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Full Length Research Paper

The place of education in social development and its sociological foundations

Eray Öztürk*, Mesut Kardaş, Ali Sapmaz, Ugur Dönmez, İlhan Şahin and Arif Çölkesen

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Equipping people with desired behaviors, that is, educating them, has been the most important goal throughout the ages. Today, this phenomenon is becoming more and more complex and its effect is felt more intensely. However, unless a person's behavior develops in a valid and reliable way, it is not possible to reach a longed for life style. A person can be intertwined with all kinds of processes, from the most concrete and simple relationships to the most abstract and complex ones. He is the person who will plan, build, operate the future, distribute products, consume, process nature, take products from it, build houses, schools, roads, dams or all, create or solve problems in objects and phenomena. As such, people must equip with consistent behaviors, that is, with problem-solving knowledge and skills. In this study, a descriptive analysis of the subject has been made and the relationship between education and economic development has been examined.

Key words: Social development, sociological foundations, education.

INTRODUCTION

Education is the process of creating a consciously desired change in the behavior of the individual through his own life (Ertürk, 1972). This can be achieved through education (Sonmez, 2001). On the other hand, if an example is given from Turkey, some educational institutions support students professionally and economically as well as receiving education for the welfare of individuals and social development. Departments and programs in high school are determined. In other words, not every multi-program high school has the same departments and programs. For this reason, students who will make a choice should research

the relevant high school in advance and have knowledge about it. In addition, internship opportunities are also offered for students studying in the vocational and technical department of the multi-program high school. In this way, students have the chance to apply the theoretical knowledge they have learned in schools in practice with various internship programs. In addition, they receive a certain fee for this and they are insured.

When Turkey's efforts to become a modern society are examined, it is seen that education forms the basis of the development movement. Educational institutions and teachers have had a special place in the westernization

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movements that have been going on for about a century and a half, and education has been accepted as a dynamic social force that changes the structure of the society and provides a better living standard for the youth and society. It is not possible to think of the education system independently of the society system and social needs. All countries have to renew their school and teaching activities in a way that will respond to changing modern production forms and methods. In this age, rapid changes in economic, social and technological fields affect social institutions and education systems are faced with the need for restructuring (Alkan, 1982). As a result of the production of science and technology, the circulation of scientific knowledge and the training of individuals with high creative potential, countries have undergone significant economic and political changes. The tendency of continuous innovation and development among countries, especially in the field of education, has also accelerated the unlimited competition for more information and newer technology.

In parallel with the rapidly passing time, new formations and technological breakthroughs have also affected the education systems. The aim of education is to raise a healthy society with both an individual and a universal culture, with a high level of knowledge. All innovation and development initiatives in education are in the interest of all segments of the society. Since education is responsible for changes in society, it has to adapt to change before other systems. Welfare and happiness of a country depends on the people of that country to receive a qualified and continuous education and to contribute to economic growth with the knowledge and skills they will gain. For this reason, the most important driving force of socio-economic development and the most important element of productivity increase is the education level of the society.

Contribution of education to economic development

Economic growth can be defined as the permanent increase in the national income of a country. The basic condition for this increase is to increase the total amount of production factors used in production (Hesapçioğlu, 1984). For example, in the protocol signed between the Ministry of Agriculture And The Ministry of Education in Turkey, the relationship between education and economic development is emphasized. As in every sector, it is vital to continue on the road with cooperation in education in the agricultural sector as well. The cooperation of the agriculture and education world is needed by many factors such as the use of increasingly depleted natural resources during agricultural activities on the basis of effective, sustainable and environmentally friendly practices, the integration of technology and traditional agriculture, the introduction of food safety and reliability.

Current situation in Turkey

It is known that a significant portion of national resources are allocated to education in the Organization for Economic Cooperation and Development (OECD) countries. The average expenditure per student in OECD countries excluding the USA is 9,130 dollars, which is more than 6 times the expenditure per student in Turkey (TÜBİTAK, 2006). Increasing the level of education in a society increases the production capacity by increasing the quality of the workforce. An increase in the quality of the workforce can be achieved by investing in human capital. In this case, there is a relationship between the increase in the education level of the workforce and economic growth (Erdogan, 2006).

Development was previously defined only as economic growth and development. However, in the recent past and today, it is argued that development is not only about the material needs of people, but also about the improvement of their social conditions and the realization of their hopes. Economic development of a country is closely related to the personal and social development of the people of that country; it is emphasized that new value judgments developed through education and suitable for the purpose of development through social behavior are extremely important in terms of accelerating economic development (Kaya, 1984).

The role of education in the development of a country is the attempt of the political power to change the structure of the society by following certain economic policies in order to increase the welfare of individuals (Adam, 2005). In this respect, development is both an economic and a social process. The fact that many young people are raised in accordance with the goal of a developing economy and constitution shows that education has economic effects as well as social, cultural and psychological effects. At the beginning of the twentieth century, the role of education in development attracted attention and efforts in this area were considered as national investments. Experiences during and after the Second World War helped to better understand the relations between education and development. In this framework, a period of strong advanced technology and economic growth has begun in these countries (Yılmaz, 2003).

Economic development

Development is possible with the development of technology that will increase production, and the best and rational use of natural resources and capital. What provides this is the trained human power. For example, many countries with petroleum, which is a very valuable natural resource, cannot benefit from these resources sufficiently because they do not have qualified manpower. Germany and Japan, which have very limited natural

resources, have made great economic progress by making the best use of their scarce resources thanks to their trained manpower (Fidan and Erden, 1991; Kasliwal, 1995).

Investments in education will undoubtedly have an impact on economic survival (Sami, 2003). While emphasizing the education-development relationship, he states that the three basic production factors in the development of a country and reaching the level of contemporary civilization are respectively land, capital and labor, but it is argued that the most important of these is human labor. The backwardness of some countries that could not develop despite having sufficient capital and resources exemplifies this situation. He supported this view by explaining the main reason these countries could not develop because the education level of the population is very low. The biggest reason some rich countries are not considered developed is due to the lack of educated and trained manpower.

For example, he explained that a country with sufficient capital can establish a factory and have a dam built, but that there is a human element that will operate the factory, operate it and market the product obtained (Adam, 1981). In many studies on this subject, it has been revealed that there are interesting relationships between economic growth, which is defined as an increase in per capita income and other economic indicators, and social change, which is defined as the transition from a traditional-agricultural society to an industrialized contemporary society, and economic growth.

The role of education

It is thought that there is a direct proportional relationship between per capita income or economic growth and education level. Therefore, it is possible to estimate the per capita income of a country when the literacy rate of a country is known, and the literacy rate when the per capita income is known. Education is an area where countries should invest. The resource allocated to education is not an expenditure, but a very necessary and even the most profitable investment for countries (Ünal, 1985). Developed country managers always keep education, which is a tool in the development of human resources, at the top of their agenda. The best economic policy we have is education. Regional development strategies will play an important role in providing new jobs and the skills needed for the economy of tomorrow. Another dimension of education in the development of the country is to make the learned information usable and marketable (Sedef, 2005). It is known that agriculture has gained great importance all over the world, especially with the epidemic, "In recent years, there has been a food crisis with the pandemic, the wars and food prices have increased. With this cooperation protocol, the future of

agriculture is extremely important. Therefore, for example, agricultural education in Turkey has been brought to the high school level. The children of those who are engaged in agriculture and those who are interested in agriculture prefer these vocational high schools are supported by government policies.

The increase in education expenditures for the development of human resources and economic development of developed countries is another example of this issue. Similar to other studies for developed countries, Kim's (1997) research revealed that more than 50% of economic development is due to technological developments that increase productivity and lead to new products and production methods (Turkmen, 1999). It has been determined that the return rate of education at the higher education level, both to the individual and to the society, is quite high (Türkmen, 2002).

Undoubtedly, every level of education is very important, but higher education institutions are of great importance in raising constructive and creative manpower that will ensure that the professions necessary for the development of a country are carried out in the best way.

Findings obtained from scientific research activities carried out in higher education institutions play an active role in raising, developing and changing the awareness of all institutions in the society (Fidan and Erden, 1991). In short, for the development of a country, a sufficient number of well-trained workforce is needed, as well as capital and technology transfer. For this reason, economists drew attention to the necessity of allocating more resources to education and supported initiatives in this regard. There is no doubt that many knowledge and skills that education will provide will affect the development of the society and reduce some of the negativities caused by the low education level of the individual.

Conclusion

As a result, the importance of education in economy and development was not emphasized in this study. Societies, with the increase in the level of education, contribute to the society in which the individual lives in the measure of productivity and the education he receives. The quality level of educational activities expresses the economic, social, political and cultural development of the society in which the individual lives. Scientific research has revealed that there are linear relationships between education level, economic growth, political and social development. Human resources, especially social development and, accordingly, its contribution to economic development is enormous. According to educational economists, education is the cornerstone of economic development. The purpose of education is to meet all kinds of wishes and needs of people. In order to contribute to sustainable development,

cooperation protocols should be made with relevant sector representatives, ministries, universities and non-governmental organizations, and education stakeholders should be informed and motivated on this issue.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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Full Length Research Paper

Effects of Whatsapp group learning platform on senior secondary schools students' learning outcomes in Science, Technology, and Mathematics (stm) in Ekiti State, Nigeria

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The study investigated the effects of the WhatsApp Group Learning Platform (WGLP) on Senior Secondary School (SSS) Students' Learning Outcomes in Science, Technology, and Mathematics (STM) in Ekiti State, Nigeria. The sample comprised 100 SS II students from two public secondary schools in Ekiti State who were randomly selected from their classrooms. A multistage sampling technique was used to pick the sample. Data were collected using a self-created questionnaire called Science, Technology, and Mathematics Performance Tests (STMPT). The instrument's reliability was determined using the test-retest approach, which provided reliability co-efficient of 0.86. Descriptive and inferential statistics were used to analyze the data. The study question was answered using mean and standard deviation, while all the hypotheses were tested using a t-test statistical analysis tool at 0.05 level of significance. The results revealed that before the treatment, there was no significant difference between the mean scores of students in Science, Technology, and Mathematics in the experimental and control groups. The results also demonstrated that the pre-test and post-test mean scores of students exposed to STM using the WhatsApp Group Learning Platform and those exposed to traditional methods differed significantly. Based on the findings, it was recommended that the WhatsApp Group Learning Platform should be used to improve students' performance in STM.

Key words: Science, technology, mathematics, WhatsApp, learning platform, students.

INTRODUCTION

Education is a tool for societal moral, intellectual, cultural, and social development. The importance of education to both individuals and society cannot be overstated.

Individuals and governments have been putting money into education because of its importance in promoting societal technological re-awakening (Ekundayo, 2020). In

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a developing country like Nigeria, education is a top priority for the federal, state, and local governments, as well as citizens. Education is seen as an instrument for change and a path to social, political, scientific, technological, and economic excellence.

STM is essential for the growth of science and technology in any civilization; as a result, no society can hope to survive without embracing Science and Technology. STM is a combination of disciplines that form the basis of human and environmental development. In Nigeria, Computer Studies also referred to as Basic Technology is a subject that is taught at all levels of education. The subject overlaps with Science and Mathematics. Though Basic Technology is often referred to as the application of science and mathematics yet many problems in the sciences, engineering, health care, business, and other professions are tackled effectively through the use of technology. The teaching of these three subjects in Nigerian schools is not always being handled properly. Most often, the teachers are so theoretical in their presentations with little or no practical manipulations; yet, these subjects are practical oriented (Federal Government of Nigeria, 2014). As a result of poor classroom interaction, students' performances have been consistently not encouraging (Ajayi et al., 2017). Hence, the need for innovations in the teaching of the subjects. Basic Technology is made compulsory for all students at the elementary school levels while it is optional at the higher levels. In high school, Computer Studies (Basic Technology alongside Science and Mathematics are frequently seen as career options (Frank and Quaxil, 2018). The three subjects are preferred in this study because they are subjects of emphasis in Nigeria for students at the middle schools called Senior Secondary Schools in the country. These three subjects are made compulsory in the curriculum of secondary education (Federal Government of Nigeria, 2014).

The teaching of Science, Technology, and Mathematics are unique in process and practice. They require a manipulative and constructive approach that makes the concepts concrete and practical. On this premise, the use of innovative strategies like the electronic classroom, virtual laboratory, and Social Media handles are gaining upper hands in Nigerian classrooms.

Virtually all homes and youths in Nigeria are now glued to the use of social handles, especially WhatsApp and this is taking a better part of their time daily. It is therefore of opinion that such handles which the students are much familiar with and most addicted to could be transformed into learning devices and environments to properly engage them in academic activities rather than social use only. The use of social handles especially and most common, WhatsApp is so rampant among the age bracket of youths in Senior Secondary Schools. For this purpose, the research focused on Senior Secondary School Students where the highest populations of social

handle users are found.

Social media/networking, particularly one of its handles referred to as WhatsApp has been warmly received by all since its introduction, especially youths. Different institutions in Nigeria today, as well as others across the world, can speak to the fact that the majority of students and lecturers using mobile phones are engaged in online communication and social interactions. Social Media has become an important part of modern life. It provides a vastly expanded route for information delivery, exchange, and collaborative engagement between people and technology that is not limited by geography (Agui and Ogwueleka, 2018; Asur and Huberman, 2010). People especially youths now spend more time online than in the "real world" for most of their day-to-day engagements. In most cases, individuals do use such strong and multifunctional platforms for mere audio and video communications only possible to reconnect with their old high schoolmates (Nikos, 2016).

There are numerous social media networking platforms to choose from. These include Bebo in the United Kingdom and Cyworld in Korea. The most popular and extensively used social networking sites in Nigeria are Facebook, Google+, LinkedIn, WhatsApp, Instagram, Reddit, Telegram, Messenger, Twitter, YouTube, Google+, Zoom, and Skype (Ajayi, 2020a). All of these platforms might be turned into productive learning environments to improve student engagement in academic activities to bring about enhanced performance.

Social media network sites are online-based sites that allow video and audio conferencing, screen sharing, two-way communication, and manipulation. Common social media sites in Nigeria include WhatsApp, Zoom, Google Classroom, Google Docs, Google Forms, AZ Recorder, Cisco Web-Ex, Team Viewer, and Join Me, Messenger, Apache, OpenMeeting, Google Hangouts, GoToMeeting, Skype, Mikogo, WeChat, Screenleap, AnyMeeting, Discord, JitsiMeeting, Proficonf, UberConference, Other social media network applications are just a few examples of (Ajayi, 2020b).

Due to the popularity and general use of the WhatsApp platform among Nigerian youths the platform could be turned into a mobile classroom in which all students are registered to participate in the learning activities. WhatsApp has several tools like Live videos, Photos, Events, Files, Albums, Announcements, and Watch parties among other features which are suitable for classroom activities (Ajayi, 2020a).

WhatsApp handle in recent years has transformed communication and this could make teaching and learning activities easier. The WhatsApp platform is one of the most significant communication tools among teenagers. It is a term that is frequently used to describe an approach that combines online and in-person learning experiences. WhatsApp is a mobile application that allows users to communicate with one another using a smartphone or a computer (Edglossary, 2016). Educators

are in recent years advocating the importance of WhatsApp handle in the classroom. The use of WhatsApp facilitates communication, and education is nothing more than communication in its most basic form.

Teachers can use WhatsApp to communicate with their students more swiftly and effectively. It can also help students to communicate better in any given environment (Muhammed and Umar, 2021). The group chat features can be used to coordinate learning and studies within and outside the school premises to produce lessons that could be listened to at students' leisure, and maintain constant contact with students outside of the classroom.

When students are encouraged to participate in learning and research through social networks, it might provide possibilities for them to develop teamwork and communication skills as well as create a learning environment in which they can be self-directed learners (Oriji and Anikpo, 2019). WhatsApp is a free, limitless messaging tool that may be used in and out of the classroom. WhatsApp Web is a web-based version of WhatsApp that allows you to utilize it directly over the internet. WhatsApp can be used to communicate with kids and parents who do not have access to traditional communication methods like landlines or email. With the use of WhatsApp groups, teachers can effortlessly and effectively manage large class sizes. It can help students acquire self-assurance.

A social networking site, sometimes known as a social website, is a website that allows users to engage, communicate, socialize, entertain themselves, and exchange information with others (Ajayi, 2020a). According to Mehjabin and Banu (2015), Mageto (2017), and Ngonso (2019), social networking activities are time-demanding and useless if they are not translated into meaningful academic pursuits. The fulfillment of a country's educational goals could be jeopardized by such social networking. Social networking refers to a confined setting in which people connect. At any time, this setting can be transformed into an academic learning environment suitable for remote learning, e-learning, virtual classrooms, and mobile classrooms.

Purpose of the study

The purpose of this study was to investigate the effects of the WhatsApp Group Learning Platform on Senior Secondary Schools Students' Learning Outcomes in Computer Studies in Ekiti State, Nigeria. The process of teaching-learning in Nigeria is more of rote learning and this is limiting the application skills among the 'product' of such 'process'. Most youths in Nigeria are not entrepreneurial-oriented; they are not problem solvers as a result of the kind of exposure given to them while in school. Most teachers are not innovative in their teaching Concepts are most often taught theoretically with little or no moment of manipulations throughout teaching.

This study thought that the use of the WhatsApp Group Learning Platform could tackle most of the challenges faced by teaching the concepts in STM properly and appropriately. The study would possibly enhance the students' performance in the subjects.

Research Question

This research question was raised and answered to guide the study:

1. What is the performance of students in STM before and after the treatment?

Research Hypotheses

The following null hypotheses were generated for the study:

1. There is no significant difference in the pretest performance mean score of students in STM in experimental and control groups.
2. There is no significant difference between the performances mean scores of students exposed to STM through the WhatsApp Group Learning Platform and those exposed to the conventional method.
3. There is no significant difference between the retention of students exposed to STM through the WhatsApp Group Learning Platform and those exposed to the conventional method.

RESEARCH METHOD

A two-group pre-test, post-test, control quasi-experimental research design was used in this study. The quasi-experimental approach allows for the employment of experimental and control groups, with the experimental group being exposed to the use of the WhatsApp Group Learning Platform while the control group is taught by their normal teacher using traditional methods. To ensure homogeneity, the experimental and control groups were given a pre-test.

After the treatment had been carried out on the experimental group, a post-test was conducted on the two groups to determine the performance across the two groups.

The population for this study included all 53,562 students in Senior Secondary School two (SSS II) in all Secondary Schools across the Ekiti State's sixteen Local Government Areas (Ekiti State Ministry of Education, 2021). Because of S.S.S. II students not preparing for any external examinations at the time of this research, they are anticipated to be more prepared and available for study.

The sample consisted of 100 S.S.S. II students from two public secondary schools in Ekiti State who were offering core Science subjects, Computer Studies, and Mathematics. Multistage sampling techniques were used in selecting the sample. In stage one; a simple random sampling technique was used to determine two Local Government Areas in the state. Stage two involved the selection of a secondary school each from the two Local Government Areas through a simple random sampling technique. In stage three, the purposive sampling technique was adopted in the selection of students who were offering the three subjects in the two

Table 1. Mean and standard deviation of pre-test and post-test scores of students exposed to WhatsApp Group Learning Platform and conventional method.

| Strategies | Test | N | Mean | S.D | Mean Diff. |
|--------------|-----------|-----|-------|------|------------|
| Social Media | Pre-Test | 52 | 12.40 | 1.35 | 9.47 |
| | Post Test | | 21.87 | 3.51 | |
| Conventional | Pre-Test | 48 | 12.29 | 1.50 | 1.11 |
| | Post Test | | 13.40 | 1.55 | |
| Total | | 100 | | | |

Source: SPSS analysis of data collected through STMPT

Table 2. t-test analysis of the difference in the pre-test performance mean scores of students in experimental and control groups before the treatment.

| Variation | N | Mean | SD | df | t _{cal} | P |
|--------------|----|-------|------|----|------------------|-------|
| Experimental | 52 | 12.40 | 1.35 | 98 | 0.394 | 0.695 |
| Control | 48 | 12.29 | 1.50 | | | |

*p>0.05

Source: SPSS analysis of data collected through STMPT

schools previously selected for the study. 50 students were selected from each school totaling 100 students used in the study. In stage four, a simple random sampling technique was used to select the school that served as the experimental group while the second school automatically became the control group.

The instrument used in this study was a Science, Technology, and Mathematics Performance Test (STMPT). It was self-designed by the researchers using the curricula contents of the three subjects. The current contents of the curriculum at the time of carrying out the research were adopted. The instrument comprised ten items each from the STM subjects amounting to 30 multiple-choice items extracted from the past questions of the West Africa Examinations Council (WAEC) which is the body responsible for the conduct of the final year examinations in Nigeria. The researchers ensured that the items extracted were those covered by the contents used in this study. Each of the items with the correct choice was allotted one mark while any item with the wrong choice was scored zero. The test-re-test approach was used to determine the instrument's reliability. The instrument was given out twice over two weeks on 40 students who were not included in the study's sample. Pearson's Product Moment Correlation method was used to analyze the data collected with the STMPT. The analysis of the data yielded a reliability coefficient of 0.86 which was high enough to adjudge the instrument as trustworthy and appropriate for the study.

RESULTS

Before the treatment, the instrument (STMPT) was administered to the two groups to elicit the pretest scores. After the treatment, the instrument was re-administered to elicit the posttest scores. After a space of two weeks, the instrument was again administered to the groups to obtain the retention scores. The pretest, posttest, and retention scores served as the data analyzed to answer the question and test the research hypotheses.

Descriptive and inferential statistics were used to analyze the data acquired. Means and Standard Deviation were used to answer the study questions. The t-test was used to test all of the hypotheses at 0.05 level of significance.

Research Question 1: What is the performance of students in STM before and after the treatment?

Table 1 shows that the difference in the pretest and post-test performance mean scores of students in the experimental group is 9.47 while the difference in the pretest and post-test performance mean scores of the control group is 1.11. This outcome indicates that the usage of a WhatsApp Group Learning Platform employed in the teaching of Science, Computer Studies, and Mathematics has an impact on students' performance. The use of the WhatsApp Group Learning Platform has the potential to enhance students' performance in STM.

Test of Hypotheses

Hypothesis 1: There is no significant difference in the pretest performance mean score of students in STM in experimental and control groups.

The P-value = (0.695) is greater than the value (0.05) > 0.05, as shown in Table 2. This implies that both experimental and control groups performed equally before the treatment. Therefore, the hypothesis was not rejected. There was no significant difference in the performance mean score of students in STM in the experimental and control groups. Both groups of pupils

Table 3. t-test analysis of the difference in the post-test performance mean scores of students in experimental and control groups after the treatment.

| Variation | N | Mean | SD | Df | t _{cal} | P |
|--------------|----|-------|------|----|------------------|-------|
| Experimental | 52 | 21.87 | 2.51 | 98 | 20.07* | 0.000 |
| Control | 48 | 13.40 | 1.55 | | | |

*p<0.05

Source: SPSS analysis of data collected through STMPT

Table 4. t-test analysis of the difference in the retention mean scores of students in experimental and control groups after the treatment.

| Variations | N | Mean | SD | Df | t _{cal} | P |
|--------------|----|-------|------|----|------------------|-------|
| Experimental | 52 | 20.83 | 3.41 | 98 | 14.37* | 0.000 |
| Control | 48 | 12.83 | 1.65 | | | |

*p<0.05.

Source: SPSS analysis of data collected through STMPT

did equally well. This shows that the two groups are homogeneous.

Hypothesis 2: There is no significant difference between the performances mean scores of students exposed to STM through the WhatsApp Group Learning Platform and those exposed to the conventional method.

Table 3 reveals that the P-value (0.000) is less than 0.05. As a result, the null hypothesis was rejected. The performance mean scores of students exposed to STM using WhatsApp Group Learning Platform and those exposed to traditional methods differ significantly. Students who were exposed to the WhatsApp Group Learning Platform performed better in STM than students who were exposed to the traditional technique.

Hypothesis 3: There is no significant difference between the retention of students exposed to STM through the WhatsApp Group Learning Platform and those exposed to the conventional method.

Table 4 reveals that the P-value (0.000) is less than 0.05. Therefore, the null hypothesis was rejected. There was a significant difference in the retention mean scores of students exposed to STM using the WhatsApp Group Learning Platform and those exposed to traditional methods. Students who were exposed to the WhatsApp Group Learning Platform were able to retain what they have learned in STM better than students who were exposed to the traditional technique.

DISCUSSION

Based on the findings of this study, there was no significant difference in the pre-test mean scores of

students in STM when exposed to the WhatsApp Group Learning Platform and the group not so exposed. This finding proved the homogeneity of the two research groups before the treatment.

The findings of the study also revealed a significant difference in performance mean scores between students who were taught STM using the WhatsApp Group Learning Platform and those who were taught with the conventional method. Students who were exposed to the WhatsApp Group Learning Platform performed well than students who were exposed to STM through the traditional methods. This might be because the students were already used to the consistent interactions among their peers through WhatsApp social handles. It was possible and easy for them to collaborate, share ideas, and source more information on the concepts through the internet. They build better confidence working through the medium they are already familiar with. The opportunity of working alone or with a peer of their own choice was also an added advantage. There are earlier studies of similar findings by Ajayi (2020b) who in his study found out that students develop a better attitude towards the learning of science using WhatsApp Group Class and this enhances their performance. Tulika and Dhananjay (2014) and Khurana (2015) found that a Social Media handle can help students and enhance their academic performance in Biology and other science courses.

The findings also showed that students exposed to STM using the WhatsApp Group Learning Platform had significantly higher retention mean scores than students exposed to traditional techniques. According to the findings of this study, students that were exposed to the WhatsApp Group Learning Platform retained what was learned for a more extended period than their counterparts in the control group. This indicates that using the WhatsApp Group Learning Platform to teach STM is more effective for classroom interaction and has a

significant effect on students' retention abilities. Students were able to retain what they learned for some time. This finding is in support of Ajayi (2020b) who further opined that this could be because a simple and familiar platform was used in disseminating the contents to the students. Also, the teaching was direct and concrete. There was no need for rote learning. The finding also supported by Smit (2012) had earlier discovered that the application of social media in classroom activities has the potential to improve learning and academic performance, also, Abdulla (2017) discovered that social media has a positive impact on academic performance, with 57% of the students sampled preferring the WhatsApp mobile applications as a Learning Platform for academic purposes.

Conclusion

From the findings of the study, it was deduced that the use of the WhatsApp Group Learning Platform has effects on the students' performance and retention. Most students were conversant and comfortable with the use of the WhatsApp handle and this made it easy for them to concentrate with a positive attitude towards learning with full participation. This resulted in better performance in the subjects. The fact that the students were good in the manipulation and applications of the functions in the WhatsApp handle was an advantage that resulted in their good performance and retention.

RECOMMENDATIONS

Based on the findings of the study, the following recommendations were made:

1. Secondary school students should be encouraged to apply the WhatsApp Group Learning Platform in their academic activities.
2. Teachers of STM should always incorporate the use of the WhatsApp Group Learning Platform in the delivery of classroom instruction to improve students' academic performance and retention in STM.
3. Teachers of Science, Technology, and Mathematics should be equipped with the knowledge of Social Media facilities and use of WhatsApp Group Learning Platform and encourage them to apply the same in all their classroom teachings and students' homework.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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Full Length Research Paper

Fathers looking after children in Türkiye in public settings

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This study was conducted to determine the situation in Türkiye in terms of fathers looking after their children in public settings. For this purpose, natural observations of parents who came to playgrounds, movie theaters, stores, toy stores, and restaurants with their children aged 3–5 years were made in the study. Observational data were collected from 522 children and parents who came to the shopping mall with their children in Ankara, the capital of Türkiye. The study found that mothers looked after their children in public settings more than fathers did. However, fathers spending time with the child varied depending on whether it was the weekend or a weekday. Fathers look after their children more on weekends than on weekdays. In the study, it was determined that the gender of children was influential in parents looking after them and that fathers mainly looked after boys and mothers mainly looked after girls, but the children's age had no effect. These results are significant in that they show that fathers in Türkiye maintain their traditional understanding of looking after their children less while looking after their sons more than mothers; however, they are experiencing a shift toward the new paternal role during weekends.

Key words: Preschool, father-child, naturalistic observation, fathers, Türkiye.

INTRODUCTION

Parents are in the best position to have a positive effect on their children's early learning and school achievements (Aaskoven et al., 2022; Donkor, 2018; Petersson et al., 2022). According to this point of view, families have a primary effect on children and lay the foundation for how they will grow and develop (Bronfenbrenner, 1986), as well as playing a key role in promoting children's development (Rous et al., 2003). Yet, in a traditional sense, a large part of raising children continues to be done by mothers, and they spend more time with their

children and look after them more than fathers (Amato and Rivera, 1999; Lawson and Mace, 2009; Wilson and Prior, 2011). Related studies often focus on the participation of mothers. Participation of fathers is rarely mentioned in this process, and they are often ignored (Downer et al., 2008; Ramisetty et al., 2019). Ignoring a person who takes on the role of a father means ignoring the potential parental effects on the child's development (Parent et al., 2017). In studies with parents and on theories about parenting, it is stated that not only mothers

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but also fathers are effective in the development of the child (Bronfenbrenner and Morris, 2007; Teungfung, 2009). The father's role is independent of the mother's role (Atmaca-Koçak, 2004; Bögels and Phares, 2008; Lamb and Lewis, 2010), and many recent studies have also raised awareness of the importance of fathers for the development of their children (Akçınar, 2017; Crespi and Ruspini, 2015; Hauari and Hollingworth, 2009; Huerta et al., 2013; Lamb and Lewis, 2010; Paquette et al., 2013; Tutkun and Tezel, 2016). In this context, it is important to examine the situation in Türkiye with respect to fathers looking after children in public settings.

The changing fatherhood role

Traditionally, fathers are defined as breadwinners (Brandth and Kvande, 1998; Hauari and Hollingworth, 2009; Paquette et al., 2013; Teungfung, 2009). However, the traditional understanding of fatherhood is constantly being reshaped and rearranged according to the cultural setting, work, and family relations (Brandth and Kvande, 1998; Cabrera et al., 2000). In the transition to new societies, factors such as globalization, industrialization, increasing educational levels, increased female employment, and cultural diversity accompany the transformation of gender identities, family models, and intergenerational relationships, as well as restructuring the design and functions of family life. These changes have led to different expectations and beliefs regarding the roles of fathers, as well as different family structures (Cabrera et al., 2000; Crespi and Ruspini, 2015; Kagıtcıbası and Ataca, 2005; TAYA, 2014). This significant change in perception of the role of fathers creates a new paternal identity that is often quite different from one's own father and grandfather (Dick, 2011). In contemporary society, fatherhood requires men to be simultaneously the person who supports the family, guides the family, and helps with household chores (Crespi and Ruspini, 2015). However, while the norms relating to fatherhood may change, behaviors may be more resistant to this change (Lamb and Tamis, 2010). There is no mention of a completed process for the change seen in fathers relating to modern fatherhood or the new understanding of fatherhood, and it is noted that this change is still under way (Hauari and Hollingworth, 2009). The current findings for fathers in Türkiye suggest that the change in the discourse of transition from traditional fatherhood to modern fatherhood shows only a partial trend (Barker et al., 2009; Bolak-Boratav et al., 2014; Bozok, 2018). In this context, culture can still be characterized as traditional, authoritarian, and patriarchal (Sunar and Fişek, 2005). However, in the past three decades, Turkish society has seen significant transformations (Kagıtcıbası and Ataca, 2005), especially in urban centers, where fathers are more open to global trends and are aware of the demands of social change

(Bolak-Boratav et al., 2014). In addition, it shows that fatherhood is in a process of transition and that change and continuity in Türkiye lead to the coexistence of modern and traditional practices (Kavas and Thornton, 2013). Since this study aims to determine the situation in Türkiye in terms of fathers looking after their children in public settings, it is assumed that the change in the aforementioned fathers affects the situation of fathers looking after their children in public settings. For this purpose, natural observations of parents and children who came to playgrounds, cinemas, stores, toy stores, and restaurants with their children aged 3–5 years were carried out in the study.

Fathers' time spent with children

Fathers spend less time with their children than mothers (Baxter et al., 2010; Baxter and Smart, 2010; Bianchi, 2000; Hook et al., 2022; Huerta et al., 2013 and Levtoev et al., 2015). The amount of time devoted to children varies considerably between countries (Hook and Wolfe, 2011; Huerta et al., 2013). For example, the total time spent by fathers on childcare is the highest in Australia, Austria, Canada, and the United States, with more than 1 h a day. It was found to be the lowest with less than 30 min a day in Belgium, Estonia, France, Japan, and South Africa (Huerta et al., 2013). In a study conducted in Türkiye, it was determined that fathers spend about 2 hours and 20 minutes with their children in a day. However, although fathers are in the same setting as their children at home, the vast majority of them watches television with their children (78.5%) and chat with them (74%). It was concluded that they do not do much in the way of one-on-one activities to support their development otherwise (Akçınar, 2017). From this point of view, it is very important not only to spend time with the child but also to spend time with activities that are qualified and effective for his/her holistic development (Akçınar, 2017; Bozok, 2018). A study conducted in OECD countries, including Australia, Denmark, and the United Kingdom, as well as the United States, also concluded that the important thing is not the amount of father-child interactions, but the quality (Huerta et al., 2013).

Fathers interact with boys and girls in different ways than mothers (Levtov et al., 2015). Fathers are more active in partnership with their children and are more likely to engage in activity-based time (Hauari and Hollingworth, 2009) and play with their children (Levtov et al., 2015), from games in the park that are usually not structured, to structured activities such as golf or tennis (Zahra et al., 2015). It was determined that fathers most often played games involving physical contact and strength, such as wrestling or joking, thinking that children should run and move to release their energy (Akçınar, 2017). Children also associate elements of activity and play more with the roles and responsibilities

of fathers. They describe the father as someone with whom they can play, have fun, laugh together, and share leisure activities. Children tend to attach great importance to having a parent who is “active,” and this is usually the father (Hauari and Hollingworth, 2009). A study conducted in Türkiye found that fathers prefer to “play games together” as a quality time activity (Turkoglu et al., 2013).

Some researchers have found that fathers are more likely to play with boys than girls (Zahra et al., 2015), spending more time in leisure, play, and project activities, and in private interviews (Marsiglio, 1991), it was revealed that they spend more time on sports and other active leisure pursuits (Lundberg et al., 2007), as well as activities such as gardening, car care, animal care, and shopping (Bryant and Zick, 1996). These results may be due to the belief stated by Marsiglio (1991) that fathers are better equipped with the appropriate knowledge and perhaps the skills to look after their sons than their daughters, or, as stated by Tutkun and Tezel (2016), that it may be due to the belief that fathers can do gender-based activities (such as playing/watching football, doing repairs) more comfortably with their sons. Fathers can treat their sons or daughters differently, and pay closer attention to their sons because they are of the same gender (Teungfung, 2009). Children also probably play an active role in the configuration of this model, as they may be more inclined to approach their parents of the same gender when they want to do certain things or discuss important issues (Marsiglio, 1991). It is seen that a gender-based activity model begins at an early age for boys and their fathers. In particular, as children reach puberty, time spent with same-gender parents in gender-specific activities becomes very important (Lundberg et al., 2007).

It is important to give children opportunities to participate in activities in public with their families (Baxter et al., 2010). In this context, the use of parks, restaurants, shopping malls, movie theaters, and stage theaters in the field of leisure activities and social activities of families in public throughout Türkiye constitutes an important part of many people's social life today. Activities carried out with the family not only provide critical findings concerning the importance of the family in our society, but they also give clues about the relations family members have with each other (TAYA, 2014). It can be said that fathers in Türkiye spend time together with their sons and daughters by playing games, watching TV, going to the movies, and going on picnics and to parks (Aydın-Kılıç and Tezel-Şahin, 2018). In this respect, it is important to identify the parents who look after their children the most and spend more time with them in areas such as playgrounds, cinemas, stores, toy stores, and restaurants.

Another important issue is that studies on fathers are usually based on mother, child, or teacher evaluations (Bögels and Phares, 2008; Paquette et al., 2013). These evaluations may not fully reflect the state of fathers caring

for their children. Therefore, the use of observation in this study may facilitate more reliable identification of behaviors. In addition, despite its increasing importance in Türkiye, it is seen that the studies on the influence of the father are inadequate (Atmaca-Koçak, 2004; Aydın-Kılıç and Tezel-Şahin, 2018). In studies conducted on fathers, data were collected using questionnaires, rating scales, and interview methods (Akçınar, 2017; Aydın-Kılıç and Tezel-Şahin, 2018; Bozok, 2018; TAYA, 2014; Turkoglu et al., 2013) while observational studies were limited (Tutkun and Tezel, 2016).

Observational studies determine the differences in how parents look after their children in public settings, give insight into the situations in which parents care for their children in today's world, and contribute to the understanding of the circumstances (such as age, gender, weekday, or weekend) under which care for their child changes. At the same time, parental involvement is influenced by various factors such as cultural and social expectations and the existence of family-friendly policies (Cabrera et al., 2000; Dick, 2011; Huerta et al., 2013; Kagitcibasi, 1970; Kagitcibasi, 2020). In this context, it is important to learn more about parents in different social and cultural settings such as Türkiye. Based on all this information, the questions asked in this study are: It is the mother or the father who mainly looks after children in public settings? Is there a relationship between fathers caring for their children in public settings and the children's gender and age? Is there a relationship between fathers looking after their children in public settings and it being a weekday or the weekend?

METHOD

Participants

The study was conducted in Ankara, the capital of Türkiye. Approximately 5.663 million people live in Ankara and 49.54% of the population is male and 50.46% female (TUIK, 2020). Observational data were collected from five different areas, namely, playgrounds, movie theaters, stores, toy stores, and restaurants in 21 shopping malls. Among the 522 children observed, 52.9% were girls and 47.1% were boys; 21.6% of them were 3 years old, 34.9% were 4 years old, and 43.5% were 5 years old. Overall, 43% of the mothers were under the age of 30, 53.3% were working, and 51.7% had at least an associate degree or a higher educational degree. Whereas 33.1% of the fathers were between the ages of 30–35, 98.1% were working, and 73.4% had at least an associate degree or higher.

Procedure

Observational data were collected by the author and a team of volunteer students. The author provided observers with 10 h of training in the purpose of the study and observation procedures. At the end of the training, two preliminary observations were made for each observation area. Data obtained from these observations were excluded from the analysis. At the end of the training, the observers observed the children they thought were between the

Table 1. Difference between parents looking after children in public.

| Caring parent | f (Observed) | f (Expected) | X^2 | sd | p |
|---------------|--------------|--------------|--------|----|-------|
| Mother | 329 | 261 | | | |
| Father | 193 | 261 | 35.433 | 1 | 0.000 |
| Total | 522 | 522 | | | |

Source: Author

ages of 3–5 in the shopping malls and the adults with them in their natural setting without letting them realize that they were being observed and marked the criteria in the observation forms prepared to decide which adult was looking after the child the most. If the child was with a single adult, this adult was recorded as the one who looked after the child the most. In cases where there was more than one adult, the one who held the child's hand (or the adult sitting next to the child in a restaurant), who chatted with the child, intervened, or helped the child was identified as the adult who looked after the child the most. In cases where it could not be decided whether the adult who looked after the child the most was the mother or father, the observation was canceled and the observation data were excluded from the analysis.

Observation sessions lasted 30 min on average. During this time, the observers recorded data for all children in the target age group. When the observation ended, the observers went up to the parents they had observed in their natural setting, and first introduced themselves then talked briefly about the study being made and its purpose. As for the ethics of the study, the parents were informed that this study is voluntary and that the personal information of the participants will not be disclosed in the study. Subsequently, participant consent was obtained for some observed variables: Is the child's age between 3 and 5? Is the adult mother or father next to the child? What is the gender of the child? The observation was canceled and the observation forms were excluded from the analysis if the child's age was not between 3 and 5, if the adult next to the child was not the mother or father of the child, or if the participant did not give consent to participate in the study. To generalize the situation of parents coming to shopping malls with their children, the observation days and hours were diversified to be between 10.00 a.m. and 10.00 p.m. on weekdays and weekends. The analysis is based on 522 observations collected in the fall of 2019 in Ankara.

Data analysis

Observation forms were created to make natural observations of parents and children. In the form, the estimated age of the child was coded as 3 years, 4 years, and 5 years, and the gender of the child was coded as male and female. Then, the gender of the observed adult was coded in two categories: mother (female), father (male). The status of the observed adults was coded into four categories: an adult (one male or one female), mixed-gender couple (male and female), same-gender group (two or more adults of the same gender), and mixed-gender group (three or more adults with both men and women). Areas were coded as playground, Movie Theater, store, toy store, and restaurant. The day and time of observation were recorded.

In each observation area, the first 10 observations of the adult caring for the child were made by the author and one observer. At the same time, two observers observed the same children and adults and evaluated them independently of each other. The Kappa coefficient was used to demonstrate consistency between observers, and when the relationship between them was evaluated

(Kılıç, 2015), it was found to fit perfectly ($K=1.00$, $p<0.001$).

The Chi-Square test was used to analyze the relationship between the independent variables examined in the study and the parents who looked after the child in public. To reveal the level of the relationship between variables, phi (Φ) coefficients were calculated in cases where both variables consist of two categories, and Cramer's V ($C'V$) coefficients were calculated in cases where at least one variable comprised three or more categories (Kilmen, 2015; Pallant, 2016).

RESULTS

The parent looking after children the most in public settings

As part of the study, the univariate Chi-Square test was used to test whether there is a difference between parents in looking after children in public settings (Table 1). It is seen that there is a significant difference between parents in looking after children in public settings ($X^2_{(1)}=35.433$, $p<.001$). The observed and expected values are quite different from each other. It was found that 63.03% of mothers look after their children in public. Accordingly, it was found that mainly mothers look after the child in public settings, and fathers look after their children less than mothers.

Gender and age of the child and fathers looking after their children

When Table 2 is examined, it is seen that there is a significant relationship between the gender of the child and fathers looking after their children in public ($X^2_{(1)}=42.867$, $\Phi=.29$, $p<.001$). This situation is demonstrated by the fact that the observed frequency and expected frequency values are not close to each other. Analysis determined that mothers (76.1%) generally look after girls in public settings, and fathers (51.6%) look after boys. Accordingly, it was determined that the child's care in public settings is affected by the gender of the child and that fathers look after boys while mothers look after girls in these settings. It was determined that the relationship between the child's age and the parent looking after the child in public settings was not statistically significant ($X^2_{(2)}=2.285$, $C'V=.07$, $p>.05$). Accordingly, it was concluded that the age of the child does not affect the child's care in public settings.

Table 2. The relationship between fathers looking after their children in public and the child's gender.

| Gender | | Parents looking after their children | | | χ^2 | sd | p | Φ |
|--------|--------------------|--------------------------------------|--------|-------|----------|----|-------|--------|
| | | Mother | Father | Total | | | | |
| Girl | Observed frequency | 210 | 66 | 276 | 42.867 | 1 | 0.000 | 0.29 |
| | Expected frequency | 174 | 102 | 276 | | | | |
| Boy | Observed frequency | 119 | 127 | 246 | | | | |
| | Expected frequency | 155 | 91 | 246 | | | | |
| Total | Observed frequency | 329 | 193 | 522 | | | | |
| | Expected frequency | 329 | 193 | 522 | | | | |

Source: Author

Table 3. Relationship between fathers looking after their children in public settings and weekdays or weekends.

| Observation day | | Parents looking after their children | | | χ^2 | sd | p | Φ |
|-----------------|--------------------|--------------------------------------|--------|-------|----------|----|-------|--------|
| | | Mother | Father | Total | | | | |
| Weekdays | Observed frequency | 208 | 70 | 278 | 35.497 | 1 | 0.000 | 0.26 |
| | Expected frequency | 175.2 | 102.8 | 278 | | | | |
| Weekends | Observed frequency | 121 | 123 | 244 | | | | |
| | Expected frequency | 153.8 | 90.2 | 244 | | | | |
| Total | Observed frequency | 329 | 193 | 522 | | | | |
| | Expected frequency | 329 | 193 | 522 | | | | |

Source: Author

Fathers looking after their children on weekdays and weekends

Results of Chi-Square analysis applied to determine whether there is a relationship between the day on which the observation took place and fathers looking after the most their children in public settings are included in Table 3. When Table 3 is examined, it is seen that there is a significant relationship between the day the observation was performed and the parent who was observed to be looking after the child the most in public ($\chi^2_{(1)}=35.497$, $\Phi=.26$, $p<.001$). As a result of the analysis, it was found that mainly mothers (74.8%) look after children in public during the weekdays, and fathers (50.4%) look after them more on the weekends with a slight difference. Accordingly, it was found that fathers are more likely to look after their children in public on weekends than on weekdays.

DISCUSSION

The situation in Türkiye regarding fathers looking after their children in public settings was determined through natural observations of parents and children aged 3–5 years who came to playgrounds, movie theaters, stores, toy stores, and restaurants. The study yielded very important results in terms of fathers in Türkiye looking

after their children. One of the most important results revealed in this study is that it is mainly mothers who look after their children in public settings, while fathers do not look after their children as much. A similar study conducted in Türkiye concluded that in bookstores, which are a public setting, it is the mother who mainly looks after the children (Tutkun and Tezel-, 2016). It can be thought that this situation stems from social and cultural differences. For example, Kagitcibasi (1970), states that there are differences in Turkish and American societies in terms of social and familial factors. A study conducted by Amato (1989) in the United States revealed that men are primarily concerned with the care of their children in public places compared with women. However, in the children's section of the public library in Northern Arizona, it was observed that the majority of parents/adult caregivers accompanying children for their protection are women (Becker, 2012). Other studies in different cultures have shown that men in Pakistan are more likely than women to hold and carry their children in public places (Jahn and Aslam, 1995). In Thailand (Teungfung, 2009; Australia, 2009), studies conducted with Pakistani, British, Black Caribbean, and African fathers found that fathers devote less time to their children compared with mothers (Hauari and Hollingworth, 2009). In this context, in light of the results of studies made in Türkiye and different cultures, it cannot be said that fathers, in general, have moved away from traditional fatherhood

and fully adopted the new or modern concept of fatherhood. In addition, it can be stated that this change in paternal behavior is still ongoing and is not complete. Furthermore, one of the reasons why fathers devote less time to their children outside of the home may be that they lack sufficient knowledge and experience in dealing with children to know what to do in such circumstances, or how to spend more quality and productive time with their children. In their study, Turkoglu et al. (2013) stated that one of the factors that prevent quality time between father and child is that fathers do not know how to spend time with their children.

One important conclusion of the study is that fathers usually look after boys and mothers usually look after girls in public settings. This result is consistent with other studies showing that the child's gender affects the father's participation (Amato, 1989; Lundberg et al., 2007; Marsiglio, 1991; Tutkun and Tezel- 2016). In the United States, for example, it was concluded that boys spend significantly more time with their fathers than girls (Lundberg et al., 2007), and fathers spend 18 min more with boys than girls (Yeung et al., 2001). In a study conducted in different provinces of Türkiye, it was determined that the involvement levels of fathers living in Ankara and Erzurum did not differ significantly according to the gender of their children, but the involvement of fathers living in Trabzon was influenced by the gender of the children. It was determined that fathers living in Trabzon had higher involvement levels with boys than girls (Aydın-Kılıç and Tezel-Şahin, 2018).

Social differences may be one of the underlying factors in fathers spending more time with their sons than their daughters. Sexist attitudes toward children in Türkiye affect paternal behavior (Akçınar, 2017). Family dynamics, gender roles, social change, attitudes, and values (Kagitcibasi, 1982) regarding children change over time. Comparisons made in 1975 and 2003 showed that having boys was less important in 2003 than it was in 1975. This change is explained by important transformations over the past three decades (Kagitcibasi and Ataca 2005). In another study, 76% of the parents did not indicate a preference for their child to be a boy or a girl. But in interviews, some participants expressed a preference for a boy. Different values are attributed to boys and girls in Turkish society. Situations such as the boy's continuation of the lineage, expressing power, and taking care of the family (Akçınar, 2017) are reflected in them getting more education and their reluctance to educate girls. Official statistics show higher literacy rates and higher levels of educational achievement for men than for women of all ages (Sunar and Fişek, 2005). In this respect, it is seen that traditional gender roles still exist and that the child's gender is influential in the father's participation.

It was found that mainly mothers looked after their children in public settings during the week while fathers mainly looked after them on weekends. Therefore,

although mothers are primarily responsible for looking after their children on weekdays, fathers seem to share this responsibility with mothers more on the weekend. Studies examining the time differences that fathers spend with their children on weekdays and weekends have shown that they spend more time with their children on weekends (Baxter et al., 2010; Hook and Wolfe, 2011; Maume, 2011; Yeung et al., 2001; Zahra et al., 2015), and they spend more quality time on weekends than on weekdays (Turkoglu et al., 2013). In this context, it is observed that there is both a quantitative and a qualitative increase in terms of fathers spending time with their children on weekends. The main reasons behind this condition include fathers' working hours and working conditions (Zahra et al., 2015), working until the evening on weekdays, work stress, and fatigue (Turkoglu et al., 2013), as well as fathers' earnings and the mother's contribution to total family income (Yeung et al., 2001). Maume (2011) found that the temporal increase in fathers' time with children was three times greater on weekends compared with weekdays. More work by fathers usually reduces the time they spend with their children (Bianchi, 2000; Bryant and Zick, 1996) and Harrington et al. (2011) interviewed 963 fathers in their study of fathers and childcare. The study observed that many fathers wanted to share the responsibility of childcare with their partners, but most of the time did not fulfill this desire. It was stated that the main reasons fathers could not fulfill this desire were working hours and working conditions. Taken as a whole, it shows that factors such as working hours, working conditions, and income levels are effective in fathers looking after their children on weekends.

When we examined different studies on whether there was a difference between countries in which fathers looked after their children more on the weekend than on weekdays, one study examining father participation in the United States, Germany, Norway, and the United Kingdom found that fathers mainly looked after their children on weekends (Hook and Wolfe, 2011). In Australia, it was concluded that fathers spent more time on weekends with preschool children than on weekdays (Baxter et al., 2010). Evidence from the United States also revealed that the amount of time the child was with his father more than doubled on weekends compared to weekdays (Yeung et al., 2001). In a nationwide study carried out with fathers in Turkey, it was determined that fathers who cannot spend much time with their children due to the busy work schedule during the week try to make up for this on weekends and take more interest in their children at that time (Akçınar, 2017). The study examined the nature of the time fathers spent with their children between the ages of 3 and 6 in Türkiye and found that they spent longer and more qualified time with their children on weekends compared to weekdays (Turkoglu et al., 2013). In this study, it was found that fathers looked after their children on the weekend, albeit with a

small difference. So the result for the weekend reveals that fathers are undergoing a shift toward a new paternal role on weekends.

According to the findings, the age of the child does not affect which parent looks after the child in public settings. In this study, children between the ages of 3 and 5 in preschool were included. It is difficult to generalize and compare between age groups from the results in previous studies since it differs in the age of the children covered in the studies on this subject. Most of them focus on different age groups such as infancy (ages 0-2), preschool years (ages 3-5), early school years (ages 6-8), and preteen years (ages 9-12) (Baxter, 2009; Yeung et al., 2001, for a review). In this study, the fact that the age of the child does not make any difference is due to the fact that the age range of the children in the study is not very high. Consistent with this study, it was observed that the involvement levels of fathers living in Ankara, Trabzon, and Erzurum in their children's lives did not differ significantly according to the age of the children (Aydın-Kılıç and Tezel-Şahin, 2018). In addition, one Australian study concluded that the time fathers spend with their children differs little depending on the age of the child (Baxter, 2009) and that the level of father involvement decreases as the child's age increases (Yeung et al., 2001).

Conclusion

The aim of this study was to learn about the situation in Türkiye of fathers looking after their children in public settings and showed that mothers look after their children in public settings the most, and fathers look after them less, but this is changing in favor of the fathers, albeit by a small margin, on the weekend. It was also determined that the gender of the children affected the state of care for them and that fathers mostly looked after boys and mothers mostly looked after girls. In light of this data, it is clear that Türkiye is experiencing a cultural shift in paternal values, but this shift has only had a limited impact on behavior. However, it can be said that fathers are experiencing a shift toward their new roles during weekends.

LIMITATIONS AND RECOMMENDATIONS

This study had some limitations. First, participants were limited to parents who came with their children to public settings such as playgrounds, cinemas, stores, toy stores, and restaurants in a single city. Similar studies in other cities or different areas such as zoos, amusement parks, or children's hospitals can increase generalizability. In future studies, observations can be made in public settings for infancy, early childhood, and later age groups by providing a difference between the age groups of children. In addition, the data were limited to what could

be noticed through observation. In particular, more information about fathers' income, job, and working conditions can be obtained through research using alternative methods. Therefore, variables such as fathers' hours of work, total time spent at work, and income levels are important factors to be examined in future studies. Finally, more research will be needed, especially since going to public settings has changed during the pandemic.

CONFLICT OF INTERESTS

The author has not declared any conflict of interests.

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Full Length Research Paper

Motivation heightens and independent thinking deepens: Undergraduate students share their experiences of PBL while learning Microeconomics

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The aim of this study is to analyze the use of Problem-Based Learning (PBL) in learning Microeconomics. It aims to answer the following research questions: What are the experiences of undergraduate students who studied with Problem-Based Learning (PBL)? Is this strategy useful at the undergraduate level? Does PBL really motivate students? Does it foster independent thinking? These questions are interesting but very complex and convoluted. The above questions created parameters for this action research which was done in relation to the teaching of an undergraduate course at a tertiary education institution. This paper presents the experiences of sixteen undergraduates at a tertiary institution in Trinidad and Tobago called New Model University. There is a paucity of information in the local setting as it pertains to this topic. As a result, the experiences of these sixteen students are valuable. Their diverse voices and varied experiences can certainly fill the existing gap. They can be instrumental for the better creation of policy. They can also assist in the effective implementation of PBL at tertiary education in Trinidad and Tobago. Furthermore, their voices and opinions answer the research question: What are the experiences of students who use Problem-Based Learning in the study of Microeconomics at New Model University? A seven-step approach to PBL was utilized as the main teaching and learning process. A case study was conducted over a period of twelve weeks. It incorporated open-ended questions and semi-structured interviews with four focus groups. The individual reflections and independent experiences of these sixteen students were carefully documented in weekly journals, and this complemented the data collection process. Data were collected, collated, analyzed, and narrated using six major themes. Recommendations which strongly advocate student-centered strategies were offered.

Key words: Teaching approaches, Problem-Based Learning (PBL), independent thinking.

INTRODUCTION

The opinions of the study participants clearly demonstrate that PBL heightens, motivates, and fosters independent

thinking. These sixteen students were fervently engaged in the study of Microeconomics which used a Problem-

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Based Learning (PBL) approach, over twelve weeks. Prior to the beginning of the semester in September to December students who were reading the course in Microeconomics at that time, were given a pre-course test. This was to chiefly determine their content knowledge and to ascertain whether or not they were capable of reading for it. Most of them obtained low scores. They were demotivated, disenchanted, and disillusioned. Their self-esteem was crushed, and they wanted to discontinue their studies. It is within this scenario, that the authors conducted this research. The principal aim was to ascertain why these students felt broken and shattered and to view how the use of the PBL strategy in Microeconomics would assist them. Mention must be made that they were exuberant and animated about this unfamiliar, compelling, and ingenious learning strategy and gave it their full support and attention. Moreover, they were quite eager to forego the traditional method just to experience this innovation called PBL.

This action research is an investigation about the experiences of these sixteen students who pursued an undergraduate course in Microeconomics at New Model University. Microeconomics is one of the core courses for students who read for a Bachelor of Education Degree. Thus, they must be successful in this subject area to graduate.

Consequently, a seven-step approach to PBL was chosen as the principal teaching and learning process. During this process a case study was conducted over a period of twelve weeks. It involved open-ended questions and semi-structured interviews with four focus groups. Students also documented their personal experiences in their journals, and this complemented the data collection process.

A review of the literature within the local context revealed that there is a paucity of information. It also highlighted that the teaching of Microeconomics using the PBL instructional approach at this institution has never been explored and officially recorded. In addition, the experiences of these students were never documented. This gap in the literature was the main factor that contributed to this study. The different perspectives of the students who use PBL in the study of Microeconomics at New Model University can fill this gap. Van Manen (1990) suggests that qualitative research focuses chiefly on the naturalistic approach and thus, it was chosen to conduct this research. In this regard, a case study, which included open-ended questions, semi-structured interviews and journals, was utilized. This method was best suited to answer the research question: What are the experiences of students who use Problem-Based Learning in the study of Microeconomics at New Model University? Data collection procedures were outlined, data analysis process was described, and findings were extensively explained and narrated with the use of six themes. Recommendations which strongly promote the use of more student-centered strategies were also offered.

LITERATURE REVIEW

This literature review addresses the following research questions and offers the philosophical thinking that drives these concepts. One such underpinning is the constructivist. The questions are: What exactly is Problem-Based Learning (PBL)? What does it involve? Is this strategy useful at the undergraduate level? Does PBL motivate students? Does it foster independent thinking? What are its benefits? Is this strategy useful? Does it really stimulate cognition and promote independent thinking?

Constructivism

Taskin-Can (2011) advocated that Immanuel Kant (1724-1804), John Dewey (1933) and others who were intimately involved in the field of education coined the term constructivism as an educational philosophy. Constructivism is a new paradigm which explains the nature of knowledge and the nature of learning. This theory identifies learners as individuals who construct and build their own knowledge as they interact with the environment. Hence, Patankar (2011) and Taskin-Can (2011) claimed that each person's knowledge is unique. Constructivism, therefore, is a middle path between the empiricist and the rationalist philosophical perspectives. Maxwell et al. (2005) stated that it is the cornerstone of the current reforms, which is the center stage as the foundation for teaching and learning in science education programs and, more recently, in the study of Economics. It is against this philosophical background that Problem-Based Learning (PBL) approach to teaching and learning is explored.

Theoretical framework of (PBL)

Dewey (1916) was one of the first proponents of child-centered education. He also posited that education must contain a heavy concentration on the involvement of students in the teaching and learning. This strategy is of paramount significance because it involves the natural and active participation of the intellectual capacity of students. Similarly, Duch et al. (2001), described PBL as a felicitous teaching method. They further added that it activates the mind. This teaching strategy is imperative and it fosters critical-thinking and creates independence among students.

It enhances problem-solving abilities and stimulates cognition. It promotes communication skills and underscores socialization. It also gives students the opportunity to work in groups. It allows them to evaluate research materials. Most of all it is a life-long learning process. Qi (2017) espoused that fundamental differences exist between the teacher centred approach to instruction and PBL.

In the 1960s and 1970s prominent researchers such as Barrows and Tamblyn (1980) hypothesized that a group of medical educators was determined to find an alternative way to teaching and learning and to enhance the practical skills development among doctors in their practice. There was a lot of deliberation and criticism of the traditional methods of teaching such as rote memorization of facts, inadequate problem-solving techniques, and fragmentation. However, Barrows (1996), Barrows and Tamblyn (1980); Noble et al. (2020) and Murphy (2006) posited that an education evolution occurred which placed emphasis on experimentations of student-centered instructional processes.

One such outcome was that the faculty members at the McMaster University developed a problem-based curriculum for the medical students. The basis of this new approach was that they identified their own learning styles through problem solving in small groups. This methodology was eventually adopted as the new approach to teaching and learning. Albanese and Mitchell (1993) and Duch et al. (2001) and Cardon, Kinczkowski with Speelman (2022) underscored that some advantages of the new model included self-directed independent learning skills and increased learning motivation. They also stated that students acquired a new and increased knowledge base, and their social skills were heightened through group interactions.

These students understood how to apply these new and innovative theories to the world or work. In addition, Albanese and Mitchell (1993) and Duch et al. (2001) mentioned that the role and function of the teachers changed to facilitators. These advantages were eagerly sought by many educators worldwide. Hence the interest and desire of educators to utilize this innovation in education grew rapidly. Thus, the PBL model was used as the catalyst for various experimentations among several educators. This same model formed the framework for this study because it was suitable for this group of students.

METHODOLOGY

As noted in the introduction, a seven-step approach to PBL was designated as the chief teaching and learning strategy. During the implementation of this seven-step approach to PBL, a case study was utilized. It incorporated open-ended questionnaires and semi-structured interviews with four focus groups. In addition, personal journals were used. This action research included a repetitive process of data collection, reflection, and analysis. Questionnaires and interviews were specifically selected because the use of these two instruments often allows participants to speak without inhibition. In this way, the authors were able to properly address the research question: What are the experiences of students who use Problem-Based Learning in the study of Microeconomics at New Model University? The use of their personal journals also provided detailed description about their varied and unique experiences. Data collection was done through regular and consistent fieldwork. The days and the hours of contact were specifically chosen to facilitate the students.

This case study lasted approximately thirteen weeks. Students

were taught with four teaching modules for three weeks each. After each session, they recorded their experiences in their journals. Data were collected through the four focus groups during the thirteenth week of the semester.

Information was gathered from open ended questionnaires, structured interviews, and the journals of these sixteen participants. The authors read them repeatedly to determine the precise meaning. This process involved re-reading the information to accurately identify key recurring themes. It was followed by a detailed review, which included coding each response to a particular theme, before writing a brief description for each theme. This constant reading and reviewing of the various scripts generated an enhanced understanding of the voices and experiences prior to formal thematic analysis. Paradigmatic analysis was used to produce clearly defined themes from the sentiments or essence of the writings of the students. The idiomatic language used by the participants was coded verbatim during this case study.

Case study

The introduction mentioned that the principal focus of this paper was to record the experiences of these sixteen students accurately and professionally about the use of Problem-Based Learning in the study of Microeconomics. Consequently, a case study was specifically selected. Case studies normally encapsulate an extensive picture. They also provide profound insights and allow researchers to adequately scrutinize compound issues within real-life scenarios. Creswell (2018) underscored this fact and he posited that case studies are comprehensive inquiries which explore a specific event within its natural environment. They facilitate description, assist explanation and foster clarity into capricious events. Creswell (2018) also alluded to the fact that qualitative research is appropriate since researchers can probe and assimilate in greater detail what respondents convey. In a similar way, Smith (1978, cited in Merriam and Tisdell, 2016) supported that case studies are adaptable and dynamic and provide a meticulous and detailed examination of events. It is also an intensive, extensive explanation and analysis of a single unit. Cohen et al. (2018) described it as an inquiry into precise scenarios within a real-life situation.

Questionnaires

Leedy and Ormrod (2018) believed that open-ended questionnaires provide a suitable avenue for participants to communicate voluntarily. Open-ended questionnaires allowed the authors to articulate what was discussed in the interviews. These sixteen students voluntarily responded to the questionnaires. It must be noted that they were not obligated nor obliged to produce the "right" answers. In fact, they were given an opportunity to express themselves freely. In this way the principal aim of the research was maintained, that is to obtain the perspectives and insights of these students. The authors felt that maintaining this objective was far superior than trying to glean whether or not the students responded appropriately to the questionnaires. Creswell (2018) confirmed that this instrument also permits participants to state their perspectives and opinions objectively and unconstrained by any biases of researchers or past research findings. Open-ended questionnaires are also cost effective and allow for structured responses. They were an appropriate instrument of data collection in this research. Moreover, the sixteen students were given the assurance that anonymity would not be compromised. Open-ended questionnaires included areas that were related to their experiences about the use of Problem-Based Learning in the study of Microeconomics. Cohen et al. (2018), together with Leedy and Ormrod (2018), cautioned that researchers need to be acutely aware of the advantages and

limitations of the use of questionnaires. Cohen et al. (2018) and Connelly (2016) acknowledged that this instrument does not fully permit participants to clarify and illustrate their responses. With this idea carefully in mind, the use of semi-structured interviews tried to address this issue.

Interviews

Interviews are suitable instruments for collecting data. They are malleable and adaptable. Most of all researchers can capture nuances and non-verbal cues. They can probe for further clarification according to Cohen et al. (2018).

Interviews are important tools for data collection, but they are time consuming. They are also inconvenient for the interviewee, and it is difficult for researchers to be impartial. They are also difficult to maintain anonymity. Against this background, the interviews covered two crucial areas: demographic and the experiences of students. The interviews focused chiefly on the social, intellectual, psychological, and educational aspects of the lives of these students.

Written permission was obtained from the students to make copious notes of what they said. After interviews were conducted, data were documented and analyzed verbatim. The qualitative thematic data analysis process offered by Creswell (2018) was used and six themes emerged. The analysis of data was carried out with the research question in focus: What are the experiences of students who use Problem-Based Learning in the study of Microeconomics at New Model University?

Personal Journal

The sixteen participants documented their thoughts, feelings, anxieties, and experiences during the use of Problem-Based Learning strategy in the study of Microeconomics. They were honest in writing their opinions and views as well as their difficulties and frustrations. They also used their personal journal to refine ideas, thoughts, concepts, and beliefs as they continued this seven-step approach.

Triangulation

Creswell (2018) stated that researchers ought to try to triangulate their findings. He also believes that triangulation is the process of authenticating and substantiating evidence from different individuals in descriptions and themes in qualitative research. Denzin (1978, cited in Danny, 2014), mentioned that triangulation is the skillful use of multiple approaches to analyze data. In a similar manner, Spaulding (2014) and Walsh (2013) hypothesized that triangulation presents various aspects and a detailed analysis of the outcome of the research.

Pilot and Beck (2014, cited in Connelly, 2016) held the firm opinion that triangulation is also imperative. They further added that it refers to the depth of confidence in the data, interpretation, and methods used to support the quality. Leung (2015) stated that it refers to exact replicability of the processes and the results. Thus, to enhance consistency, in this research, intercoder reliability was properly established. A high level of intercoder reliability indicated that both reliability and replicability were present. These strengthen evidence that the results of a qualitative study were scientifically documented.

Triangulation also allowed the researchers to collect and compare various perspectives of the phenomenon. In this way, data presented were valid and free from bias. It also encouraged the researchers to optimize credibility. Data for this research were

gathered with the use of open-ended questionnaires, semi-structured interviews, and the personal journals of the participants, during the seven-step approach to the PBL strategy.

Redesign seven-step model

Alternative PBL approaches were redesigned for four modules. Each one lasted three weeks and seven steps were used.

Step one: Instructors told students that each discipline had specific jargon with which they should become familiar. Thus, their first task was designed to help them become familiar with key terms in Microeconomics. The facilitators informed students of the objectives of module one. They also noted that it was imperative for the instructors to answer questions posed by students throughout the process. This facilitated the ease of adapting to a new approach to teaching and learning. In addition, the instructors facilitated students' learning by answering their questions. In this way it built the content knowledge and directed students to appropriate reading materials which were adapted from the modules presented over a period of twelve weeks. They also began their journal entry and continued this activity every week. Their journals described their experiences during the PBL sessions.

Step two: Students defined the problem and completed the work process plan. This included a table to identify what they know, what they need to know, and which persons are to be assigned responsibilities to complete the task within one week.

Step three: Students continued to work on module one. They sought further clarifications to the problem through the use of online resources, or the use of library. They even asked the facilitators questions to assist them to solve the problem. They also actively engaged in self and group study.

Step four: Students engaged in self-study to solve address the problem or that part of the problem to which they were assigned.

Step five: Students returned to class. They presented their solutions to their peers and then they discussed the answers with their peers and instructors.

Step six: Students received feedback and discussed their approaches to their final assignment submission in various groups.

Step seven: Students presented their final assignment portfolio with their possible solutions to the problem. The sixteen students repeated the above steps for the next three modules.

It ought to be mentioned that these sixteen students who read for the Bachelor of Education in Microeconomics at the undergraduate level were extremely anxious and zealous about their study. Fourteen females and two males comprised the PBL group for the collection of empirical data. Their ages ranged from 18 to 34 years. PBL sessions were held once per week, every Thursday, from 8:30 a.m. to 11:30 a.m. at New Model University and all students attended the total of twelve sessions. Great care was taken to ensure this PBL approach was delivered properly and as accurately as possible.

FINDINGS AND DISCUSSION

To present findings, the general qualitative data analysis offered by Creswell (2014)'s general qualitative data

analysis process was used to move students' journal entries and focus group statements to general codes and themes. Data were collated, analyzed, triangulated, and documented in a narrative form with the use of six thematic headings. They are: students' responsibility for learning, development of life-long learning skills, knowledge construction and interaction, blended learning, interaction skills, and role of the facilitator.

Students' responsibility for learning

In several ways these students admitted they had to take responsibility for their own learning during the PBL sessions. They used words like autonomy, self-motivation, creativity, constructivism, self-directed and independent learner, to indicate they had to take responsibility for their own learning. These sentiments were underscored by writers such as Ertmer et al (2013), and Dochy, Segers, Bossche and Struyven (2005).

They were also more cognizant that they had to be more responsible for their own learning. They even realized that they had to dominate the following duties: understand their work, seek clarification, set their work tasks, meet deadlines.

They also admitted that at times the content of the course was difficult for them to comprehend and they wanted further assistance in this area. This action ensured they completed their assignments on time and that they understood their content in preparation for the post-intervention test.

They generally felt that this teaching strategy empowered and motivated them. It also caused them to be more independent and responsible. They even acknowledged that they inculcated qualities such as: autonomy, self-motivation, creativity, constructivism, self-directed and independent learner. Some of them commented that:

"The more I read, the more I understood the material. I have learnt that the more I read, the better my marks in this course, because I understand the material better."

"The assignment to create our imaginary business helped me to think of creating my own business. Constructivism helped me to achieve a better understanding of Microeconomics and relationships among my peers."

"This is an important step to helping students become self-directed learners."

"In PBL students learn to be self-directed, independent and interdependent learners motivated to solve a problem."

Development of life-long learning skills

The sixteen students wrote several statements that indicated their lifelong skills were developed. The development of research, communication and interaction

skills were evident among students as they approached the end of the semester. Students agreed that the PBL intervention 'promoted the development of lifelong learning skills, research skills, communication, and interaction skills, and reflective thinking. After the semester, students expressed profound gratitude because they were well equipped with these learning skills that the PBL strategy offered. They acclaimed that:

"The many advantages of the PBL significantly outweigh the disadvantages. It promotes the development of lifelong learning."

There was a vast and notable improvement in this area.

"The method is great for fostering the development of self-directed learning skills. I learnt how to learn with PBL."

"We collaborated and got more work done. The benefit we derived through working in groups is that we each did not have a heavy workload to deal with on our own."

"My group members explained things I did not understand."

"Team learning helped me in understanding this technical subject called Microeconomics."

"I learned through significant others." These sentiments were affirmed by Hmelo-Silver (2012).

Additionally, students reiterated that another benefit of the PBL experience is that it encouraged reflective thinking. Brockbank and McGill (2007) also posited the positive effects of reflective thinking in the learning process, hence another benefit of the PBL experience.

Knowledge construction and interaction

PBL encouraged participation and group work. Students engaged with the material and manipulated resources to properly grasp content. Some terms that they associated with knowledge construction and interaction were: "...PBL challenges students to learn through active engagement in real life problems."

Another mentioned that it: "...makes students retain the knowledge they gain much longer ..." "The problems and group work in PBL engages us to construct our own knowledge."

"The fact that PBL challenges students to learn through active engagement in real life problems makes students retain the knowledge they gain much longer."

"The problems and group work in PBL engages us to construct our own knowledge."

Wardoyo et al. (2021) highlighted the claim that the PBL engages students in meta cognitive activities such as planning, organizing and even evaluating their own learning. These activities inevitably lead to the development of problem-solving skills. Students acquiring important problem-solving skills is critical to a progressive labor force and intellectual society.

The fact that PBL challenges students to learn through active engagement in real life problems makes students

retain the knowledge they gain much longer.

There is no doubt that some students prefer the PBL over the traditional approaches. Rigall (2011) stated that students prefer PBL over more traditional approaches in education. More specifically, the fact that students prefer PBL over more traditional approaches indicate that they are willing to go beyond the normal level of student engagement and engage in activities which will allow them to achieve higher order objectives while learning.

These sentiments and experiences were underscored by Ertmer et al. (2014) and Maxwell et al. (2005).

Blended learning

The use of online resources appears inevitable in the PBL environment. Students use a combination of hard copies of resources such as textbooks and online materials to gain an understanding of subject content. The following statement clearly states how important the blended learning environment was to the student: "We were encouraged to use online learning resources which were very helpful in my understanding of Microeconomics". A similar argument was stated by Ertmer et al. (2014), and Morgan, Capraro and Capraro (2013).

Interaction skills

The majority of the participants commented on cooperative learning or team building or team learning in their reflective entries. This appeared to have been one of the most common learning experiences. Very few students commented on the negative aspects of cooperative learning such as "sponging" or students "feeding off" the efforts of others. It appears that the multi-faceted aspects of the problem forced students to be assigned different tasks and each member of a group did his or her part of the task to complete the solution of the problem in time for presentation.

Based on students' feedback, the role of the facilitator seemed inevitable to the success of the PBL process. All students reflected on the role of the facilitator, and hence the authors decided to create a special note on this important element of the PBL processes.

Role of the facilitator

Edgen and Kauchak (2019) together with Taskin-Can (2011) who adhered to the constructivist philosophy stated that the role of the teacher is that of a facilitator, a guide on the side, or a problem solver. One critical aspect of PBL procedures is the role of the facilitator. The facilitator, according to Ertmer et al. (2014), is an individual who guides students in their learning processes.

The students depended on the facilitator in this

intervention in locating the right resources to understand the content and mathematical aspects of the course, which they could not understand using other resources. All participants commented on the role of the facilitator. The students used words and phrases such as: 'resourceful', 'knowledgeable', 'helpful', 'encouraging', 'motivating', 'uses questions as a guide for our learning', 'good coach', among others, to describe the teacher. The students used words and phrases such as: "resourceful," "knowledgeable," "helpful," "encouraging," "motivating," "uses questions as a guide for our learning," "good coach," among others, to describe the teacher.

It is possible that facilitators play a significant role in determining the extent to which students stay with the intervention process. The role of the teacher in PBL is critical to the success of the students, and it must be taken seriously to ensure that they achieve mastery over the academic, personal, and social processes.

The teacher has two main functions: (1) the tutor or the facilitator and (2) the stimulator of the learning process. The tutor must be able to facilitate students' learning through the provision of adequate resources, posing to students thought provoking questions to help them develop their knowledge bases. The teacher must also be a stimulator of the learning process, encouraging students to reflect deeply on the represented content. In addition, the tutor must stimulate students to fulfill their roles in groups. Different roles such as the leader and recorder are given to students. Mane et al. (2012) presented the view that the facilitator monitors and evaluates the extent to which each group member contributes to the group's task and tries to create the conditions in which each group member can function optimally.

Peart (2019) opined on the critical nature of the challenging work environment. These researchers did create challenges with this PBL research experience. They felt that the suitable match between interest in advancing their teaching practice and a work challenge creatively enhanced their experiences as teaching/learning practitioners.

Conclusion

The authors tried as much as possible to maintain the focus of this research. They also explored in depth the voices and opinions of these undergraduates as they shared their various experiences of PBL while learning Microeconomics.

In this way the authors recognized that the proper and effective use of the PBL strategy motivates and energizes the students' cognition. It also heightens and fosters the students' independent thinking; thus it promotes the teaching and learning process. This research process allowed the authors to adequately answer the research question: What are the experiences of students who use

Problem-Based Learning in the study of Microeconomics at New Model University? To competently address this research question, they presented the experiences of the students. Action research offered them the flexibility to interact informally with these sixteen undergraduate students in their natural environment. It also allowed the participants to express themselves freely about their own individual experiences. The skillful use of a combination of open-ended questions, semi-structured interviews and personal journals allowed the authors to triangulate and thus uphold validity and readability. Data were collected, collated, triangulated, and documented in a narrative form. This was documented with the use of six basic thematic headings: students' responsibility for learning, development of life-long learning skills, knowledge construction and interaction, blended learning, interaction skills, and role of the facilitator.

RECOMMENDATIONS

From the forgoing the following recommendations are presented:

1. More opportunities must be provided for students to use the PBL approach
2. Tertiary educators need to appreciate and value the PBL strategy
3. Policies enacted at the tertiary level must include students in the teaching and learning process as well as the decision-making processes.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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