ACADEMIC RESEARCHES IN EDUCATIONAL SCIENCES

Editor
Assist Prof. Gülnaz KURT, Ph.D.

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CHAPTER-1

A REVIEW OF MOBILE APPLICATIONS DESIGNED WITH AUGMENTED REALITY FOR MUSIC EDUCATION: AN IOS OPERATING SYSTEM EXAMPLE

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Introduction

Education technology is relevant to the teaching process and helps to achieve the set goals. It is essential that new technologies are used in education to improve the quality of education. Using technology in education helps students learn more easily and faster, and the use of technology and the follow-up of the developments by teachers help to improve quality in education. (Yılmaz, 2007).

The technology used in all areas of education is also a huge part of music education. There is some software (applications) developed for use in many areas such as ear training, musical instrument education, music theory and that offers students considerable convenience. With the development of technological devices, applications that can be installed on mobile phones, smart phones, laptops and tablets are designed for a more enjoyable and lasting learning. The recent use of mobile devices has been significantly more than the use of computers.

The importance of mobile devices is growing as it offers faster access to information. They are frequently used in different sectors, from health care to the business world, to increase the efficiency and throughput of the Internet and mobile technologies. The multimedia capabilities of mobile devices, which also contribute to educational environments, support learning regardless of time and place (Ağca&Bağcı 2013).

The operating systems that mobile devices need to operate are called mobile operating systems. These operating systems are designed to make file directories much easier, with the applications installed on them and the processes they themselves can run. One of the most widely used and known mobile operating systems is “Android” and the other is iOS. iOS operating system is a Linux-based operating system. This operating system is only

used on mobile devices developed by Apple.

There are many new technological developments for mobile devices. Augmented reality is among these technologies. Augmented reality was previously computer-based, and today, augmented reality applications are widely used in mobile devices.

According to Güngör and Wolf (2014), augmented reality applications have recently increased dramatically. This is because mobile phones are cheaper and thus reach larger masses. As information becomes more accessible, applications using augmented reality are seen more in education.

Especially, technology, which has become a necessity of the digital age, is often used both in voluntary music education and in professional music education. When we look at the software developed for music education, they are especially more convenient and useful for voluntary music education. In this regard, exploring the software available for voluntary music education is critical for both educators and students alike.

Based on this information, the purpose of the research has been determined as exploring augmented reality applications designed for music education on iOS operating system.

Method

Research Design

The method used herein has been determined as descriptive scanning model. Descriptive scanning describes a situation accurately and carefully and is widely used in the area of education. Scanning models are intended to describe a past or existing situation as was and is. The descriptive scanning model, which seeks to describe an event, individual or object in a research in line with its circumstances, can observe what exists without changing it (Karasar, 2005).

Research Sample

The research population is all of the augmented reality applications designed for iOS mobile operating system, and the research sample is, according to a branch of purposeful sampling, homogeneous sampling i.e. some five augmented reality applications designed for music education on iOS mobile operating system including Piano 3D-AR, Guitar 3D-AR, Tonic-AR, Note Blast and Music.iLuv. A homogeneous sample describes a group on a particular sub layer in depth, selects a homogeneous subgroup or situation from the population in relation to the research problem and describes the conduct of the study. In addition, in this sampling, a prioritized homogeneous subgroup depending on the purpose must be selected (Büyüköztürk, Kılıç, Akgün, Karadeniz & Demirel, 2016).

Results

Augmented Reality

Today's technology is shaping our lives with new technologies that are increasingly varied and even more advanced. Advances in technology are creating new concepts in both our daily and professional lives. One of these innovations, which has recently been frequently used in education, is augmented reality.

From the birth of humanity to the end of the twentieth century, people lived in one world. The invention of computers and the Internet added a new realm of reality. This reality has brought a complex, exciting and useful digital world to life. Since then, mankind has lived in two different worlds -- physical and digital. This technology makes it possible to have a new world that is a mixture of reality and digital. Augmented reality, or blended reality, puts digital content into the physical world. This allows experiencing the digital world without leaving the physical world.

Augmented reality is a valuable and important technology for the future of humanity, from the dualism of the physical and digital worlds to their unity (Geroimenko, 2018).

Augmented reality is displaying the object, or converting the object into images and displaying it to the user as if it were real via mobile devices or computers (Çakır, Solak & Tan, 2015).

According to Azuma (1997), augmented reality is a form of virtual environments or more commonly used virtual reality. However, the virtual reality technology puts the user into a fully synthetic environment.

Augmented reality is a way to show digital content in interaction with the environment and the user in the real world. Unlike virtual reality, this technology is strengthened by a select digital layer that contains information only through advanced information and communication technologies (ICT), in order to preserve the full perception of the world. In other words, augmented reality is a concept that can be used not only in a laboratory or enclosed environment but also indoors and outdoors without restriction (Kysela&Storkova, 2014).

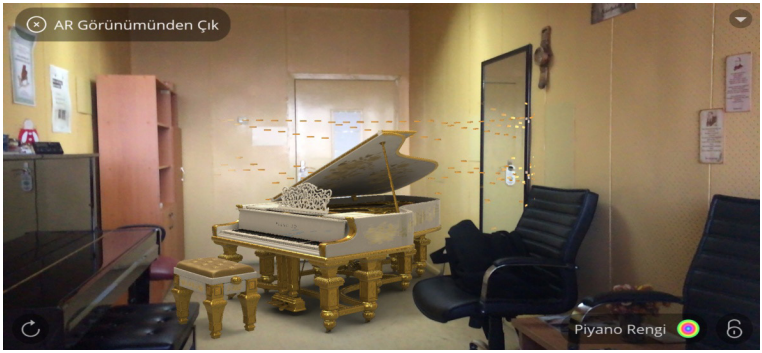

Figure 1. *Piano 3D application*

Somyürek (2014) argues that augmented reality and virtual re-

ality are being confused. In fact, virtual reality aims to bring reality into the virtual world as it is, while augmented reality aims to enrich reality with virtual information.

Real Environment	Augmented Reality	Augmented Virtuality	Virtual Environment

Reality - Virtuality Plane (Blended Reality)

Figure 2. *Reality-Virtuality Continuum* (Milgram&Kishino, 1994).

Figure 2 further clarifies the definitions about the theoretical plane showing the relationship between the virtual and the real.

Augmented reality consists of a combination of four different peripherals, including cameras, computer infrastructure, markers and the real world. These units can also be defined as 3D-positioning in the real world. The first example of augmented reality technology in the historical process was created by students at the University of Harvard and Utah in 1960, led by Ivan Sutherland, and used to produce 3D graphics (Krevelen&Poelman, 2010).

Throughout the development of technology, PC-based usages have been high, including augmented reality technology and other advanced technologies. Recently, many applications have been developed for mobile devices as they are convenient and can access information more easily.

The reason for the increased use of augmented reality technology, which is available as computer-based, for mobile devices is considered to be that the mobile device technology has become cheaper and more prevalent (Güngör& Wolf, 2014).

Mobile augmented reality applications are mobile applications that enable augmented reality creation through mobile devices suitable for any operating system and also use location, image, or sign-icons (Demirer&Erbaş, 2015).

Augmented reality has both advantages and disadvantages on mobile phones. Most mobile devices produced today are one of the most suitable platforms equipped with cameras for augmented reality applications (Carmigniani&Furht, 2011).

The present study explores augmented reality applications used on iOS operating system on mobile devices, providing recommendations for their usability in music education.

Augmented reality applications

Augmented reality applications are some of the most common computing technologies in recent periods. It was initially used in military areas and has been increasingly used in many areas since then.

These areas are:Education, Art, advertising and marketing, Entertainment, Gaming, Health, Museology, GPS and geotagging, and Engineering (İçten&Bal, 2017).

Accelerometers, magnetometers and GPS are the augmented reality applications that can make the most of the mobile devices (Carmigniani&Furht, 2011).

Below are a few examples of mobile augmented reality applications designed for different areas and a brief overview of each application.

SketchAR

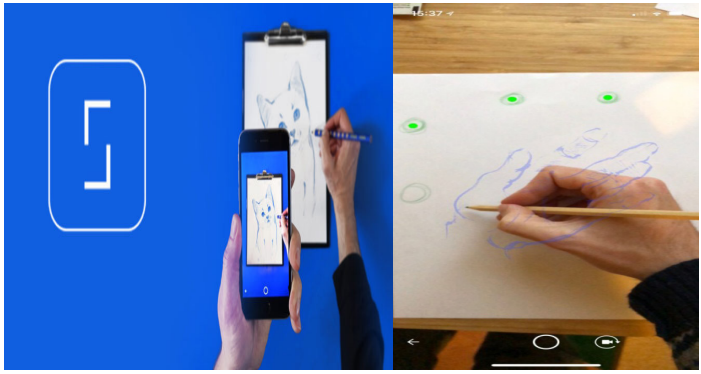

Figure 3. *Sketch AR application examples accessed from* http://www.tapsmart.com/apps/ar-apps/review-sketchar-learn-draw-ar/.

This application is available on both iOS and Android operating systems and can be downloaded for free.

SketchAR is an application developed to teach drawing using augmented reality technology. This application is a tutorial tool designed for anyone who wants to but cannot draw or create anything. The lessons enhance drawing skills step-by-step. The application places virtual images on the paper/wall by following drawings from mobile devices. In addition, the application has been designed to be a simple and convenient tool for both professional artists and amateur artists for drawing on any surface, including for example canvas, wall, etc. For application purposes, the application must be used in a bright environment on A4/A5-size paper. If the devices are kept stable, they lead to healthier results (https://www.mediaclick.com.tr/blog/mobil-uygulama-incelemesi-sketchar).

MeasureKit

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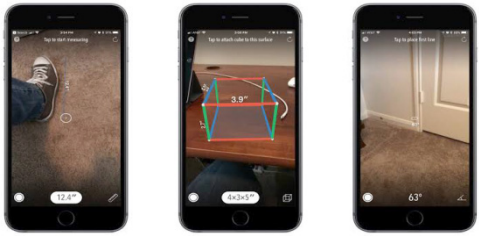


Figure 4. *MeasureKit measurement examples* accessed from https://www.macstories.net/reviews/measurekit-brings-ar-measuring-tools-to-the-iphone/

One of the most compelling points of iOS 11 is applications built on augmented reality (AR/Augmented Reality). Developed with ARKit framework offered by iOS operating system, this application is available for free download. MeasureKit application can make net measurements such as height, width, distance, angle, trajectory, level, square and more by using the camera of an iPhone or iPad. Information on the object being measured is easily seen with augmented reality technology on the camera. It can easily measure the area of a room, the width or height of a wall. There are many shortcuts in the application. For example, when measuring someone's height, the height is calculated immediately and indicated on the screen by selecting the custom menu and shooting first the floor and then moving up from the floor to shoot the person's height. If a heavy item in any room is to be relocated, you can create a virtual cube covering the object that is to be moved and drag this cube on the screen where the item is to be placed to see whether or not the item will fit there.

Star Walk

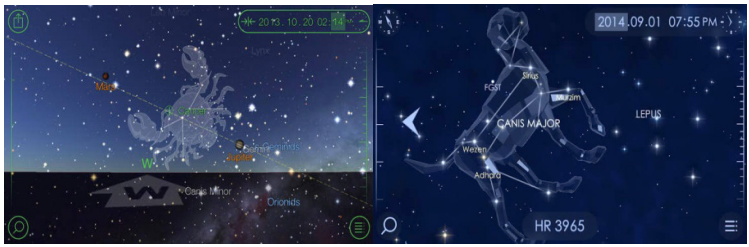


Figure 5. *Star Walk accessed from* https://www.chip.com.tr/gununiphoneuygulamasi/star-walk_45625.html.

Star Walk is an application launched as of 2001 for iOS, Android, Amazon and designed by Vito Technology.

The goal of Star Walk application is to help astronomy amateurs, students and professionals find and identify more than 200,000 stars, planets, constellations, satellites in the night sky. The application allows users to discover astronomical objects in real time, watch moon stages, meteor showers, iridium lenses, and view daily sunset and sunrise times, elevation angles and day lengths. The application provides detailed information about most objects. It also features a time machine that gives you the opportunity to explore a map of the sky for the past and the future. Star Walk uses the mobile device camera on iOS operating systems for augmented reality. It combines image data from the camera with a star map to provide the user with a real-time view of the objects in the sky. In order to use the features of this application easily, it must be used on devices having a digital compass.

Pokémon go:

Figure 6. *Images for Pokémon go accessed from* accessed on https://www.mobil13.com/pokemon-go-benzeri-en-iyi-ar-oyunlari-21922.html.

Pokémon Go is a mobile augmented reality (AR) game developed and released by Niantic for iOS and Android devices. Pokémon Go was first released in some countries in July 2016 and later in all other regions. The game was created by the collaboration between Niantic, Nintendo and the Pokémon Company. This application is used via a mobile GPS device to find, capture, fight and educate virtual creatures that appear to be in the player's real world.

The BBC Civilization AR

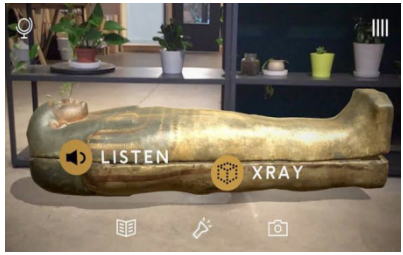


Figure 7. *BBC Civilization AR mummy example*

Augmented reality is a very useful technology for education. Designed by BBC, this application is also as an educational application built highly on augmented reality technology. It has been designed for both Android and iOS mobile operating systems. BBC Civilizations AR application offers the ability to view, place, rotate and resize various historical items. This application is a very useful and instructive application that can control an Egyptian mummy, enable the past to be heard and even to be seen through an X-ray function. This application, which also allows many historical exhibitions to be displayed virtually, is able to show the past and current state of historical items in an animated fashion.

Mondly: AR

Figure 8. *Images for MondlyAR application accessed from* https://www.mondly.com/ar.

It was developed by ATI Studios. MondlyAR is an augmented reality application designed to learn languages. This application is available on both Android and iOS mobile operating systems. It is downloaded for free, but can be fully accessed by subscription/at a fee. The application first starts with a conversation between two people at beginner level. It allows the quick learning of basic words. The user interactively chats with a virtual character to reinforce the learned words. The user learns in the form of a dialog, transferring the virtual character guide to the real world in any environment, regardless of place and time. It teaches English, Spanish, French, German, Italian, Russian, Japanese, Arabic

and Korean. It is suitable for all ages.

Using augmented reality in education

Augmented reality technology that has recently begun to be used in some sophisticated universities is enriching educational environments, making learning more permanent and fun (Wu, Lee, Chang &Liang, 2013).

The educational benefits of educational environments supported by augmented reality are as follows:

- Supports learning by blending real objects with virtual elements.
- Improves spatial learning.
- Enables the system dynamics to be understood.
- Provides more enjoyable and engaging teaching materials.
- Organizes teaching materials by learning status.
- Enables kinesthetic learning.
- Improves learning permanence.
- Provides individual student learning and supports material interaction (Uluyol& Eryılmaz, 2012).

Many researchers argue that augmented reality technology is a valuable technology for use in education. According to Billinghurst (2002); augmented reality technology

* Supports uninterrupted interaction between real and virtual environments,

* Uses a concrete interface metaphor for object manipulation,

* Has the capability to seamlessly transition between reality and virtuality, thus contributing greatly to the educational experience.

Studies on augmented reality in education which were conducted on students who had not experienced such technology, have shown that students had more fun and motivation and had a

positive educational environment. It is recommended that when implementing and developing augmented reality technology, the educational value should not only be based on its characteristics, but should also focus on pedagogical and learning theories (Nincarean, Ali, Abdul Halim, Abdul Rahman, 2013).

Textbooks are a common practice of augmented reality technology used in education. These books are printed normally, but designed interactions and images are transferred over to a webcam. This is used in mobile device applications or by accessing it from a website. This technology allows any existing printed book to be converted into augmented reality view later. Thanks to the use of augmented reality on printed book pages, textbooks become a dynamic source of information. Thus, it is regarded as a rich, interactive experience for people who have not used a computer (Kesim&Özarslan, 2012).

Software Designed with Mobile Augmented Reality for Music Education

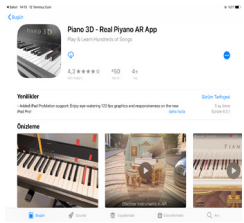


Figure 9.Piano3Dlogo

Piano 3D-AR

Developed by Massive Technology, Piano3D is an augmented reality application. This application is available on iOS mobile operating system iPad and iPhone. The application starts with a virtual piano placed in the real environment. There are many piano sounds in the application. There is a music library created both within the application and by the user. The user can play each selected song from within the application or create their own song. It operates by touching the screen. It has the feature of slowing or pausing a song being learned. It also has the feature of recording a song being studied. MIDI and video recording features make the application more fun to use. Users can choose between three piano options: These pianos are White Grand, Gold Grand and Mechanical console piano. When played in standard 3D or "Portal" mode, each of these pianos is placed in a different room. White Grand piano is designed as placed in a modern Scandinavian room, Gold Grand in a luxury room in a palace in Europe, and the mechanical console piano in a standard room.

Users can rotate, move, and zoom in the piano in standard 3D mode. In AR mode, you can rotate and move the piano to place it in a convenient location in your room. The notes have a nice and comfortable look. There is also an option to "Play Camera" for an automatic camera, an orbit camera, or a top view.

The "Learn" option is very useful. A top view of the keyboard and notes are shown with lines that flow from top to bottom. Each hand has its own unique color. Piano 3D is not designed to replace a piano play experience, but has been developed as a fun music discovery tool that serves as a learning tool. This application is not just about play: it also provides the experiences of listening and learning by listening. The user can also create their own songs and import and save any songs. With MIDI feature,

it offers the ability to play with an orchestra. Although the application is free, if a subscription fee is paid, most songs become available and all instruments become accessible.

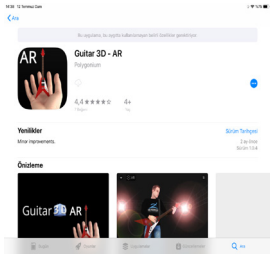


Figure 10. *Guitar 3D logo*

Guitar 3D-AR

Guitar 3D is an application developed by polygonim. Designed for music making and guitar learning, Guitar 3D application has been developed with academic guitar trainers and guitar artists.

This application provides the opportunity to learn in both 3D and augmented reality in real world. The virtual character shows the chords contained in the application by playing, and the image is adjusted (by zooming in and out) to better detect the virtual character's hands.

When the application is opened, there are natural, sharp and flat voice changer markers in the top left. The chords to be worked on or to be played appear on the screen by clicking on these markers. On the top are the letters for the notes. When a note is pressed, there are several chord options just below it. Not all chords are displayed because advanced-level packages are available for a fee. Free at first stage, the basic package in this application shows only major and minor chords.

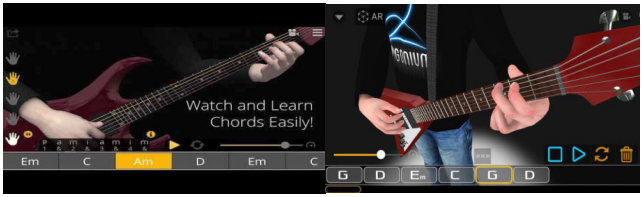


Figure 11. *Images of Guitar 3D-AR application*

There is also the option of displaying the right hand and left hand separately or together. There are separate trainings for both hands. It shows rhythmic beats and arpeggio for the right hand, and how and where to press for the left hand. It also offers the ability to create, save and share your own compositions with other users. To make your own music, you can drag the chords at the top by a finger or use the add sign on the screen. Correction is possible with the play, stop, rewind and erase markers. This application is of great use for both professional musicians and amateur musicians.

Figure 12. *TonicAR-chord dictionary logo*

Tonic Ar-Chord Dictionary

This application was developed by Coda Labs. There are other applications from the same company on music. These are*Choroma* for piano learning, *Cycle* for music creation, *Pitch* for metronome and chord, and *Tone* for musical hearing training.

Tonic AR is an augmented reality application designed to make the piano easier to learn. The application's augmented reality technology enables the display of over 130 piano chords and modes with blue dots placed on the piano keys.

The Tonic AR application shows the chord dictionary and the notation of the chords in its database and also displays the notes of the chords on the screen. It offers a choice of 88, 76, 61, 49 and 25-key piano keyboards.

Figure 13. *Display of TonicAR chords on the keyboard*

At the bottom of the screen, the chord letters and their location above the stave are shown. Tapping the chords to be learned or played shows the locations on the keyboard. With the octave option, you must make the appropriate selection in the settings section to choose the desired octave. This application is very convenient for both professionals and amateur musicians, making learning fun and easy.

Figure 14. *Note Blast logo*

NoteBlast

Note Blast is an augmented reality application designed to learn the notes. It is only compatible with iPad and iPhone on iOS mobile operating systems. It is a quite fun application for those new to music education and those who don't know the notes. There are several songs in the application. Songs are available from easy to hard. When the application is opened, there are options to "Play" and "Train". The Train option has several chapters in the settings section. These are control, seconds, g clefs, faults, and determining the thickest and thinnest sound ranges in relation to g clefs. By selecting the desired features in the settings section

The game begins in augmented reality mode.

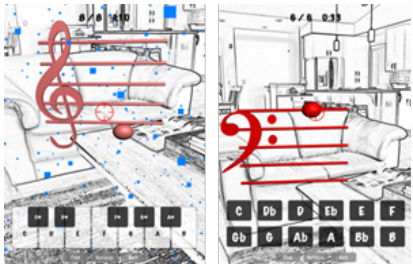


Figure 15. *Note Blast - find notes on treble clef and bass clef*

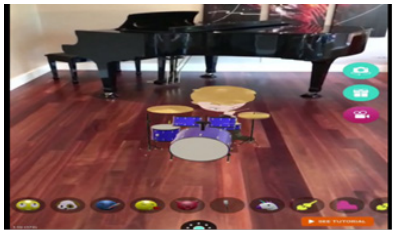
Which key or note to press is shown in colors with the real-world virtual stave and the note thereon. If an incorrect note is tapped, it will stop and indicate what the correct note is. This makes it fun and reinforcing to learn the note. The Play option is a type of exam. It does not show or warn what notes are like the Train option. In this option, the user collects certain points and earn rewards after playing a work. The application also has a song option. In this section, you first select the song that you want to learn, and listen to it, and then find the right notes to play it. It also provides the ability to play on the treble clef and bass clef and learn the notes on them. With augmented reality technology, the clef and the notes of the song to be played are transferred to the real environment via the mobile device's camera. The target is hit by placing the aiming mark on the screen over the note and pressing the letters shown below. This will play the song and complete the note learning. Eventually, a score table is created based on time and accuracy, which can be shared in any social media environment as an option.

Figure 16. *Music.iLuv logo*

Music.iLuv

Music.iLuv is a social music technology application designed with augmented reality (AR). Developed by Melody Khair and MojiGhodousi, Music.iLuv is designed to enhance students' learning, creativity, problem-solving skills and musical quality.

In addition, the Music.iLuv application is supported by research at Harvard University and the University of Southern California on what motivates the digital age children, how they learn and which learning processes they prefer. Available on iOS mobile operating system, it can be used on iPad and iPhone.



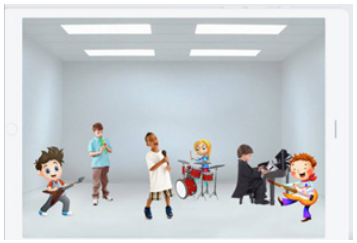


Figure 17. *Music.iLuv - group playing*

The application is designed for kids and music lovers of all ages. It is created for making music, creating music and performing in a digital environment. With this application, errors made are communicated to the user via feedback. Users can also create orchestras with friends or virtual groups in an augmented reality environment. The characters in the virtual environment can be edited as desired. You can add the songs available in the application, or the songs you have composed to the library. You can also share a song you have composed or recoded on social media platforms. Music.iLuv enables communication with artists or other added musicians. The general features of Music.iLuv are: Create music videos and sounds together, and practice, Play and record,Access to a rich song repertoire or add your own music to the list to play with different instruments or vocals, Live performance, polyphonic detection technology, Add voice recordings and songs to music recordings and synchronize voice recordings for multiple users, Perform in AR environment with 3D virtual orchestras, virtual characters, Share music videos and

albums, Receive 3D rewards and songs from the rewards store with points earned on multiple media.

Discussion, Conclusion and Recommendations

As technology evolves, taking alternative and solution-oriented steps in education further increases the use of technology. Augmented reality technology which has begun to be used in several areas in recent years has offered a lot of innovation with different applications.

This research has been studied on the examination of AR applications in IOS operating system. Research was aimed to reveal the positive and negative aspects of the availability of AR applications designed for music education.One of the applications examined is Piano 3D-AR. The remarkable feature of this application is that it allows you to play the piano with the help of the visuals, even without knowing the notes. Chow, feng, amor and wünsche (2013) the article "Music education using Augmented Reality with a head mounted display" relates to the augmented reality program developed for the elimination of basic deficiencies in traditional music education.The purpose of this study is to design a system to increase the motivations and interests of students who do not know the notes and want to learn to play the piano without learning the note. As a result of this study, it was observed that the augmented reality program designed was very useful for students.

In this research, applications designed on instrument education, music theory and playing together are mentioned.NoteBlast and TonicAR applications are related to music theory.NoteBlast application notes; Tonic AR application is also designed for teaching chords.

These applications is very convenient for both professionals

and amateur musicians, making learning fun and easy. Gomes, Figueiredo, Amante and Gomes (2014) the article "Augmented Reality Musical App to Support Children's Musical Education" mentions an educational activity designed to teach the student the periods of music history with augmented reality. Peddy-paper; is a fun activity associated with learning about a particular topic.The Musical Peddy-paper event was developed through the Hoppala and Layar platforms. With this activity, questions about music are taught in an educational and entertaining way. As a result of the study, students have shown that they can accurately describe twentieth-century music, musical instruments, musical genres, with hints that include visuals, sounds and videos.

As seen in the reviewed augmented reality applications, they aim to teach by playing games.

Lemos, Corrêa, Nascimento and Lopes (2017) article "Augmented Reality Musical app to support children's musical education" examined an augmented reality application designed to support children's music learning.This application shows whether the predetermined notes are correctly colored. In addition, there is a 3D animated character dancing according to the rhythm of the melody. As a result of the study; It was observed that the music education process of children was improved with the AR application.

Programs related to musical instrument learning in the reviewed applications appear not to be designed with a detailed training approach and not to focus much on technical skills. Serafin, Adjorlu, Nilsson, Thomsen & Nordahl (2017) In the study called "Considerations on the use of Virtual and Augmented Reality Technologies in Music Education", an alternative approach of virtual and augmented reality to provide children with musical skills is presented.This article provides information on how augmented reality technologies make playing music easier.As a re-

sult, it has been observed that there are applications that increase motivation and participation and aim to teach in a fun way. However, they reported that these practices were not functional in a pedagogical sense.

Augmented reality applications designed for music education are unfortunately few. And, data obtained as a result of literature search shows that the studies conducted on this area are not sufficient, and that there is a need for research on the use of this technology in educational environments. Demirer and Erbaş (2015), in their study, argue that studies on mobile augmented reality applications are not distributed over a large time period and that research on its use in educational environments is few.

Each application is designed to be used by individuals of all ages, professionals, or amateur musicians new to music. The interfaces of the applications are designed to be very clear and easy to use. Their disadvantage is the limited use despite their availability for free download. As the user progresses and accesses to other stages, they provide access only at a fee or by subscription. As a result, the implementation of augmented reality technology in education is also a meaningful initiative for the creation of new teaching approaches and the development of education.

This research was limited only to the IOS mobile operating system. Similar studies, including other operating systems, can be conducted to expand the research. A very useful and enjoyable teaching tool for children growing in the digital age, these applications can be made available at schools and applications can be developed according to the needs of the age. Studies in this area can also be supported by experimental studies on educational availability to ensure healthier results. Augmented reality applications for learning musical instruments can be further developed. More applications can be designed for use in general music education.

References

1. Ağca, R. K., Bağcı, H. (2013). Eğitimde mobil araçların kullanımına ilişkin öğrenci görüşleri. *Eğitim ve* Öğretim *Araştırmaları Dergisi*, 2(4), 295-302.
2. Azuma,R.T. (1997). A survey of augmented reality. *Teleoperators and Virtual Environments* 6(4), 355-385.
3. Billinghurst, M. (2002). *Augmented reality in education*. New Horizons for Learning- Technology in Education. Seattle,WA.
4. Büyüköztürk, Ş. Kılıç Çakmak,E., Akgün, Ö.E., Karadeniz, Ş. & Demirel, F. (2016). *Bilimsel Araştırma Yöntemleri*. Pegem Akademi:Ankara.
5. Carmigniani, J., Furht, B. (Ed*.).* (2011). *Augmented reality: An overview*.(2nd Ed.). Handbook of Augmented Reality,Springer*,* , s:3-46.
6. Chow,J., Feng, H., Amor, R. & Wünsche B.C. (2013). Music education using Augmented Reality with a head mounted display. *Proceedings of the Fourteenth Australasian User Interface Conference (AUIC2013)*, s.73-79, Adelaide, Australia.
7. Çakır, R., Solak, E.& Tan,S.S. (2015). Artırılmış gerçeklik teknolojisi ile ingilizce kelime öğretiminin öğrenci performansı üzerindeki etkisi. *Gazi Eğitim Bilimleri Dergisi1(1),* 45-58.
8. Demirer, V.&Erbaş, Ç. (2015). Mobil artırılmış gerçeklik uygulamalarının incelenmesi ve eğitimsel açıdan değerlendirilmesi. *Mersin* Üniversitesi *Eğitim Fakültesi Dergisi, 11(3),* 802-813.
9. Geroimenko, V. (2018). *Concluding Remarks: Today's Vision of an Art Form of the Future*, *Augmented Reality Art.* Springer Series on Cultural Computing*,* Springer Interna-

tional Publ. V. Griemenko (ed.), s:383-384.
10. Gomes, J.D.C., Figueiredo,M.J.G, Amante, L.G.C. D.& Gomes, C.M.C. (2014). Augmented Reality Musical App to Support Children's Musical Education. *International Association for Development of the Information Society, Paper presented at the International Conference on Cognition and Exploratory Learning in Digital Age,* s.221-224, (11th, Porto, Portugal, Oct 25-27, 2014)
11. Güngör, C.& Kurt, M. (2014). Improvising Visual Perception of Augmented Reality on Mobile Devices with 3D Red-Cyan Glasses. *IEEE 22nd Signal Processing and Communications Applications Conference, SIU'14,* 1706-1709, Trabzon.
12. İçten, T.&Bal, G. (2017). Artırılmış gerçeklik teknolojisi üzerine yapılan akademik çalışmaların içerik analizi. *Bilişim Teknolojileri Dergisi*, *10(4),*401-415.
13. İçten, T.& Ba. G.. (2017). Artırılmış Gerçeklik Üzerine Son Gelişmelerin ve uygulamaların İncelenmesi. *Gazi Üniversitesi Fen Bilimleri Dergisi* Part C: Tasarım ve Teknoloji, *5(2),* 111-136.
14. Karasar, N. (2005). *Bilimsel Araştırma Yöntemleri*. Nobel:Ankara
15. Kesim, M. & Ozarslan, Y. (2012). Augmented reality in education: current technologies and the potential for education. *Social and Behavioral Sciences, 47,* 297-302.0
16. Krevelen, D.W.F., Poelman, R., 2010. A survey of augmented reality technologies, applications and limitations. *The International Journal of Virtual Reality*,*9(2)*, 1-20.
17. Kysela, J. & Storkova, P. (2014). Using augmented reality as a medium for teaching history and tourism. *Procedia-Social and Behavioral Science*. *174*, 926-931.
18. Lemos, B., Corrêa A.G. D., Nascimento M. & Lopes R.

D. (2017). Augmented Reality Musical App to Support Children's Musical Education. *Computer Science and Information Technology* 5(4): 121-127.
19. Li,L. (2017). Application of augmented reality technology in piano teaching system design. *Educational Sciences: Theory & Practice, 18(5),* 1712-1721.
20. Miligram, P. & Kishino, F. (1994). A taxonomy of mixed reality visual displays. IEEE Transactions on Information Systems, *77(12),* 1321-1329.
21. Nincarean, D., Ali M.B., Abdul Halim, N.D.& Abdul Rahman, M.H. (2013). Mobile augmented reality: the potential for education. *Social and Behavioral Sciences,103,* 657-664.
22. Serafin, S., Adjorlu, A., Nilsson, N.C., Thomsen, L.A.& Nordahl, R. (2017). Considerations on the use of Virtual and Augmented Reality Technologies in Music Education. *IEEE Workshop on K-12 Embodied Learning through Virtual & Augmented Reality,* Los Angeles.
23. Somyürek, S. (2014). Öğrenme sürecinde z kuşağının dikkatini çekme: artırılmış gerçeklik. *Eğitim Teknolojisi kuram ve uygulama, 4(1),* s.63-80.
24. Uluyol,Ç.& Eryılmaz, S., 2012). Artırılmış gerçeklik ve eğitimde kullanımı. *6th International computer and instructional technologies symposium,* Gaziantep.
25. Yılmaz, M. (2007). Sınıf öğretmeni yetiştirmede teknoloji eğitimi. *Gazi* Üniversitesi *Gazi Eğitim Fakültesi Dergisi*, 27(1), s. 155-167.
26. Wu,H., Lee, S., Chang, H. & Liang, J. (2013). Current status, opportunities and challenges of augmented reality in education. *Computers and Education, 62,* 41-49.
27. https://www.mediaclick.com.tr/blog/mobil-uygulama-incelemesi-sketchar

28. https://www.mondly.com/ar
29. http://www.tapsmart.com/apps/ar-apps/review-sketchar-learn-draw-ar/
30. https://www.mobil13.com/pokemon-go-benzeri-en-iyi-ar-oyunlari-21922.html
31. https://www.chip.com.tr/gununiphoneuygulamasi/star-walk_45625.html
32. https://www.macstories.net/reviews/measurekit-brings-ar-measuring-tools-to-the-iphone/

CHAPTER-2

WORK MOTIVATION*

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* The chapter was written by using a section of Ramazan ERTÜRK's "Relationship Between Work Motivation and Organizational Commitment of Teachers" Master Thesis.

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Motivation and Motivation Process

The rapid change brought by the 21st century also affects organizations. Organizations wishing to achieve competitive advantage will be able to adapt to this rapid change and be productive by realizing their goals, by making the best use of human resources. Because the organizational goals can be realized as a result of the efficient and productive work of the employees. The basis of effective and productive work is based on employees' efforts towards organizational purposes. It is about the concept of motivation to direct employees to a purpose and to make efforts by spending energy for this purpose. Motivation can be defined as the power that motivates individuals to achieve a specific purpose, directs them to work and arouses desire to work in individuals. "What motivates individuals"? To find the answer to the question, many researchers have worked on motivation and developed various theories.

The word motivation is derived from the Latin word "movere", which means "to act, to act". This word is used for a basic psychological process (Pekel, 2001). The concept of motivation was first defined by Woodworth (1918) as the accumulation of energy that mobilizes an organism in various ways. According to the theory developed by Cannon (1939), imbalances caused by internal or external factors move the organism away from the equilibrium state. The organism is activated to return to equilibrium. Motivations enable this organism to take action (Ertan, 2008).

There are many definitions of motivation in the literature, some of which are: It is the process of influencing and inspiring the needs of the institution and individuals to act, by creating a work environment that will result in satisfaction (Engin, 2004). According to another definition, motivation is the thoughts, hopes and beliefs of the individual, which activates the individual and determines the direction of the individual's actions (Şa-

hin, 2004). Motivation stems from individual needs, desires and desires that provide motivation for action. Motivation is the reason for people's efforts (Tim, Peterson & Stevens, 1990, cited by Kurt, 2005). Motivation is defined as the name given to the factor that leads individuals to certain behaviors in certain situations (Ergül, 1996). Motivation is a collection of various motives and motives that originate from themselves or their environment, encouraging individuals to act and act with a special attitude (Genç, 2017). Motivation is an application to increase the role of the personnel who are more managed in achieving the goals or the personnel who play a role in the provision of the service (Aşıkoğlu, 1996). Motivation was defined by Can (1997) as an increase in the individual's willingness by creating a work environment that will satisfy the needs of the organization and individuals. Motivation is defined as their thoughts, hopes, beliefs, briefly desires, needs and fears that activate the person and determine the directions of their movements (Fındıkçı, 2000). When the definitions are analyzed, it is seen that the emphasis is placed on human needs and then the individual behavior towards meeting the needs serves the purposes of the organization. In other words, in definitions, it is stated that the behavior of the individual is shaped in accordance with the objectives of the organization and what will provide them. Two types of motivation can be mentioned.

These; The internal rewards from creation and the external rewards provided by someone else. internal rewards refer to situations such as a sense of accomplishment of the individuals or the realization of a personal mission. External rewards include promotions and wage increases and are usually given by managers. These awards are based on the organization's satisfaction with the employees (Tuna &Türk, 2006).

Work motivation is a concept related to the adequacy of the

employees' desires and wishes at work. If the employees are motivated and willing to do what they do, if they are motivated, but rather unwilling and reluctant, it is mentioned that their motivation is low (Ertan, 2008). Business motivation, Steers and Porter (1991), the process of strengthening, directing and maintaining behavior in organizational order; Simons and Enz (1995), the power that makes people choose a particular job, continue doing it, and work hard; Robbins (1998), a desire to spend a high level of effort towards organizational goals; Smith (1999), dynamic and internal state arising from the common effects of independent and personal and situational factors; Lussier (2000), the desire to achieve organizational goals; Tong (2001) is what stimulates our emerging and sustained behavior towards achieving goals; George and Jones (2002) defined the behavior of a person in an organization as the psychological forces within the person who determines the level of effort and level of endurance against obstacles (Transfer : Ertan, 2008).

The motivation process is quite complicated. Since human needs are very diverse, the manager needs to know these needs, analyze behavior, and be aware that not all people are similar. One cannot be motivated until the needs are mobilized. The motivated need is called motivation in psychology. Motivation starts with the need for certain things in individuals. When a need arises, the individual's desire to meet him appears. Thus, the individual starts to be stimulated with a driving force. This arousal prompts the individual to act towards reaching the goal, when he reaches the goal, some of his needs will be satisfied and the tension on him will decrease. This will be followed by tension created by other unsatisfied needs and the process will continue in this way (Genç, 2017).

Motivation features

The first of two important features of motivation is that motivation is a personal event. In other words, any situation or event that motivates someone may not motivate someone else. The second is that motivation can only be observed in human behavior (Koçel, 2010). The characteristics of motivation are as follows: (Altok, 2009).

- The demands and needs that form the basis of the concept of motivation are shaped under the influence of the social culture of the human and the emotional and spiritual structure of the individual.
- In terms of the person's educational status and abilities, the full use of personal work capacity, and the activation of these two factors affect the motivation.
- Motivation is for a purpose or reward. The power we use in the workplace, to win awards, to change our status, etc. is because we hope for things. In other words, the key feature in motivation is towards the goal and the desired result. Sometimes this desired result is an undesired thing.
- Goals do not control behavior; it only impresses and warns the person to satisfy their needs.
- When one need is satisfied, another emerges. A satisfied need is no longer a motivational tool.
- The same motives can cause different patterns of behavior.
- Purpose in motivation; is to ensure that employees stay in business, use their creative secret powers and increase their business performance.

The importance of work motivation

Managers are required to employ employees effectively and efficiently in order to achieve organizational goals. This is possible by increasing the morale and motivation of the employees. Nowadays, it is not possible to employ people by force, pressure or just a lot of money. In order to work people effectively and efficiently, it is imperative to gain people in a psycho-social way. This can only be possible through motivation (Genç, 2017). In organizations, people who cannot reach their goals and goals and cannot meet their needs become unsuccessful and inefficient. Employees must be motivated financially, financially, physically and psycho-socially in order to be successful and efficient in their duties (Aşıkoğlu, 1996).

While motivation supports the individual in revealing his abilities and potential, low morale and motivation cause some health problems in the employees and cause them to work with low efficiency. Managers should also be aware of the fact that organizational goals can only be achieved with employees. Managers and governments form two aspects of motivation. Using the motivation tool, managers try to ensure that people concentrate on their work, do things better, and therefore use resources in the most efficient way. The success of the manager depends on his subordinates working for organizational purposes and spending their knowledge skills and powers in this direction. The principal's job in the organization is to reveal the talent and potential of the employees in favor of the organization. For this, the most powerful tool in the hands of the manager is motivation (Genç, 2017). From a school perspective, it is important for the school principal, who will carry the future people to the information society, to meet the expectations of the teachers and students at the school, increase the efficiency of the school and provide a healthy communication environment in the school (Kapusuzoğlu, 2001).

Theories of Work Motivation

Various theories and theories have been developed for motivation that managers can use. These theories and theories claim to assist managers in determining the factors that motivate people and maintain motivation. While some theories focus on the motifs, which are an expression of the needs of the people, and the factors that are inside the person, others focus on incentives, the factors that are outside the individual and given to the individual externally. The first group are the theories that can be called scope theories and that focus on the internal factors, and the second group are the theories that can be called process theories and that focus on the external factors (Koçel, 2010).

Content theories

Scope theories explain the motivation depending on the factors that are in the person and lead the person to a certain behavior by focusing on the internal factors. If the manager can understand and comprehend these factors that force staff to behave in certain ways, they can refer them to act in line with the organizational goals (Koçel, 2010). The four best-known theories grouped under the scope of scope theories are:

- Abraham Maslow's Needs Hierarchy Theory
- Frederick Herzberg's Double Factor Theory (Hygiene - Motivation Theory)
- David Mc. Celland's Need for Success Theory
- Alderfer's Need for Existence, Relationship and Development Theory

Maslow's hierarchy of needs theory

Among the most well known theories of motivation Maslow's Hierarchy of Needs Theory is. Maslow tried to explain the motivation phenomenon by arguing that the most important factor directing human behavior is needs. This approach has two main assumptions. The first of these is that every behavior shown by the person is aimed at meeting certain needs of the person. The second assumption of the theory is concerned with the needs as well. According to this assumption, a person has needs that show a certain ranking (hierarchy). Unless the needs in the lower levels are met, the needs in the upper levels do not refer the person to behavior (Koçel, 2010). Maslow's needs hierarchy pyramid consists of five digits. Physiological needs are found at the bottom step of the pyramid. The top security respectively, not belonging and love, esteem, self-realization needs revenue. The five categories of needs that Maslow's Needs Hierarchy Theory are listed hierarchically from bottom to top are as follows (Şimşek, 1998):

Basic Physiological Needs: The need to eat, drink, dress, shelter, rest, maintain and exist.

Security Needs: Physical (accidents and diseases), and economic security, protection, comfort, peace, and threatened to be under threat.

Social Needs: Accept vision, sense of belonging, love and understanding, and need not take place in a group in solidarity with him.

Need for Respect: Acceptance and prestige, confident and leadership, competition and achievement needs.

The Need for Self-Realization: It is the need to be satisfied with its power, to do business with the desire to succeed, to be the best according to its peers. The person first acts to satisfy his

/ her lowest needs. It is not possible to motivate someone who is hungry by trying to meet their social needs. Each need group will lose its ability to affect behaviors and higher level needs will begin to affect the behavior of the individual (Koçel, 2010).

Herzberg's two-factor motivation theory

Herzberg developed this theory as a result of his research on 203 accountants and engineers in the Pittsburgh area. He asked the employees when they felt particularly good and when especially bad in their work. He then asked each subject to define the conditions that led to good and bad emotions. Subjects reported different working conditions for each of their emotions. The reported good emotions were generally related to the business itself. These were success, recognition, business itself, responsibility, progress and development. Herzberg called them motivants. The bad feelings reported were generally related to the business environment. These are organizational policy, supervision, interpersonal relations, working conditions and salary. Herzberg also called these health factors (Lunenburg and Ornstein, 1996, cited by Sarpkaya, 2006). Herzberg based his theory on motivating factors and health (hygienic) factors. Motivating factors in expressing hygienic (protective) factors, working conditions, wages and salaries, work safety, business conditions, fringe benefits, management practices, interpersonal relations and business policies; The work itself refers to the rewards that can be achieved as a result of achieving, being noticed, promoted (promoted), working in a meaningful and enjoyable job, taking responsibility and fulfilling the task. When these factors are present, they increase the level of job satisfaction and motivation. Herzberg also calls these factors "satisfying factors". There are some differences between motivational factors and hygiene

factors. While motivation factors deal with the content of the job, hygiene factors are related to environmental conditions (Şimşek, Akgemci & Çelik, 2003).

Herzberg proposed a two-stage process for this approach to be applied in the organization. Conditions that cause dissatisfaction within the organization should be eliminated. Motivation factors should come into play after the dissatisfaction disappears (Vural & Coşkun, 2007). Satisfaction takes place with the presence of motivating factors. Therefore, according to the theory, if managers want to motivate their employees, they should ensure that hygiene factors are good, but they should focus their attention on motivating factors (Aşan, 2007).

Mc. Clelland's need for success theory

The need to succeed is that a person behaves towards meeting various needs, such as establishing a relationship with others about increasing their social relationships, gaining power to influence others and achieving a certain success with people's talents and skills. McClelland; unlike other theories, he argues that needs can be gained later through learning. According to this theory developed by David C. McClelland, one behaves under the influence of three groups of needs. These:

Need for Success: Success; the need to do a job better, more effectively and solve problems or deal with difficult operations; they are found in purposeful individuals and they risk to a certain degree by putting average, realistic and achievable goals. In addition, they spend high energy with willingness to see the result of the work done and willingly enter into hard work (Altuğ, 1997).

The Need to Gain Power: The need to have control over others. Those who dominate this need act to expand their power and authority resources, to influence others, and to preserve their power.

Need to Build Relation: Love refers to the need to belong and belong. This need refers to establishing relationships with others, being a group member and developing social relationships (Önen & Tüzün, 2005).

Employees in need of success want to do their jobs better and more efficiently than they did before. They differ because they have a desire to do better jobs than other employees. Employees who need power need to be effective and control others. Those who need power who strive to empower others by empowering prefer to take part in competitive and status-oriented situations and be prestigious. Employees in need of relationship want to continue their business in a collaborative and friendly relationship, far from competitive and desire to control (Langton & Robbins, 2007).

Alderfer's theory of need for existence, relationship and development

Developed by Clayton Alderfer, E.R.G. his theory takes its name from the initials of the words Existence, relatedness, and Growth. This theory, which is a simplified version of Maslow's hierarchy of needs, is published in Turkish sources by Alderfer's V.I.G. It is known as (Existence-Establishing Relationship-Development) theory (Paksoy, 2002). The first existence needs consist of physical demands such as eating, drinking, wages, working conditions and security. The second needs of establishing relationships include the need to be in contact with others and to be accepted and appreciated by others in business and out of life. The third and final development needs combine self-esteem and self-fulfillment needs. In the ERG approach, which is expressed by taking the initials of these needs, when the lower-level needs are eliminated, the higher-level needs will arise. In the ERG the-

ory, it is impossible to meet the need for development as in the needs theory. On the other hand, in the ERG theory, it is accepted that lower-level needs become less important as they are met, but higher-level needs become more important as they are met (Çetinkanat, 2000). According to the VIG theory, the satisfaction of each step becomes increasingly abstract and difficult. Others are frustrated and frustrated. If this does not meet personal development needs, they have to return to one of the other steps and concentrate their efforts on it (Şimşek, Akgemci & Çelik, 2003). The motive for erg is the urge to have control. People with an ERG motivation choose behaviors that are difficult to reach and require meaningful purposes, and act in order to obtain and use the knowledge and skills necessary to achieve them. They risk more than other people. But they can also use this power destructively for humans (Silah, 2005).

Process Theories

Scope theories address the issue of what leads to motivation. He argues that there are needs that lead the individual to conduct. Process theories, on the other hand, examine how the motivation process is handled (Baysal & Tekarslan, 1996). The focal point of theories is about what purposes and how people are motivated. The question of how the individual showing a certain behavior can be provided to repeat (or not repeat) this behavior is the basic question that process theories try to answer (Koçel, 2010). Process theories explain the variables in the activities from the emergence of behavior to the end of behavior. Process theories have discussed the importance of personal differences in motivation (Eren, 2004). As process theories, Victor H. Wroom's Expectation Theory, Lawler and Porter's Improved Expectation Theory, Adams' Equality Theory, and Locke's Objective Theory.

Victor H. Wroom's expectation theory

Expectation theory tries to explain human behavior in terms of the goals and choices of the individual and expectations in achieving these goals. According to Vroom, people determine which results they prefer and make realistic predictions to achieve them (Aktaş, 2002). Vroom's Expectation Theory is structured around the concepts of valence, instrumentation, and waiting. Valens is the degree to which an individual will get the result (reward). Another important input regarding Valens is that the first order results are instrumental in achieving the desired second order results. Another important variable in the motivation process of Vroom is wait (Bolat, Seymen, Bolat & Erdem, 2008). In Vroom theory, he suggests that expectation for motivation, instrumentality and attractiveness should all be positive in one's eyes. If the person does not believe how successful his efforts will be, that is, he has no expectation, he will not be motivated at the beginning. If he believes he will do the job but thinks this success will not give him any reward (no instrumentality), he will not be motivated again, as he would have worked in vain. The person believes that he will succeed and will receive a reward as a result of this success, but if he does not satisfy the reward belief, that is, if the person does not like the award given (no charm), he will not feel strong motivation to do it again. In summary, all three elements must be positive to ensure motivation according to the theory. The employee will not be motivated as a result of any negative situation (Güney, 2007).

Lawler and Porter's improved expectation theory

By making various contributions to the model of Vroom, he developed a more advanced theory of waiting. According to Por-

ter and Lawler, the effort of the individual does not mean that the performance will increase. The ability and quality of the individual and the way he perceives the work he will do will also affect the person's performance. In other words, two new concepts, talent and perceived role are added to Vroom's theory. Thus, the theory of waiting has become more realistic and complex. If the person lacks knowledge and ability, no matter how hard he tries, he will not succeed (Dizdar, 2009). A person's high effort does not automatically result in high success. The motivation of the individual is influenced by his expectation, but in order for the high effort that this expectation will result in a high performance, the individual must have the necessary skills and knowledge and have an appropriate role understanding (Bingöl, 1990). Performance shown by effort, knowledge and ability, and perceived role variables will be rewarded with a specific reward. This refers to the first stage result. These rewards can be internal or external. The important part here and the addition to the Vroom theory is the perceived equal reward variable (Koçel, 2010).

Adams's theory of equality

J.Stacy Adams' Equality Theory is a theory that points to the importance of reward justice in terms of constantly motivating and encouraging employees. The basis of the theory is the assumption that the employees of the organization compare the contributions and achievements of the other employees who are in the same situation with them, and observe the degree of equality or inequality in business relations (Yıldırım, 2006). The theory of equality tells how to use social equality to motivate people. If people see that what they have achieved is equal to what they have achieved with the same effort, they think that they are treated equally and their motivation levels increase (Barutçugil, 2002).

According to the equality theory, if the employee's workload is high but the reward is low, then the motivation and the performance of the employee will decrease. Therefore, the existence of employees who feel unfair in this way will undoubtedly cause employee inefficiency. When an individual perceives that the ratio of his / her results to inputs is not equal to the ratio of his / her results to inputs, inequality occurs (Gür, 1987). As a result, the individual gets peace only when he believes that he has achieved full equality and balance between himself and his colleagues (Tınaz, 2009).

Locke's goal theory

The goal theory developed by Locke suggests that the root cause of behavior lies in the conscious goals and intentions of individuals. Objectives power is achieved much more efficiency. Another condition to increase this efficiency is to provide feedback to those concerned (Can, Akgün & Kavuncubaşı, 1995). Locke specifies four characteristics that goals affect behavior:

- Objectives direct the person to the behaviors they believe will reach the goal,
- Goals mobilize the person to make more effort,
- Goals increase persistence; In this way, the person devotes more time to the behaviors required to achieve the goal,
- Goals motivate the person to seek effective strategies to achieve them.

The goal theory predicts that the person will make efforts to achieve his goals and that business performance is a function of the goals group. From an organizational perspective, goal setting is an effective tool for maintaining and increasing the level of current business performance, and businesses use it. According

to Locke, there are some elements that are necessary for setting goals to improve business performance. First of all, employees should have purpose loyalty, in other words, they should accept the given purpose. An employee cannot be motivated to achieve the purpose that he has not accepted or embraced. Secondly, the employee must be given feedback on whether their behavior has led him towards the goal. Without feedback, it is difficult for the purpose to direct the behavior. Third, the harder the goal, the higher the performance. However, the aim should not be more than the difficulty of the employee. This situation has the opposite effect on the employee; lowers motivation (Önen &Tüzün, 2005).

Intrinsic motivation

The goal in motivation is to provide intrinsic motivation (Argon &Ertürk, 2013).Intrinsic motivation expresses employees' beliefs about their job. If an employee with a certain competence is given the right to control his job, his inner motivation will increase and he will have energy and passion for the job. Autonomy and meaningfulness of the work are very important for ensuring inner motivation (DuBrin, 2019). Employees can be provided with opportunities such as compelling work, business success, business diversity, autonomy, responsibility, personal and professional development, and participation, and it can be provided to have a high level of intrinsic motivation (Mahaney & Lederer, 2006).

Intrinsic motivation results in positive behaviors such as enjoyment, dedication and psychological well-being (Deci & Ryan, 2008). Employees with intrinsic motivation are more likely to be motivated and performing. Intrinsic motivation can also increase employees' organizational satisfaction and loyalty (Ryan, & Deci, 2000). For this reason, the internal motivation and au-

tonomy of the employees should be protected and improved. The competencies and autonomy of the employees should be supported (Legault, 2016). Intrinsic motivation is a true motivation tool for employees to do meaningful work and perform well (Singh, 2016).

Extrinsic Motivation

Extrinsic motivation is not linked to employee satisfaction or pleasure. It focuses on the external consequences of the job such as incentive, financial reward, status, and promotion, rather than the fulfillment of the job (Giancola, 2014). Employees with high external motivation are motivated by positive evaluations provided by their managers or the organization or by enhancers such as hikes, promotions and bonuses. They also want to finish their work to escape punishment. They do not do this because they love or enjoy the job (George & Jones, 2012).

Extrinsic motivation includes effects from the environment of the individual. From an employee's performance external rewards such as wages, bonuses, promotion and appreciation by the manager increases the motivation of the employee. While external factors play an important role in increasing motivation, together, external factors often cannot provide the necessary motivation without internal factors (Ertürk, 2016).

References

1. Aktaş, A. (2002). *Turizm işletmeciliği ve yönetimi (2. Baskı)*. Antalya: Azim Matbaa.
2. Altok, T. (2009). Çalışanların motivasyonunu etkileyen faktörlere ilişkin hizmet ve imalat işletmelerinde karşılaştırmalı bir araştırma. Yüksek Lisans Tezi, Ispar-

ta Süleyman Demirel Üniversitesi Sosyal Bilimler Enstitüsü, Isparta.
3. Altuğ, D. (1997). *Toplam kalite yönetimi anlayışı içinde örgütsel davranış.* Ankara: Haberal Eğitim Vakfı, İntermat Yayıncılık.
4. Argon, R. & Ertürk, R. (2013). İlköğretim okulu öğretmenlerinin içsel motivasyonları ve örgütsel kimliğe yönelik algıları. *Kuram ve Uygulamada Eğitim Yönetimi [Educational Administration: Theory and Practice],* 19(2), 159-179.
5. Aşan, Ö. (2007). *Motivasyon.* S. GÜNEY (ed.). Yönetim ve organizasyon (ss.293-326). İçinde. Ankara: Nobel Yayıncılık.
6. Aşıkoğlu, M. (1996). *Motivasyon.* İstanbul: Üniversite Kitabevi.
7. Barutçugil, İ. (2002). *Organizasyonlarda duyguların yönetimi (1. Baskı).* İstanbul: Kariyer Yayıncılık.
8. Baysal, A. C. & Tekarslan, E. (1996). *Davranış bilimleri*. İstanbul: Avcıol Basın Yayın.
9. Bingöl, D. (1990). *Personel yönetimi ve beşeri ilişkiler (1. Baskı).* Erzurum: Atatürk Üniversitesi Basımevi.
10. Bolat, T., Seymen, O. A., Bolat, O. İ. & Erdem, B. (2008). *Yönetim ve organizasyon (1.Baskı).* Ankara: Detay Yayıncılık.
11. Can, H. (1997). Organizasyon ve yönetim. Ankara: Siyasal Yayınları.
12. Can, H., Akgün, A. & Kavuncubaşı, S. (1995). *Kamu ve özel kesimde personel yönetimi.* Ankara: Siyasal Yayınları.
13. Çetinkanat, C. (2000). Örgütlerde güdüleme ve iş doyumu. Ankara: Anı Yayıncılık.
14. Deci, E. L. & Ryan, R. M. (2008). Self-determination the-

ory: A macrotheory on human motivation, development, and health. *Canadian Psychology, 49*, 182-185.
15. Dizdar, A. (2009). Çalışanların içsel motivasyon algısı ve konuyla ilgili bir uygulama. Yüksek Lisans Tezi, Marmara Üniversitesi Sosyal Bilimler Enstitüsü, İstanbul.
16. DuBrin, A. J. (2019). *Fundamentals of organizational behavior* (6th Edition). USA: Academic Media Solutions.
17. Engin, E. (2004). *Psikiyatri kliniğinde çalışan hemşirelerin öfke d*üzeyleri ile iş *motivasyonları arasındaki ilişkinin incelenmesi.* Doktora Tezi, Ege Üniversitesi Sağlık Bilimleri Enstitüsü, İzmir.
18. Eren, E. (2004). Örgütsel davranış ve yönetim psikolojisi (8. Baskı). İstanbul: Beta Yayınları.
19. Ergül, Ş. (1996). *Personel yönetimi (1. Baskı).* İstanbul: Rem Ofset, Araştırma Yayınları.
20. Ertan, H. (2008). Örgütsel bağlılık, iş motivasyonu ve iş performansı *arasındaki ilişki: Antalya'da beş yıldızlı otel işletmelerinde bir inceleme.* Doktora Tezi, Afyonkarahisar Kocatepe Üniversitesi Sosyal Bilimler Enstitüsü, Afyon.
21. Ertürk, R. (2016). Öğretmenlerin iş motivasyonları. *Eğitim Kuram ve Uygulama Araştırmaları Dergisi*, 2(3), 01-15.
22. Giancola, F. L. (2014). Should hr professionals devote more time to intrinsic rewards? *Compensation & Benefits Review, 46* (1), 25-31.
23. George, J. M. & Jones, G. R. (2012). *Understanding and managing organizational behavior* (6th Edt). USA: Pearson.
24. Güney, S. (2007). *Yönetim ve organizasyon.* Ankara: Nobel Yayın Dağıtım.
25. Gür, M. (1987). *Hastane personelini motive eden faktörler.* Bilim Uzmanlığı Tezi, Hacettepe Üniversitesi, Ankara.

26. Fındıkçı, İ. (2000*). İnsan kaynakları yönetimi.* İstanbul: Alfa Yayınevi.
27. Genç, N. (2017). *Yönetim ve organizasyon: Çağdaş sistemler ve yaklaşımlar* (5. Baskı). Ankara: Seçkin Yayınları.
28. Kapusuzoğlu, Ş. (2001). Yönetimde motivasyon süreci. Çağdaş Eğitim Dergisi, 277, 37-41.
29. Koçel, T. (2010). İşletme yöneticiliği (12. Baskı). İstanbul: Beta Yayıncılık.
30. Kurt, T. (2005). Herzberg'in çift faktörlü güdüleme kuramının öğretmenlerin motivasyonu açısından çözümlenmesi. *Gazi Eğitim Fakültesi Dergisi,* 1(25), 285- 299.
31. Langton, N. & Robbins , S. P. (2007). *Organizational behaviour: concepts, controversies, applications* (6th Edt). Toronto: Pearson Prentice Hall.
32. Legault, L. (2016). *Intrinsic and Extrinsic Motivation. Encyclopedia of Personality and Individual Differences,* 1-4. DOI:10.1007/978-3-319-28099-8_1139-1.
33. Mahaney, R. C. & Lederer, A. L. (2006). The effect of ıntrinsic and extrinsic rewards for developers on ınformation systems project success*. Project Management Journal, 37* (4), 42-54, DOI: 10.1177/875697280603700405.
34. Önen, L. & Tüzün, B. (2005). *Motivasyon.* İstanbul: Epsilon Yayınları.
35. Paksoy, M. (2002). Çalışma ortamında insan ve toplam kalite yönetim. İstanbul: Çantay Kitabevi
36. Pekel, H. N. (2001). İşletmelerde motivasyon-verimlilik ilişkisi; dev*let hava meydanları işletmesi Antalya havalimanı çalışanları arasında bir örnek olay araştırması.* Yüksek Lisans Tezi, Süleyman Demirel üniversitesi Sosyal Bilimler Enstitüsü, Isparta.
37. Ryan, R. M. & Deci, E. L. (2000). Intrinsic and extrinsic motivation: Classic definitions and new directions.

Contemporary Educational Psychology, *25*, 54-67. DOI:10.1006/ceps.1999.1020.

38. Sarpkaya, R. (2006). Yöneticilerin öğretmenleri güdülemesinde içerik kuramlarından yararlanması ve bir örnek olay. *Burdur Eğitim Fakültesi Dergisi,* 11, 95-105.
39. Silah, M. (2005). *Sosyal psikoloji davranış bilimi (2. Baskı)*. Ankara: Seçkin Yayıncılık.
40. Singh, (2016). The impact of intrinsic and extrinsic motivators on employee engagement in information organizations. 26.04.2020 tarihinde https://files.eric.ed.gov/fulltext/EJ1096700.pdf adresinden alınmıştır.
41. Şahin, A. (2004). Yönetim kuramları ve motivasyon ilişkisi. *Selçuk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi,* 1(11), 523-547.
42. Şimşek, M. Ş. (1998). *Yönetim ve organizasyon.* Ankara: Nobel Yayıncılık.
43. Şimşek, M. Ş., Akgemci, T. & Çelik, A. (2003). *Davranış bilimlerine giriş ve örgütlerde davranış (3. Baskı).* Konya: Adım Ofset.
44. Tınaz, P. (2009). Çalışma yaşamından örnek olaylar (2. Baskı). İstanbul: Beta Basım
45. Tuna, M. & Türk, M. S. (2006). Kamu ve özel sektör matbaa işletmelerinde çalışanların içsel motivasyon düzeylerinin karşılaştırılması. *Selçuk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi,* 1(16), 619-632.
46. Vural, Z. B. & Coşkun, G. (2007). Örgüt kültürü (1. Baskı). Ankara: Nobel Yayıncılık.
47. Yıldırım, D. Ş. (2006). *Resmi ilköğretim okullarında görev yapan* öğretmenlerin motivasyon *ve iş tatminini etkileyen faktörler.* Yüksek Lisans Tezi, Yeditepe Üniversitesi Sosyal Bilimler Enstitüsü, İstanbul.