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FOREWORD

The proposed book with title Current Studies in Social Sciences 2023, is primarily intended to serve as a scientific reading that deals with multidisciplinary and currently determined topics in the field of social sciences. The book is published annually and aims to cover topics with a broader educational setting.

This edition, which has been prepared with a multidisciplinary approach, includes 3 sections and 9 papers from the fields of values and hertiages, digital technologies, and education. All submissions are prepared by expert academics who will contribute to the relevant fields and reviewed by at least two international reviewers. The purpose of the book is to provide the readers with the opportunity of a scholarly refereed publication in the field of social sciences and education.

This book addresses different aspects of the social sciences such as education, marketing, values, heritages, and digital technologies used in the social sciences. We hope the book will be useful to new scientists, social science readers, and anyone interested in education, marketing, values, heritages, and digital technologies used in the social sciences.

December, 2023

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Emine Senay DOGANER
Ministry of National Education

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Introduction

In this chapter, philanthropy and the motivational sources of philanthropy will be examined and the sociological dimension of philanthropy in education will be discussed. Additionally, education financing in different countries will be examined and examples of different financial sources for education will be presented.

People share what they have with others to contribute to society and create better living standards for other people. This concept, known as philanthropy, has transformed over time with the developing technology and has been moved from the individual level to the local and then to the international level. As a result of this transformation, these activities now reach wider; It has also became more planned and professional structure.

Education financing aims to use resources effectively and efficiently in order to train manpower that can compete with other countries. However, in cases where resources are insufficient, it is very important to create different financial opportunities and channel them to the right places.

According to the TUSEV (Third Sector Foundation of Turkey) report, the sum of donations made by an individual during the year constitutes approximately 0.8 percent of that country's gross domestic product. While this rate does not change in European Union countries and Turkey, it constitutes 1.5 percent in the United States. Among the general philanthropic activities, the share of those made in the field of education is 8.3% (Çarkoglu, 2016). Whereas, the important point is quality of the usage like; where and how this amount is used rather than quantity like the amount of the money. In this context, since the beginning of the 2000s, the effectiveness of philanthropic activities in the field of education in many countries has become a matter of debate (Reckhow & Snyder, 2014). It can be said that this share should be handled more systematically and evaluated with a holistic perspective in order to add value to the education economy.

From the beginning of basic education to the other levels, education is among the basic rights that states offer to their citizens. However, there are alternative sources of finance through contributions or other income collected at schools. The fact that the amount of these additional financial revenues from time to time reached quite serious levels with the campaigns or other activities made not only the transfer of these

resources to the areas of need, but also their supervision, follow-up and sustainability open to discussion.

It is known that in no country, all of the education expenses are not only supported by public resources. For example, it is seen that 25% of donations made in the United States are devoted to education. The majority of this amount, rather than basic education or secondary education institutions; they are mostly distributed to higher education institutions (Colvin, 2005). Important names of the IT world such as Bill Gates, Jim Barksdale, Michael Dell or David Packard invest in education in significant amounts. Numerous studies are being conducted on the returns on these investments. For example, in a compilation study by Aguinis and Glasvas (2012) in which 690 studies were examined, it was determined that philanthropy activities not only serve public interests, but also have positive effects on the performance, behavior and attitudes of the employees of the institutions that carry out the activities. As for the philanthropy in Türkiye, Akgeyik (2007) states that businesses carry out these activities for the purpose of "charity" in the traditional sense.

Development

Joint Action of Humanity: Concepts of Philanthropy and Charity

Since the beginning of history, people have been in need of each other's help to meet their material and spiritual needs. The helping is an act that people do many times in everyday life. Helping encompasses many different activities, from guiding a foreigner to religious volunteering activities, from blood donation to donation to the graduated school. Although there are different motivations for helping, helpfulness in the historical process; psychology, sociology, economics, etc., it has been examined in the literature and many theories and models have been suggested about helping behaviour (Drollinger, 2010).

When the literature is examined, it is seen that there are many words used synonymously with the concept of philanthropy. philanthropy in related studies; It is used together with the words philanthropy, donation, charitable donation, altruism, benevolence, sharing, helping, gift, giving. However, the discussions focus on the concepts of philanthropy and donation (Dietlin, 2010).

The word philanthropy comes from the combination of the Greek words “philien” meaning love and “anthropos” meaning human and means “human love”. On the other hand, while philanthropy in Turkish culture is the act of individuals mostly with religious, conscientious and emotional motivations, the concept of philanthropy in other cultures generally includes donations to non-governmental organizations in order to increase the welfare of the society. Philanthropy includes a wide network of foundations, corporate donors and donor individuals who are not only concerned with charity but also interested in improving the quality of life of society for many reasons (Bikmen, 2006).

Philanthropy also indicates “voluntary actions for the public good.” The action referred to here refers not only to financial aid, but also to time and service as expertise, institutions that both collect and distribute financial aid. While "public good" in the West Countries include individuals outside the family, similarly, the concept of "***maslaha***" in Islam corresponds to this meaning and is used in the sense of "public interest". What is meant by the concept of ***maslahat*** here is a concept that includes the extended family, neighbors, citizens and the *Islamic Ummah* (Singer, 2012). Although the concepts seem the same, the meaning that different cultures ascribe to the concept also differs. Bozan (2010) handled philanthropy from a different perspective in a study he conducted and carried it beyond the issue of give and take. According to him, the concept of philanthropy should be considered not only in a material sense, but also as an action that people who are not rich can do. Activities such as educating, treating, distributing rights and justice, and sharing knowledge are philanthropy. Knowledge, attention, love, organizing, collecting and distributing aid are all elements that create value in philanthropy. At this point, the concept of philanthropy was handled holistically, and he argued that teaching knowledge for a profession as well as giving money should be evaluated within the scope of philanthropy (Bozan, 2016).

From sociological perspective; philanthropy is considered as altruism.It was Auguste Comte who introduced this term to philosophy. According to him, altruism explains it as a condition for the moral and cultural development of humanity (FTS, 1975). The point emphasized in the definition is to do good to others without expecting anything in return. Considering that there are motivational sources such as tax reductions in philanthropic activities, especially in modern societies (Vesterlund, 2006), it can be said that the concept of altruism cannot find its semantic counterpart in this respect.

Philanthropy is also seen as an agent of social change, as it increases the welfare of the society with the donations of individuals. In this sense, philanthropy is a tool that supports public institutions, private institutions and the third sector. Charity activities, which are an indispensable tool for organizations, provide resources for solving social problems together. Philanthropy plays an important role in the formation of the great society agenda.

The concept of philanthropy includes both aid to the needy and human love in English. The second meaning of philanthropy comes from the Latin word "caritas" and derives from a mistranslation in the King James Bible, first published in 1611. The "love" mentioned in the New Testament was the Greek word for "agape". It means the love of God. "agape" entered Latin as "caritas". This word means God's love for mankind. TheBoard King James Bible Translation Committee translated “caritas” as “charity” and the meaning of the word came to mean the love that people show both to each other and thus to God through charitable acts. Although some authors refrain from drawing a line between these two words, philanthropy was defined as worldly in the 19th and 20th centuries, while charity seems to originate from religious motivations (Singer, 2012).

Although these two concepts are used synonymously, there are some semantic differences between them. Both words mean to do good and help people however; there are differences in the way they are perceived by the society. Charity; direct and

immediate help to solve a problem. On the other hand, philanthropy is donations made to love people and therefore improve their current situation. In other words, philanthropy focuses on long-term donations, while charity focuses on short-term instant donations. These concepts explained through the example of giving fish to a hungry person; If a hungry person is given fish then it is defined as charity on the other hand when fishing actions is taught then it is philanthropy (Dietlin, 2010).

Types of Philanthropy

Rapid changes in many areas such as social, cultural, political, economic and education have also affected the system, knowledge and methods applied in these areas and have dragged these concepts into a transformation. The concept of philanthropy has also not been able to resist the pull of change and has undergone some transformations. Especially the transition to the industrial society has led to some transformations in the concept of philanthropy. The concept of philanthropy has now turned into corporate activities as well as individual initiatives, so philanthropy has been examined under two headings; individual and strategic.

Individual philanthropy is defined as any kind of help that an individual gives to family members, close circles, neighbors or other people in need of help in the society, based on some motivational resources or rewards (Sarıyer, 2011).

Strategic philanthropy is defined as the donations made by companies are also related to the economic goals of the companies. Modern companies have a greater say in the resolution of social events and are more concerned with the reflection of the benefits they bring to their own strategic goals. As a result, they began to integrate philanthropic activities into the management of their strategic plans (Porter & Kramer, 2002).

The Modern Face of Traditional Philanthropy: The Third Sector

Changing world conditions and the rapidly increasing world population have caused some changes in the field of philanthropy. Individuals who cannot go beyond their immediate circle to donate through traditional methods now have the opportunity to reach larger audiences. Because the sectors that act as intermediary institutions between the receiving hand and the giving hand are voluntarily applying for this job. This sector mentioned is the new generation sector called the third sector.

Traditional acts of philanthropy and charity offer short-term solutions to meet people's needs, whereas permanent and sustainable methods need to be implemented to solve issues such as poverty and inequality. The third sector, which ensures that such activities carried out in the public interest take on an institutional structure; they are institutions that make a difference in philanthropy in the long term with their resources, flexibility, leadership and entrepreneurship (Bikmen & Meydanoglu, 2006).

In his study, Baidhavy (2015) evaluates the third sector as an effort to increase social welfare. The concept of social welfare does not only limit itself to economic and material meaning, but also includes elements such as people living like humans and

supporting social justice. In this sense, this sector, which is also considered as agents of change in societies, is considered as a solution in terms of providing democratic solutions, especially in societies where government interventions are high (Baidhawy, 2015).

Third sector institutions focus on the field of education and carry out studies and projects to address problems.The fields of activity of education associations are grouped under 10 themes;

- Education-research-project associations,
- School protection and development associations,
- Alumni association,
- Religious education support association,
- Local-regional-city education support association,
- Disabled-special education associations,
- Environmental and health education associations,
- Earthquake and search and rescue training associations,
- Scholarship-oriented associations,
- Associations focused on specialist training (Eraslan, 2007).

Although it has some advantages, there are also criticisms of the third sector. TUSEV-Individual Giving and Philanthropy in Turkey 2021 Report indicates that organizations don’ give any detailed reports for philanthropist about their giving. Moreover individuals donate organizations without any information about where and how their donations will be used. This can be considered one of the most important indicators of the inability to establish long-term trust relationships between the donors and organizations (TUSEV, 2021).

Why Do People Give Their Money?

Explaining the reasons underlying philanthropy theoretically and empirically will help to better understand the philanthropic process.

The disciplines of psychology and economics have tried to understand the reasons why people prefer to give the money or goods they earn to others rather than spending them on themselves. Although many people say that they give only because they are asked, it has been revealed that there are a number of reasons that push people to give (Konrath &Handy, 2018).

Sarıyer (2011) examined the reasons why individuals give under two headings; These are psychological reasons and secondly, religious reasons. Individuals donate for reasons such as suppressing the feeling of guilt that relieves the individual's soul, being happy, sharing, and doing good. On the other hand, individuals help and donate to those in need in order to fulfill their religious duties (Sarıyer, 2011). It can be said that individuals who fulfill their religious duties feel more peaceful psychologically and that these two reasons trigger each other.

Konrath and Handy (2018) stated that the benefits obtained as a result of philanthropical activity may be financial or non-material (Konrath &Handy, 2018). In addition, donations may directly benefit the donor, or donations may only benefit others. All these topics are collected under two main themes in the literature; these are the public and personal benefits of philanthropy (Vesterlund, 2006).

Sargeant and Shang listed the motivations that push people to do philanthropy as follows;

- Self-esteem: One of the factors that motivates people to donate is gaining self-esteem. People feel good and satisfied by donating.
- Atonement for Sins: The thought of having past sins forgiven is also among the reasons for donating.
- Recognition: Receiving appreciation and recognition from society, close circle and family are also among the motivational sources of donation.
- Access to Services: People need to go to hospitals etc. in the future. He also donates with the idea of accessing and benefiting from certain services.
- Expecting Repayment: Donations are made in return for a service for which they have received help in the past.
- In Memory of a Relative: Those who have lost a family member or relative also donate on their behalf.
- Tax Exemption: People also donate when they want to benefit from tax deduction or exemption. All of these are evaluated under the motivation that direct people to philanthropic activities (Sargeant & Shang, 2010).

Saltman (2011) bases the activities of philanthropy, especially in the field of education, on economic and political motivations. He stated that wealthy people donate to some foundations to benefit from tax deductions. In addition, these donors also have power in education policies with the large amounts of donations they make. In this way, philanthropists indirectly work in education policies (Saltman, 2011).

Philanthropy and Social Effect

Examining the social context of philanthropy and how donors understand this context is important for understanding and sustaining philanthropic activities. Because the motivation sources that direct people to donate are largely shaped by the society and social environment they live in. Their social identities and social networks affect their donation mechanisms. In other words, donations are shaped by the traditions and norms of behavior in the society in which they live (Singer, 2012). According to social identity theory, the reason why individuals donate to charities is that it helps them gain prestige and fame thanks to the identity of that institution. It has also been revealed that corporate identities help their donors develop a sense of belonging to an identity by developing a sense of unity among them. In this way, donations have become an advantage for individuals to become known and gain prestige in society. Social effects related to philanthropy are examined in two groups; informative social effect and normative social effect.

Informative social effect

There are many studies showing that people's philanthropic activities are affected by the social environment they live in. Individuals and groups make decisions about how much aid they will donate and which charities they will donate to, based on the behavior of other people around them and the communities in which they live. This type of social effect, which has gained great importance in recent years, is called informative social impact (Bekkers, 2012).

Social informative effects occur when people respond to information about the behavior of others. People have difficulty deciding what is right in some situations. For example, it becomes difficult for people to decide which charity to donate to, how much to donate, or when to donate. In this case, people observe what other people are doing in the public space they are in or look for clues about it (Sargeant & Shang, 2010). The information they receive from the social environment they are in directs them to make decisions, and the choice of the majority affects them.

Normative social effect

One of the mechanisms that affect the donations made by individuals is group norms and efforts to gain a place in the group (Bekkers, 2012). Normative effect is defined as changing thoughts and behaviors due to desires such as being loved and accepted by society; It is very important in philanthropic activities. People donate more than they planned during mass ceremonies in order to be more active and accepted in their social environments. Being superior and being accepted in the group they are in is effective on an individual's donation behavior. For example, individuals tend to donate more that year when they hear about other individuals who donated more than themselves in the previous year (Sargeant and Shang, 2010). In this way, they feel more active and effective in the social groups they are in.

Philanthropy in Education

Economy means the efficient use or savings of existing resources. The concept of economics, which is a branch of science, examines the ways and preferences of people and societies in using limited production resources. Education, which is the activity of providing desired behavior to the individual, is intertwined with economics because education is also a branch of science in which the economic aspects of the individual are examined, as well as their philosophical, psychological, sociological and cultural aspects. In terms of economics, education both produces value and provides individuals with a profession, thus making them take on the role of consumer. Thus, in addition to the social and political functions of education, its economic function also emerges (Kural, 2002).

The field of educational economics attracted the attention of many classical economists in the 18th and 19th centuries and discussions began on this subject. The study titled "The Economic Importance of National Education" in the Soviet Union in 1924 gave impetus to the field. However, studies on education and economic concepts increased rapidly in the United Kingdom and the United States. These studies; The

contribution of education to economic growth, the profitability of investment in education, and the cost of education have brought to the agenda the issue of education financing.

Education Financing

Determining the distribution of resources allocated to education, those involved in the distribution process and those affected by the distribution, and their ability to benefit from the right to education as a result of this distribution process are examined within the discipline of education finance. Carrying out these activities effectively ensures the effective use of public resources and citizens' right to education. This situation makes providing and planning the financial resources necessary for education a very important issue for countries.

Financing issues of compulsory education, creating resources and diversifying these resources have recently become controversial in the public. Economic changes, especially in the 1980s, led countries to seek different financial resources in education. This situation has resulted in philanthropic individuals and institutions starting to take a greater role in education financing (Bircan, 1991). Increasing population and internal and external migration in recent years, combined with the state's need to allocate resources to health, security and justice services, have led to a decrease in the resources allocated to education (Kural, 2002).

As a solution to this, emphasis is placed on the effective and efficient management of the education finance, more efficient use of resources and the search for new resources (Fleet, 2011). Another important point is the process of distributing money fairly as well as managing money and obtaining resources in education financing (Kural, 2002).

The New Bosses of Education Policies: Philanthropists

The understanding of philanthropy in education has been experiencing a change since the 2000s. While the inadequacy of donations to education was discussed before these years, today these discussions have changed direction and the increasing power of donations on education policies has become debatable. Donations made in the field of education determine some of the country's education-related policies. The areas of work of education foundations in many countries are; It covers issues such as strengthening the reliability policies of schools by supporting academic standards in schools, developing teacher evaluation criteria, supporting new research and leading education reforms, and working on advanced school selection (Reckhow & Snyder, 2014). This new formation also brings with it pressures regarding being accountable to the public. Because philanthropic activities operate in many areas, from the development and maintenance of PISA assessment items to supporting disadvantaged school districts (Lewis, 2017).

According to Reckhow, there are three strategies followed by foundations operating in the field of education. The first of these strategies is that these institutions follow strategies that will contribute to each other's corporate messages. Secondly; They prefer the areas they donate to be a specific school area or region rather than covering the whole country. Finally, they increase their investments by adopting parallel

strategies with the state. To achieve this, they achieve this by developing relationships with policy makers, financing think tanks or funding program development studies (Reckhow, 2018).

As a result, philanthropists who intervene in all these areas have thus taken on the role of patrons of the rising voices of education policies. The important point in this context is that local authorities and philanthropists work in cooperation and government support and donations are carried out in a coordinated manner (Reckhow and Snyder, 2014). Furthermore, philanthropists need to carefully examine the outcomes of their strategies and consider how future investments can strengthen local communities and address the long-term health of the public sector in education (Thumler, 2011).

Educational Financing in Different Countries

Türkiye

There are a number of legal regulations in Turkey that encourage philanthropy. On 29/03/2018, an amendment was made to the 1st paragraph of the 13th article of the Value Added Tax Law No. 3065 and the donations made by philanthropists were exempt from tax with the following article of the law.

The "Regulation on Aid Collection Principles and Procedures" published in the Official Gazette has been examined and it has been seen that the procedures and principles of all kinds of aid to be collected are determined. The principles and procedures for sharing the expenses to be made and the income to be obtained from fundraising activities among the Social Assistance and Solidarity Foundations, Turkish Aeronautical Association, Turkish Red Crescent Association, Social Services and Child Protection Agency, and Turkish Religious Foundation have been determined (Official Gazette dated 27.12.1999, Issue: 23919 Regulation on Aid Collection Principles and Procedures). However, it is possible to interpret that these expenditures and incomes are not transferred to an association, institution or organization related to education, and therefore do not provide additional financial resources to educational institutions. It can be said that additional regulations to be made in this article are required.

Holland

In Holland, the financial resources of schools are the Ministry of Education, Science and Culture and local governments. The relationship between educational institutions and the government is largely maintained by institutional autonomy. While the government just creates the right conditions, schools; It uses funding sources provided that they meet the quality standards and financing conditions imposed by law for the school system as a whole.

Educational institutions receive income from additional funds such as special projects, capital interest, contract activities and sponsorships from municipal authorities, as well as donations from non-governmental organizations or businesses. Also parents, excursions etc. They also make donations for activities or participate in activities such

as volunteering their time or serving the school. Educational institutions use 85 percent of the budget allocated to them for personnel expenses and 15 percent for operating expenses (Eurodice, 2015).

France

In France, the budget of schools consists of contributions from the state, local governments, households and companies. 67.9% of the state's financing of education, local governments'

The contribution of companies is 10.6%, companies are 8.8% and households are 9.5%. In France, local governments contribute in the form of what they are obliged to do in line with localization laws (operating costs, construction of schools, colleges and high schools, non-teaching personnel expenses) and activities based on volunteering (e.g. financing of textbooks for high school students).

In France, companies contribute to education under the name of apprenticeship tax. The apprenticeship tax provides financing for the costs necessary to develop vocational and technical education. The amount of tax to be paid by the company is calculated based on the gross salaries paid by the company in the same year. Tax rates increase for companies with 250 or more employees and those that do not have enough apprentices. In short, the fewer apprentices a company employs, the more tax it pays.

Even though education and textbooks are free in France, in 2014, households; It financed 5.9% of domestic expenditures for pre-school and primary education and 7.1% of the cost of secondary education. The scope of financed activities is; It consists of food services and extra-curricular activities (Eurodice, 2015).

Germany

The financing of education in Germany is covered by the budgets of state and local governments. Education financing arrangements are formed as a result of decision-making processes in the political and administrative system according to the priorities of federations, local governments and education policies. According to ISCED data, 11.6 billion Euros of the 87.6 billion Euros of general education expenditures in Germany are covered by the private sector. In vocational education, training costs are covered by companies in accordance with the "dual system". In the dual system, vocational schools are financed by companies responsible for education and training as well as public financing (Education Policy Outlook Germany, 2014).

England

Financial resources of education in England, which has a localized resource distribution mechanism; local governments, private organizations and school administrations. In 2015, the British Government decided to apply the national financing formula for calculating the financial revenues of formal education institutions. The dimensions of financing are created by a combination of decisions taken at local and national levels.

It also includes the financing needed and annual financing calculations and the rates of some services covered by local authorities. Apart from this, schools also generate income from different sources. Additionally, most schools generate some of their own income. These resources obtained through fundraising activities include parental contributions, rental income of school facilities rented for educational activities, and sponsorship activities (Roberts & Bolton, 2017).

United States of America

The great migration to the United States (USA) in the late 19th century, as well as changes in the nature of the workforce and work, also affected the paradigms of education (Graham, 2005). For the first time in the nation's history, the Smith-Hughes Act of 1917 provided federal funding for schools to support vocational programs necessitated by the changing nature of factory work and the need for educated workers (Steffes, 2010). At the same time, the 1918 Cardinal Principles Report made recommendations on how education could respond to the increasingly complex physical, economic and socioeconomic needs of students (Hunt, 2010).

Education in the United States is primarily funded by a combination of local, state, and federal funds, which vary widely among states, among districts within the same state, and even among schools within a single district. Responsibility for financing K-12 education rests primarily with state and local governments (United States Department of Education [USDE], 2005). Private educational institutions have always been an alternative in the United States, and small for-profit K-12 schools have gained popularity in recent years (Vedder and Hall, 2002). Most other educational institutions are somewhat dependent on philanthropic donations for support.

“Charity Navigation” Sample

Apart from these studies, through a platform called "Charity Navigation" that has been operating in the USA since 2001, donors choose their criteria on the site for the schools they want to donate to and make their donations to the schools that meet their criteria by filling out a form through the system. With this model developed to support the financing structures of schools, donors can identify schools in need on their screens in a more practical way.

Conclusion

When philanthropy in education are considered, a picture emerges in terms of behavioral patterns, general perceptions and traditionalist structure. The idea that educational activities should be covered only by the state is dominant in many societies. Although this idea prevails in a large part of the society, it is seen that philanthropic activities in education are increasing.In addition, there are also the effects of some shocks that affect philanthropic practicality around the world. It is possible to say that ,as in many other issues, the economic fluctuations, political uncertainties and trust problems in society after the pandemic affect education and philanthropy issues.

It is obvious that the greatest responsibility in overcoming the economic difficulties in education is given to state institutions. However, there is no doubt that the structure to be created, especially charities and non-governmental organizations, will be a very important source of education financing. Transparent and accountable structures that will be created by knowing the society's motivation sources in philanthropy will be the pioneers of transformation in education.

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Architectural Heritage Promoted through Interior Design

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Introduction

Of particular importance for any ethnic group or people is the national heritage with the cultural and artistic values and historical vestiges left by their ancestors. All these artifacts demonstrate the character, beauty and historical uniqueness of the nation, which must be valued in due time in order to create a lasting cultural memory for future generations. For us, the architectural heritage of Chisinau is particularly relevant in this respect, with the historical buildings of the city's main arts (Bezviconi,1996). The cityscape impresses all foreign visitors as well as our locals with the wonderful view of the "city of yesteryear", in which one can glimpse the culture of architectural constructions with specific aesthetic stylistics. The old buildings are mostly renovated, restored and involved in functional activities. The plastic appearance of the exterior and interior of historic buildings still retains the same tranquillity, warmth, stability, grace and elegance from the nation's glorious past.

Having a special interest in promoting the national architectural heritage through research, we include in the scientific circuit a series of new information, findings and demonstrations of the values of this compartment identified through the interior design segment. Often the interior part of the buildings preserves in the constructive and decorative elements a special sensitivity of historical data, apparently forgotten or overlooked by researchers. The aim of this study is to bring into the scientific view the valuable data of the historic interior design that we want to preserve, promote and appreciate properly. The results obtained contribute to the completion and enhancement of the historical heritage, which is today included in the Register of National Heritage protected by the State. At the same time, we include in the scientific viewpoint valuable data of the heritage that have not been elucidated so far.

The study becomes important in the context of solving the current problem of neglect, loss or ignorance of elements of the national architectural heritage. Historic buildings are often improperly renovated, left to decay or handed over to irresponsible owners who do not respect the historic values of the buildings. That is why we have set out to carry out a complex analysis of historic buildings, determining the content of old elements preserved to the present day, in which we focus our attention on the cultural values, stylistic character and historical features that demonstrate them. We will also determine the creative tendencies of the architecture of the historical time with the stylistic synchronizations of the interior and exterior of the buildings, the aesthetic solutions and the distinctive elements that create the character of the interior environment. At the same time, we will determine the changes in the image of

contemporary renovation works and the new stylistic combinations of contemporary designers.

In this context we mention that design as a discipline or a separate segment of study is known only since 1851, when it is defined as "the accentuated tendency to manufacture by industrial means objects of practical use - machines, tools, furniture, clothing, packaging, etc., with an aesthetically pleasing appearance not so much due to ornamental and decorative effects as to the symbiosis of form and content, simplicity and emphasis on the quality of the material" (Popa, 2021, p. 20). Derived from this compartment is also interior design, which has long been perceived as part of architecture. Of course, there is no doubt of their interconnection, interaction and interdependence, but the segment of interior design activity since sec. The 19th century has gradually become a separate sector with its own problems and strategies. Nevertheless, the analysis and synthesis of interior design must be carried out through the prism of the overall perspective of building architecture, since it is a common goal through time, space and artistic context. Thus it becomes important to research the solutions and strategies of plastic approach to the architecture of the time, the means of plastic operation of the architects and the cultural-artistic predilections of the period of elaboration of the works.

Architecture of Chisinau in the mirror of time

Focusing our attention on the historical buildings included in the area of national heritage monuments, we are deeply impressed by the old buildings on the main streets of Chisinau - a city that since 1818 has become a "centre of the county" (Colesnic,1997, p.44). The historical data testify the evolutionary process of the constructions that starts in 1813 with the first City Plan, then the General Plan in 1834 with the systematization of the constructions and then according to the plans of the Construction Commission in 1870 a new and amazingly beautiful development begins. The period describes a specific completion and structuring of the old and the new town in several suburbs (Colesnic, 2011, p. 65). The architecture of the town gradually becomes completed with white stone buildings, covered with metal tiles or zinc sheets.

At the turn of the 19th and 20th centuries, a number of buildings of remarkable beauty were erected which left their mark on the aesthetic character of the city's architecture. It was also during this period that the first implementations of modern styles appeared, which encouraged the observation of a stylistic polyphony through the inclusion of ethnic data. The aesthetics of many buildings depict neoclassical, neo-gothic and so-called "neo-Russian" stylistic implementations - recognisable through decorative details associated with Russian architecture. The given implementation is also known as the "brick style" or "rational" buildings made largely of white limestone devoid of plaster and carved decoration on the facades in favour of "ornate brickwork" (Colesnic, 2020, p. 11). At the same time, various trends inspired by "architectural Romanticism" and "Baroque" combined with "Renaissance and Gothic" motifs are included, which gradually resort to a stage of "enrichment" of the decorative approach in the aesthetics of buildings, which evolves consecutively towards implementations in the spirit of Art Nouveau (Colesnic, 2020, p.5). Through these aesthetic

implementations, many buildings in Bessarabia stand out, including: the chapel of the Girls' Gymnasium, now the National Museum of Fine Arts of Moldova (1900-1901), built by architect A. Bernardazzi, the building of the Penitentiary (Prison Fortress) in Chisinau (1843-1863) by architect F. Frapolli, the urban mansion of Rascanu-Derojinschi by Al. Bernardazzi, Villa Mimi (1880) by A. Iacov, Boys' Gymnasium no.1 (1888), the District Court (1887) and the Assembly of the Nobility of Chisinau (1889) by the Austrian architect Heinrich von Lonsky, the Royal School (now the main block of the State University), the Girls' Gymnasium of the Zemstva (1881-1882) and the Theological School (1873) by Heinrich von Lonsky and Mihail S. Serozinsky, Water Towers or City Aqueduct (1890), The Theological Seminary (early 20th century) by V. M. Elkachev, Duma and City Public Administration (1900), etc. by Mitrofan A. Elladi and A. I. Bernardazzi, the Commercial School by Mitrofan Elladi, the Eparchial House, the Land Bank (1910-1911) after the project of the diocesan architect G. V. Cupcea, Building of the former Community of the Sisters of Charity from the Monastery of Hârbovăț (1904-1905), Palace of the Council of the Country by V. N. Țâganco and many other buildings designed by important architects of the city (Chastina, 2015, 2021; Movila, n.d.). All these wonderful architects gave Chisinau a beautiful development in a noble modern spirit becoming "one of the most beautiful in South-Eastern Europe" (Lascu, 1985, p.3).

A substantial contribution to the development of the architecture of Chisinau was made by the architect Alexander or Alexandru Bernardazzi (02.07.1831-14.08.1907), who from 1856 to 1878 was mainly responsible for urban construction (Condraticova, 2020, p.25). The architect distinguished himself by a "new and very special experience in the context of the reform of cultural diffusion" (Lascu, 1985, p.3). Through his projects and with his direct involvement more than 30 objectives were realized, most of them in the city of Chisinau (Colesnic,1997, p. 45, p.71).

The study of the historical architecture of Chisinau helps to know and understand the principles of artistic formulation approached by the architects of the time. Knowing the tendencies and creative interests in the realization of constructions, we can analyze deductively what were the principles of plastic approach to the interior. On the basis of this research we will identify the stylistic correspondence of the solutions implemented in the interior with those of the exterior. Among the objectives of the research are the stylistic identification of the decorative elements in the interior, the analysis of their origin, the combinations of styles used and of course the degree of correspondence and preservation of historical values in the current buildings.

Knowing that many historic buildings have been destroyed and others are still in a damaged condition, we will include in our research objects that are in a favourable condition, having been recently renovated or in the process of being renovated, and can provide us with more extensive data on historic interior design. On the basis of these we make certain observations, findings and finally propose recommendations necessary in the process of conservation, enhancement and protection of the national architectural heritage.

Interior design in the promotion of national heritage

Analyzing the beauty and uniqueness of historical buildings, and in the context of researching the record of heritage monuments in the municipality of Chisinau (Bezviconi,1996), a classification of their destination and function was made, from which the compartment of public buildings of cultural, artistic, scientific and educational purpose in the current environment was selected. In this context, some of the most important museums in the capital, national libraries and higher education institutions in the city were of particular interest.

Figure 1. *Entrance, interior. Photo L. Platon*
Figure 2. *Interior staircase. Photo L. Platon*
Figure 3. *Ornamental decoration. Photo L. Platon*
Figure 4. *Modern implementations. Photo L. Platon*

One of the elegant buildings of the time is the current National Museum of Art of Moldova (1989, p.115), a former girls' high school, founded by Princess Natalia Dadiani in the building erected in 1901 according to the plans of architect Alexander Bernardazzi. The "Urban Mansion" housed the first art gallery of Chisinau since 1939, then during the Soviet era it served as a museum of the Communist Party, and later became the main headquarters of the National Museum of Fine Arts of Moldova (Pecarschi, 2010). After several periodical attempts, the restoration and rehabilitation of the "Dadiani" headquarters of the museum (MNAM) was achieved. The work continued for 11 years and was successfully completed in 2016, with the support of the Romanian Government and the Moldovan Ministry of Culture, reaching the ideal formula whereby "the building acquired the original form" created in the historical period (Platon, 2021). The aesthetic principles follow elegant associations between white limestone masonry and reddish brick, the monumental design of doors and windows, the cadenced repetitions of forms, the simplicity of details and the complexity of construction, within which Italian Gothic influences are evident (Condraticova, p.35).

Visiting the interior halls of the Museum we are deeply impressed by the aesthetic values, the skill and the artistic culture of the plastic solutions, which preserve the principles of aesthetic formulation and the cultural-artistic trends in the architecture of the late 19th and early 20th century. The interior space as well as the façade of the building, is compositionally ordered by geometrically designed constructive elements, creating a monumental, very elegant and tender appearance. The formal structure of

the windows is doubled, finished at the top by semicircular arches, adorned with Gothic decoration (Figure 1) (Colesnic, 2020, p. 21). The aesthetic formula of the design respects the balance of forms through the generalized massive dimensions and decorative plasticity that delicately complement the elegant note of the surroundings. The walls of the rooms are occasionally devoid of decorative detail to reveal the structure of the white stone masonry combined with the burnt brick, hinting at an association with the exterior of the building (Figure 2). The modelling of the decorative shapes of the balusters and the connections with the ceiling surfaces include a highly refined ornamental abundance, which leaves the eclectic stylistics evident. Assuming the responsibility of preserving historical data through eclectic ornamentation, baroque medallions, columns, Greek meanders, Art Nouveau chandeliers (figure 3) and so on, the architect George Bulat, in a very subtle way, also implies some postmodern solutions [21, p. 49]. These can be seen in the construction decisions of the staircases, the materials used, the constructivist solutions, etc., which harmoniously complement the historical values of the national heritage (Figure 4).

It is necessary to mention that the renovation and restoration works of this building were carried out in accordance with the historical data, preserving even the smallest details of the ornamental decoration, coloring and aesthetic texture of the materials. Both outside and inside we see the same plastic principles created by the architects of the time. At the same time, the modernist implementations identified on the upper level and in the side staircase do not diminish the perception of the historical stylistics, as they aim at a plastic continuity and a completion through a much lighter facture. The solution given was proposed when these spaces had considerable damage and loss that could not be recovered.



Figure 5. *Large exhibition hall. Photo L. Platon*
Figure 6. *Ceiling. Ornamental decoration. Photo L. Platon*
Figure 7. *Decorative elements. Photo L. Platon*

Next to the central building of the Museum of Art of Moldova and part of the museum stands the "urban villa" Casa Herța (bul Ștefan cel Mare cel Mare și Sfânt no. 115) - an architectural jewel different from the rest of the buildings. Its history dates back to the 1830s and in 1845 it was bought by a landowner to be donated to an orphanage, then in 1903 it was purchased by the mayor of the city Vladimir Herța, who demolished the building and rebuilt a charming villa in 1905, following the design of the Austrian architect Henrik Lonsky. In 1939, this building also housed the Pinacoteca of the Municipality of Chisinau, and during the Soviet period the Republican Museum of Fine Arts of the SSRMM and the former Museum of Art of Western European Countries (Частина,2018, p. 18). The period of World War II

conditioned the liberation of the museum from the artistic works in order to protect them from destruction (Catalogul expoziției,2022, p.9). The architecture of the Herta House was designed in an eclectic style, with distinct Viennese Baroque forms, (Бубис И, 1997, p. 122). The interior of the building was designed in an elegant style, pronounced by the Austrian architect's own Baroque ornamental solutions (Бубис И, 1997, p. 10), providing for different plastic approaches in each space, especially the organization of ceilings, walls, door frames and windows (Figure 5,7). The interior and exterior decorations of the building were made by Toma Răilean, a Basarabian celebrity concerned with fine arts (Sava, 2020, p. 80). The ornamentation was of gilded stucco, sometimes coloured in intense shades, combined with fresco painting on mythological themes. A fascinating feast of shapes and colours, highlighted in the diffused lights of the windows that created a mysterious atmosphere (Figure 6). The building is currently undergoing restoration and aesthetic renovation on the interior. The process is very laborious as there is a lot of damage and loss of informative aesthetic data. However, from the existing elements to date, a rich artistic value of the building is identified.

A critical view shows that the building has long been neglected, forgotten by the local authorities, kept closed for many years. In this context we see the need to renovate the building with the preservation and exact completion of the decorative forms of the interior, as they demonstrate a unique stylistic pronounced by the Baroque style. In a similar situation is the neighbouring building - the urban villa Kligman House (113 Stephen the Great Street), built in the middle of the 19th century. In 1896 the villa was bought by the merchant Moisei Kligman, who built in 1898 an architectural jewel that is still recognized today. The building is one of a handful of neoclassical houses that have survived to the present day. At present the building is in a neglected state, which requires attention and investment from the local authorities, as it is of particular interest for its ornamental decoration and plastic solutions, which are characterised by light forms, balanced with soft plastic passages, brackets and vine stalks organising the door and window frames (Centrul istoric al Chișinăului, n.d.).

Figure 8. *Interior of the first level. Photo L. Platon*
Figure 9. *Interior of the second level. Photo L. Platon*
Figure 10. *The metal staircase. Photo L. Platon*

Figure 11. *"Fireplace". Last level. Photo L. Platon*

Relevant is the architectural structure of the Chisinau City Museum or "Water Tower" (Al. Mateevici, no. 60-A and Veronica Micle street intersection with Vasile Alecsandri street), built in 1892 after the project of architect A. Bernardazzi (Sava, 2022, p. 210, 211]. The buildings have an identical plan of a narrow rectangular shape with a height of 27 m. The history of the Tower in Al. Mateevici has been damaged by earthquakes and reconstructions in the period 1980-1983, then after further repair works it was reopened in 2011, with some technical modifications in the fire pit on the upper part of the construction. The interior of the tower includes 4 exhibition rooms organised in an eclectic style approach, which hints at the roughness of the carved stone in the construction of the walls or columns (figures 8, 9). The stonework is harmoniously combined with the texture of the wood to create a unique atmosphere, full of warmth and familiarity. In the "glass gazebo" - the last level - the solidity of the wood dominates in the construction of the surfaces and window frames, thus perfectly balancing the gap in the large window opening (figure 11). At the same time, the glossy texture of the floor and the active play of light provide the atmosphere of an open terrace, supported by the panoramic view over the windows. The concept of the interior is completed by the spiral or "snail-shaped" (figure 10) image of the central cast-iron staircase with rich decorative eclectic ornamentation (Частина,2018, p. 14). The historical dates are preserved and promoted to an appropriate extent, even if they are supplemented with new construction solutions after the 1980s. XXTH CENTURY. These are in perfect sync with the plastic solutions of the historical construction.

Figure 12. *Nature" room. Second level. Photo L. Platon*
Figure 13. *Combinations of ornaments. Photo L. Platon*
Figure 14. *Ornamentation. Photo L. Platon*
Figure 15. *Stained glass ceiling. Photo L. Platon*

An extremely beautiful piece of national architecture is the building of the National Museum of Ethnography and Natural History, with an area of over 2000 m2, designed by architect Vladimir N. Tiganco. Considered the oldest museum in the Republic of Moldova, it was built in 1905 and inaugurated in June 1906. During its evolution it has been reorganized several times, but always focused on two main directions: nature and traditional culture (Colesnic, 1997, p. 334). The interior of the museum has several exhibition halls on various historical and representational categories, as well as a room for temporary exhibitions. After much effort, the renovation of the central hall called "Nature" (Centrul istoric al Chișinăului, (n.d.) was completed in 2022, which brings out an ornamental splendour of an eclectic character between the national ethnic style combined with Art Nouveau, sometimes Baroque and Neoclassical elements (Figure 12, 13, 14, 15) (Colesnic, 2020). Ornamental decoration covers all the constructive surfaces of the interior architecture, in particular the upper level and the ceiling, which includes the glass structure decorated with imitation stained glass. The combination of the ornamental structure with the play of relief and colour in interaction with the multivalent lights creates a wonderful ambience, full of mystery and elegance. The decorative-ornamental solutions inside are stylistically synchronised with those outside, giving the building the character of an architectural masterpiece. The splendour of the historical solutions implemented by the architects of the time still lives on today in the urban ambience of the capital.

The renovations carried out in the "Nature" hall highlight a rich ornamental heritage, associated with traditional crafts and folk arts, which show the ethnic character of the national culture. The partial renovation of the building has favourably solved the problem of conservation and preservation of the architectural heritage, which in this case has also been long overdue. Although quite well carried out, however, the interior renovation and restoration work in this building shows some exaggerations in the decorative forms and colours of the ornamental invoice. These tendencies can be seen in the interior and exterior, manifesting a highly decorative character that slightly exaggerates the stylistic tendencies of early 20th century architecture. The result is

supposedly achieved because of the qualitative differences in colour pigments in contemporary finishing materials. The old or historical ones were based on natural pigments that created a different perception of intensity. The colour palette in today's production looks identical and the differences are harder to see. In this context we see the need for a very responsible approach in the choice of materials for the restoration of historic buildings.

Impressive is also the building of the former high school No. 3 for boys at 111 Alexei Mateevici Street, today the building is a study block of the Academy of Music, Theatre and Fine Arts in Chisinau. The building was built according to the design of architect Vladimir N. Tâganco (Academia de Muzică, n.d., p. 128), in 1902-1905, and has a versatile history: originally designed to be the Lyceum no. 3 "Alexandru Donici", a boarding school for the boys of noble families, in 1914-1918 military hospital, in 1917-1918 here were held the meetings of the Council of Tatarstan, serving as the first parliament of the Republic of Moldova, from 1934 it became the seat of the Faculty of Agronomic Sciences of the University of Iasi, then being damaged during the Second World War the building was rebuilt in the 1950s, after the design of architect Etti Roza Spirer (Academia de Muzică, n.d.). In the post-war period, the administrative block of the Agricultural Institute became the seat of the Academy of Arts (Colesnic, 1997). The architecture of the building follows a symmetrical composition with a complex structure (Centrul istoric al Chișinăului, n.d.) decorated in a tender way by obvious elements of French classicism. The solutions can also be found inside the building, evident in the central hallway, which has maintained the aesthetic principles of the time during the periodic repair cycles. The order of the classrooms along the interior corridors has also been preserved, leaving the larger spaces at the corners of the building for the more important halls or function rooms. Likewise, the very wide and high hallway retains elements and decorations inspired by French classicism. At the same time, the architecture of the interior highlights unusual combinations of massive and small volumes, suggesting decorative strips that follow one another in galleries (Centrul istoric al Chișinăului, n.d.). However, the beauty of the historical data of the interior design is highlighted in a very modest or even insufficient way, due to minimal investment, economical works and low quality of the materials used. A problem is the current purpose of the building, housing a higher education institution it is subjected daily to a large flow of people, favors rapid deterioration of surfaces. Another problem is the quality of the renovation work and its frequency. In this case there is a need for more significant investment by the state authorities.

Figure 16. *Column gallery. Photo L. Platon*
Figure 17. *Central staircase. Photo L. Platon*
Figure 18. *Old side staircase. Photo L. Platon*
Figure 19. *The cassette ceiling . Photo L. Platon*
Figure 20. *Central staircase. Photo L. Platon*

Talking about the first block of theatrical art (111 Alexei Mateevici St.) we cannot overlook the second block of musical art (87 Alexei Mateevici St.), which is actually the first artistic education institution in Chisinau. Built at the turn of the 19th-20th centuries on the initiative of Princess Eufrosinia Veazemsky, the building had several functions, initially as an old people's home, a hospital, a shack, the "Mihai Eminescu" boys' high school, and in the post-war years it housed the Council of Ministers (Biblioteca Națională a Republicii Moldova, n.d.) and since 1957 the Conservatory of Music, whose history dates back to 1919 (Centrul istoric al Chișinăului,1989). Having undergone several restorations and aesthetic renovations, the building still preserves today the reminiscences of the past, with a predilection for the eclectic and especially the neoclassical style (figures 19, 20). The interior is dominated by full, ponderous forms combining soft and rough lines, connected to a well-integrated and perfectly balanced design. With the same purpose of the higher education institution, the building hardly maintains its historical appearance with the stylistic data of the time. Old architectural elements are preserved mainly in the central hallways and the main staircase of the interior.

The building of the former Financial Administration, today the Technical University of Moldova (168 Stefan cel Mare și Sfânt Boulevard), built between 1895-1903, was partially damaged during the Second World War, then rebuilt and restored in 1946-1948 under the direction of the architect Etti Roza Spirer. In 1964, this building became the central block of the Technical University and was included in the Register of National Monuments of Architecture and History of the Municipality of Chisinau (Bezviconi,1996). Its artistic value is promoted by elegance, nobility and style. In terms of style, the exterior of the building is a combination of eclectic and Renaissance style, which offers a very sober and delicate aesthetic. The plastic structure of the forms is well balanced, in coherent rhythms, cadenced and mathematically ordered. The symmetry and divisions of the levels in horizontal registers are respected, ordered in different factual-coloristic and ornamental treatments. The decorative solutions, especially those on the central axis in the organization of the portico and upper

balconies are distinguished by elements specific to ancient Greek culture (Malanetchi, n.d.). All this confirms the imprint of Renaissance stylistics.

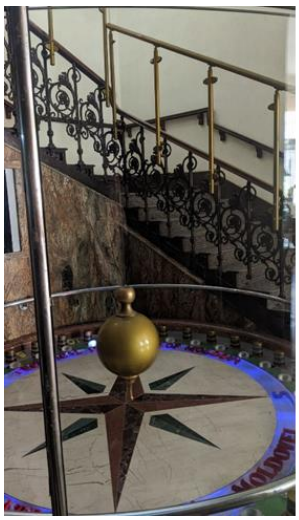

Figure 21. *The cast-iron ladder and Foucault's Pendulum. Photo L. Platon*
Figure 22. *Hallway, level one. Photo L. Platon*

Inside, the planimetric structure of the building allows for the typical layout of educational institutions. Although it was originally an elongated plan with a corridor that included on one side the offices with openings into the wide hallway, later after repairs an angular plan was obtained by adding a lateral body. The renovation of the building aimed at preserving the planimetric solution and the composition of the facades, at the same time adding the third floor and a function room. The festive staircase with cast-iron steps and grating "at the Serbov factory", located on the left side, close to the "Foucault's Pendulum (installed here in 2005)" (Частина, 2018, p. 17) (Figure 21), is striking. Impressive is also the hall wing on the left side of the entrance, which preserves the construction of the cross-arched vault on the centre of the ceiling (Figure 22). The construction solution of the ceiling creates some bridges with medieval Romanesque art, which is found in the context of the Renaissance style. The renovation works and aesthetic re-edition both outside and inside have been executed with a high level of professionalism, which does not diminish the historical values of the building but on the contrary strengthens them by creating a more monumental, sumptuous and graceful appearance. Large solid wood doors with richly ornamented fillets are preserved on all levels of the interior. Also the windows with the specific configuration for each level, according to Renaissance trends. A deviation from the stylistic context is in the material solution of the floors on the second and third levels, which must be adapted to the stylistic context.

The present building of the Faculty of Energetics of UTM and the Literature, Fine Arts and Cartography Section of the National Library of the Republic of Moldova (78, 31 August 1989), built in 1902 according to the design of the architect Vasile Elkachev from St. Petersburg (Colesnic, 1997, p. 205), is also impressive, being at the beginning the block of the Theological Seminary (Academia de Muzică, n.d., p. 96) and from 1926 to 1940 "the block of the Faculty of Theology in Chisinau" (Sava, 2022, p. 41).

After the destruction of the Second World War, several buildings in the vicinity were rebuilt, including the current central block of the National Library (78A 31 August 1989), designed by the architect Agaki Ambarțumean, 1961. The headquarters has been here since 1961 (Contrafort, 2017). As is known, the architecture of the buildings "presents an eclectic style elaboration with neoclassical reminiscences and details of Russian architecture" (Madein.md., n.d.). The plastic solutions of the facades follow symmetrical configurations, which bring out the central composition of the entrance foyers, organized with columns, arches in full cylinder and balconies-tribune. The interiors of the buildings support the style of the exterior plastic solutions. In the "plastic art and cartography" block of the BNRM, the interior design still retains the historical imprint of the time, evident right from the entrance through the square plan columns with full-cylindrical arches and the vault structure in crossed arches at the centre (Figure 23). The gallery of columns and arches harmoniously crowns the wide and high staircases that enhance the view of the linear perspective up to the building's edge wall (Figure 24). The light shades of white and pale blue in combination with the dark shades of the cast iron balusters create a very refined noble aesthetic (Figure 25). The solutions given underline the predilection for neoclassical styling with the eclectic combinations associated with Art Nouveau trends, evident in the art of ironwork. This completes the constructive structure of the staircase to the second level, but also ensures the zoning of the interior loggias on the first level, giving a unique graphic play to the interior. In general, the hall of the building preserves the stylistic imprint of the historical time, with its secluded, quiet and noble character, describing a high artistic culture. However, the interiors of the reading and music rooms have lost this character through periodic renovation works, which have included textured materials and solutions that are not in keeping with the historical style.

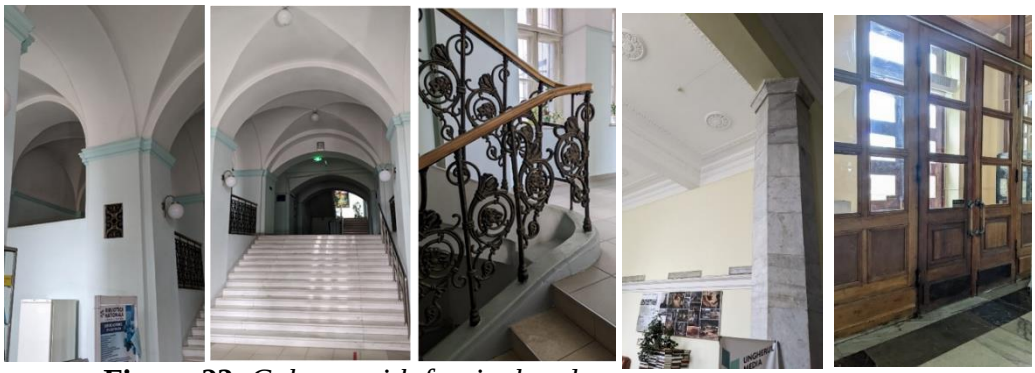

Figure 23. *Column with fasciculated grooves. Photo L. Platon*

Figure 24. *Ladder. Vault in arches. Photo L. Platon*

Figure 25. *Old staircase. Photo L. Platon*

Figure 26. *Column and ornamental decoration. Photo L. Platon*

Figure 27. *Old wooden door. Photo L. Platon*

In the central block of the BNRM we find the same eclecticism of historical styles in the entrance hall, evident in the presence of columns with hexagonal planimetry, rosettes and ornamental strips in relief on the ceilings with an extension towards the vertical surface of the walls. The ornamental decoration is quite restrained and minimalist, giving priority to the perception of spaciousness provided by the increased

height of the ceilings and the freedom of the walls (Figure 26). At the same time, in the plastic solutions of the interior, a contrast persists between light, diaphanous and elegant elements and robust, heavy and massive ones, such as the voluminous columns with sharp corners, the geometry of the capitals or the weightiness of the old solid wood doors with a sober geometric structure (figure 27). The combinations given demonstrate a unique authenticity of the plastic approach practised in the artistic past of the estate. Thus the aesthetic decisions of the historical time are pronounced in a very succinct way that only subtly indicates the imprint of stylistic predilections, focusing the major interest of interior design on functionality, comfort, nobility and freedom of spaces. The interior on the second level retains the same airy, free and luminous character by leaving large open spaces, but the furniture, floor and wall materials are of a different kind, inspired by Soviet period trends. In this case the stylistic implementations are not well timed and require some aesthetic adjustments or reworking.

Figure 28. *Gallery of columns on the right. Photo L. Platon*
Figure 29. *Column gallery on the left. Photo L. Platon*

Within the current library buildings, we cannot overlook the building of the "Bogdan Petriceicu Hașdeu" Municipal Library (148 Stefan cel Mare cel Sfânt Boulevard), which describes a very interesting history. Originally built in 1835 as a tenement house, in 1846 it housed the Boys' Gymnasium No. 1, in 1863 - the Theological Seminary, in 1864 - the "Suisse" Hotel, since 1946 it has been rebuilt according to the project of the architect Roza Spirer under the guidance of the architect Alexei Sciusev (Sava, 2022). "The exterior decorative aspect of the new building repeats, in broad lines, the architecture of the old building as it was constituted towards the end of the 19th century." (Primăria Municipiului Chișinău, n.d). This appearance of the building is preserved until today, known as the headquarters of the "Bogdan Petriceicu Hasdeu" Municipal Library, established here since 1950, occupying a significant part of the building. The architecture of the facade supports the eclectic style with neoclassical aesthetic prominences described by symmetrical compositional structure, arched windows at the first level, portico with engaged columns, triangular pediment and sober ornamentation (Colesnic, 1997, p. 203).

In contrast to the exterior the interior of the library impresses more with a very rich decorative elaboration. Maintained in perfect condition, it depicts in many details the neoclassical style and Greco-Roman values imbued in the stylistic concept. The gallery of columns placed on the sides of the central reading room recalls the structure of the interior according to the basilica plan found in Romanesque culture, the coffered

ceiling with massive beams and the arched windows in full cylinder create connections with Renaissance solutions, and the scrolled capitals and embossed ornamentation on the walls suggest an association with French neoclassicism (figure 28, 29). The interior forms and decorations are made in a massive, sober and monumental formation, adjusted to a fine and delicate image by the single tone of white that floods the entire interior. The abundant light, the playful tone in shades of white and the perfectly shaped historical forms create a unique entourage where elegance, balance and art dominate. All these harmoniously support the interior space's purpose as a home for the promotion of science, culture and art. A negative aspect of the interior design of the central reading room is the inappropriate superimposition of various pieces of furniture, stands, information panels, etc. on the elegant and sober background of the Greek columns. This creates a radical mismatch of aesthetic values. The constructive interior architecture does not integrate aesthetically with the utilitarian forms and equipment, thus creating a dissonance that rejects and disfavours each other. The monumental forms of the Greek columns and the coffered ceiling seem suffocated by the multicoloured small elements of the added pieces. In this context there is a stylistic carelessness in the organisation and choice of the utilitarian pieces in the interior. This problem is due on the one hand to under-investment in the interior design and on the other to the unwise planning of the interior design.

Conclusion

Analysing the role and function of interior design within historic buildings we can distinguish several major responsibilities assumed. Among them a particular importance is given to the stylistic approach, which maintains a unique concept with the exterior of the building. Also important is the functional character of the space with the norms or needs of its typology. The list can be continued with issues related to the quality of materials, the plastic realisation, the coordination of all technical elements, etc. Of course, all this leads to intelligent interior design, increasing attention to the problem of preserving and promoting historical reminiscences. The interior design segment has been analysed through the history in architecture section and through the actual data of the interiors of the buildings investigated. The results show that the historical buildings (researched in this material) included in the Register of the National Heritage of the Republic of Moldova contain valuable data of the historical past. In the plastic implementations of the historical interior design, trends of neoclassical, baroque, renaissance, eclectic, Art Nouveau and other styles were identified. In the process of periodic renovations of the buildings, solutions of a postmodern stylistic nature were identified, evident in the textures of materials, colorings and utilitarian forms that complement the historical background. The preservation and promotion of historical data is not always favorabile due to technical and artistic oversights. Aesthetic renovation work on buildings is often carried out on a tight budget that does not allow for full valorizations. In this context, problems are identified with the mismatch between the architectural forms of construction and the furniture, technical equipment and plastic finishing materials. There are also some negligence in preserving and promoting the historical data of the interior aesthetics in small or closed rooms such as classrooms, reading rooms, etc. We can also mention the existence of problems of exaggeration of decorativism in color and plastic

decisions. All these problems are highlighted in order to be removed, corrected and prevented. The results introduced into the scientific circuit favor the understanding and formation of appropriate concepts about the values of the national architectural heritage.

Constructive form is decided following a stylistic concept of the building and manifests a unique aesthetic design for the exterior and interior, which confirms that it cannot be changed or neglected in renovation projects. However, elements that combine functional forms, security or utility installations necessary for the current activity of the buildings may include elements with a modern character. New solutions must harmoniously complement the historic styling without diminishing the imprint of the past. Modern construction elements, involved to a minimum extent, can harmoniously complement the interior styling, adding notes of lightness, transparency and decorativeness.

In terms of ornamental decoration, we recommend the exact preservation of historical patterns through regular aesthetic reworking. In the renovation process, modern, high-quality plastic finishing materials can be used to reproduce the texture or the identical texture of the historical one. Each ornamental form has a symbolic connotation either inspired by folk art, or by the traditions of historical styles. Each element must therefore be valued and promoted accordingly. All the representative components of the ornamental interior decoration must fit into the appropriate context of the space, both stylistically and functionally.

For both compartments it is recommended to respect the stylistic character of the historical dates, as they imprint the cultural value of the national past. The values of exterior and interior architecture must be included in school curricula in order to be studied, preserved and valued by future generations.

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Values Education in Social Studies Course

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Introduction

Education not only aims for individuals to have the best skills but also desires for them to have the best character and consciousness. Education across the world also desires individuals to adopt the value judgments of the society in which they are born and raised. As stated as a goal in Turkish national education policies, our education system has important duties, especially in achieving the goals emphasized in the objectives of Turkish national education and in raising the conscious, cultured, value-oriented citizens that society needs in this direction. There is a need to assess whether the values, which are among the general objectives of the education system, are acquired by the students. While the levels of cognitive behaviours are constantly monitored in schools, affective behaviours are not consistently taught and measured. Determining the levels of students' achievement in the values stated in the general objectives of primary school education curricula will be enlightening both for the success of our schools in gaining affective behaviours and for social values (Sağlam & Genç, 2015, 107).

The rapid acquisition of cultural knowledge, developments in science and technology, and the interaction between different societies in a globalizing world undoubtedly affect the values that exist in society and family structure. This change manifests itself in all areas of life in moral, social and cultural dimensions, especially in schools as educational institutions. Competitiveness in the education system puts the acquisition of national, cultural and universal values and raising good citizens in the background. It can be argued that individuals who cannot acquire values such as tolerance, honesty, compassion, responsibility and kindness are more easily involved in violent incidents (Deveci et al., 2008). In the rapidly changing world order, there is a constant change in the concept of value, which holds an important place in societies. Therefore, parents who want their children to have a more harmonious, happy and sociable role cannot

easily achieve this today. This is because, undoubtedly, the most significant contribution to raising healthy and socially beneficial individuals lies with the family (Şen, 2007).

According to many educators, the family, which is considered the child's first educational environment, forms the basis for essential moral sensitivities, love, respect, trust, and many other values and skills that are crucial for children's future (Sağlam & Genç, 2015).

A society builds its future only through well-educated individuals with a range of values and capabilities. The process of raising these individuals continues first in the family and then at school. As a social reality, every family consciously or unconsciously tries to pass on certain values to their children. The most important thing here is to find an answer to the question "Which values should be passed on, at what age and how?". Giving certain values to individuals, especially from the primary school age, is among the most important tasks of our education system (Yel & Aladağ, 2009). Instead of constantly portraying pessimistic scenarios about the world and people during the value acquisition, it would be more beneficial to be conscious as parents, teachers, or community members about how to support students." Especially in difficult times, relying on positive thoughts that have positive implications both in the world and in human life, and putting those thoughts into practice rather than discussing and complaining, would be a more appropriate behaviour. During value acquisition, social change can be achieved through individuals, especially parents or educators, exhibiting an optimistic worldview starting from themselves and their immediate environment, including their children. Family, environment and school are important and indispensable parts of values education. The values to be taught in the family, as well as those taught in the environment and school, will be close and complementary to each other. Therefore, it should not be forgotten that values can be encountered at all times and everywhere (Ulusoy & Dilmaç, 2014). Values become an identity personality dimension through experiences (Sağlam & Genç, 2015, 108).

Therefore, it is extremely important that children's emotions are nurtured and developed in the family environment, their interests are encouraged and supported in the home environment, and their talents, skills and sensitivities are developed (Hökelekli & Gündüz, 2007).

Values Education in Primary School Social Studies Teaching

Primary education is defined by the Turkish Language Association as "the first eight-year stage of the formal education system consisting of several education stages that provide basic knowledge and skills, primary education, compulsory education". In primary education, children are provided with the rules and skills to live in harmony with other individuals in society and the basic knowledge and skills necessary to live their lives in a better way.
In developing countries like Turkey, where the dropout rate from formal education is high, primary education holds a crucial place within the education system for individuals in society to at least acquire basic knowledge and skills (Baysal, 2008).

Social studies course is actually a course of values education. Because it is important in terms of acquiring good values as it has a historical content and tells different cultures and life stories. The multidisciplinary nature of the social studies course can also be considered a richness in terms of teaching values (Kan, 2010).

Social studies focuses on the interaction of people with each other and with their environment. The values, attitudes and beliefs of individuals cause this interaction. Therefore, social studies education plays an important role in developing democratic values, attitudes, and beliefs in individuals, making them aware of existing values, and revealing how these values impact their interactions with other people and their environments.

The Concept of Values in Social Studies Education

Values are fundamental beliefs that help to distinguish between right and wrong. By adding balance and meaning to life, they enable us to live together with individuals who make up society. Values raise the quality of an individual's own life as well as the experiences of others. Values are not innate but are learned through experiences, observation, and interaction (Bostrom, 1999). The main purpose of social studies teaching is to enable individuals to solve the problems they face in order to reach the level of contemporary societies in today's world and to reach the level of ideal citizens with a well-rounded education in the culture they live in. In this sense, the main outcome of social studies curricula is to raise individuals who can make decisions based on moral ethics and value systems, respect justice, appreciate beauty and think. The social studies course is expected to educate individuals who give importance to the development of ethical and democratic values, which are integral parts of being a good citizen, and who have adopted the role of justice and law in society and the responsibility of individuals in creating a good society.

Besides, historically literate individuals who embrace their social history and have cultural values are the aims of social studies curricula for the development of society and the country. Social studies always offer important opportunities for human rights education. Through the curriculum of this course, students learn the historical foundations of our country and the world. In this context, they learn the lives of important people who have contributed to the development of humanity, democratic governments and the functioning of these governments, and the beliefs and values within the rich cultural mosaic of our country. In this way, they begin to develop a sense of responsibility towards their country. The concept of value shows itself as attitude and behaviour in every aspect of human life. Values are the determinants of lifestyle. Stein described values as "self-definition" (Sarı, 2005).

Values are abstract generalised principles of behaviour that provide a fundamental standard for judging specific actions and goals and are formed by the strong emotional attachment of members of a group. However, values cannot be considered independently of culture. Culture is the whole of shared values, symbols, ideologies, beliefs and experiences. Values have consistently been topics of interest in the field of social sciences.

This interest arises from the fact that many social scientists consider values as having a fundamental importance in explaining human behaviour. Furthermore, the fact that values are a concept that can provide information to researchers at both individual and group levels can be considered among the reasons for this interest. The values issue is important not only theoretically but also in terms of its relevance to our society, which is seeking its place in a rapidly changing world. The healthy functioning of new social regulations, which emerge as an inevitable result and sometimes as a means of socio-economic development, is closely related to the compatibility of the values of individuals with such regulations. This problem of compatibility requires a good understanding of society and therefore a detailed examination of values. Values education is not only limited to curricula and activities in curricula but has also spread to a wide area with books, magazines, TV programs and internet sites for families for society to raise their children better. Values education is generally carried out under the title of character education and moral education throughout the world. Values education is not limited to the curriculum and in many countries, it is aimed for students to internalise values and reflect them in their lives as *living values*.

In 1995, the "Living Values" program, prepared by the Brahma Kumaris educational organisation in India to mark the fiftieth anniversary of the United Nations, includes 12 core values. The aim of the program, carried out by UNESCO in different countries, is to facilitate students to become individuals who can make decisions, have a respected place in society and ensure their personal development (Living Values, 2006).

In Belgium, the ethics curriculum aims to "reveal values". These courses emphasise the discovery of values through discussion methods, without imposing any ideas on the students. Within the framework of the principle of *moral dilemma*, making students find moral truths through case studies and drama methods is one of the most commonly used methods in the course (Aydın, 1999). The new education curriculum prepared in our country covers most of the values given within the scope of values and also includes national and cultural values and the teaching of these values. In the curriculum, priority values were determined and it was stated that contemporary approaches such as value explanation, value analysis and moral reasoning should be used in teaching these values (Akbaş, 2006). In the primary social studies curriculum, the teaching of values intensifies in the fourth and fifth grades. The determined volues are:

- Fairness
- Giving importance to family unity
- Independence
- Peace
- Scientificity
- Diligence
- Solidarity
- Sensitivity
- Honesty
- Aesthetics
- Tolerance

- Hospitality
- Freedom
- Valuing Health
- Respect
- Love
- Responsibility
- Cleanliness
- Patriotism
- Generosity

Characteristics of Values in Social Studies Course

Value is a common thought, purpose, basic moral principle or belief that is accepted as true and necessary by the majority of the members of a social group or society in order to ensure and maintain its existence, unity, functioning and continuity. The curriculum emphasises the characteristics of values as follows; *Values are unifying facts adopted by society or individuals. They are criteria believed to meet the social needs of the community and contribute to the well-being of individuals. They are judgements that concern not only consciousness but also emotions and excitement. Values are the motives that exist in the consciousness of the individual and guide the behaviour. The difference between values and norms is that values have a more general and abstract nature than norms. Values also include the norm* (Özgüven, 2000). To understand what values are, it is necessary to know the value characteristics specified by Schwartz and Bilsky, who have conducted studies on values in recent years (Kuşdil & Kağıtçıbaşı, 2000). Which are:

1- Values are beliefs. However, they are not completely free from objective emotions and do not have the character of ideas. When activated, they are intertwined with emotions.
2- Values are related to the goals of the individual and the behavioural patterns that are effective in achieving these goals.
3- Values are above specific actions and situations. For example, the value of obedience applies at home, at work, at school and in all unfamiliar relationships.
4- Values function as standards that guide the choice or change of behaviour, people and events.
5- Values are ranked among themselves according to their significance. This ranking creates a system that determines value priorities.
6- Values are structures open to change. There may be changes in value priorities over time to meet interaction and new needs that arise.
7- Values are general standards that guide human behaviour and attitudes (Baydar, 2009, 18). Values form a hierarchy within themselves and change as a result of interaction (Baydar, 2009).

Necessity of Values Teaching and Factors Affecting Teaching

Comprehensive studies on values education are carried out today. The aim of values education, which is among the basic principles of citizenship education in the United

States of America, is to help students being raised as "purposeful, diligent and positive" individuals (Kıncal, 2002). Values form the fundamental structure of individuals' attitudes. Values are defined as stable motives that force individuals to choose certain goals among various options (Özgüven, 2000).

Values are the criteria that lead the activities. Individuals facing a certain situation resolve contradictions and make decisions by using their value system. Individuals make choices and take a stand in social events through their values. When individuals are informed about their values, it will be easier to predict their behaviours (Ilgar, 1996).

Families, teachers and other people who care about personality development in societies try to shape the future of their young people and want to raise them with the best values. However, not everyone agrees on what and how it should be. Families give different opinions to children. Also, various social groups put pressure on children. Religious and political social groups are effective in making children accept and believe in values. Character education aims to create behaviours and personal codes that include values such as rules of life, faith, responsibility, and respect. Especially during childhood, personal values and world views develop and change. Along with other formal and informal social structures, family and school help to shape the worldview, values and behaviour of individuals. In a democratic society, children are expected to be brought up in an environment of religious independence with democratic rules, equal rights, personal rights, judicial rules, freedom of speech and freedom of religion. All societies have a unique culture and a system of values developed by this culture. Society and the individuals living in this society create a hierarchy among these values. Society may see economic values at the top depending on the experiences it has gone through. The most important thing for people in this kind of society would be material welfare. For example, in pre-industrial societies, the ones who lived the longest gained the most knowledge and experience. Therefore, relationships between different age groups were more clearly defined compared to today. There was always excessive respect and obedience to those who were older. Today, on the other hand, age has lost its former importance. The value given to the father as a teacher in the past has decreased with the emergence of schools. Also, as the economic power of the father has decreased, the value perception has differentiated (Güngör, 1998). Families strive to raise their children in the best life conditions. However, everything is not in their hands.

Preparing children for life is actually the best thing that can be done to make their lives easier and more beautiful. Values should be taught to children in schools as well as in the family. This is because values education is one of the most necessary education for children to be happy. However, there are many criticisms about the applicability and variability of values education. These criticisms are significant because they reflect some characteristics of values education. The criticisms focus on the following titles: *Values education. Values clarification. Religion and moral education. Moral education. Individual and social education. Person, society and moral education. Person, society and health education. Judgement. Citizenship education. Character education.* These titles not only represent common points of criticism but also indicate in which areas of life values education is present. It is discussed to seek answers to questions such as "Which values should be given, with

what methods, to whom, and for what purposes? How should the identified values address the individual and society? In which area should individuals be prioritized for education? In which area should individuals be developed?" These discussions are important because they help to design and develop educational curricula. Criticisms should be regarded as the correct delivery of education and the reflection of the education given. Also, these titles show that values education is in an important position both individually and socially. Values education holds an important role in adapting to social life, living as a modern person, respecting and accepting people and their rights, participating in economic and cultural activities as a member of society and understanding life better. Goals are the outcomes that societies consider important and want to achieve. Therefore, the values of a society become what its goals are. A society will try to develop a value system appropriate to the goal it wants to achieve. If the goal is development, then values are developed accordingly. If the goal is to reach the level of modern civilisation, it is necessary to have different values (Güngör, 1998). New values imposed by rapidly changing lifestyles in our age can be said to be passed on to new generations, especially through the media, without much discussion, leaving them in an environment of uncertainty. Values education can provide students with the presentation of centuries-old human values knowledge that goes beyond popular culture. Through this knowledge, they can make decisions. Defining education as making the individual useful to society highlights the values education in schools. According to L. Küçükahmet, schools fix the incomplete and faulty teaching of the children's natural educators through real educators (Küçükahmet, 2004). Briefly, schools eliminate the negative effects that may occur on the children and put them into the process of re-socialisation. This process is the process of making the newly socialised individual useful to society through social values.

Conclusion

Childhood and the environment in which this period is experienced are important in identity formation (Hotaman, 2014). Therefore, secondary school periods can be considered as an important time for the creation and development of values. Values education should not be limited to a certain period, a certain institution and a certain group. On the contrary, it should cover all times and include all students.
Schools must play a productive role in helping families and societies as environments where students learn fundamental values (Pala, 2011). The importance of parent-school association in the process of values education is accepted as an undeniable fact. Including the parents of the students in the study was welcomed by both the students and the parents. Especially the students stated that the support, encouragement and motivation of their families to the studies carried out and this situation increased their level of readiness. Therefore, it is recommended that parents should also take part in the education process in any planned values education study.

Students today like to have fun and the monotony of school environments bores them. Therefore, preparing environments where students can have fun in schools can contribute to making the process of values education more enjoyable and desirable. Textbooks are one of the main sources where students encounter historical figures. Therefore, textbooks taught in schools should be prepared as value-oriented. This way, students will be raised holistically by taking value issues together with academic courses.

While conducting values education activities with students with different characteristics and different learning styles, different activities should be included to cater for each individual and different aspects of each individual (nursing home visit, site visit, theatre, drama, environmental cleaning activity, marketplace activity, reading and evaluating stories, writing stories, Hacivat and Karagöz play, watching and analyzing films, watching and evaluating short films, debate technique and brainstorming). The most important feature of drama is that it stimulates students' emotions, expands their imagination and helps them to empathise. Therefore, both within lessons and through independent activities, drama and theatre activities can be conducted to help students discover, develop, and reinforce their values.

Values education is process-oriented. This process cannot be limited to daily, weekly and monthly periods. When preparing activities for values education, it is expected that these activities will be more efficient the longer they are spread over a longer period. It is not sufficient for students to only know or feel values; furthermore, the ability to apply them to life can be considered the ultimate goal of values education. Therefore, it is recommended to carry out activities that will provide opportunities for students to bring values to life.

In this context, social life should be accepted as a laboratory environment and should be used as an application centre and a reinforcement area in the process of values education. Nature and the environment offer educators much more than they can find in the classroom environment as educational materials in many areas, especially during values education. Therefore, students should be provided with direct experiences to acquire values. This is possible through practices based on activities in which nature and the environment can be used as an educational space. Taking students to a park or a pond and simply collecting rubbish may not ensure that the targeted values are acquired at the desired level. Cognitive processes of students such as reasoning and analysing should be activated in the process with an activity prepared with a well-made plan. The process should be enriched with affective and cognitive activities. Creating an environment where students will be in touch with nature by taking them out of the classroom environment in order to gain values such as sensitivity to natural heritage and sensitivity to cultural heritage plays an important role in providing permanent and efficient values education.

One of the points that educators need to pay attention to in the values education process is concretising abstract value concepts for students. Concrete activities, especially for students who have not yet reached the abstract stage, help them perceive more easily and experience more permanent learning. As value role models, firstly family members (especially parents), then teachers and historical figures were mentioned. Therefore, it is recommended that those in the immediate environment, especially parents and teachers, should be good role models. Therefore, teachers should live in accordance with values and, if necessary, explain the wisdom behind their actions to students.

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SECTION

2

DIGITAL TECHNOLOGIES

Implementation and Impact of Electronic Marketing in the Field of Production Technology

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Introduction

Internet marketing and e-services are considered to be the newest areas of research which present a strategic importance to businesses that have directed their efforts towards the e-market. Studies have shown that online consumer behavior differs (in some important aspects) from consumer behavior in the traditional marketplace. On the other hand, managers seem to have a good understanding of customer needs in order to meet them effectively and efficiently in the electronic environment. The quality of electronic services is a much discussed concept, especially in recent years. It is defined as: "The degree to which a website facilitates or helps the purchase process (making it as effective and efficient as possible) and the distribution of products or services". The quality of e-services is a strong indicator of consumer satisfaction on the website. It is exactly what makes the difference between a quality website and a low-quality website (from the consumer's point of view), which facilitates the process of bringing consumers closer to businesses and affects the creation and maintenance of long-term relationships. The idea of online marketing and the quality of electronic services is the challenge for travel agencies today and in the future. Tourism has experienced rapid growth especially over the past four decades and was predicted to be the primary economic activity in the world as early as 2000. In a short time, Internet marketing became a worldwide phenomenon, shifting the interest of new tourist developments towards it. One of the main reasons for the increased attention to internet marketing is that it represents the trend of the times. On the other hand, seeing the advances in technology, his activities will help the tourism industry. This can be seen in the large-scale increase in the use of the Internet by different age groups for activities related to tourism products or services (Beqiri et al., 2013).

Marketing activities are being transferred very quickly as a result of the use of information technology and network technology, and marketing is taking on a much broader meaning than in the recent past when it meant only the sale of products and services. The term electronic marketing represents a common name for all types of online marketing, i.e. it is a set of activities aimed at selling products and services to

specific customers using the Internet and online services. Electronic marketing represents a process of online promotion of goods and services via the Internet and establishing contacts with existing buyers or potential buyers. From 1995 onwards, the term electronic business is often emphasized in economic circles and entrepreneurs. Electronic business is a contemporary form of business organization which implies the intensive application of information technology, especially the Internet. Electronic business today is of great importance and represents the most contemporary form of business organization that is oriented towards market conquest and investment and expansion. Undoubtedly, these developments were strongly influenced by the increasingly rapid development of information technology, which enabled radical changes in the way of business organization (Bajrami, 2010). This type of business enabled the development of completely new business models and is a very important tool that leads to real cooperation between companies. E-business is different from e-business because e-business refers to transactions and processes within the enterprise. E-business through key applications for communication, coordination and conducting electronic transactions such as: electronic mail, voice mail, fax, digital information services, teleconferencing, video conferencing and electronic data exchange made the Internet the largest distribution channel of goods, services and managerial jobs. This changed the economy, the market, products, services and their flow, market segmentation, consumer behavior, work and the labor market. As a result of electronic business, many activities are carried out today:

a) Sale of goods and services,
b) Distance trade,
c) Conducting financial transactions - payments and electronic collections (Ceku & Reshidi, 2006).

The Impact of Electronic Marketing on Products, Quality and Machine Sales

Market research

The subject of market research are many internal and external variables that affect the company's business. Some of them are in mutual relationship, therefore often the market research approach is very complex, while the isolated research of only some variables is a difficult task.
In most cases, marketing research (marketing needs research) is a broader concept than market research. However, the importance of market research within marketing research is much greater than some authors think. The essence of market research is presented in Figure.4.

Figure 1. *Market research*

In this figure, market research is presented as an activity, which should provide information on certain elements on the basis of which certain decisions can be made both from the field of general marketing policy and from the fields of particular elements of marketing. Therefore, taken in general, we come to the conclusion that all elements of the marketing mix will be examined in the market. Thus, in the future, within each marketing function, the following issues will be studied:

1. Discovering market opportunities and predicting potential sales. The main questions to which market research should provide answers from this field are:

- What is the market potential?
- What is the company's market share?
- What are the market development trends?
- What changes can be expected in consumer behavior?
- What are the chances of penetrating new markets?
- How is the sales forecast done?, etc (Ceku and Reshidi, 2006).

2. Inquiries about product policy needs. Here the most important questions that market research should answer are:

- *How does the quality of our products compare to those of the competition?*
- *Which product attributes will be given the most importance?*
- *What design will the product have?*
- *How will new products be developed and launched on the market?*
- *How will the diversification, modification and simplification of the production range be done?*

3. Research related to pricing policy. Here market research should help in solving these issues:

- *What price will we assign to the new product?*
- *What methods will we use to determine the prices?*
- *What price changes are anticipated within a product line?*
- *How is the elasticity of demand for the prices of our products?*

4. Research on distribution policy needs. The most frequently asked questions regarding product distribution are:

- *What types of intermediaries will be used?*
- *What conditions of sale will be set for intermediaries?*
- *How to decide about the consignment sale?*
- *What criteria will be used when choosing distribution channels?*
- *How will the product be re-exported?*
- *How will intermediaries be incentivized?*
- *What distribution strategies will the company use?*

5. Research related to promotional activities. The main questions that require answers regarding promotional activities are:

- *What forms of promotion will be used?*
- *What promotional goals and strategies will the company use?*
- *How will promotional orders be created and tested?*
- *Which mediums will be used and how will they be selected?*
- *What advertising appeals will be used?*
- *What will be the height of the promotion budget?*
- *How will the effects of the promotion be measured?* (Ceku and Reshidi, 2006).

The need for market research

In the situation where the enterprise has at its disposal the choice of two or more courses of action (it is a situation of an unsolved problem), the dilemma arises: whether to do market research or not. The final decision depends on several factors, which are:

Lack of time

It is often an obstacle to the realization of market research. Any systematic market research takes a certain amount of time. If the situation is such that decisions must be made quickly, then perhaps there is no time for research. Decisions are often made without additional new information or based on prior knowledge of the market. Such a solution is not ideal, but the urgency of the choice may influence what is decided without the implementation of market research.

Adequacy of data

Availability in the company's computer system is in most cases sufficient for deployment, without taking special market research. Especially this case is presented to companies that have developed an analysis of their business and thus have a knowledge of market events based on that data. If data is not adequate, consideration should be given to obtaining market research. This implies that market research will provide answers to questions that are not clarified.

The nature of the decision

They will greatly influence the implementation of market research. If it is about a less important tactical decision, it will certainly not be necessary to carry out market research, and vice versa - if it is about an important strategic decision, it will be necessary to carry out market research. The nature of the decision is closely related to the cost of the research and the question being asked - the benefit of the research relative to the cost.

Value of information

Compared to the expenses to a large extent influence the decision whether to do market research or not. Market research still incurs certain costs, but of course it also brings a certain benefit. When deciding whether a business activity should be implemented with the help of market research or without it, the question is always raised about what the market research will bring: will it affect the research results in the improvement of marketing, I will prevent the presentation of the loss to which it would be put without market research, etc (Uka, 2008).

Figure 2. *The value of information*

Market research process

Like any rational human activity that presents a certain sequence of actions, market research also presents a logical sequence of certain activities through which we obtain information necessary for making decisions from the marketing management side.

The main characteristics of the market research process in most cases are described through the weighting of the stages of the process development. Although the stages of the market research process in each concrete case may be different, there is still a certain weighting of them that characterizes the market research process.

The process of market research consists of the logical sequence of approaches, which must be undertaken to obtain accurate and meritorious information, which will help us during the business decision. Basically, the process of market research is based on the sequence of certain stages, while starting from the questions: what should be done, why, in what way, when, where and who.

The efficient market research process, according to Philip Koler, includes five stages, which are:

- Definition of the research problem and goals,
- Compilation of the research plan,
- Data collection,
- Data processing and analysis,
- Presentation and interpretation of results (Ceku and Reshidi, 2006).

Figure 3. *Stages of the efficient research process according to Philip Kotler*

Product Policy

For the company, the product is presented in different forms, such as wall coverings, which can simultaneously be the main product both in production and in the presentation and development of activities that follow the production in the market. The demands of wall covering buyers are different and differ depending on which market segment of the company, the specific type of wall coverings is divided by the customer's requirements, depending on what and which need he prefers to fulfill by purchasing the wall coverings and which qualities encourage the buyer to decide on the company's production.

The company observes and researches on the basis of sales analysis, customer comments and sales intermediaries (who with their own suggestions influence the orientations about meeting the demands of buyers). In different periods of development, the different advantages given to carpet buyers compared to other forms of arranging the walls of apartments, bars, offices, etc. have been presented.

Production assortment

The company for the production of wallpapers has two types of products:

- *wall hangings, and packaging paper, which have approximately the same production process, but differ in meeting needs, quality, characteristics of use, etc.*

The company for the production of wallpaper, on the other hand, has an assortment of products, which are distinguished:

- *wallpapers - according to categories, quality, price, etc.,*
- *wrapping paper - for trade and industry (tobacco).*

The company's production assortment has the following general characteristics, where it is distinguished:

- *width,*
- *depth and*
- *degree of consistency.*

The breadth of the production assortment is reflected in the number of products it produces. They are, as we said – wallpaper and wrapping paper.

The depth of the production assortment is distinguished by the fact that in the production of wall coverings during a year more than 150 - 200 types of wall coverings are produced and offered to buyers according to quality categories.

Meanwhile, the smallest depth is presented in the packaging papers, even from 3 to 5 types of this product in different shapes and qualities.

Diversification of the production assortment

In the process of its development and growth, the enterprise may face the need to change the structure of the production assortment, driven by influencing factors.

The activity of the enterprise may have diversification of the production assortment in several directions:

- *Vertical diversification, and*
- *Horizontal diversification.*

Vertical diversification

Was carried out with the presentation of the need for the enterprise to expand the production assortment, acquiring the production of some production components, which it previously supplied from its cooperators. It is this production of most replacement parts for existing cars.

Horizontal diversification

In the enterprise it is done in the field of production assortment with the need for experience and technical-technological advantages both in production and in the field

of sales (marketing), e.g. The paper bag manufacturer also begins to produce decorative paper for trade. With this diversification, it was possible to create an advantage over the competition and conquer new market segments as a complement to the primary activity.

Planning and development of new products

According to the researchers, the development of the new product goes through several stages:

- *initiative, formation and collection of ideas;*
- *selection of ideas;*
- *economic analysis;*
- *technical development;*
- *market testing and*
- *product launch and commercialization.*

Distribution Policy

For the successful implementation of the marketing strategy, it is important to supply customers with certain products. Likewise, these products must be available in certain quantities, in certain places, and at the time when the customer requires them. In today's economy, most manufacturers do not sell their products directly to end consumers. Between producers and final consumers there are many intermediaries, who perform various business activities.

Distribution as a business activity includes all those actions that are necessary for the product to reach the consumer from the producer. Intermediaries include all distribution channels. According to Bucklinovi (Ph.Kotler – 554), by distribution channels we mean: the whole of institutions, which perform all the activities that are used during the process of product movement and ownership from production to consumption.

Distribution channels are instruments of the marketing mix, which the manufacturer uses as a means to make contact with buyers. In some cases, the producer in contemporary business conditions has lost direct contact with buyers in the market. Based on market research, the manufacturer organizes the production process and creates an organized system for selling its products in the market (Ceku and Reshidi, 2006).

Promotion Policy

Promotion is the process of communication between the company and the buyers in order to create a positive attitude for products and services. It is a permanent process of company communication with existing and potential buyers. Through promotion, the efficiency of the company's business in the market is affected.

Promotion is necessary for those products for which consumers must be informed of the advantages they possess compared to other competing products for which consumers have not been informed. Likewise, promotion serves to create a suitable psychological climate for consumers, which climate encourages them to make decisions about purchasing the product (Merovci, 2006).

Promotion will be efficient if other marketing activities (product, price, distribution) perform their tasks efficiently. If the product with its own attributes does not respond to market criteria (high price, inefficient distribution channels), then promotion cannot successfully play its role in the enterprise's business.

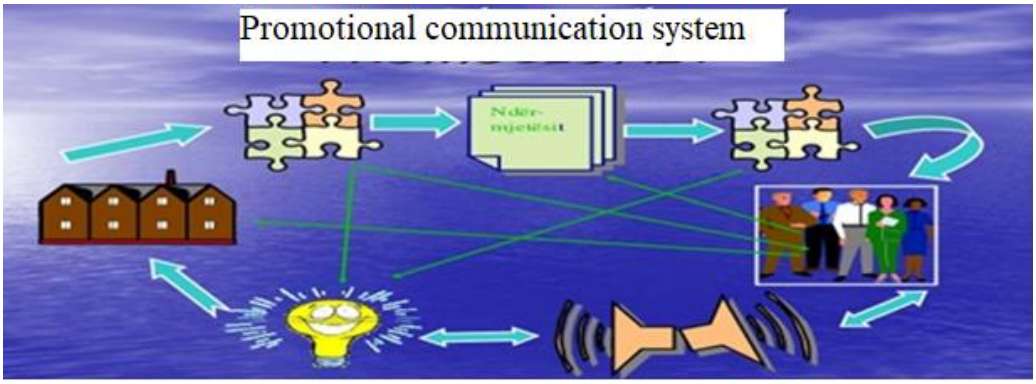

Figure 4. *Communication system of promotion*

Main forms of promotion

Promotion takes place in different forms, the most important of which are: advertising, publicity, sales promotion and personal selling as in fig.9.

Figure 5. *Main forms of promotion*

Mixed promotion is an optimal combination of all forms of promotion of a product or service. There is no doubt that better placement success can be expected if the parallel, synchronized and harmonized action (in time and space) of all forms of promotion is ensured, neglecting other forms, will not bring about the same results desired.

Each form of promotion has its own main characteristics.
The company must know those characteristics in order to be able to make their selection. Philip Kotler gives the characteristics for each form of promotion, such as:

Advertising

This represents the most important form of promotion. For this reason, it is often identified with the entire promotional activity.

Its main characteristics are:

Public presentation: Advertising represents the most open way of communication. Its public nature gives the particular product or service a kind of legitimacy. Since many people work on the same order, manufacturers know that the motive for purchasing a particular product will be publicly expressed.

Great penetrative ability: Advertising is such a form of promotion with great penetrating abilities, which enables the enterprise to penetrate more into the market.

Emphasis: Advertising offers opportunities to emphasize the individuality of the company and certain products, making good use of writing, sound and color tools.

Impesonal: Advertising cannot be as insistent as personal selling.

Personal selling

This is the most efficient tool at several stages of the buying process, especially during the development of buyer preferences, persuasion and action. Compared to advertising, personal selling has the following main characteristics:

Personal conflict: Personal selling creates a direct, lively and interactive contact between two or more people. Each party can intimately know the needs of the other party and immediately adapt to them.

Cultivation: Personal selling enables the creation of different relationships, starting from purely sales ones to friendly and personal ones. Successful sales representatives will always have the interests of buyers in mind if they want healthy business relationships.

Answer: Personal selling influences the buyer to feel an obligation to what he hears from the seller. The buyer has the opportunity to listen and actively participate in business conversations.

Sales progress

Sales promotion is one of the forms of promotion for which it is difficult to find a definition that would explain, would include all the heterogeneity, interdisciplinarity

and its importance. Difficulties are presented in its limitation in comparison with other promotion activities, especially with advertising and personal selling. Sales promotion with actions and means directed towards consumers must advertise ideas of general interest benefit. Why should a plaque at the point of sale, in addition to stimulating the purchase, not motivate and communicate with buyers about values of general interest, such as:

Buy the new cover X ... Thanks.
...donate the old one to the red cross!

Or

Let's give back to nature what we took from it!
X mobile company gives away new pines when buying mobiles. Sow.

Or the enterprise for the production of canned food:

Buy it ...
I wish you a good appetite ...
Don't shoot me point blank in the wild!

These examples are a small part of what can be done in terms of promoting good ideas of general economic and social interest.

Economic publicity

It is a suitable form of promotion, because consumers are informed about the state of the enterprise and its products within the framework of receiving other daily information. Therefore, on consumers, economic publicity does not leave the impression that the company glorifies itself and its products. The results of publicity, in the conditions of contemporary business, can be spectacular in some cases. The company uses publicity to draw attention to new products or to counter a bad reputation, even if it is described as a second-hand marketing tool. But, it can accomplish a very valuable public awareness activity with little expense. The company in the mediums that they used for advertisements did not pay for space or time. It pays the people who prepare and send the certain information into circulation. If the company prepares an interesting report, it can be accepted by all mediums, whereas if we submitted it as an advertisement, it would be very expensive (Jakupi, 2008).

Strengths

When we look at Electronic Business we have many advantages, which are mainly related to the ease of doing business. The benefits of implementing E-Business tools are in the modernization of business processes and not so much in the use of technology. Here are some:

Easy setup: E-business is easy to set up even from home, the only requirements are software, a device and internet connection.

Flexible business hours: There are no time constraints that a location based business can face as the internet is available to everyone all the time. Your products and services can be accessed by anyone with an internet connection.

Cheaper than traditional business: E-business is less expensive than a traditional business, but it is more expensive to set up. The cost of transactions is also cheaper.

Without geographical boundaries: The biggest benefit is the possibility of geographical distribution. Anyone can order anything from anywhere at any time.

Government subsidies: Digitization is highly encouraged by the government and they provide the necessary support.

New market entry: It has great potential to enable entry into a previously unknown market that a traditional business could not.

Lower inventory levels: E-business enables companies to reduce their inventory levels by digitizing their assets. (ie: Netflix no longer sells physical DVDs but instead offers online streaming content).

Lower marketing and sales costs: E-commerce allows industry players to advertise their product/service offering (ie: home rentals) at generally lower costs than physically promoting their business.

Figure 6. *Benefits of electronic business*

Disadvantages

Despite all the advantages, there are also some disadvantages that we need to address. The most common limitations of e-business are:

Lack of personal touch: Products cannot be examined or felt prior to final purchase. In the traditional model, we have a more personal customer experience, while in e-business this does not happen as much. Another missing factor of the personal touch can also be in online transactions.

Delivery time: Traditional business allows for instant gratification as you receive the product the moment you buy it, whereas in e-business this is not possible. There will always be a waiting period before you receive the product. For example, Amazon provides one-day delivery. This doesn't solve the issue completely, but it's an improvement.

Security issues: Fraud can be cited as a factor for people's distrust of e-business. Hackers can easily obtain customers' financial and personal details. Some customers still find it difficult to trust e-businesses due to lack of security, reliability and integrity issues. (Theodhori, 2013).

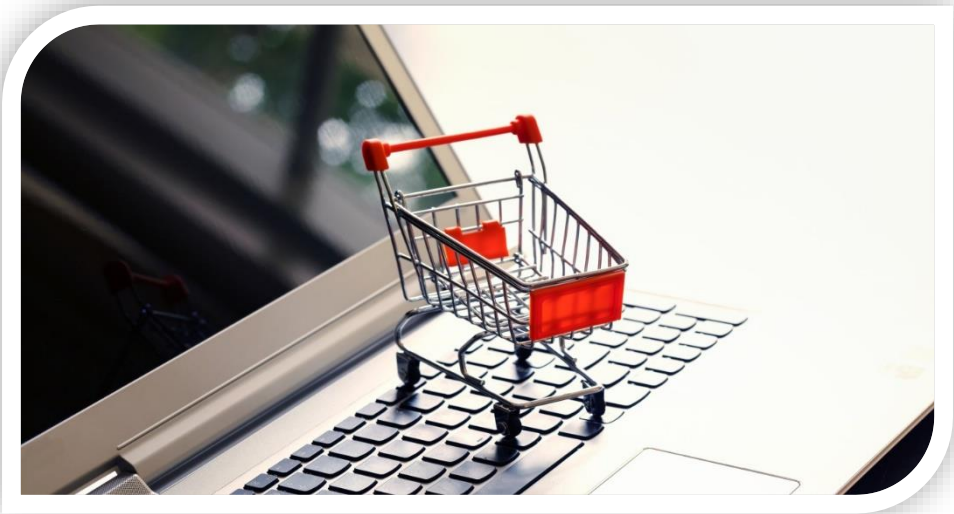

Figure 7. *Lack of personal touch to the product*

Conclusions

The main purpose of the section is to present the study's conclusions, the study's implications for theory and practice, and recommendations for future research. The first part of the chapter deals with the main results of the research regarding the use of Internet marketing and the evaluation of services on the websites of tourist agencies as well as other main issues in this field. The second part of the chapter deals with the theoretical and practical implications of the study as well as recommendations for future research.

- The study has a strong practical orientation, i.e. building a profile of electronic services present on the websites of tourist agencies to increase traffic and customer satisfaction.

- The success of website marketing depends on electronic services. Despite the strategic importance of the Internet and the website as a tool for attracting and retaining customers, the understanding of customer needs in this area still remains

subject to study. So, it is important to know what are the electronic services that a website should contain from the perspective of consumers in order to ensure the best results.

- The main function of marketing is to reach consumers, make them aware of the offers, direct them towards the purchase process and then convince them to make purchases and repurchases. Since online consumers do not have the opportunity to see or touch the tourist product or service, agencies try to differentiate their offer and ensure competitive advantages by offering superior value electronic services that facilitate the purchase process and increase the efficiency of activities. However, we should not leave without mentioning the reputation of the agency or the prices of the products / services.

- The field of electronic services can be considered as one of the new fields of research which is developing rapidly. A common consensus has not yet been reached on how different electronic services affect consumer perception or behavior according to different industries.

- Perceptions regarding electronic services of users purchasing tourist products through the website differ from the perceptions of non-purchasing users.

- The most important electronic services (according to consumer perception, listed in descending order) are: information on tourist products, information on tourist destinations; online booking and payments; security and privacy; interaction with the website; technical aspects and direct links to other sites to provide further information

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Controllable Text Generation: Style & Content

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Introduction

The generation of texts from human language by machines is called Automatic Text Generation (ATG). ATG is one of the most important research topics in Natural Language Processing (NLP). Automatic text generation is seen as a technological development that is expected to lead to significant changes in the world. It is a key component of language translation, question-answering systems, summarization, and several other applications that people interact with every day (Celikyilmaz et al., 2020). Chatbots like ChatGPT, which are very popular today, are one of the most important examples of this, which give very good results in generating text according to the prompts given. ChatGPT is a text generation structure that offers a very advanced service in question and answer developed by OpenAI. Thanks to its Transformer-based GPT large language models (LLM) (Radford et al., 2018) structure, it provides various benefits to users in every field by generating meaningful texts.

The model used in ATG is called the Language Model (LM). Simply, an LM learns the probability of occurrences of the token, i.e. the desired split smallest structure (symbol, character, or word) of a piece of text, based on given examples with considering the features of natural languages such as grammar, syntax, and semantics. This way, meaningful texts can be generated automatically (Caglayan, 2022). Although ATG has been tried with different methods before, the most significant results begin with the use of Deep Neural Network (DNN) models. New solutions are tried over time for problems such as the analysis of language structure, the length of words that can be associated, etc. encountered in text generation. With deep learning coming into the picture, recurrent neural networks (RNN) e.g., long short-term memory networks (LSTM), gated recurrent units (GRUs) methods are frequently used. Later sequence-to-sequence learning opens up a new chapter featured by the wide application of the encoder-decoder architecture. Although the encoder-decoder structure was strengthened with attention mechanisms and started to be used, it was still weak in capturing the relationship of words with each other since the language was examined sequentially. The success of all the deep learning-based methods relies heavily on large-scale datasets, posing a challenge for supervised and cross-domain text generation tasks (Zhang et al., 2022). As a solution the transformer structure (Vaswani et al., 2017), which adds the self-attention to the encoder-decoder structure

and examines it in parallel with the relationship of the tokens, came out. Self-attention is an attention mechanism relating different positions of a single sequence in order to compute a representation of the sequence (Vaswani et al., 2017). The transformer models showed big success in text generation as well as in all NLP fields. Later, transformer-based and pre-trained language models with large text data entered our lives. Pre-trained Large Language Models like GPT (Radford et al., 2018), BERT (Devlin et al., 2018), etc. are the most important examples of today. Pre-trained Large Language Models can learn to extensively model the distribution of natural language from their many different materials, so they can generate texts of unprecedented quality. In time while these developments in text generation continue, has also been focused on controllable text generation.

Controllable text generation (CTG), is an important part of ATG. CTG aims to ensure that the automatically generated texts have the desired qualities. The qualities to be controlled can be stylistic features such as politeness, sentiment, and formality; or maybe the characteristics of the hypothetical person writing the text, such as age, gender, and character; or maybe the topic, keywords, and information in the content of the text (Prabhumoye et al., 2020). As shown in Figure 1, basically CTG system has four components: an input text (I), the control element as (C) e.g. topic, the language model as process (P), and the generated text satisfying the control condition, as output (O).

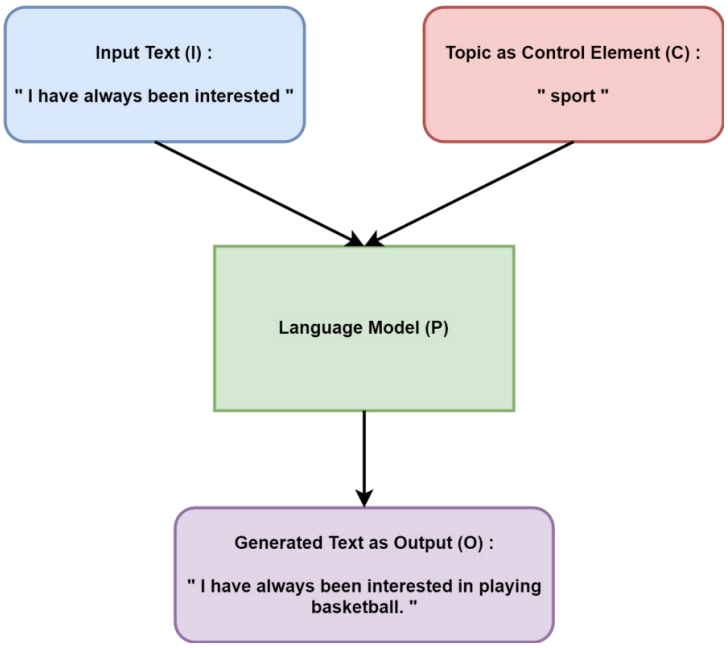

Figure 1. *Example of topic-controlled text generation*

In this case, the source sentence "I have always been interested" is completed based on the specified topic condition. As an example, if the topic is determined as sports in a topic-controlled text generation, the sentence can be completed with "in playing basketball" in accordance with this condition.

Given a vocabulary $\mathcal{V}$, the goal of CTG is to generate a target text $Y = \{y1, y2, \ldots, yn\}$, where $yn \in \mathcal{V}$, with respect to a control element denoted as C. Then CTG can be formally described as:

$$P(Y|C) = (y1, y2, \ldots, yn|C)$$

The specific expression of C may vary according to different tasks. As for the sentence Y generated by the model, it is also expected to satisfy the constraint conditions while conforming to the general natural language characteristics such as fluency, rationality, and readability, to the greatest extent (Zhang et al., 2022).

Today, controllable text generation is made using a wide variety of models and techniques, but in this study, the results from the literature review are grouped as controllable text generation for style or content purposes. The aim of the study is to examine the academic studies on controllable text generation using different models and techniques and to collect them under the headings of style and content control. Thus, it may useful for researchers working on this subject.

Style-Controlled Text Generation

Style is the way people do anything. Linguistic style is expressed in the choice of words or phrases as well as syntactic structures used to convey a piece of information (Prabhumoye, 2021). In this way, people can convey the information they want to give in a style they want, depending on their word or sentence choice. Creating a piece of information as text in a certain style is a fairly easy process for people. For example, people can convey a text with the same content in a ruder or more polite style in a matter of seconds. Gender, age, education, and personal styles, formality, politeness can be used as styles for text. In addition sentiment, humor, and romance etc. can be seen as different styles in texts and a text can include more than one style. However, it is very difficult for a machine that generates automatic texts in the desired style. Therefore, style-controlled text generation is a challenging and important study topic in the field of CTG. Figure 2 shows an example of how to control the style of two texts with the same content.

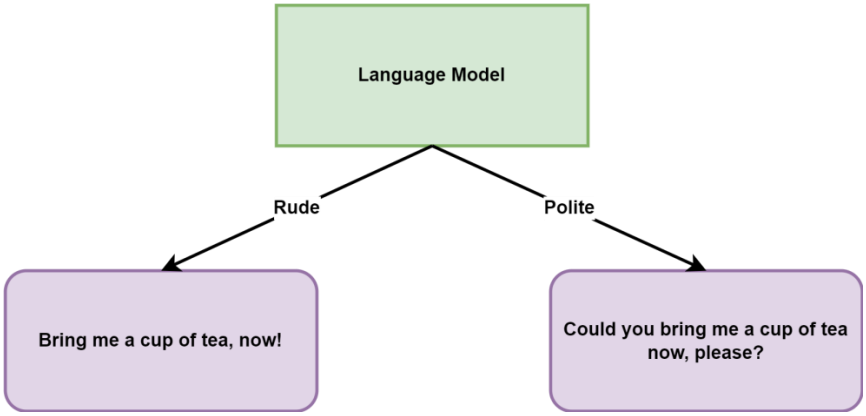

Figure 2. *Politeness-controlled text generation*

Style-controlled text generation task is also called style transfer. Style transfer is the task of rephrasing the text to contain specific stylistic properties without changing the

intent or effect within the context (Prabhumoye, 2021). The expression of the same emotion or thought by different personas may reveal a different style for each text.

There are many different types of tasks that we can use style transfer while generating text in real life. One example is to generate style-controlled responses for dialogue systems/chatbots. We can control the politeness, authority, persona of the chatbots. Also style transfer is widely used for generating texts for emails and stories.

The politeness plays a very important role in the style of the text generated. (Madaan et al., 2020) converts non-polite sentences to polite sentences for emails while preserving the meaning. An example they use in their work is to replace "send me the data" with a more polite version of " could you please send me the data". (Prabhakaran et al., 2014) works on emails according to control of politeness based on gender. (Peterson et al., 2011) examines the controlling formality of emails. (Sennrich et al., 2016) uses the English to German translation task to provide a model that can create formal or informal sequences based on verbs and pronouns to control the politeness. (Niu and Bansal, 2018) generates polite dialogues, their work focuses on contextual dialogue response generation. In the task of dialogue response generation, not only politeness but also to control emotion (Li et al., 2020), persona (Zhang et al., 2018) (Li et al., 2016), formality, authority etc. is also required.

Gender-related style differences are also an important issue in text styles. According to the researches, the word choices of women and men, the frequency of using pronouns and exclamations differ (Bamman et al., 2014).

Style transfer is used to generate persona based dialog responses and generating stylistic sentences for different type of personalities such as romantic or humorous (Shuster et al., 2018) (Li et al., 2018), politically slanted (Prabhumoye et al., 2018) or sentiment based like being more positive or negative (Shen et al., 2017) (Fu et al., 2018). Also to generate stories with different emotional endings (Peng et al., 2018) and creating them according to the different persona types (Chandu et al., 2019).

Another example is we can transfer the specific person’s style to generated text. (Xu et al., 2017) use a phrase-based statistical model, and (Jhamtani et al., 2017) use a standard encoder-decoder model to convert modern language to Shakespeare-style language by treating style transfer as a translation task (Niu et al., 2018).

Style-controlled text generation is very popular subject and research is being done to improve it day by day. The biggest challenge of style-controlled text generation is the lack of parallel data. Also, this makes it very difficult to measure whether the generated text has the desired properties. Since pre-trained large language models trained with a very large corpus have a lot of information, they show improvement in reflecting the desired style on the given prompt. However, the issue of the fact that the generated text should be accurate and fluent as well as having all the desired features and the methods for measuring the results needs improvement.

Content-Controlled Text Generation

Controlling what content and information the text will have is a very important subject, as much as controlling the style. Having the desired content of an automatically generated text is called content-controlled text generation or content transfer task. Unless trained language models are specifically conditioned, the contents of texts may be random rather than limited. One of the most important sub-tasks is the topic-controlled text generation. As shown in Figure 1, the topic of the text to be generated can be limited. When the desired topic is "sport", the prompt given is completed in accordance with this topic. For example in our previously published work on this subject, we add the topic information to the input during the language model training (Caglayan et al., 2021). In this way, while the language model is expected to generate user reviews according to the characteristics of the language, the text should also be about the desired topic. (Tang et al., 2019) and (Prabhumoye et al., 2020b) controls the topic sequence for dialogue response generation task. Accordingly, it is possible to limit the answers generated to the desired topic. Also (Huang et al., 2019), (Wang et al., 2019), (Yang et al., 2019), (Chang et al., 2021), (Lin and Riedl, 2021) controls the topic sequence for story generation task.

Another important sub-task of content transfer is document grounded. In document-grounded controlled text production, the content of the text produced is determined by an external source. A lot of information resides in an unstructured format in the form of books, Encyclopedias, news articles, Wikipedia articles (Prabhumoye, 2021) and this information is used to control the content of the text to be generated. Figure 3 shows that if the continuation of the text given as input to the language model is generated by using an external source, for example, a Wikipedia article, the content of the generated text will be determined according to the given document.

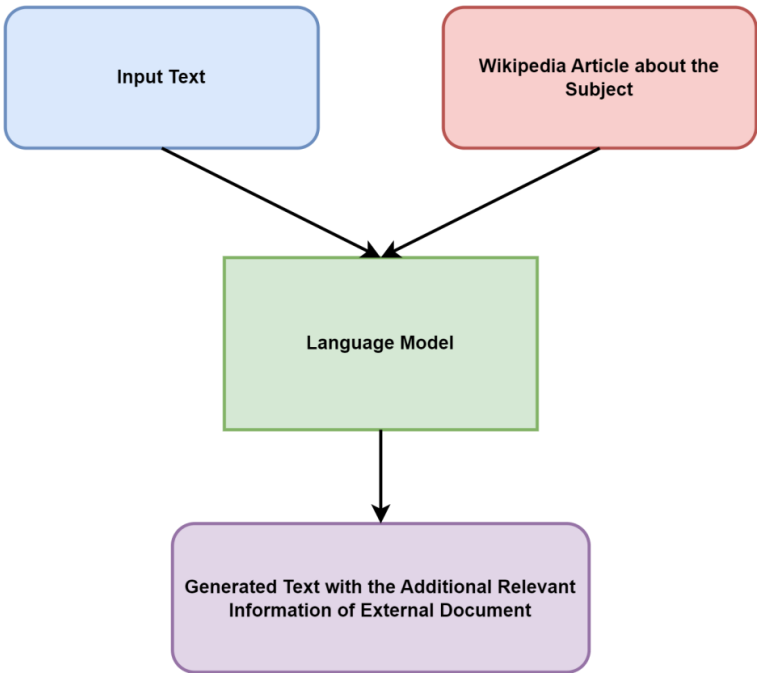

Figure 3. *Document grounded controlled text generation*

(Prabhumoye, 2021) introduces a new dataset that addresses the concerns of grounding in conversation responses, context, and coherence for dialogue responses, presents a dataset that has real human conversations with a grounding in a document with Wikipedia articles about movies and generates responses. (Dinan et al., 2018) also introduce a dataset of human-human conversations that are grounded in Wikipedia articles. (Zhou et al., 2018) and (Ghazvininejad et al., 2018) generates grounding the responses in external source of information for dialogue response generation task.

The most critical difficulties in document-grounded controlled text generation are that the documents used are generally unstructured, the extraction of information from the document requires extra operations such as summarization, which is open to development, and of course, the difficulty level of these operations varies according to the length of the document. It is also very difficult to generate precisely distinguishable texts for topic-controlled text generation. Because of all these, content-controlled text generation is a very important research area.

Conclusion

As a result, controllable text generation is an important and challenging issue today in terms of both style and content control. In addition to providing fluent and accurate text generation, it is necessary to generate texts in the desired style and content. This study was written to give general information about controllable text generation also to explain style, and content-controlled text generation, and gather the research under these two important headings. Nowadays, by considering these various factors, controllable text generation studies are carried out quite a lot and the importance of this field will increase gradually.

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Revolutionizing Engineering, Health and Education through Digital Technologies

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Introduction

The use of digital technologies has had a significant impact on different fields, such as transforming the way we live, work, and interact with each other. These technologies, such as artificial intelligence, machine learning, big data analytics, cloud computing, the Internet of Things (IoT), and blockchain, have become essential tools in many industries.

These technologies have brought about significant changes, enabling businesses to reach customers worldwide, improving patient care in healthcare, enhancing the way we learn in education, and creating new forms of entertainment. For example, businesses have increased their productivity and reduced costs by utilizing digital technologies in their operations. At the same time, healthcare professionals have been able to diagnose diseases more accurately and develop personalized treatment plans with the help of digital tools.

In education, digital technologies have enabled online learning, allowing students to access educational resources anywhere and anytime. In addition, digital technologies have revolutionized the entertainment industry, creating new immersive experiences, such as virtual reality, augmented reality and the creation of videos, which have enhanced how we consume media.

However, the challenges and risks that come with the benefits of digital technologies, such as cybersecurity threats, data privacy concerns, and the potential for job displacement due to automation, are some challenges that have to be addressed. As digital technologies continue to advance, it is vital to examine their impact on different fields, identify potential risks and challenges, and explore ways to alleviate them.

This review aims to provide a comprehensive overview of the use of digital technologies in various fields and their impact on society. We discussed digital technologies' benefits and challenges and examined their impact on business, healthcare, education, entertainment, etc.

Digital Technologies in Education

In the education sector, digital technologies have transformed teaching and learning practices, becoming an essential component of modern education. Therefore, its important to examine the research conducted on using digital technologies in education, such as its benefits, challenges, and implications. Even though several benefits are associated with using digital technologies in education, one of the major benefits is that these technologies provide students with access to a wealth of information and resources. Furthermore, these technologies, such as computers, tablets, and the internet, allow students to access vast information and resources to enhance their learning (Barajas, 2020; Prensky, 2010). In addition, these technologies allow students to collaborate and communicate with others, enhancing their social and communication skills. For instance, online discussion forums and social media platforms facilitate collaborative learning and communication among students (Hrastinski & Dennen, 2018; Lin etal., 2019). To continue, they enhance student engagement and motivation. They also use educational games and simulations to make learning more engaging and fun for students, increasing their motivation to learn (An & Reigeluth, 2011; Sailer et al., 2017). Additionally, these technologies provide teachers with tools and resources to help them personalize learning experiences for individual students, improving student outcomes (Darling Hammond & Flook, 2018; Means et al., 2014).

Despite the many benefits of these technologies in education, several challenges are associated with their use. One of the major challenges is that these technologies distract students. Particularly, the internet, social media, and other digital tools distract and take away from students' focus on learning (Rosen et al., 2013; Shao et al.,2020). Additionally, such technologies create a digital divide, where some students do not have access to the same technology as others, which creates inequalities in education (Warschauer & Matuchniak, 2010). In another example, such technologies are costly to implement and maintain. Even schools and educators have the resources or funding to invest in these technologies, which limits their ability to provide quality learning experiences (Cavanaugh & Jacquemin, 2015; Warschauer, 2016).

It has a significant role in using these technologies in education and has significant implications for educators and students. For educators, these technologies require a shift in teaching practices and new skills and competencies to effectively use them (Kirschner & van Merriënboer, 2013; Voogt et al., 2017). Additionally, they must develop new assessment methods to measure student learning in digital environments (Conole, 2013; Gikandi et al., 2011).

For students, using these digital technologies requires developing new skills such as information literacy, digital communication, and digital citizenship (Hague & Payton, 2010; Hargittai et al., 2010). Furthermore, using these technologies in education has significant implications for student privacy and data protection, and educators need to ensure that they are using digital technologies responsibly.

Transforming Healthcare through Digital Technologies

The healthcare sector is one of the most critical sectors in society, and it is undergoing a significant transformation through digital technologies. These technologies are revolutionizing healthcare by enhancing patient care, improving the efficiency of healthcare delivery, and providing new opportunities for healthcare providers to engage with patients. It is critical to examine the research conducted on these technologies in healthcare, including their benefits, challenges, and implications. These technologies provide numerous benefits to the healthcare sector, including improving patient outcomes and quality of care. These technologies enable remote patient monitoring and telemedicine. They allow patients to receive care from their homes, which reduces the need for in-person visits and improves access to healthcare services (Bashshur et al., 2019; Dorsey et al., 2018). They also provide healthcare providers with tools to improve patient care and enhance the efficiency of healthcare delivery. For example, electronic health records (EHRs) provide healthcare providers access to patient information, such as medical history, test results, and medication information. It improves patient care by enabling healthcare providers to make more informed decisions and deliver personalized care (Adler-Milstein & Jha, 2017; Patel et al., 2018). In addition, they enable healthcare providers to engage with patients in new ways. Recently, some mobile health (mHealth) apps, patient portals, and social media have provided patients with healthcare information and enabled them to communicate with healthcare providers (Patel et al., 2018; Zhai et al., 2020). They also improve patient engagement

Despite the many benefits of these technologies in healthcare, several challenges are associated with their use. It has to ensure the security and privacy of patient information. These technologies, such as EHRs and mHealth apps, collect and store sensitive patient information, and it is essential to ensure that this information is protected from unauthorized access and data breaches (Kierkegaard & Schulz, 2019; Li et al., 2021). Further, they require healthcare providers to develop new skills and competencies. They also need to be proficient in using digital tools and technologies, which require additional training and education (Mickan et al., 2019; Topol, 2019).

The use of these technologies in healthcare has significant implications for healthcare providers, patients, and healthcare organizations. For healthcare providers, these technologies require a shift in practice and new skills. Additionally, these technologies require healthcare providers to consider the ethical and legal implications of collecting, storing, and sharing patient information (Booth et al., 2018; McGonigle & Mastrian, 2017).

For patients, the use of these technologies provides new opportunities to engage with healthcare providers and take control of their health. However, it is essential to ensure that patients have access to reliable information and are not overwhelmed by the sheer volume of available information (Kaufman & Flanagan, 2016; Pagliari et al., 2005).

For healthcare organizations, the use of these technologies requires significant investment and the development of new policies and procedures. These healthcare organizations need to ensure that they are using these technologies responsibly and

effectively and that they are meeting the regulatory requirements related to healthcare data (Adler-Milstein & Jha, 2017).

The Impact of Digital Technologies on Business and Industry

Digital technologies have transformed the business and industry landscape, significantly changing how businesses operate, interact with customers, and deliver products and services. Adopting these technologies has disrupted traditional business models and created new opportunities for businesses to innovate and compete. This literature review aims to examine the research conducted on the impact of digital technologies on business and industry, including its benefits, challenges, and implications.

Benefits of Digital Technologies on Business and Industry

Digital technologies provide several benefits to businesses and industries, including improving efficiency, enhancing customer experience, and enabling innovation. One of the main benefits of digital technologies is that they improve business efficiency by automating processes, reducing costs, and increasing productivity (Chen & Huang, 2019; PwC, 2017). For example, businesses can use digital technologies such as enterprise resource planning (ERP) systems to streamline operations, manage inventory, and reduce wastage.

Digital technologies also enhance customer experience by enabling businesses to provide personalized and seamless customer experiences across multiple channels (Lemon & Verhoef, 2016; Schierholz & Schnittka, 2019). For example, businesses can use digital technologies such as customer relationship management (CRM) systems and social media to understand customer needs and preferences and deliver targeted and relevant content.

Another benefit of digital technologies on business and industry is that they enable innovation and disrupt traditional business models (Brynjolfsson & McAfee, 2014; Westerman et al., 2014). Digital technologies such as cloud computing, artificial intelligence (AI), and blockchain enable businesses to create new products and services and enter new markets.

Challenges of Digital Technologies on Business and Industry

Despite the many benefits of digital technologies, there are also several challenges associated with their adoption. One of the main challenges is the cost of implementing and maintaining digital technologies (Chen & Huang, 2019; PwC, 2017). Businesses need to invest in infrastructure, software, and personnel to implement and manage digital technologies, which can be a significant cost.

Another challenge of digital technologies on business and industry is the need to develop new skills and competencies (Westerman et al., 2014). Digital technologies require businesses to be proficient in the use of digital tools and technologies, which may require additional training and education for employees.

Implications of Digital Technologies on Business and Industry

The adoption of digital technologies has significant implications for businesses and industries, including changes in business models, the emergence of new competitors, and the need for regulatory and legal frameworks. For businesses, the adoption of digital technologies requires a shift in strategy and the development of new business models (Brynjolfsson & McAfee, 2014; Westerman et al., 2014). Additionally, businesses need to be aware of the emergence of new competitors, including digital disruptors, and develop strategies to remain competitive.

For industries, the adoption of digital technologies has implications for industry structure, with traditional industry boundaries becoming blurred (Henderson & Clark, 1990). Additionally, the adoption of digital technologies requires the development of regulatory and legal frameworks to address issues such as data privacy, cybersecurity, and intellectual property (Kshetri, 2018; McAfee & Brynjolfsson, 2017).

The adoption of digital technologies has transformed the business and industry landscape, leading to significant changes in how businesses operate, interact with customers, and deliver products and services. While digital technologies provide several benefits, including improving efficiency, enhancing customer experience, and enabling innovation, their adoption also presents several challenges, including the cost of implementation, the need for new skills and competencies, and the emergence of new competitors. As businesses and industries continue to adopt digital technologies, it is essential to understand the implications

The Role of Digital Technologies in Urban Development

The world has witnessed an unprecedented level of urbanization in recent decades. According to the United Nations, over half of the world's population now lives in cities, and this number is expected to increase to 68% by 2050 (United Nations, 2018). As cities grow, so do the challenges they face, such as traffic congestion, pollution, crime, and inadequate infrastructure. Digital technologies have the potential to address these challenges and improve urban development. In this article, we will explore the role of digital technologies in urban development and their potential impact.

Smart Cities

The concept of smart cities has gained popularity in recent years, with cities around the world exploring the use of digital technologies to improve their urban environment. Smart cities are defined as cities that use data and digital technologies to enhance the quality of life of their citizens and improve the efficiency of urban services (Caragliu et al.,2009).

Digital technologies are the backbone of smart cities, enabling the collection and analysis of data, as well as the delivery of services. For example, sensors can be used to monitor traffic flow, air quality, and energy consumption, while data analytics can

be used to predict and prevent traffic congestion and optimize energy use (Albino et al., 2015).

Digital technologies can also improve public safety in smart cities. CCTV cameras can be connected to a central monitoring system, allowing for real-time monitoring and response to incidents. In addition, emergency services can be dispatched more efficiently using digital technologies, such as GPS tracking and mobile applications.

Urban Planning and Design

Digital technologies are also playing an increasingly important role in urban planning and design. For example, 3D modeling software can be used to create virtual representations of cities, allowing planners and designers to visualize the impact of proposed developments on the urban environment. This can help to identify potential issues and optimize the design of new developments (Batty & Marshall, 2019).

Digital technologies can also be used to engage citizens in the urban planning process. For example, online platforms can be used to gather feedback from citizens on proposed developments, and augmented reality technology can be used to allow citizens to visualize proposed developments in situ.

Transportation

Digital technologies are transforming the way we think about transportation in cities. For example, ride-sharing services such as Uber and Lyft are changing the way we travel, reducing the need for car ownership and decreasing traffic congestion (Shaheen, Cohen & Pangbourne, 2017).

In addition, digital technologies are enabling the development of new forms of transportation, such as autonomous vehicles and electric scooters. Autonomous vehicles have the potential to reduce traffic accidents and increase the efficiency of transportation, while electric scooters provide a low-cost and environmentally friendly mode of transportation for short trips (Becker et al., 2019).

Challenges

While digital technologies have the potential to revolutionize urban development, they also pose challenges. One of the main challenges is ensuring that digital technologies are accessible to all citizens. This is particularly important in the context of smart cities, where digital technologies are used to deliver urban services.

In addition, there are concerns about the collection and use of data in smart cities. The collection of large amounts of data raises concerns about privacy and data security, and there is a need to ensure that data is used ethically and in the public interest (Kitchin & Lauriault, 2014).

Digital technologies have the potential to transform urban development, improving the efficiency of urban services and enhancing the quality of life of citizens. However, there are also challenges to be addressed, such as ensuring that digital technologies are accessible to all citizens and that data is used ethically and in the public interest.

Digital Technologies and the Environment

Digital technologies are having a significant impact on the environment, both positive and negative. On the one hand, digital technologies have the potential to reduce environmental impact by enabling more efficient use of resources and reducing waste. On the other hand, the production and use of digital technologies can have a significant environmental footprint. In this article, we will explore the role of digital technologies in the environment and their potential impact.

Positive Impacts

Digital technologies have the potential to reduce environmental impact in a number of ways. One way is through the optimization of energy use. Digital technologies can be used to monitor and control energy consumption, for example, by turning off lights and heating systems when they are not needed (Khan et al., 2020).

Another way that digital technologies can reduce environmental impact is by enabling more efficient use of resources. For example, digital technologies can be used to optimize agricultural practices, reducing the use of pesticides and water (Acharya et al., 2019).

In addition, digital technologies can enable the development of renewable energy sources, such as solar and wind power. Digital technologies can be used to optimize the efficiency of renewable energy systems and to manage energy storage systems (Ma et al., 2017).

Negative Impacts

While digital technologies have the potential to reduce environmental impact, they also have a significant environmental footprint. The production and use of digital technologies require significant amounts of energy and resources, and can result in the generation of electronic waste (e-waste).

The production of digital technologies, such as smartphones and laptops, requires the mining of rare earth metals, which can have significant environmental impacts. In addition, the manufacturing process requires large amounts of energy and water, and can result in the release of toxic chemicals (Chen et al., 2020).

The use of digital technologies also has an environmental footprint, particularly in terms of energy consumption. Data centers, which are used to store and process digital data, require significant amounts of energy, and are a major contributor to greenhouse gas emissions (Liu et al., 2019).

E-waste is also a significant environmental concern. Digital technologies have a relatively short lifespan, and when they are no longer useful, they are often discarded. E-waste can contain toxic chemicals, such as lead and mercury, which can leach into the environment and cause health problems (Lepawsky & McNabb, 2018).

Digital technologies have the potential to reduce environmental impact through the optimization of resource use and the development of renewable energy sources. However, the production and use of digital technologies also have a significant environmental footprint, including the generation of e-waste and greenhouse gas emissions. As digital technologies continue to evolve and become more widespread, it is important to consider their environmental impact and to work towards minimizing their negative effects.

Social Media and Communication

Social media has become an integral part of modern communication, connecting people across the globe and providing new opportunities for personal and professional networking. In this article, we will explore the role of social media in communication, including its benefits and challenges.

Benefits of Social Media Communication

Social media provides several benefits for communication. One of the most significant benefits is the ability to connect with people across the globe, regardless of location or time zone. Social media platforms such as Facebook, Twitter, and LinkedIn provide opportunities for personal and professional networking, allowing users to connect with others with similar interests, backgrounds, or expertise.

Social media also enables the sharing of information and ideas on a large scale. Users can easily share news, opinions, and perspectives, and engage in discussions with others. Social media can also be used for marketing and advertising, providing businesses with new channels for reaching customers and building their brand.

Another benefit of social media is the ability to facilitate collaboration and teamwork. Social media platforms such as Slack and Trello provide tools for team communication and project management, enabling remote teams to work together effectively.

Challenges of Social Media Communication

While social media provides many benefits for communication, it also presents some challenges. One of the most significant challenges is the potential for misinformation and fake news to spread quickly and widely. Social media algorithms prioritize engagement, which can lead to the amplification of sensational or misleading content, even if it is not accurate.

Social media can also lead to the spread of hate speech and cyberbullying, particularly on platforms such as Twitter and Instagram. The anonymity and distance provided by social media can embolden users to engage in behavior they would not otherwise engage in, and can create a toxic online environment.

Another challenge of social media communication is the impact on mental health. Studies have shown that excessive use of social media can lead to feelings of anxiety, depression, and loneliness, particularly among young people (Lin et al., 2018).

Social media has transformed communication, providing new opportunities for connection, collaboration, and the sharing of information and ideas. However, it also presents challenges, including the potential for misinformation, cyberbullying, and negative effects on mental health. As social media continues to evolve, it is important to consider these challenges and work towards creating a more positive online environment.

Digital Technologies and Politics

Digital technologies have transformed the way politics is conducted around the world. In this article, we will explore the role of digital technologies in politics, including their benefits and challenges.

Benefits of Digital Technologies in Politics

Digital technologies provide several benefits for politics. One of the most significant benefits is the ability to engage citizens and promote democracy. Digital technologies, such as social media and mobile apps, provide new channels for political communication and mobilization. These technologies enable citizens to connect with political leaders, express their opinions, and participate in the political process.

Digital technologies also enable political campaigns to reach a broader audience and target specific groups of voters. Political ads on social media platforms can be targeted to specific demographics, interests, and locations, allowing campaigns to reach voters more effectively.

Another benefit of digital technologies in politics is the ability to collect and analyze data. Digital tools, such as polling software and data analytics platforms, provide political campaigns with valuable insights into voter behavior and preferences. This data can be used to develop more effective campaign strategies and messaging.

Challenges of Digital Technologies in Politics

While digital technologies provide many benefits for politics, they also present some challenges. One of the most significant challenges is the potential for misinformation and disinformation to spread quickly and widely. Social media platforms have been used to spread fake news and propaganda, and foreign actors have been known to interfere in elections by using digital tools to manipulate public opinion.

Digital technologies can also lead to a lack of privacy and security. Political campaigns collect vast amounts of data on voters, including their personal information and online activity. This data can be vulnerable to hacking and misuse, raising concerns about privacy and security.

Another challenge of digital technologies in politics is the potential for polarization and division. Social media algorithms prioritize engagement, which can lead to the amplification of extreme or divisive content. This can create a polarized online environment that reinforces existing biases and makes it difficult to have productive political discussions.

Digital technologies have transformed politics, providing new opportunities for citizen engagement, data analysis, and targeted campaigning. However, they also present challenges, including the potential for misinformation, lack of privacy, and polarization. As digital technologies continue to shape politics, it is important to consider these challenges and work towards creating a more transparent, secure, and democratic political environment.

Opportunities and Challenges

Digital technologies have revolutionized the way we live, work, and interact with each other. While these technologies provide numerous opportunities, they also present significant challenges that must be addressed. In this article, we will explore the opportunities and challenges associated with digital technologies.

Opportunities of Digital Technologies

- **Increased connectivity:** Digital technologies have made it easier for people to connect with each other across geographical and cultural boundaries. Social media platforms and video conferencing tools enable people to communicate in real-time, no matter where they are in the world.

- **Improved access to information:** The internet has made it easier than ever to access information on a wide range of topics. From news and entertainment to educational resources and scientific research, digital technologies provide instant access to vast amounts of information.

- **Increased efficiency:** Digital technologies have streamlined many processes, making them faster and more efficient. For example, e-commerce platforms enable consumers to shop from anywhere and have products delivered directly to their doorstep, while digital workflows and automation tools can help businesses streamline their operations.

- **Enhanced creativity:** Digital technologies have opened up new avenues for creative expression, enabling artists, musicians, and writers to share their work with a global audience. Online platforms, such as YouTube, Instagram, and TikTok, have also enabled creators to build their own audiences and monetize their content.

Challenges of Digital Technologies

- **Cybersecurity risks:** As digital technologies become more prevalent, cybercriminals are increasingly targeting individuals and organizations. Cyberattacks can result in data breaches, financial losses, and reputational damage.

- **Privacy concerns:** Digital technologies collect vast amounts of personal data, raising concerns about privacy and surveillance. Individuals may be unaware of how their data is being collected, used, and shared by companies and governments.

- **Information overload:** The sheer volume of information available on the internet can be overwhelming, making it difficult for individuals to separate fact from fiction. Misinformation and fake news can spread quickly on social media, leading to confusion and mistrust.
- **Digital divide:** Not everyone has equal access to digital technologies, which can create a digital divide between those who have access to technology and those who do not. This can lead to inequalities in education, employment, and social opportunities.

Digital technologies provide numerous opportunities for individuals, businesses, and society as a whole. However, they also present significant challenges that must be addressed. As digital technologies continue to evolve, it is important to work towards creating a more secure, inclusive, and equitable digital world.

Future Implications of Digital Technologies

Digital technologies have already transformed the way we live, work, and communicate with each other. As these technologies continue to evolve, they will have even greater implications for the future. In this article, we will explore some of the potential future implications of digital technologies.

Automation and Artificial Intelligence (AI)

As digital technologies continue to advance, automation and AI are likely to become increasingly prevalent. This could lead to significant changes in the labor market, as many jobs become automated. However, it could also create new opportunities for workers to focus on higher-value tasks that require human skills, such as creativity, problem-solving, and empathy.

Internet of Things (IoT)

The Internet of Things refers to the network of connected devices that are able to communicate with each other and with the internet. As more devices become connected, it will create new opportunities for businesses to collect and analyze data in real-time, enabling them to make more informed decisions. However, it will also raise concerns about privacy and security, as more personal data is collected and transmitted over the internet.

Augmented and Virtual Reality (AR/VR)

AR/VR technologies have already begun to transform the entertainment industry, but they have the potential to revolutionize other industries as well. For example, they could be used to create more immersive training experiences for workers in various industries, from healthcare to manufacturing.

Blockchain

Blockchain technology has already been used to create cryptocurrencies, but it has the potential to revolutionize many other industries as well. For example, it could be used

to create secure voting systems, track supply chain data, and verify the authenticity of digital content.

Environmental Sustainability

Digital technologies could play a significant role in addressing some of the world's most pressing environmental challenges. For example, smart grid technologies could help to reduce energy waste, while precision agriculture technologies could help to reduce water usage and increase crop yields.

Digital technologies have already had a significant impact on society, and they are likely to continue to do so in the future. As these technologies continue to evolve, it will be important to ensure that they are used in ways that promote the common good, rather than simply maximizing profits. By doing so, we can help to ensure that digital technologies have a positive impact on society and the environment.

Conclusion

In conclusion, the use of digital technologies has had a significant impact on various sectors such as engineering, health, and education. In engineering, the use of computer-aided design (CAD) software has made it easier and more efficient to design complex structures and systems. In healthcare, digital technologies such as telemedicine and electronic health records (EHRs) have improved patient outcomes and made healthcare more accessible. In education, digital technologies have revolutionized teaching and learning, providing new opportunities for personalized and collaborative learning experiences. However, while digital technologies have brought many benefits, there are also challenges that need to be addressed, such as privacy and security concerns, the digital divide, and the need for digital literacy. It is important to ensure that these technologies are used in ways that promote the common good, rather than simply maximizing profits. As digital technologies continue to evolve, there will be even greater opportunities for innovation and transformation in these sectors. It is crucial that we continue to invest in research and development to ensure that we are able to fully leverage the potential of digital technologies for the benefit of society. By doing so, we can create a more equitable, efficient, and sustainable future for all.

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SECTION

3

EDUCATION

Concept Instruction in Science Education

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Introduction

Science and technology are the cornerstones of the modern world and are critically important for the progress of humanity. Science focuses on understanding the principles of how nature works and acquiring new knowledge using systematic and empirical methods, while technology enhances people's lives by applying this scientific knowledge in practical ways, offering innovations. This combination has a significant impact on various fields, including healthcare, communication, energy production, and agriculture. Scientific discoveries improve the diagnosis and treatment of diseases in the field of medicine, while communication technologies facilitate global connectivity. The use of renewable energy sources in energy production provides environmentally friendly solutions, and advanced technologies in agriculture enable more efficient and sustainable production. Science and technology serve as important driving forces for economic growth. Therefore, investing in science and technology is indispensable for the development and well-being of societies. The 21st century is considered the age of science and technology, and living in this era is regarded as an indicator of a society's level of development. In this context, prioritizing science and technology is essential for societies to sustain their existence and independence. Individuals in the 21st century are expected to possess qualities such as being explorative, inquisitive, critical thinkers, innovative, continually self-improving, having effective communication skills, being entrepreneurial, and being able to integrate knowledge from various fields (Karamustafaoğlu, 2018).

In our current era, technology and technological tools have become integrated into nearly every aspect of life. Both improving economic and social conditions relies heavily on technology and its products. The development of technology and ensuring the correct use of these technologies hold special importance in the field of science (Demirci, 2017). Therefore, in the age of technology, there is a greater need to prioritize science education. Science classes can equip students with scientific thinking skills, enhance their research abilities, and provide them with the foundation to contribute to future technological advancements. The effective implementation of science education can be a critical step for the sustainability of future technological developments.

The rapid changes in science and technology have directly influenced the changing needs of individuals and society, as well as innovations and developments in teaching and learning approaches (MEB, 2018). The impact of technological and scientific advancements on the lives of individuals and communities is considered a significant topic in science education. Objective assessments can be made on subjects that affect societal and individual life, and in this context, the concept of science literacy has gained importance (Özden, 2020). Science classes can serve as an important tool in developing this literacy. These classes can provide students with skills in scientific thinking, critical thinking, problem-solving, and understanding technology. This can contribute to individuals using scientific knowledge effectively and addressing the challenges they encounter, ultimately contributing to the development of science and technology-based progress in society.

Science Teaching and Its Purpose

People have always been driven by the desire to explore nature, learn the secrets of the relationships between beings and events, control events, and benefit from nature. This desire has guided people in order to live a more comfortable and safe life. This endeavor against nature has led to the emergence of today's technology. For this reason, Natural Sciences are of great importance for the development and development of countries. Countries that want to progress in science and technology attach great importance to science education (Demirci & Mutlu, 2017).

In schools, science courses are conducted with the aim of making students scientifically literate, helping them understand the process of acquiring knowledge, and teaching them the logic of the scientific methods used in obtaining scientific knowledge (Demirbaş, 2017). Thus, the goal is for students to continue their lives as individuals who research, question, think critically, and solve problems. Considering the importance of science in the developlment of societies, it is of great importance to raise individuals possessing these qualities.

Children are highly sensitive to their immediate surroundings, full of energy, curious, driven by a desire to explore, and possess strong imaginations and inquisitive qualities. Science courses provide the most suitable environment to trigger these natural abilities, expand children's thought processes, and encourage them to inquire (Tezel & Bıyık, 2018).

The instructional vision of science courses has been defined in a manner that aims to cultivate individuals with scientific literacy, in alignment with the objectives of science education (MEB, 2013). The concept of scientific literacy encompasses all cognitive, affective, and psychomotor competencies that enable the understanding, monitoring, internalization, and conscious use of scientific and technological advancements, thereby enhancing an individual's quality of life and the ability to preserve the natural environment (Hastürk, 2017).

Science Curriculum and Development

Adapting to changing world conditions and all kinds of technological advancements is possible through the shaping and updating of the education system according to these changes. In our country, the Ministry of National Education creates educational curricula to keep up with these developments. These educational plans should have specific objectives. In general, the objectives that all educational programs should have can be summarized as follows (Gücüm & Kaptan, 1992).

- Creating a realistic and coherent worldview,
- Understanding and explaining the conceptual structure of science,
- Developing the skills necessary for the application of scientific methods,
- Adapting to innovations in the field of science and technology,
- Fostering an effective sense of citizenship for society.

The Science Curriculum, published in 1926, was not only the first comprehensive program of the Republic period but also based its foundation on Dewey's concepts of "Life Knowledge, Collective Instruction, and Trade School" (Arslan, 2007).

In 1936, 1948, 1968, 1980, 1992, 2004, and 2013, science education programs were updated in accordance with the changing education systems and technological advancements. Since 1980, constructivist-based teaching programs have been adopted in many countries around the world. In our country, significant changes were also made to the science education program in 2004. It was observed that this program was carefully prepared to meet the requirements of the constructivist approach (Anılan & Atalay, 2020).

In the parallel with the updates made in the teacher traning process, curriculum have also been updated. Most recently, in 2018, changes were made to the science education program, adopting a spiral approach for different topics and grade levels, and emphasizing recurring achievements and explanations. Additionally, it emphasized the acquisition of targeted learning outcomes in a single stage, along with a holistic perspective (Anılan & Atalay, 2020; MEB, 2018).

The main objectives of the science course curriculum published in 2018 are as follows (MEB, 2018):

1. Providing fundamental knowledge about astronomy, biology, physics, chemistry, earth and environmental sciences, and science and engineering applications.
2. Encouraging the adoption of scientific process skills and a research approach in the process of exploring nature and understanding the human-environment relationship, enabling the generation of solutions to problems encountered in these fields.
3. Raising awareness of the mutual interaction between individuals, the environment, and society; fostering a sense of sustainable development related to society, the economy, and natural resources.

4. Taking responsibility for everyday life issues by using knowledge based on science, scientific process skills, and other life skills.
5. Developing awareness of career opportunities related to science and entrepreneurship skills in the field of science.
6. Assisting in understanding how scientists create scientific knowledge, the processes through which this knowledge passes, and how it is used in new research.
7. Stimulating interest and curiosity in events occurring in nature and the immediate environment, fostering attitudes.
8. Emphasizing the importance of safety in scientific work and creating an awareness of safe practices in scientific research.
9. Developing the ability to make judgments, scientific thinking habits, and decision-making skills using socio-scientific topics.
10. Promoting the adoption of universal moral values, national and cultural values, and scientific ethical principles.

Concepts and Their Characteristics

What is a Concept?

There are many definitions of the concept. One of these definitions is made by Tokcan (2021) as follows: "A concept represents a category used to group similar objects, people, events, ideas, and processes." According to Senemoğlu (2020), the definition of a concept is as follows: "Concepts not only enable individuals to distinguish a group of entities, events, ideas, and processes from other groups but also help them establish relationships with other groups, entities, events, ideas, and processes. For example, concepts like psychology, sociology, educational psychology distinguish each field of science from others and also assist in establishing the relationships between one field of science and other fields. These concepts guide us in understanding the connections between different disciplines and help us evaluate knowledge more comprehensively. Concepts play a significant role in structuring, understanding, and expressing our thoughts and assist in organizing knowledge in a meaningful way."

Concepts are the naming of common characteristics by combining facts, events, and objects. Concepts are the fundamental units of our thoughts and shape our thinking process. Through concepts, we create meaning by thinking, speaking, and writing. These concepts serve as our means of understanding and communication because they help us organize and express the complex world in an understandable way by identifying common features. Concepts aid us in making sense of knowledge and expanding our worldview (Şimşek, 2019).
Concepts are the fundamental building blocks of an individual's thought processes and are important elements that make up their cognitive structure (Klausmeier, 1992; cited in Özmen, 2020).

Concepts represent a form of knowledge and structure in the human mind that encapsulates variable common characteristics among different objects and phenomena. A concept is expressed with a single word and often reflects a specific meaning (Ülgen, 2004).

Upon examining the provided definitions, it is possible to say that concepts are essentially mental images. In this context, it can be said that concepts, in fact, have abstract qualities. All concepts are abstract in nature, even though some may contain concrete examples, others are entirely abstract (Şimşek, 2019). Concepts might be related to how we perceive phenomena because they are mental representations of phenomena. Therefore, concepts do not have a concrete existence.

Concepts formed in people's minds may differ from each other because concepts are shaped by their experiences. Therefore, the mental images of concepts formed in the minds of different individuals can differ. For example, when the word "table" is mentioned, an image is formed in all of our minds. This mental image can vary depending on our experiences, age, education, and other factors. Concepts can vary among individuals, different cultures, and societies. Moreover, even the characteristics of concepts we develop over time can change (Şimşek, 2019).

How we structure concepts in the educational process is essential, as concepts are interconnected. Incorrectly learned concepts can affect the proper understanding and learning of related concepts in the future and may sometimes pose a significant obstacle (Şimşek, 2019).
Based on the concept definitions provided so far, a general definition might be as follows: Concepts are mental images that are fundamental to individuals' thought processes, can be formed in the human mind, and allow for the distinguishing of individuals, groups, phenomena, ideas, or processes with similar qualities from others, as well as for establishing connections with others.

General Characteristics of Concepts

Concepts are expressed through language and are named with words or compound words. Regardless of the linguistic structures used to represent them, all concepts have characteristics such as learnability, usability, comprehensibility, prevalence, and effectiveness (Senemoğlu, 2020).

1. Learnability: The acquisition of concepts occurs at a later stage. Concrete concepts are easier to learn compared to abstract concepts.
2. Usability: Concepts have various application areas. Within these areas, some concepts are frequently used, while others are used more rarely.
3. Clarity: Concepts should be clear and understandable in a way that reaches a consensus of meaning among experts in the field.
4. Generality: Concepts are organized from general to specific.
5. Strength: Concepts become powerful when they facilitate the understanding of other concepts and problem-solving situations. In this way, they promote effective learning.

Sever (2021) summarized the general characteristics of concepts as follows: Concepts are the building blocks of knowledge, and they are generalizable. Since concepts are mental images, they are abstract in nature. They serve as the communication language of knowledge and play a role in shaping it. Additionally, they enable us to perceive

knowledge and define its boundaries. Concepts are fundamental elements that facilitate learning.

The Importance of Concepts in Science Education

Anagün & Duban (2016) stated that the purpose of science education is for learners to understand, describe, and explain natural phenomena with scientific facts throughout their educational journey. They should learn scientific methods, allowing them to analyze and explain the events they encounter through a scientific lens. Anagün & Duban (2016), following Jenkins, also convey that the aim of science education in schools is to assist students in learning some of the ways that can be used for them to understand the world.

The aim of science education is to present situations that students encounter in their daily lives in the learning environment once again, allowing them to look at these situations from a scientific perspective. It also aims to foster curiosity towards nature and nurture individuals who question, investigate, produce, and think. In this context, the goal of science education can only be achieved when students meaningfully learn the concepts taught in class. Learning abstract concepts is a more challenging process compared to concrete concepts, especially in science lessons where abstract concepts are more prevalent (Anagün & Duban, 2016). To ensure meaningful learning of the abstract concepts in science education, it is essential to make these concepts as concrete as possible.

Concept Teaching

Bacanak, Küçük, and Çepni have stated that concept teaching is a process that should be considered starting from the early years of primary education. In this process, it is highly important for students to learn fundamental abstract science concepts fully and correctly, as it will be crucial for them to understand these concepts in secondary and later stages of education (cited in Anagün & Duban, 2016). In other words, ensuring that the concepts taught in science classes are taught accurately and comprehensively from the beginning of students' education can prevent possible misconceptions in their future years and assist in their educational journey.
Concept teaching, which plays a vital role in a student's learning journey, is carried out through two different approaches (Şeker, 2010):

- Teaching Concepts through the Traditional Method (Instruction through Presentation)
- Teaching Concepts through the Modern Method (Instruction through Discovery)

In Turkey, the constructivist learning approach, initiated in pilot schools during the 2004-2005 academic year, became widespread across the country from the 2005-2006 academic year (Teyfur & Teyfur, 2012). In an education system based on the constructivist approach, it is more appropriate to use the modern method for concept teaching. This is because traditional concept teaching aims to provide students with direct information. However, according to Canpolat, starting concept teaching directly from the definition can lead to some difficulties (Canpolat & Pınarbaşı, 2002). In the

traditional method, the definition of the concept is directly provided, and students are expected to memorize it. The teacher remains in a constant transmitter role, while students passively assume a receiver role.

In modern constructivist education, students are in an exploratory, questioning, researching, problem-solving position. They are more actively involved in the teaching process. As expressed by Sever (2021), students play an active role in their learning process and construct their own learning. At this stage, teachers should consider students' individual differences and offer various teaching methods to ensure that students have access to knowledge.

Concept Teaching Levels

Senemoğlu (2020) classified the levels of concept teaching, which form the basis of cognitive development, as follows:

Concrete Level and Recognition Level Concept Teaching: At these levels, students

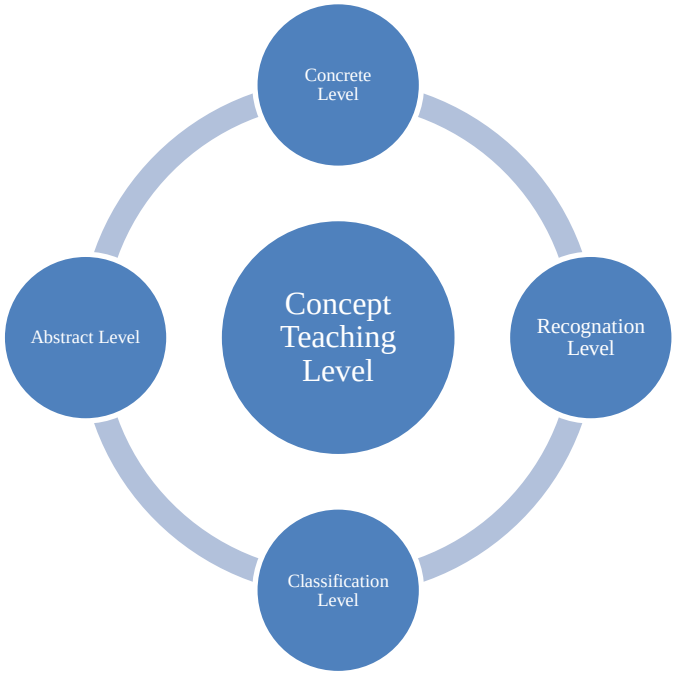

Figure 1. *Concept teaching levels diagram*

can learn many concepts in places such as family, friends, and neighborhood, which are their daily living areas. At this level, the concept itself or its picture is brought to the classroom and shown to the students. Then, the name of the item is given to the student to establish a relationship between the item and its name. After this process is done correctly, the student is given feedback. Then, the item is shown again to check the learning (Senemoğlu, 2020).

Beginning Level of Classification Concept Teaching: In this level, students are presented with at least two different examples of the concept, along with one or two examples that are not related to the concept. Then, students are encouraged to establish a relationship between the concept and its name. Opportunities are provided for

students to discover the critical features of the concept. Definitions are provided in a way that helps students understand the concept, and then students are given new examples and examples that are not appropriate for the concept, so that they can define and classify the concept in different situations. Finally, feedback is given to students (Senemoğlu, 2020).

Advanced Classification and Abstract Level Concept Teaching: Students are supported by providing examples and non-examples related to the concept as they prepare to learn the concept. Students are helped to identify examples and non-examples and develop strategies. Students are encouraged to acquire the names and properties of concepts. Opportunities are provided for students to use the concepts, and then feedback is given (Senemoğlu, 2020).

Techniques Used in Concept Teaching

Concept Maps

Concept maps are a learning strategy that focuses on the classification and visualization of information, thoughts, and attitudes around a key concept. Concept maps are visual tools that show the relationships and hierarchies between concepts. They allow students to organize how they relate concepts in their mental worlds in a concrete and visual way (Gödek et al., 2019). From this perspective, it can be said that it is a useful technique for both students and teachers. While creating concept maps, students have the opportunity to develop the ability to sort concepts in a logical order and relate each concept (Tokcan, 2021). Teachers, on the other hand, can easily identify gaps and misunderstandings thanks to the visual presentation of concept maps (Gödek et al., 2019).

The benefits of concept maps can be listed as follows (Kaptan, 1998):

- Helps to make information meaningful and to ensure its sustainability.
- Supports the visual presentation of the subject to be conveyed.
- Allows for the organization of mixed information.
- Provides the opportunity to observe and summarize the entire content of the lesson.
- Ensures that the core concept is clearly defined.
- Helps to identify the relationships between the core concept and other concepts.
- Provides the opportunity to notice the conflicts, differences, and differences between concepts.
- Makes confusing concepts clear.
- It is a tool that can be used in different lessons and teaching processes.
- Can be used at every stage of the lesson.
- Contributes to the student taking an active role.

Concept Networks

Concept networks are schematic tools called semantic networks that represent students' perceptions, thoughts, and concepts and principles in written teaching materials in a consistent way (Ayas, 2019).

The reasons for using concept networks in the educational process can be listed as follows (Ayas, 2019):

- To reveal and evaluate students' old knowledge,
- To show the relationships between concepts,
- To create new relationships between concepts and group them,
- To facilitate the collaboration of teachers and students,
- To enable students to review the information they have learned and to build relationships between them,
- To contribute to students' better thinking and better understanding of the subject.

Concept Puzzles

According to the Turkish Language Institution, a puzzle is defined as a game that is organized in various ways and aims to find by thinking and researching. In cases where concepts are not known enough, what is told and read in books may be boring for students. Including concept puzzles at the beginning of the unit will help to eliminate this situation. Students will have the opportunity to develop their independent learning skills thanks to concept puzzles (Tokcan, 2015).

The benefits of using concept puzzles in teaching can be listed as follows (Ayas, 2019):

- Ensuring the learning and sustainability of concepts,
- Providing a learning environment where students are active,
- Making verbal lessons more interesting and enjoyable,
- Making students mentally active and gaining practical thinking skills,
- Ensuring collaborative learning between students in case of group work,
- Providing students to realize independent learnings in the teaching process and develop problem-solving skills.

Conceptual Change Texts

Conceptual change texts are texts that help students to recognize their existing conceptual misconceptions and reveal the contradictions between scientific knowledge and students' mental misconceptions. These texts are aimed at developing students' conceptual understanding by eliminating misconceptions (Kılıçoğlu, 2020; cited in Akbaş, 2021).

Conceptual change texts are an important teaching tool or material in terms of providing meaningful learning using different methods. It is seen that the teaching carried out in this way is very useful in terms of awareness, meaningfulness, and sustainability (Yalçınkaya & Karaca, 2021).

In conceptual transformation texts, a scenario is first presented and a question is asked accordingly. Then, common erroneous thoughts related to the presented scenario are conveyed and why these erroneous thoughts are wrong are explained with reasons and examples. After this explanation, the correct thought is presented and supported by examples (Şimşek, 2019).

Information Maps

Information maps are schematic teaching tools that show the information and relationships between these information in a graphical way in a text (O'Donell, 1994).

According to O'Donell (1994), information maps have the power to build more effective connections between thoughts than other graphic organizers. These connections can be grouped into three categories.

1. Dynamic connections express the cause-and-effect relationship.
2. Static connections describe the structural relationship between thoughts.
3. Deepening connections express the relationships that develop knowledge.

Since the summary of the text in information maps is easier to extract than in a plain text, it can help students learn concepts and information more easily. Relationships between concepts can be understood more easily. Knowing the relationship between concepts is important for storing information in the mind in a more permanent and efficient way (Görgen, 2001).

Concept Cartoons

Cartooning is an art form that represents an important form of visual language that conveys messages using symbols and images and affects human emotions. Cartoons are used in various ways for educational purposes. Especially as places where humor is used effectively, they appear as tools with significant effects in learning and teaching processes in terms of their psychological effects (Tokcan, 2015).

Concept cartoons used in education have many features that differ from other cartoons. Although concept cartoons look like other cartoons that have visual features, they aim to provide opportunities for students to interpret and understand concepts instead of humorous elements (Sexton, 2010).

Concept cartoons, introduced by Brenda Keog and Stuart Naylor in 1991, are an approach that aims to support students in revealing their thoughts, encouraging their thinking skills, and developing their understanding abilities (Naylor & Keogh, 2013).

In concept cartoons, two or more characters who come together about events encountered in everyday life share questions or ideas through speech bubbles. Since concept cartoons do not directly provide the correct answer, they can help students change their existing misconceptions and misconceptions through discussion and the process of cognitive balancing (Canpolat & Pınarbaşı, 2002).

The purposes of using concept cartoons can be listed as follows, as the most frequently mentioned among teachers and teacher trainers (Gödek et al., 2019):

- Develops students' thinking skills and allows them to meet different perspectives.
- Provides support to gain the ability to ask questions for students.
- Provides a starting point to start the research and investigation processes.
- Encourages participation and increases students' motivation.
- Provides the opportunity to apply scientific concepts in everyday life.
- Makes it easy to understand by summarizing and rearranging the subject.
- Can be used in extracurricular activities such as homework and science clubs.
- Encourages families and society to be interested in science.

Characteristics of Concept Cartoons

The characteristics that should be included in concept cartoons have been listed by Naylor and Keogh as follows (Tokcan, 2015):

- Should include alternative perspectives that cause misconceptions in students identified in research.
- Should use short texts that students can understand, and concept cartoons appropriate for age groups should be presented with dialogues.
- Concept cartoons should offer alternative views that students can find logical.
- Alternative views that correspond to the misconceptions defined in research should be included in concept cartoons.
- Attention should be paid to the adaptability of scientific thoughts to everyday life to enable students to make connections between science and everyday life.
- Among alternative views, there should also be ideas that are scientifically accepted.
- Views should be presented on equal terms in a way that students will not easily reach the correct answer and can lead to scientific conflicts.
- Concepts should be presented by associating them with everyday events.
- Thoughts should be expressed in short and understandable sentences as much as possible.
- Scientific thinking style should also be included in concept cartoons.
- Thoughts in concept cartoons should be similar in terms of expression style and should avoid clichés avoided from textbooks.

- The ideas in concept cartoons should be determined as a result of research. This can increase validity and credibility.

Benefits of Concept Cartoons

In a teaching environment where concept cartoons are used, students have an active role. Concept cartoons that participate in teaching processes in line with the constructivist approach make the lesson both fun and help to reveal the understandings that students have formed in their minds about the concept because they contain characters that offer different perspectives. The benefits of concept cartoons can be listed as follows:

- Concept cartoons contribute to students' thinking skills (Keogh & Naylor, 2000).
- Concept cartoons provide opportunities for formative assessment, allowing students to discover their own ideas and teachers to prepare the learning environment in line with these ideas (Stephenson & Warwick, 2002).
- Concept cartoons are an important tool for identifying students' misconceptions because they contain misconceptions expressed comfortably (Keogh et al., 1998).

Concept cartoons provide students with alternative perspectives, allowing them to develop their ideas. It also increases students' motivation, allowing students to participate more in class (Gödek et al., 2019).

Summary

This text provides information on the importance of science education, the definition of concepts used in the field of science, and the levels of teaching in science education. Science aims to satisfy the desire to understand nature, control events, and benefit from the natural world. To fulfill this desire, objectives are set in science education, such as imparting scientific literacy, teaching the process of obtaining scientific knowledge, and developing inquiry skills.
Concepts are the fundamental building blocks of science and are at the center of the learning process. Concepts are mental images used to group and understand similar objects, events, ideas, and processes. Among the general characteristics of concepts are learnability, usability, clarity, generality, and strength.

In science education, the teaching of concepts can be carried out using traditional (teaching through presentation) and modern (teaching through discovery) methods. In the traditional method, concepts are taught directly to students with definitions, while in the modern method, students are actively encouraged to explore and understand the concepts. Due to the adoption of a constructivist approach in modern education, teaching concepts using modern methods is more commonly preferred.

Concept teaching can occur at different levels, including the concrete level, recognition level, classification level, and abstract level. Different strategies are used to teach concepts at each level, and students are guided at different levels.

Concept teaching is an essential component in helping students understand and improve their applications in the field of science. Effectively teaching concepts to students ensures the success of science education.

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The Contribution of E-Learning Techniques in Teaching Arabic as a Foreign Language to Non-Native Speakers

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Introduction

Arabic language has, throughout the long history, spread widely in conditions of war and peace. Besides, during a certain period of time, it was the first language for reading, writing and publishing. Teaching it to non-native speakers through modern electronic technologies has become one of the most important basic steps to spread and introduce it to the world. As there are many schools and universities in the world and also in the Arab countries, Arabic language is presented to non-native speakers of different ages and levels and for many purposes being for research, exploratory, education and/ or tourism.

Time and space horizons are open to those who are jealous to Arabic language and its dissemination because demand for it is increasing, and a lot of efforts have been exerted to include it within the global educational system based on electronic media and platforms, especially that we live in a world where educational media and platforms are widespread.

In order for this process to succeed, serious researchers must take advantage of electronic media and platforms. They are also encouraged to focus on information technologies used while teaching Arabic, methods and tactics for the success of learning Arabic for non-native speakers, especially as Arabic language is facing major challenges. Shedding lights on teaching it to non-native speakers using these methods, strategies, technologies, techniques and platforms.

Concerted efforts and participation in presenting clear educational curricula on this subject lead to the advancement and promotion of Arabic language through modern electronic space, and bringing it to the ranks of other leading languages in this world. Not to forget the role of the teacher of Arabic as a second language; training and developing him professionally, encouraging and motivating him to play his role to the fullest, and co-operate with specialized experts with experience in designing electronic curricula in line with technological development and keeping pace with the spirit our time with its technologies, media and platforms – e.g.:

- What are the information technologies used in teaching Arabic as a foreign language?

- What is the role that educational technologies play in the distance- learning process?

- Are self-learning and e-learning tools important in teaching Arabic to non-native speakers?

- Does the use of educational technology and e-learning increase the learning of Arabic language for non-native speakers?

- What is the extent of the impact of e-learning and educational technologies on the culture of non-Arabic speakers?

- To what extent can non-Arabic speakers benefit from electronic educational programs?

-What are the difficulties that non-Arabic speakers encounter when learning Arabic?

-What are the useful solutions to help the process to succeed and what are the ways to overcome obstacles and difficulties?

This requires us, being interested in Arabic language, to define concepts and terminology to set the theoretical framework for the research, such as:

Education technologies, educational technology, e-learning, media, platforms and their role in improving the teaching of Arabic to non-native speakers and paying attention to terminology that is related to e-learning and selecting criteria, and taking into account the quality and not the quantity.

Learning techniques and their importance

It is the processes, procedures and strategies that students use in order to improve their ability to obtain, store and save information and concepts i.e. increase language competence. This way, the student can retrieve and recall information from his memory in order to apply and use it. I.e. improve their performance. Hence, the gap between the learners' competence and performance would inevitably be narrowed.

The concept of information techniques (information technology) includes all areas related to information management and processing, whether within small or large institutions, as it is used to describe computers and their networks extensively (Salama,1996).

Information technology is used in wide areas of society in business, finance, health care, protection, employment and education, which is what interests us in this research.

Information technology has been developed from teachers' communication with students, in addition to helping students learn new things and ease of access to information away from the classroom using mobile phones and smart tablets. (Salem,2004)

Obstacles hindering information technology include

- Data overload.

- The need to increase teamwork skills.
- Protection and security issues.

Information technology is an integrated system based on a structure of knowledge and sciences specialized in human learning and the use of a group of learning resources, whether human or non-human. This way, it enhances and supports the activities of learners by relying on the application of the "systems approach" that achieves the goals of education and helps to target effective learning. . Information technology also has an important role in the educational environment, and its use and application in education depends on a set of means known as educational technology means. These include educational tools and devices used in the application of this technology (Rahim, 1998).

Virtual education: It is an educational method that can be applied in or outside the classroom by using visual recordings (videos) that students watch using over-head projectors or smart boards in their classrooms or using smart devices. Education techniques and technologies have a fundamental importance in the educational environment. This importance includes:

- Supporting sensory perception, through which the use of illustrations is employed to clarify written words, and contribute to enhancing students' understanding of how to distinguish between things.

- Developing student skills by teaching them a set of specific skills such as the skill of proper pronunciation and utterances.

- Developing student thinking rendering technology to teaching students sound ways of thinking and correct methods of how to solve problems.

- Contributing to establishing correct concepts, promoting linguistic growth and developing positive attitudes among students towards education techniques because its importance is double:

The learner benefits from it by providing him with the opportunity to learn Arabic as a second language consistent with what modern educational philosophies and learning theories propose through educational technology.

- Providing the opportunity for non-Arabic speaking students to get acquainted with a variety of resources through technology and modern educational techniques, and to acquire the necessary information related to learning Arabic as a second language.

- This type of learning helps to overcome the difficulties and render obstacles that hinder learning Arabic as a second language.

As for the teacher, he can get benefitted by saving time and effort, which makes it easier for him to collect scientific materials related to the language according to the needs of its recipients as well as developing his intellectual wealth and identifying the sources that enable him to make the teaching process successful. (Khazneh Katbi, 2012).

Advantages of education using educational technologies

There are many benefits provided by educational technologies and technology. These include:

- Achieving learning targets and goals with high competencies.

- Taking into account the physical, mental and emotional characteristics of the learner.

- Providing a linguistic wealth from the learning resources.

- Powering the teacher with motivation to keep abreast of progresses, achievements and developments of the times.

- Supplying the teacher with motivation to aspire after always being updated with development and knowledge of all that is new.

- Fitting in with the requirements and data of the time to prepare generations and train them for self-learning.

- Saving time and effort (Noureddine, 2007).

Teaching Arabic to non-native speakers and contemporary education

The technical field is one of the most vital and growing fields, and its developments have come in line with human aspirations and renewable needs. It has been employed in many fields, the most important of which is the electronic media through the world-wide web, which is a feature of this era. This web has linked the world to each other and made it look like a small village through electronic correspondence that transcends the sides of the world. This network promotes an advanced stage, especially in the field of e-learning and teaching for the sake of individuals who do not speak the mother tongue (Mathkour, 2006).

As it has become a very important method in the field of distance education, and, therefore, e-learning and all its means have become necessary to provide learners with the skills necessary for the future. This education will open new horizons for learners that were not available before. It makes available a solution to the needs of learners in the future, and encourages the application of the benefits and advantages of e-learning along with face-to-face education.

Mixing the written, audio and video forms a message of information reinforcement. For this reason, teachers should be trained to use educational techniques and educational technology in teaching Arabic language as a language of dialogue and

communication, As well, they need to introduce the Arab heritage on more practical and objective bases because humans, by nature, like to be involved in events in areas outside their motherland, and this requires knowing the language of the other that he seeks to reach. Here, technology and information technology are harnessed to serve all mankind (Akram, 2012).

The economic prosperity experienced by the Arab Gulf states, thanks to the studied economic successes, has made these countries a destination for millions of people prompting tens of thousands to learn Arabic, whether in their countries (There many prestigious universities in several countries such as Korea, Japan, Turkey, European and Scandinavian countries have created Arabic language departments for students to learn Arabic), or in Arab countries such as the Kingdom of Saudi Arabia, the United Arab Emirates, and the Arab Republic of Egypt, which offer Free scholarships for non-native speakers of Arabic to learn this language. Just as sustainability aims at development that takes into account well-being and increasing capabilities for future generations, language has a fundamental role in the three axes of a sustainable result:

- The economic ax: it means the continuity of economic growth by relying on cultural characteristics, knowledge and its content (language), and thus leading to the continuity of growth.

- The social ax: This is the continuation of human development and raising the quality of life, interdependence, cohesion, harmony and societal integration through interest in language, culture and values, education and scientific culture.

- The environmental ax: The culture of preserving the environment and guaranteeing it for future generations.

These three axes are not integrated except in the society of knowledge. Language, in the knowledge society, plays a major role in improving the quality of life and raising the standard of living towards the welfare, prosperity and well-being of the citizen. Here, language has two roles from the economic and social point of view of states and nations as an industry and a commodity (Al –Mousa, 2005).

The information market in Arabic language is an important market as it covers many products in the education sector, research and development, documentation, libraries, management, pricing, e-commerce, e-government, health, security, entertainment, industry, and others sectors. The intellectual development that the world feeds on today is purely intellectual and technological development, and teaching Arabic as a second language must follow this path.

Foreign languages have made great strides in this field because the World Wide Web has played a major role in linking individuals on the one hand, and the broad influence in the field of teaching and learning many languages on the other. Therefore, digital information technologies, communication skills, and techniques for teaching Arabic to non-native speakers in the twenty-first century must be adopted. It should take into account the learners' needs, tendencies and desires in this field, and work to influence their behavior, use their muscular abilities, and the extent to which they can use these media and play the role to the fullest Face.

The importance of information technologies and educational technology in teaching Arabic to non-native speakers

Arabic language is an ancient language with a wide culture and civilization; as it is a living and contemporary language; it is considered one of the global languages with an international presence. Learning this language by non-native speakers is due to several reasons and motives, including political, diplomatic, economic, religious, cultural, educational, tourism and communication. Other than the self-motivation that drives the interested and the intellectual non-Arabs to learn the language to learn about the diverse Arab culture, thought and heritage.

Since Arabic is among the most widespread languages, it requires good handling in the use of technical means in the development of teaching this language to non-native speakers. Facing the challenges of the technological era that provided many opportunities in the educational fields, which contribute to modernizing the methods of teaching Arabic as a second language and raising the level of teaching based on technologies and educational technology. Modern electronic media are innovative solutions to many problems of teaching the Arabic language as a second language. This is to raise the efficiency of education and increase its effectiveness in a way that is compatible with contemporary civilizational developments. (Qandil, 2006)

The modern inventions that suit the requirements of the time, and these inventions led to the development of smart devices, and thus the emergence of an advanced generation of devices, programs and platforms. They were called multimedia programs. We can pay attention to the phonetic system of Arabic language, and focus on displaying letters during education and on using different letters according to their presence in the sentence.

Arabic language has many sounds that are not found in other languages, for example: The sound of the letter Ain, Qaf, Dhad and Dhaa, Ta'a and Hamza. Non-Arabic speakers will find it difficult to pronounce them correctly. We need to choose the most common and widespread words, and present the new words in examples to indicate the situations in which they are used in order to make it easier for the learner to memorize, acquire and absorb the meanings of the words and benefit from them.

Connecting new words and vocabulary with the daily life experiences of the learner, in order to speed up and facilitate the process of learning the language. When you follow of the rapid development movement you notice the beginning of the actual application of multimedia in order to quickly adapt to it; giving learners examples from various topics that enrich their dictionary with new meanings and their uses and improve their pronunciation and composition of sentences during learning. Relying on the principle of gradualism in teaching Arabic to non-native speakers and dividing the educational process into levels commensurate with the learner and his goal.

Taking into account the gradation in written education from easy to difficult, and from the oral to the written, this matter enhances the learner's self-confidence and urges him to continue learning. (Saaed, n.d.)

These are considered the basics of learning Arabic for non-native speakers, and what helps in teaching it to non-native speakers is the use of audio-visual means such as videos, audio clips, and pictures to bring the word and meaning closer to the learner's understanding. As well, we need build electronic courses, whose importance appears in achieving the goals of enriching the content of electronic courses, increasing the learner's motivation towards learning, acquiring research skills and navigation skills, and raising the level of achievement and performance. (Marei & Al-Haila,2017)

It is useful to create many sorts of teaching and learning facilities: Designing a website using an electronic content management program, making electronic educational units for Arabic language skills; publishing them through content management programs on the Internet; employing some learning situations on the Internet in the linguistic educational situation; developing appropriate technology for teaching and learning Arabic for non-Arabic speakers; creating a multimedia library from various sources to teach Arabic to non-native speakers via wide web; choosing ready-made linguistic educational software according to educational, technical and scientific standards using the smart board in teaching Arabic to non-native speakers using one of the specialized programs; creating miscellaneous Internet pages in Arabic on the web; preparing learning and teaching resources that lie in designing non-traditional linguistic educational situations; using the educational video to present linguistic educational situations; developing the work and enriching the programs for preparing teachers of Arabic language for non-native speakers, and increasing the practical and technological aspect and linking it to the entrance of linguistic communication.

Training teachers to employ learning techniques and the teaching- learning of Arabic for non-native speaker technology in order to achieve the goals of linguistic communication.

These technologies are stimulating for all senses because the content of the educational videos, whether those created by teachers or those they upload from YouTube, contain a minimum level of integrity of cognitive and ethical content, where visual stimulation works, simulating reality, employing gestures, movement, breaking routines, and the ability to control work clips and stages of exploiting the medium outside the classroom. Teachers need skills to overcome the use of media, techniques and technology to develop listening skills, oral conversation, and writing letters and words to teach Arabic to non-native speakers. They also need to enable the adoption of technological media in the completion of activities and exercises and test being formative or partial self-evaluative.

Despite the possibility of dispensing with the teacher, the limited ability of computers and applications to predict all learners' needs and responses and interaction with them in a humane manner, such software and technologies remain a fertile field that undoubtedly requires the availability of devices, efficiency along with parallel and integrated efforts (Account, 1993).

"Between theory and practice" combines the principles of employing new technologies and transforming learning into a collaborative project that takes into account the diversity of consistency and different skills, and achieving common goals.

Arabic is the language of religion, culture, history and science. Throughout its long history, it has occupied pioneering positions and played great humanitarian roles.

Arabic language contains a lot of grammar, syntax, synonyms and antonyms. Herein lies the difficulty of the language and teaching it to non-native speakers. It is regarded as one of the richest languages in the world, but this renders the difficulty when learners desire learning it by exerting more efforts and dedicating more time for training and competence. Learning will not take place in a month or a year, but it will take more time. It would be great if non-native speakers could befriend with Arabic-speaking people to train them to practice speaking most of their time.

Technical solutions for teaching Arabic to non-native speakers

- Designing a simplified form for its alphabet and everything related to its layouts, which makes it easier for the learner to use it.

- Going deeper into learning materials and supportive lessons for teaching Arabic to non-native speakers through information technologies.

- Focusing on reading and listening to improve their practical performance.

- Paying attention to lessons that contain the grammar of Arabic language, while supporting them with realea examples from the environment of the learner.

- Designing lessons and electronic video clips through which the linguistic information that characterizes Arabic is provided.

- Introducing vocabulary for non-Arabic speakers in a simple and easy way with correct pronunciation.

- Continuous evaluation, where the teacher recognizes the level of his students and provides them with feedback.

Conclusion

Teaching Arabic language to non-native speakers needs to adopt the latest trends and the ability to diversify strategies and make use of technological development. It also requires taking care of the learning environment, the abilities and tendencies of learners and working on developing the competencies of teachers. Information technology and education technology have played a prominent role in conveying the echo of languages to those who wish to learn them from individuals whose countries are far apart and whose languages are multifarious.

Since the demand for Arabic language is increasing and it is considered one of the most productive and prosperous languages, it has become necessary to introduce this ancient language and to communicate its sound and impact to those who seek it with a desire to learn it. It is necessary to work on the exploitation of educational

technology and information technologies to spread Arabic language around the world, and to work on the exploitation of interactive electronic texts for learners of this language for non-native speakers. This will benefit the teacher and the learner. The good handling of the Arabic text and its good inclusion in modern media are among the reasons leading to the success of the educational process for non-native speakers. Accordingly, the Arabic teacher must have wisdom and sophistication in order to be able to overcome the obstacles that hinder the learning of this language for non-native speakers. This requires continuous updating and activation so that Arabic language for non-native speakers can keep pace with the spirit of the times and keep pace with change, progress and development.

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Supporting Ontology-Based Personalization for Improving Learning during Pandemic Situation

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Introduction

Scientific research in recent years has shown that ontologies can improve access and quality of information processing and propose possibilities for information processing automation in many practical fields as Information Extraction, Information Retrieval, Information Integration, E-Learning, E-commerce, Digital libraries, Bioinformatics, etc. During the COVID-19 pandemic, the need for personalized, adaptive student-centric e-learning software is increased. This need requires adaptive learning materials and its dynamic adaptation to the learners' educational needs. Ontology-based adaptive and personalized learning was discussed in grand variety of e-learning-related research projects, but in practical computer systems ontologies are still used very rarely. One of the main reasons for this is the fact that ontology development and management is difficult, time consuming, and requires some knowledge-management skills. The ontology learning is a process of (semi) automatic extraction of data, concepts, properties, relations, and axioms from a given corpus, textual document or other kinds of resources to organize them in semantic machine-processable format as ontology (Asim et al., 2016; Maedche et al., 2016). Automated ontology development and management facilitates are not integrated in application development environments, as E-Learning resource development IDEs, web development IDEs, etc. In this paper we analyze and classify an ontology learning methods and algorithms, and discuss which of them may be useful for adding as (semi) automatic ontology learning or management capabilities to Integrated E-learning Resource Development Environments (IERDE) for learning content development in E-Learning domain. Our main research questions are:

- For development of what types of ontologies in e-learning automation is important?
- What are important specifics of application of ontology learning and management in educational field and how ontology learning can improve tutoring in the context of pandemic situation, requiring wide application of e-learning?
- What ontology learning techniques are the most important to use in e-learning resource development environments?
- How to implement ontology learning and management methods and algorithms in IERDEs

Analysis and classification of Ontology Learning Methods and Algorithms

The automatic development of ontologies is a task that involves many disciplines: information retrieval, information extraction, information integration, natural language processing, and knowledge management. A lot of methods for ontology learning have been developed in recent years. Usually, the process starts by extracting terms from plain text or other type resources, recognizing them as concept names, relation names, property names, or individuals. This usually involves linguistic processing (e.g. part of speech tagging, phrase chunking). Statistical, semantic or symbolic techniques are also used. Ontology learning approaches, techniques and algorithms can be classified according to several dimensions (Figure 1.). Classifications according to all these dimensions are important or selecting and using the most appropriate methods or algorithms in every specific context.

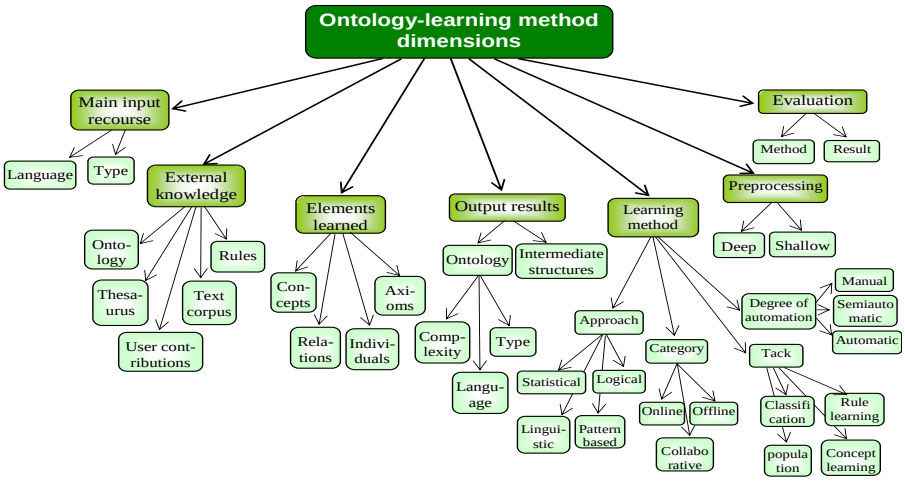

Figure 1. *Main dimensions for classification of ontology learning approaches.*

All three types may be used in different learning or resource development situations (see figure 2). For example, usually external (web-based) sources for LO development are HTML or plain text documents, and there are many free web ontologies, representing in machine-processable way some knowledge in almost every domain.

That is why the methods for every type of resource are needed for automating ontology learning in e-learning context (see figure 3). While highly structured data as found in databases or ontologies are proper for the application of rule-based or pure machine learning techniques such as Inductive Logic Programming (ILP), or ontology mapping, unstructured data requires some preprocessing, which are typically performed by natural language processing methods and semi-structured – NLP + document structure processing algorithms, to extract terms before recognizing or classifying them. For processing free text, the language-specific natural language processing systems (GATE's library for example, https://gate.ac.uk/download/) should be used. Most of the listed above approaches and algorithms are applicable both for building ontology schema (T-box) and for ontology population. Classification of ontology learning methods according to used resources is presented in Table 1.

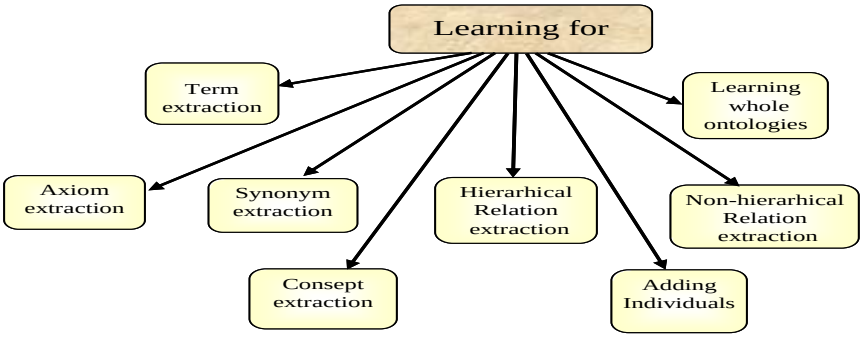

Figure 2. *Classification of ontology learning algorithms according to learning elements*

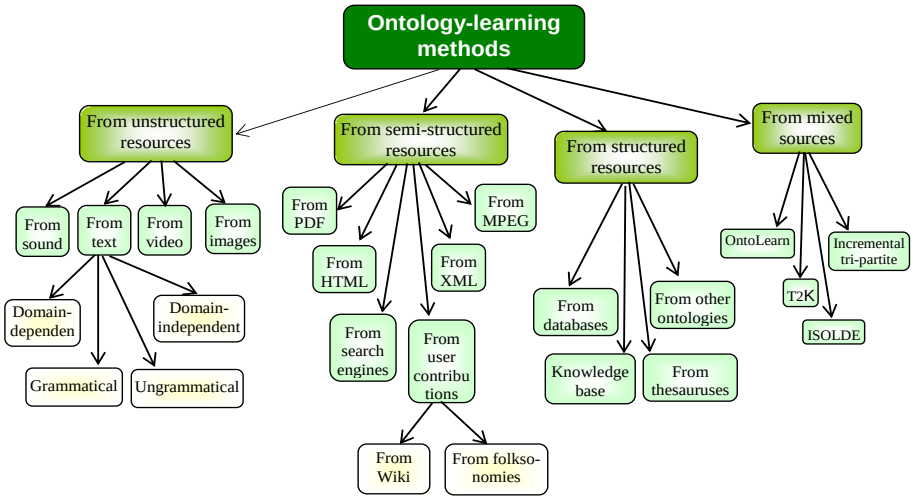

Figure 3. *Classification of ontology learning methods according to used*

When we concern with the concrete algorithm, it may be most appropriate for schema generation (for example, mapping – based algorithms), or for ontology population (for example, named entity recognition algorithms), but concrete usage depends from the specificity of learning tack.

Ontology learning methods are far from his maturity and it is important to evaluate the quality of every method in the domains of interest. Results usually depend from the quality of used resources, as well as from the domain characteristics and requirements to the developed ontologies. As a whole, the evaluation of ontology learning procedures is still an open problem. The measurement of the correctness of the learning procedure is very important for automatic learning method selection, but it is very difficult to make good estimation, as the results depend from many external parameters, as quality of used resources, domain, concrete requirements and so on.

Table 1. *Classification of ontology learning methods according to used resources*

	Algorithm types	Subtype	Examples	Use in e - learning
Using document content	Linguistic (syntactic or semantic)	Linguistic processing	Information retrieval methods for term indexing- chunking, parsing	Extracting earning domain terminology to annotate LO
		Machine learning	SVMs, Naive Bayes, kNN (Monzur et al., 2020), multi-strategy learning and result combination	For document classification
		Word Sense Disambiguation	Differential Semantics WordNet/EuroWordNet - based	Learning synonyms, homonyms
		Pattern – based (Konys, 2018)	Hearst-patterns, Formal Concept Analysis, *k*-values, lexico-syntactic patterns	learning specific terminology and relations, synonyms, building hierarchy
		Ontology - based	Upper ontology – based, partition – based, mapping - based	For terminology extraction, resource annotation
		Thesaurus - based	WordNet based, gazetteer – based, Dictionary Parsing, Tree ascending algorithm	Extracted from LO Term and named- entity recognition
	Statistical analysis	Machine learning	SVMs, Naive Bayes, kNN, supervised or unsupervised learning	For determining the domain of the resource
		Clustering or classification text mining	kNN , hierarchical clustering, genetic algorithms**,** non-hierarchical clustering, Harris' distributional hypothesis	For terminology extraction and understanding hierarchical relations
		Information retrieval	Distributional Semantics, Google-based analysis	Using external web resources
Using structure or content	Logical (Calegari et al., 2020)	Deductive logic programming	Resolution - based	Learning how to reason and deduce new knowledge
			Quinlan's FOIL algorithm	for classifying resources
		Inductive	(First Order Logic) based clustering, inductive logic programming	For synthesizing new know-ledge from experience, and visualization of that process
		Propositional learning	Decision tree learning algorithms	Learn association rules, or other attribute-value rules
		Higher order logic	(First Order Logic) based clustering	Recognize relations by reasoning, explain reasoning
Using document structure	Document structure - based	Information extraction	Corpus – based, Ontology learning from web, SVM (Support Vector Machine)	Estimating external web resources

The learned ontologies can be compared by evaluating them in a running application, a posteriori evaluation by experts, or evaluation by comparison of learned results

against a predefined gold standard. Manual evaluation has some advantages, since experts are supposed to know the concepts and their relationships in their domain of expertise and, but it is not feasible for dynamic ontology learning . The comparison against a gold standard is preferable when ontologies for evaluation exist.

As a conclusion we may say that there is a lot of various ontology learning algorithms. Many of them are only tested in research projects and rarely are used in practice. For enhancing and simplifying practical usage of ontology learning algorithms in the process of learning resources collaborative searching and development, they should be implemented, tested in various contexts, classified in context of its applicability, stored, described by using semantically structured programmatically processable format (may be as metaontology), and be accessible from standardized development libraries. Above presented classifications will be very useful for structured organization of ontology learning algorithms in ontology building or management libraries.

Ontology Learning for the E-Learning Domain

Ontological approach has been used in many learning resource development environments. (Bouihi et al., 2019) Defines a conceptual model that introduces an intermediate level between learning design and learning objects called the learning object context. They develop and use ontologies LOCO, based on IMS-LD, ALOCoM describing learning objects, and LOCO-Cite for the learning object context model. The CCOnto ontology describes situation-based human behavior and can be used for predicting student's behaviour including in the context of COVID-19 situation. (Ullrich, 2007). Uses resource description ontology and specific ontology mapping algorithms to access resources, distributed in distinct repositories, and axioms, operators and methods that provide a basic set of functionality to perform course generation. A presented in (Tane et al., 2004) learning resource recommender system uses a domain ontology which describes the knowledge structure of the domain. All the resources and user portfolio are described with this ontology. Resource description framework and a set of reasoning rules based on pedagogics are used to support semantic inference.

It is clear that many adaptive e-learning systems need of fast and easy development and maintenance of several type ontologies (learning domain, learner, pedagogy). Ontology learning proposes techniques to automate ontology construction tasks to simplify the ontology building and customization and decrease development time and cost. The complexity of the e-learning domain, level and specificity in requirements to educational ontologies make difficult the application of ontology learning in this domain. Latest research in the area of ontology learning is targeted to ontology learning from textual learning resources, as well as from databases and mixed web-based resources. Semi-automatic mapping of previously developed and tested small ontologies, modeling specific features of the participants of the learning process (as dyslexia ontology, LMS ID ontology or mall domain ontologies, developed by learners). So, semi-automatic mapping of previously developed ontologies is a specific approach for automation of ontology development in e-learning domain.

A framework to construct and extend Educational Ontology to describe systematic knowledge of learning subjects automatically is proposed in (Chen et al., 2021). This ontology learning framework is called ADOL, and can convert domain textbooks into a corresponding ontology automatically and efficiently. A case study on High School Physics shows feasibility and efficiency of the proposed approach.

A method to extract the possible relationships between knowledge points by analyzing e book log and mining quiz data and mining Wikipedia articles is presented in (Wanget al., 2017). This method can be implemented in an ontology-based visualization support system to support the teachers or knowledge engineers to construct course-centered ontologies semi-automatically.

A stable, web-based, multi-lingual, user-adaptive learning and authoring system for mathematics domain is proposed in (http://www.activemath.org/Software). It is a Semantic Web application with a number of services. Active Math's knowledge base stores semantically encoded learning objects annotated with metadata, which are encoded in a pedagogically extended OMDoc. (Li et al., 2019) uses collaboration context ontology to analyze and evaluate the success of collaborations supported by digital technologies.

Many LMS store information about learners in relational databases (RDB). In this context methods for learning ontologies from RDB are very important for fast and automatic transformation of data about learners in semantics – based format as ontologies. (Louhdi et al., 2013; Hssina et al., 2017) proposes an approach for building owl ontology from the RDB of the open source LMS Moodle. This work proposes also rules for analyzing stored data to detect disjointness and totalness constraints in automatically-generated hierarchies. The proposed technique can be applied to any RDB.

A semi-automatic approach for learning process activity ontology from event logs is proposed in (Sadeghianasl et al., 2021). Crowdsourcing and gamification techniques are used for the task of ontology learning. Semantic relations synonymy, hypernymy, holonymy, and antonymy are used in the process activity ontology. This approach can be used for learning educational process-related characteristics from logs of LMS.

Technology became crucial for learning in COVID-19 pandemic and the lockdown. It also became important for computers to be able to interpret and represent human behavior. Learner interaction with computers should be improved as it became the only tool for communication between learners and teachers during learning. (Bolock et al., 2021) present a psychologically driven computing ontology, CCOnto, describing situation-based human behavior and its relations to psychological states. This ontology also categorizes psychological factors that influence student behavior during the COVID-19 situation. It should be mapped to learner profile ontology and used in intelligent e-learning systems.

Ontology learning is the most applicable and most useful for development and evolution of tutoring domain ontologies, as changes in these ontologies are most frequent, and learning process is close to ontology learning from textual or mixed web sources in corresponding scientific domain. NLP techniques work well for knowledge

extraction from unstructured or semi-structured textual e-learning content, as these recourses are grammatically correct and have clear linguistic structure (Khadir et al., 2021). Patterns finding techniques work well when using e-learning content, as this type textual content has good and well-known structure (e.g., contains definitions, explanations, examples, etc.). (Asim et al., 2017; Somodevilla et al., 2018).

All above mentioned works use ontologies, APIs or reasoners in some way in resource and ontology development or selection process, but they can't support the whole cycle of ontology learning and evaluation for every type of ontologies, needed in adaptive e-learning environment. In the next section we will answer the question how all the functionality, needed for learning ontologies to support adaptive e-learning can be implemented in learning resource – development framework.

An Approach for Extension of Integrated Development Environments for E-Learning Resources to Ensure Ontology Learning

Ontology learning is a complex task and usually includes complex sequence of algorithms. We classify ontology learning techniques in two main classes, in dependence of its application in the main steps of the learning process: techniques for information extraction and techniques for ontology building. In many cases it is difficult to divide the complex algorithm in several simple independent subalgorithms, as it single steps may depend each other. So, complex sequences of different techniques can be dynamically generated and used in ontology learning. Clear classification and semantic description of well working modules, implementing all the needed techniques is very important for making possible automation of ontology learning.

Implementation of ontology-based information extraction techniques are needed to be added to learning content development tools (and to be integrated in integrated E-learning environments) for supporting automated ontology development and maintenance. Actual ontologies, describing learning content or learners are very important for many tacks, related to learning content development as performing automatic semantic annotation, classification of resources, etc. We will first discuss requirements to the methods and tools for automatic extraction of information from learning content and ontology building, maintenance and use, extending resource development environments, and then propose architecture for software organization of the implemented methods and tools.

Main requirements to E-learning IDE ontology learning extension

There are two main questions, related to the discussed extension: what ontology learning algorithms to integrate for facilitating E-learning resource development tack, and how to organize implemented in the library algorithms.

Requirements, related to needed ontology learning algorithms

As E-learning resources may be of various types (plain text, pictures, diagrams, multimedia, and so on), algorithms for information extraction from all of these popular types resources are needed to be implemented in the library. Also, algorithms for extraction of emerged from folksonomies semantic and social intelligence, as FolkRank are needed to use voluntary social annotations for facilitating searching and

ranking web resources. So, algorithms for various input type resources, including text, graphic, multimedia, video, special pedagogical metadata, stored in databases, or folksonomies should be included in the library.

Algorithms, realized which approaches should be included in the library? Latest research shows, that ontology learning is a complicated tack and no one single method or approach can guarantee high quality results. That is why all the linguistic, statistical, and knowledge-based methods should be presented in the library. As good learning resources are highly structured, pattern-based information extraction algorithms are of great importance. As e-learning systems usually incorporate a grand amount of structured knowledge and metadata, algorithms, used external knowledge would be working properly in such environments. Concept, relation and axiom extraction algorithms will be very useful in automatic analysis of free answers, as well as in automatic annotation of texts, used non described in previously developed ontologies or non traditional for learning area terminology.

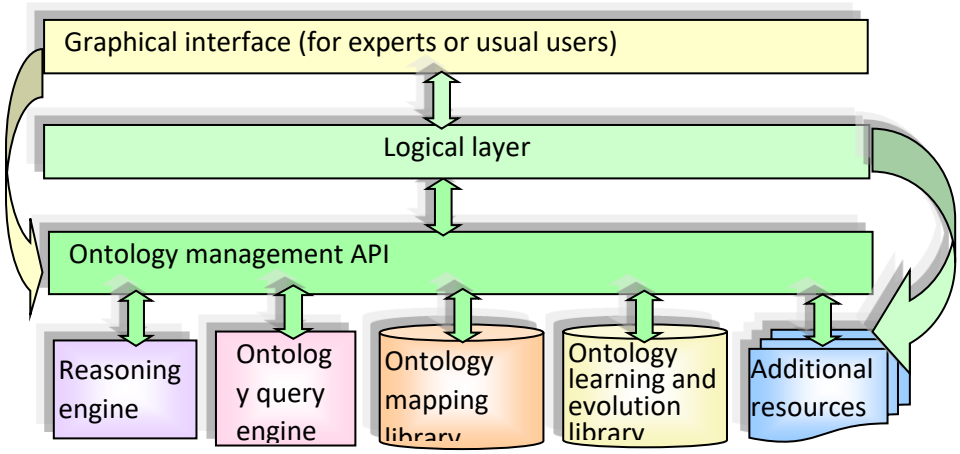

Figure 4. *The layered architecture of ontology learning extension*

Requirements for the extension architecture

The main requirements are flexibility (easy dynamic combination of algorithms); maximal simplicity (every function should realize minimal complete algorithm, not system of algorithms); presence of planning functionalities to make dynamic learning strategies; presence of evaluated good static strategies, realizing the whole complex evaluated learning algorithms; presence of metadata, describing the quality of realized methods, domains and tacks where it have been evaluated; maximal possible quality of learned ontology; recommendation assistant; graphical interface for displaying ontologies, learning process dimensions, reasoning process.

The layered architecture of the needed ontology learning extension module

Direct calling of library functions using ontology management API requires programming and knowledge management skills and is not appropriate for domain experts. As above classifications show, there are a lot of algorithms of various types, and choose the best one for concrete tack isn't easy even for professionals. In order to make realized in the libraries ontology management algorithms easily usable for

teachers and LO developers, only libraries, containing realized algorithms aren't sufficient and additional software is needed. That is why we propose layered architecture of the needed ontology learning extension module (Figure 4).
On the lowest layer there are libraries, containing ontology learning and ontology mapping algorithms, reasoning engines and used resources. The reasoning engine is needed in the integrated development environment for checking the learned ontology consistency, and for reasoning in the process of resource searching and development. Learned or additional ontologies may contain instances and ontology query engine is needed for extracting those of them, relevant to specific restrictions. For every implemented function in the library, important metadata for making informed choice are stored. Quality – related characteristics of the functions in the library are domain – dependent. For every domain or specific tack, in which they are tested, the precision, recall and F-measure should be stored as its important metadata.

Ontology management API includes function headers, directly invoking library functions or engine functions, or static compositions of library functions. It usage from graphical interface is needed for example to verify and correct automatically learned ontology. Knowledge – management professionals may use it directly for performing specific tacks, but it is too complicated for LO developers and teachers. In many cases, the dynamic, context dependent composition of library functions is needed. For example as it is discussed in survey section, to analyze textual resource, syntactic, lexical and semantic analysis needed, textual resource is appropriate for pattern – based ontology learning only if it contains specific textual patterns, and statistical or knowledge-based approaches should be applied in other cases. The purpose of the logical layer is to make dynamic context-dependent function invoking and compositions, and propose various strategies for ontology mapping, learning, querying and evaluation. It ensure flexibility and automation of knowledge-management processes and for this reason. Multiagent architecture is appropriate for it implementation. This layer also supports functionality of various intelligent assistants for helping users in performing collaboration, resource searching, integration, and so on.

A number of algorithms are provided for the extraction and maintenance of the ontology elements. The most useful ones for e-learning are linguistic based methods for terminology extraction from text and some ontology learning algorithms from databases. In order to be able to combine the results of different learning algorithms, it is necessary to standardize the output in a common way. If several extraction algorithms obtain complementary results, they should be combined. All strategies for selection of basic functions to realize sophisticated learning methods, learned ontology evaluation and searching external resources in the web should be implemented in the logical layer.

By means of easy to use graphical interface, logical layer proposes various strategies and realizations of ontology learning strategies and methodologies.

Conclusion

Use of ontologies and ontology learning methods can result in more effective tools and services that increase the level of LO reusability and collaboration, effectively annotate and organize available content to facilitate effective sharing, reusability and customization. Ontology learning is the most valuable for developing and evolving tutoring domain ontologies as these types of ontologies are the most frequently used in adaptive e-learning systems and are tightly related to their specific learning content. Logically simple and terminology classification ontologies are easy to learn and most often used for resource recommendation and organization of personalized learning. Textual educational content and many other external textual or semantic resources are good sources for learning these ontologies, and possible need of frequent changes in these ontologies makes automation in ontology development very important. Semi-automatic mapping of previously developed ontologies is specific approach for automation of ontology development in e-learning domain.

To increase ontology usage and decrease the cost, many ontology learning and mapping algorithms should be integrated in E-learning resource development environments, described by sufficient amount of machine-processable metadata, and presented to the resource developers by means of user friendly graphical interface. We propose a comprehensive classification of ontology learning methods and techniques to support description and selection of ontology learning algorithms. Ontology learning and semi-automatic ontology evolution are very important for supporting actual metadata, describing e-learning resources. Well – described educational content can be in the base of personalized semantics – based tutoring. To organize personalized e-learning and resource recommendation is very important in situations when widely usage of e-learning is a must (for example, during pandemic situations, as COVID - 19 pandemy). High-quality learning content, learner interaction with computers and categorization of psychological factors that influence student behavior are important during learning in pandemic situations, requiring wide usage of e-learning. These facts lead to the increasing need of high-quality actual semantic models and importance of automated ontology development and maintenance.

We also present a flexible and scalable approach for extension of practical E-learning environments by implementing ontology learning and mapping facilitates. Practical realization of this approach require implementations (and evaluation) of many ontology learning or mapping algorithms. This big and ambitious tack will be facilitated by usage of the open research and software, developed in many resent related research projects.

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