this respect the director and designer should position the studio decor and make a plan of the shooting before the program starts.

### Erasing Blackboard When Changing Subject and Legibility of New Information Written on Blackboard

If what was written previously is not relevant to what is to be taught next then the blackboard must be erased entirely and the new information must be written on a clean board. Erasing only enough space as required writing the new information can cause the ideas and concepts to become confusing. By causing a distraction, this can prevent the right hemisphere from processing the information correctly. The results show 22% yes (erased board entirely), 38% no (didn't erase the board) and 40% partially erased the board.

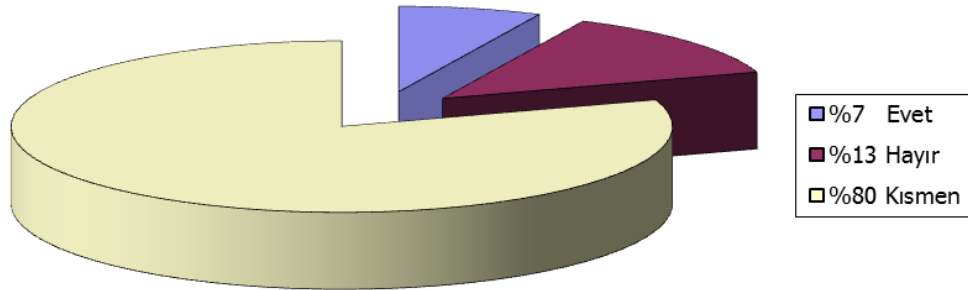


Şekil 6 - Başka bir konuya geçilirken yazı tahtasının silinmesi ve yeni yazılanların okunabilirliği

Figure: 6

Erasing Blackboard When Changing Subject and Legibility of New Information Written on Blackboard

Only partially erasing the blackboard causes confusion and stops the students from understanding the information clearly. The results asking whether the blackboard is legible after being erased show 7% yes, 13% no and 80% partially.



**Şekil 7 - Yazı tahtası silindikten sonra yeni yazılan bilgilerin okunabilirliği**

**Figure: 7**  
**Readability of information after erasing on the board**

The Partially results come from the writing of the television teacher and also the blackboard eraser not erasing the board well causing the old writing to be mixed in with the new and making the writing illegible. It is thought that this will have a negative effect on attention, interest, focus and motivation.

#### **CONCLUSION AND RECOMMENDATIONS**

This study was undertaken to show how to effectively and efficiently use the blackboard - a teaching aid used in the e-television Open Class of Anadolu University Distance Education program, and whether it has a positive effect on attention. Gagné's theory of instruction was utilized in this study. The questions asked were if the blackboard is used or not, if the information is spoken out loud before being written, if there is a 3-8 second silence while the information is written on the blackboard, the legibility of the writing on the board, whether there is anything distracting happening while the subject is being taught at the blackboard, if the blackboard is erased before moving on to a new subject and whether the new writing is then legible. These subjects were tested and then generalized.

The blackboard was seen to be less preferred than the electronic graph in Open Class programs. The reason for this was seen to be a lack of time and too high a course burden leading to the television teachers preparing electronic charts before the start of the lesson. When considering if the information is first stated verbally before being written on the board it has been seen that largely the information is first stated verbally before being written. In terms of learning, when the information is stated verbally before being written it draws the student's attention, helps students recall prior knowledge and prevents students from seeing the beginning of the writing and making an incorrect assumption. When considering if a 3-8 second silence is given while writing on the blackboard, it has been seen that in large this silence is present.

This is due to the nature of the blackboard as a teaching aid. While information is being written on or erased from the board time passes. Thus, students are able to place the new information in to their memory and recall prior knowledge. This will have a positive effect on the success of students. When considering the legibility of the writing on the blackboard, it has been seen that the writing is partially legible. The reason for this is the writing of the television teacher, the inability of the teacher to use the blackboard systematically, the eraser not erasing the board adequately, the camera angle due to the placement of the blackboard, choice of scale and camera movements.

This shows that the blackboard is not used effectively and efficiently in teaching. When considering if there is any distraction present when using the blackboard it has been seen that off-topic information is not present however there is some distraction caused due to the positioning and usage of the blackboard. In this respect it is thought that television designers and directors should first do a detailed plan of the layout of the studio and shots and should also learn how to best utilize the blackboard according to the specifications of the screen.

When considering whether the board is erased before moving on to another subject and the legibility of the new writing it has been seen that in general the blackboard is not completely erased. The fact that the new writing on the blackboard is not sufficiently legible shows that the blackboard is not being used effectively and efficiently. This situation is thought will causes the students to be unable to understand the information clearly and causes confusion, making them drift away from the subject and change their learning environment. If the blackboard is not used effectively and efficiently it is thought that it will have a negative effect on attention, perception, focus and motivation.

As a result, the blackboard is seen to be a familiar teaching aid which can be very valuable when used efficiently and effectively. For efficient and effective use the properties of the blackboard must be considered. Educational television designers must take in to account the importance of the blackboard in education in Open Class programs when creating their new designs. The shape, color, placement in the studio, angle and scale of the blackboard on screen can increase the efficiency and effectiveness of the blackboard. The cleaning of the blackboard must also not be forgotten. If the eraser is not cleaning the board adequately then filming must be stopped, the eraser and blackboard thoroughly cleaned and filming resumed or the another board should be chosen in place of a chalk blackboard. Because the lesson is known in advance, the television teachers should plan out the flow of information before the class so as not to get flustered when trying to cram too much information in to one lesson and writing fast or illegibly on the board with lettering that is not appropriate for the screen or having to use a blackboard that has not been properly erased.

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