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**THE IMPACT OF E-LEARNING ON STUDENT'S
COGNITIVE DEVELOPMENT DURING THE PANDEMIC OF
COVID-19**

The case of first year's students at the section of English in the University of Mohammed
kheider Biskra

Dissertation submitted to the department of Foreign Languages as a partial fulfillment of the requirements for the degree of **Master in Sciences of Languages**

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Declaration

I, ABIDI Nour El Houda, do hereby solemnly declare that the work I am going to present in this dissertation is my own, and has not been submitted before to any other institution or university for a degree.

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Dedication

In the name of Allah, Most Merciful, Most Compassionate

I have the honor to dedicate this work at first to

All cancer's patients around the world & at the top of the list to my dear father *ABIDIFarid*, wish you all the courage, patience, healing and purposefulness to fight this malignant disease for us, to tell you we are nothing without you.

To my iron woman, *BELKHEIRIA MALE*, who's sacrificed, endured hardships and troubles of life to raise me to be the person I 'am today. You are the light of my life.

**Thank you both for your unconditional love and support may god keep you save
for me**

To my source of support *Aicha, Aya, Belkacem ABIDI & Farida AOUCHE* my beloved family you are the reason of my power.

To my best friends with whom I enjoy life and find them for the better and for the worst: **Razane, Hayam, Iman, Zahra, Manal.**

To my uncles: *Rachid, Yahia, Hakim BELKHEIRI* grateful for having you in my life.

Thanks also giving to the friend who supported me and without him I would never have the courage to continue *Youcef*.

Finally, I dedicate my regard and thanks to all those who supported me while completing this humble work.

Acknowledgements

All thanks given first to **Allah** who has given me the power and strength to complete this work.

I would like also to express my deep sincere gratitude to my honorable supervisor **Dr.BASHAR Ahmed** who has guided this research and has been so generous in devoting his time and valued knowledge. Without his support, precious advices, and fruitful interaction I would not have completed this work.

My thanks also go to the members of the jury **Dr. MAALLEM samia**, **Mrs.BENCHAREF sakina**, and **Mrs. BAKHOUCHE rim** who have kindly accepted to examine my work.

I am very grateful to all my classmates as we are as a one family from **2016** to **2021**.

Special thanks to my best teachers who they help me **Dr. TURKEY barket**, **Dr. MEDDOUR Mustapha**, **Dr. ELHAMEL Lamdjed** who they provide me with help.

My endless appreciation also goes to all those who helped me in one way or another to complete this work.

Abstract

Due to the hard situation that the world witnessed recently because of COVID-19 pandemic, and under the circumstances many dramatic changes happened in all educational institutions. A million of schoolchildren and university learners were forced sent to home for an open vacation in order to maintain their health from risk of contracting with the virus. What make many countries all around the world take the necessary precaution in order to preserve the continuity of the learning process successfully and safely, where many schools and universities adopted the idea of following up e-learning to solve the problem for the closure of schools and colleges as long as the COVID-19 virus lasts. This following work is an attempts to spot the lights on the importance of e-learning on student's career during the inevitable situation the world is in, this recent study focusing on one main hypothesis suggested in that e-learning has an impact on student's cognitive development and how much is effective among English foreign language learners (EFLL). Methodologically, we choose the appropriate qualitative approach as a descriptive process that suits our research work. To carry out this research and confirm the hypothesis we suggest, we design two qualitative data collection methods; a student's questionnaire for 1st years (LMD) students, and a teacher's interview with a five teachers from English language division at the University of Mohammed Kheider Biskra. After the interpretation of the collected data, the result obtained through the analyses provides some evidence that support and verify our hypothesis; e-learning has an impact on student's cognitive development during the pandemic of COVID-19. Finally, this study recommended some suggestion for the teachers and student to help them for better applying this learning process.

Keywords: COVID-19, e-learning, student's cognitive development.

List of Abbreviations and Acronyms

EFLL: English foreign language learners

LMD: License, Master, Doctorate

Q: Question

USB: Universal Serial Bus

CD-ROM: Compact Disc Read-Only Memory

Ibid: ibidem (the same previous source)

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GENERAL INTRODUCTION

General Introduction

The Background of the Study

Education is a broad field that facilitates the process of acquiring knowledge and developing new ideas, skills, moral values... Learners all over the world are fully aware of the critical role that education plays in their lives. Furthermore, highly educated people have a chance to be part of academia.

As a result of the current situation (i.e., Covid-19), many educational institutions such as schools, universities and academic administration ... are struggling with the issue of how to maintain the continuity of both learning and teaching processes without jeopardizing students' and teachers' health.

COVID-19 has lately migrated spread rapidly from (Wuhun, China) throughout to the whole world, its danger lies in its fast-spreading contagion. The virus can spread from infected person's mouth or nose in small liquid particles. However, its numerous variants are the real threat.

COVID-19 has changed dramatically the path of learning. It has become impossible for students to return to the classroom environment and continue their studies in the same manner as before. However, it has become necessary to find a solution that allows students to continue their learning without endangering their teachers and their own health. Lockdown, a forced stay at home and keep as much distance from others as possible and this where technology steps in and helps learners to study online during this difficult pandemic situation.

This study focuses on the role of e-learning and how it affects students' cognitive development and the potential impact of Covid-19 on students.

Statement of the problem

Students in this level '1st year level' are required to give their best to improve themselves and their level in English. They are-by and large to achieve their goals and ambitions thanks to education by engaging in different assignments in order to develop their language skills.

As they considered as EFL learners, they rely much on the content giving by teachers during the course in order to ameliorate their level by adding new information and knowledge to the background they have, or sometimes acquiring new skills, values and basics to effectively master the language.

The main problem that learners suffer from due to the current situation is how they can receive their needs in the learning process and practicing their studies as before without exposing themselves to risk of infecting by the virus. Also, another problem spot light is how much e-learning can be effective for learners as a learning method. Accordingly, the present study tries to provide a solution to the problem of interruption of education because of Covid-19.

Significance of the study

This study is significant as it tries to show the role of education in time of the Covid-19. It defines what e-learning is and its importance in both learning and teaching fields in addition to its methods, advantages, disadvantages and reasons behind shifting toward it. Furthermore, this research presents the major bases of Piagets' theory of cognitive development in details and its major concepts. This study presents the impact of e-learning on students' cognitive development.

Aims of the study

The general aim of the study is to show the role of e-learning as a method of learning and its potential impact on the nature of the learner's cognitive development during this current situation (the spread of corona virus 'COVID-19')

More specifically, this study aims at:

1. Shedding light on the importance of e-learning on students' career.
2. Presenting some of the important concepts of e-learning.
3. Identifying the main causes of shifting towards e-learning.
4. Exploring the benefits of e-learning comparing to the traditional way (classroom/face to face learning).
5. Suggesting some of e-learning tools and methods as a solution that solves the problem of non-studying.

4. Research Questions

This research will attempt to address the following questions:

- RQ1: What is the role of e-learning in student's career?
- RQ2: Is e-learning method effective/non effective?
- RQ3: To what extent can e-learning replace face-to-face teaching?
- RQ4: How much can e-learning be beneficial to learners' cognitive development?

Research Hypothesis

It is hypothesized that e-learning has an impact on student's cognitive development during this pandemic (COVID-19).

Limitation of the study

Actually, it was not an easy task to collect data easily from all the learners during the period of corona virus (COVID-19). This researcher could not gather data properly because of the lockdown and social distancing. So, this researcher raced against time to share the questionnaire online via social media platforms (Facebook, Messenger groups). And for the same reasons teacher's interview was carried out, taking into account health protocol.

Research Methodology

In order to achieve the aims of this study and to confirm the previous hypothesis; a qualitative approach will be used (descriptive). This approach fits the nature of the research.

Population

As it has been already mentioned, the previous aim of the study is to investigate the impact of e-learning on student's cognitive development during the pandemic of covid-19, in order to achieve the aims of this study, and test and confirm the hypothesis, and obtaining more information from the subjects (teachers /students), the qualitative approach (descriptive) shows that it is the most suitable to this study to dive deeper in the problem and examine the impact of e-learning on student's cognitive development during the pandemic of Covid-19 .

Sample of the study

In order to precede this study, 1st year students of English at Mohamed kheider University have been as a target sample to focus on this study. From the total population of student, 50 students have been selected. In addition, it was not possible to eliminate the teachers from the sample since they are an essential part (interview) in our research due to their essential role and responsibility to develop learners academically writing performance

by their precious experience; therefore, a number of 5 (five) teachers from the English language division were chosen to give their thoughts on this following research topic.

Data gathering tools

In order to succeed this study this researcher has used two (2) data gathering tools about the actual study and the current situation, a questionnaire has been offered to the sample of the study (1st year student of English at the university of Mohamed Kheider Biskra) to collect their reasons, thoughts, attitude, and opinions about this research problem. In addition, an interview has been conducted with the English teachers of Mohammed Kheider University of Biskra about the performance and the difficulties that EFL with e-learning and whether it affect them in a positive way of evaluation during this period (Covid-19 period).

Dissertation structure

This following thesis is divided into two (2) main parts, starting with the first part which is the theoretical part which is divided into two chapters and the fieldwork.

Chapter one gives an explanation with details of the independent variable which is e-learning and its benefit, methods, elements, advantages and disadvantages, tools and strategies, on the other hand,

The second chapter gives more details about the dependent variable student cognitive as theory by mentioning its stages and substages. Moreover, a thorough comparison between Piagets' and Vygotskys' theories of cognitive development Furthermore, is about the practical part, which is the third and the final chapter it shows the two (2) data gathering tools, which are used (interview,questionnaire) that shows a different interpretation for both students and teachers about the topic.

Chapter One: The Nature of E-Learning

The Nature of E-learning

Introduction

This chapter sets out firstly to define what e-learning is, and secondly to argue on the real role that e-learning plays in both learning and teaching field. Also, it attempts to present different online methods and strategies that suit many students in different levels due to deterministic situations that require a quick alternative solution in addition to some others important elements that should be taken into consideration. Along its elements. Additionally, some light is shed on some reasons that urge students to shift out towards studying online. Then, both advantages and disadvantages of e-learning are outlined by listing some elements. Furthermore, we are set to compare between classroom study and online study, and which of these is more beneficial to learners. Finally, this chapter is to set different types of platforms and websites used among learners and teachers. This is done with the premise to clarify how e-learning has an effective impact on students' cognitive development as the only solution for the time being.

1.1 E-learning: Reviewing fundamentals

E-learning has proved to be one of the important concepts gained attention of many researchers and interested of the domains, thus it has become a necessity to introduce it carefully in details.

1.1.1 Definition of E-learning

E- Learning has been extensively defined by many scholars from a different point of view. There to Ally (2008) highlight on the importance of online education by the following,

Chapter One: The Nature of E-Learning

“ ... The use of the internet to access materials; to interact with the content, instructor, and other learners; and to obtain support during the learning process, in order to acquire knowledge, to construct personal meaning, and to grow from the learning experiences” (p.5).

This definition provides a clear description about online education in details by mentioned how should e-learning be and its main advantages on learners specifically.

Bates (2005) set out the term ‘online learning’ and ‘e-learning’ are totally used in an alternate way by mentioned that e-learning can encompass any form of technology. Whereas, online learning is all about using the internet and websites (p, 9).

In other word, online learning as it was described previously is clearly considered as a way of distance education totally mediated by technological materials and tools where learners are geographically far away from the pedagogical atmosphere (classroom) and the main academy of learning.

“ E-learning is defined as learning facilitated by the use of digital tools and content that involves some forms of interactivity, which may include online interaction between the learners and the teacher or peers” (Ministry of communication and technology of New Zealand, 2008).

In short, online education seems as the cost of making students updating in the media that increase the chances of making them more intelligent by going deeper in technology, not only that, but it is also about gaining much time by being at home and receiving needs and educational materials.

Yet, there are some learners who prefer to study individually as a matter of feeling more comfortable with being alone while they study, due to the fear of making mistakes in front of mates, anxiety, and lack of confidence.

Definition of Distance learning

Distance learning is often defined as the effort of giving an effective access to learners to those who are geographically far away.

Many scholars and researchers have taken the term of distance learning as an investigation that should be taken into consideration. Starting with 'Moore' who present his theory of "independent study" which contribute in the foundation of distance learning, it provides the effective teaching can be successful even if the teachers and learners are separated physically during the learning process is achieved " distance learning is not simply a geographical separation of learners and teachers, but more importantly is a pedagogical concept" (Keegan, 1993).

Greenberg (1998) asserted that distance learning is "a planned teaching/learning experience that uses a wide spectrum of technologies to reach learners at a distance and a designed to encourage learner interaction and certification of learning" (p, 36).

There is also Desmond Keegan, who offers a clear definition by declaring that distance learning and training result in situation of technological separation of both teachers and learners which release the student from the obligation of travelling to be present physically in the classroom." A fixed place, at a fixed time to meet a fixed person, in order to be trained" (p, 7).

He also asserted six key elements of distance education (1980, Ahmed basher article);

- Separation of teacher and learner.

- Influence of an educational organization.
- Use of the media to link between teacher and learner.
- Two-way exchange of communication.
- Learners as individuals rather than grouped.
- Educators as an industrialized form.

History of distance learning

Distance education was not considered as a new concept at all, because it was one of the distance education programs “correspondences courses” started in Europe exactly in the United states in the late 1800s, in which the teacher and the learner were totally separated in different locations. It was designed to help those who were not elite and who could not afford full time to be present physically in classroom or in the same time regularly all the time in order they can improve their educational purposes (Harting & Erthal, 2005).

Until the Middle of the same century were the radio and television were used in schools and academic administration to deliver some of the instructions at a distance, such the Charles Widemeyer’s innovative in use of media at the University of Wisconsin to provide learners with materials and content that belong to their education system to effectively enhance distance learning, not only that but some audiotapes including lectures and lessons were sanded via mails to teach important material have been used in correspondence courses too (Harting & Erthal, 2005).

Nowadays, distance education still in practice among many teachers and learners by using some live video applications such; (zoom, Google meets, discord...) all around the world in many countries with a different languages and educational content (Ibid).

1.1.2 The importance of E-learning

The prime benefits of e-learning play an important role in both learning and teaching field in many different points as the following:

1.1.2.1 Learning field

Learning online recently has watched an asylum from a lot of students in many different levels, it has been growing in number of online courses, degrees, and masters have greatly increased.

“E-learning is a course where most or all of the content is delivered online. Typically have no face to face meetings” (Allen & seaman, 2003, p6).

Also Moore and Kearsley (2012, p. 8) set several reason concerns the importance of e-learning;

- Expand the capacity for education in new subject areas.
- Improve the cost effectiveness of educational resources.
- Increase access to learning and training as a matter of equity.
- Provide opportunities for updating skills for the workforce.
- Add an international dimension to the educational experiences.
- Enhance the capacity of the educational system.

This shows how much online learning is effective for learners in the way it offers to learners, many different opportunities that enhance their level as EFLL.

“Over the past years, online learning has moved from the periphery to the center of university life (feenber, 1999). Furthermore, is no longer binding to the university

extension. In recent years, distance learning has become a ubiquitous practice as a result of the spread of the internet” (Larreamendy–joerns&leinhardt, 2006, p570).

Despite the growth of online learning that all the world witnessed, online learning still takes a secondary role in higher education institutions, strategic planning (Black, 2007; Allen & seaman, 2011). Most universities in the United, according to Anderson (2003), do not intend to incorporate online learning into their higher education programs despite its widespread use and importance.

1.1.2.2 Teaching field

Teaching filed in studying online has become a power of communication technology to send, receive, use, and deliver information by the teacher towards learners successfully. Teaching methods nowadays are no more confined to being present as the old traditional way face to face course with the obligatory attendance in the classroom.

Today’s students, according to Prensky (2001), are “digital natives”. He noticed that students have not only acquired a set of skills by using new technologies, but it also allows the majority of learners at all levels to develop a new learning style and skills by utilizing them as a very useful way to stay in touch with educational needs (lessons, test, and assessments, etc..). As a result, it has become necessary for teachers to prepare themselves to deal with the recent mode of teaching (online teaching) in order to overcome the associated possible challenges.

Dealing with advantages, online teaching offers new opportunities and different chances for teachers to practice their profession comfortably through critical discussions with students excluding impressing or intimated feelings.

Chapter One: The Nature of E-Learning

In addition, Bergman & Sams (2012) claimed that online lectures “ensure students receive a personalized education tailored to their individual needs” (p.6). In the same vein, many scholars emphasized on the vital role online teaching provides in improving the learners’ degree of engagements and involvements in learning process by making them active learners through opening various debates and discussions.

In the matter of e-learning elements, educators presented the followings:

1.1.2.2.1 Accessibility

It means that all kinds of information and knowledge are available to students at any time they want, and wherever they are. These benefits make the process of learning easier than it was before with no barriers of both time and distance (Rao, 2011).

1.1.2.2.2 Scalability

On one hand, it means that reaching twenty participants or even more all around the world and in many different countries is instant and accurate, and it depends on showing technical skills of the system which shows the accurate feature of the distribution. On the other hand, scalability can be increased resources by adding processing power to the server to make it faster (Rao, 2011).

1.1.2.2.3 Immediacy

Rao (2011) claimed that immediacy refers to the process of delivering information just in time. For example, if one of the students cannot be present in the synchronicity program, he is welcome to go back to the asynchronous information that is stored on the web.

1.1.2.2.4 Affordability

Affordability is the removal of travel cost and classroom attendance, it means there is no necessity to be physically present at all to undertake assessments and classroom activities. In brief, learning is just available on students' online devices in any place they want (Rao, 2011).

1.1.3 Methods of E-learning

There are four basic categories of online education courses methods:

1.1.3.1 Asynchronous online courses

“ Asynchronous learning refers to instruction that is not constrained by geography or time” (khan, 2005).

Shahabadi & Uplane (2015) argued that asynchronous method learning was considered as the first and the most method of e-learning used among students and teachers since it was a course that was self –paced programs independently. With more details synchronous course enables students to access the material in 24 hours on all days of the week. Usually there is a strong interaction between teacher and students in form of practically office hours, days, months ect, in online discussions or by sending emails.

1.1.3.2 Synchronous online courses

Khan (2006) explained that “ asynchronous learning as interact of participants with an instructor via the Web in real time. “

Also, it is considered as a course that takes place in real time, the main concept in this course is that students and the instructors need to log in the learning platforms at the same time and date. Whereas, the instructor needs to deliver the lecture directly, and the same for other activities and works. This process is live and students are allowed to ask

Chapter One: The Nature of E-Learning

questions as much as they can in real time. It includes the live webinar, video/audio, instant messaging, and live webcast (Shahabadi & Uplane, 2015).

Yet, here tools used in both Asynchronous and synchronous online courses:

Asynchronous tools	Synchronous tools
Email	Text-based chat
Discussion/message boards	Voice-based chat, to include the phone
Blogs	Audio and/ or video conferencing
Social media sites	Web conferencing
Listservs	Virtual worlds
Streaming audio or video	Whiteboards
Wikis	Real-time document sharing (e.g., Google
Non-real-time document sharing (e.g.,	documents)
Google Documents)	

Table 1. 1: Asynchronous and synchronous tools (Hewett & Depew, 2015, P.138)

1.1.3.3 Hybrid or blended online courses

Procter (2003) defined, blended learning “ as the effective combination of different modes of delivery, models of teaching and styles of learning.”

Also, according to Chew, Jones and Turner “ blended learning involve the combination of two fields of concern: education and educational technology” (2008).

This course combines some specific aspects from both previous synchronous and asynchronous courses in the learning system with the same previous tools (classrooms, books) and new tools (video conferences, digital items, forum discussions). It is also called the flipped classroom learning, because students are required to study by themselves in

some particular topics that is usually online and give an effective interaction in the classroom.

1.1.3.4 Competency-Based online courses

Competency – based online course assesses students learning, not time spent in a classroom (Fain, 2009).

Competency-based online is course based on personal effort of learning, where there is a specific skill achieved to support particular goals at the end. Unlike the asynchronous course, there is no previous record of lectures or learning material, the students and the instructor work together in order to create a learning process using personal experiences in job and books to help other learners to develop their skills when competency has been achieved (Ibid).

1.1.4 Shifting towards E- learning

In 1999, the term ‘ e-learning’ was appearing to the world. However, its real existence as a real method needed to be taking seriously in use and implementation for many years beforehand as a beginner. Back to 1840 an English educator called ‘Isaac Pitman’ invent a writing system called shorthand (stenographic sound hand), a rapid system that depends on the sounds of words and terms (phonetically) than the full conventional spelling. He organizes sounds of words into different separated groups to the end makes a simple abbreviation for each term rapidly. In 1852 the shorthand system was introduced to the United States, then it starts to be taken by many different languages like French, Spanish, Dutch, and of course Arabic. (Charles, Dykman, Davis, n.d).

Then, in 1954, a Harvard professor called BF Skinner invented the teaching machine; which include a program made by a system that combine teaching and test materials to be

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learned. It is totally consisting from a fill in the blank method on a workbook or a computer, the teaching machine work by a rule, if the student gives a correct answer the teaching machine will give a reinforcement and move automatically to the following question, but if the answer is wrong the student studied the correct answer instead of the previous wrong one in order to increase the opportunities of getting reinforcement in next time. Skinner believes that the classroom had disadvantages because of the rate of learning for certain different students that is variable and reinforcement is delayed due to the lack of interest and attention of many students.

Thus, we agree that the main principle within this invention is to replace teachers by machine because of many reasons, but the most one is to gain efficiency (Ibid).

Going to 1960, where the world witnessed the first computer- based training program (computer-based learning or computer- based instruction) and it was also called Plato-program logic for Automatic Teaching Operations, it was created by Donald L Bitzer in Illinois University at Urbana- Champaign (UIUC) as a teaching tool, firstly it comes because of a discussion with Bitzer's friend (Chalmers Sherwin) who asked whether it work if we use computer for educational needs and purposes. Practically students were interesting with many different types of learning material and here the computer- based training made of courses designed in many different shapes and forms in software packages to at least enable students to allow student receive their learning needs (lessons, homework, tests) at their own stride and also provide them with overall progress (Charles, Dykman, Davis, n.d).

Now, we should agree that the future can be complex to predict, and especially regarding technology using in education, such a vast field and how it will affect our lives. Especially when we are living in a world where technology facilitate each time things and

still going in the process of updating new things more easily, that is what creates an increased awareness among the idea that technology hold the key to their future prosperity and social well-being (Ibid).

“ I really do not know how internet learning will shake out, but I am utterly convinced that over the next ten years we will see shifts from in-residence learning to online learning” (Gerhard. as cited in Muller, 2002).

Gerhard was 100% sure from the important place that online education will take place, back to previous centuries technology was dominated many filed of human life in many different domains and that what make it more meaningful since the necessity of creating a surge of collection between technology and education to facilitate the process of learning for both teachers and learners (Ibid).

“ For tens of thousands of years, human beings have come together to learn and share knowledge. Until now, we have to come together at the same time and place. But today, the technologies of the internet have eliminated that requirement. Soon anybody will be able to learn anything, anywhere at any time, thanks to a new development called e-learning” (Horton, 2006, p, 1). Horton clearly argues that e-learning offers a charge of power to learners to enhance the process of learning easily in a way it is allowed at all places and in all times to preserve the continuity of learning.

1.1.5 Advantages and disadvantages of E- learning

Despite the fact that online learning affects positively the way we learn, still have some negative side that we should pay attention to while we are depending fully in studying online. That’s what makes it necessary to mention both advantages and disadvantages of e-learning;

1.1.5.1 Advantages of E-learning

A/ A flexible way to learn

E-learning is flexible way of learning to many students since they can access their educational content and material any time they want in an easy way that is stored specially for the required time, not only that, but they are allowed to select and choose what is appropriate to them in both instructors led and the system of learning they want (Arkorful, 2014).

B/ convenience

E-learning is convenient because it suits a lot of students in different situations, students are no more obliged to be present physically in the classroom, they can receive their needed content where ever they are in and in the way that suits them. Also, they are allowed to save and memories their educational material and use them when it needed (Arkorful, 2014).

C/ Lower cost

According to Arkorful (2014) e-learning counted as the most efficient, cost way of study among many students as they can use online courses and materials much they can but depending on their needs, and not only for students but it is also suits teachers and universities to updating each times lectures and using online platforms for occupational purposes.

D/ Distance Learning

E-learning has many kinds of strategies as an educational system to facilitate distance barriers for both teachers and students. Nowadays, it becomes easy to access the

material and the educational content and contribute to it regardless to the geographical location of students or teachers (Arkorful, 2014).

E/ Update Materials

When the material is available in the system (platforms/ websites) the process of updating lectures and content needed becomes easier to use it whenever they want (Ibid).

F/ Facilitates the Teachers' job

The e-learning process helps teachers to better do their duty towards students for better understanding during the explanation and for better performance later on in the test or exam; it becomes easier than the traditional way when they teach before it requires a lot of effort (Ibid).

G/ A Developed Tool

Due to Arkorfull (2014) we are in a gold generation that each time we develop more than were before, and with technology, everything becomes easy and available. For this reason, mixing technology with education as a new learning style is a must that should be explored and used.

1.1.5.2 Disadvantages of E-learning

A/lack of Effectiveness

E-learning cannot be effective in all cases and with all students. It depends on the levels of students and the kind of material. For example, it suits the intelligent students when they deal with mathematics, while an average intelligent student, he may not access

to the point directly. Plus, that there are some materials they really rely only on face to face courses to be clear enough to all levels of students (Arkorful, 2014).

B/ E-learning create problem of social isolation

An e-learning process sometimes depends a lot on studying individually at home or any other place except classroom. Being with classmates and colleagues cannot encourage all students who they prefer to study in groups or peers (Arkorful, 2014).

C/ E-learning feed student with untrusted content

It means that sometimes websites and educational videos deliver wrong information to students, it is not correct at all times, that's why the researchers (students) need to be careful and aware to distinguish between what is true from false (Arkorful, 2014).

D/ E-learning unmotivated comparing to the traditional way

Students find themselves unmotivated and bored while they studying online, the lack of feeling people surrounding them can make them lose interest towards the content. So student here find themselves unable to acquire new information that leads to laziness (Arkorful, 2014).

E/ factor of poor internet connection

There are some countries in the world who they suffer from the low quality of the internet that formulate a big issue if some student wants to use it for educational purposes, which leads to time consuming and uninteresting much make student incapable to continue the study (Ibid).

1.1.6 E-learning versus classroom learning

There are some scholars whom they concern the concept of interaction as the first element in which e-learning totally differ from classroom/face to face learning such (Karayan & Growe, 1997; D. Smith & Hardaker, 2000) who they suggest that in an online environment learners centered learning; students are encouraged themselves and classmates to better participate and produce much better even participate in complex discussion more than they do in their classroom learning participation.

(Warschauer, 1997) claimed that the concept of interaction in e-learning course is less intimidating between students each other than does interaction in classroom learning course. Interaction can be considered as a very important concept that classroom courses depend on it between teachers and students and students between them, he creates a strong ability to make student more interesting about the lecture by asking questions for better understanding, and for sharing an opinion to persuade others from his own perception, and sometimes to disagree with an opinion to confirm the opposite.

It has often happened through a direct conversation, discourse, dialogue, deep discussion or even debate between students and teachers or between students each others about the giving content to clarify a new concept or to change an old assumption, and even to practice a skill or to acquire a new one in order at least to achieve a learning goals. Whereas, online learning depends on adjustments by teachers as well as students to achieve a successful interaction that needed, and to occur that interaction online should be followed with electronic bulletin, e-mails, and synchronous chat, etc.

Online courses should involve many different learning activities and educational materials to achieve diverse communication skills such reading, listening, speaking, and writing. Not only that but also to consume some electronic material such video and audio

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that belong to the content in order to interact with classmates in different variety of communication styles, and to added a new knowledge to the previous background they have and to receive a feedback on the performance they give. While, in classroom learning course which depend on much diversity of lectures and dialogue based learning activities in order to make student capability to read or view the material and the content as they want so many times to better support student (bird, 2014).

Student call for what is most easy, comfortable, and available to them. That's why the majority of student in face to face course want to get the fast and the best feedback about their performance in the class whenever they attend physically the lecture. Whereas, In the synchronous online course is not motivated enough to make them well perform live in front of classmates or even if they perform it is less than they do in face to face course (Bird, 2014).

According to Bird (2014) classroom learning typically takes place in a group setting, being in classroom atmosphere is much helpful for the majority of students to be strict enough among the lecture, and psychologically more comfortable to find themselves next to mates and friend in college. Moreover, most of students rely on the teacher as they consider him/her as a guide to guide them to the correct answer or as a trusted source. In the other side, in e-learning the only distraction is the student themselves, as they take responsibility in some cases about the content they give and at the same time correcting themselves if they full of mistakes in order to acquire the right material.

Classroom learning courses are more suitable to young teenager students; according to them the regular attendance in the classroom allows them to join better with others of their own age to better discipline and improve their physical fitness and mental creative art, but

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in online learning it depend on loneliness mode that sometimes consider as an issue for some adolescent students to make them fall in big troubles (Ibid).

Concepts	E-learning	Classroom learning
Interaction	Less interaction	High interaction
Collaborative work	Hard to perform since it is individually achieved	Easy to perform due to classroom attendance
Concentration	Low proved, unsuitable environment	High proved, classroom atmosphere
Way of understanding	High, self paced learning	Medium, student's level
Accessibility	high	Medium

Table 1. 2: E-learning versus classroom learning (Punchihewa, 2012)

1.1.7 Differences between; face to face learning/distance learning/E-learning

Broaching to those three important factors, Nunan, Reid, Mc Causland (2002) made a necessity to mention some particular modes for each learning methods in order to distinguish between each one of them as they include an important processing in many fields. Thus, it is pointed out the aim to mention those several elements;

Modes	Face to face learning	Distance learning	E-learning
Role centered	Teacher centered	Resources centered	Learner centered
Characteristics	Fixed place, time, and group of people	Time, place are more flexible	Flexible people, no fixed time and place
cost	For free and limited cost	High fixed cost required large scale	Variables fixed and marginal costs
Sources	Transient experience	Permanent resources	Both transient and permanent
Methods based	Content support teacher performance	Materials support learners	Online websites produced by time for both teachers and learners

Table 1. 3:Differences between face to face/distance/e-learning (Nunan, Reid, Mc Causland 2002)

1.1.8E-Learning Platforms

E- Learning platforms are those digital websites that operate through online based hardware and software. These tools are considered as educational environments that offer for students learning, training, and courses in different educational domains.

The following are the most inspiring e-Learning websites that offer students from all around the world inspiring educational alternatives;

1.1.8.1 Moodle

The word Moodle is an abbreviation for modular object- oriented dynamic learning environment. Moodle is a learning platform that was mainly created to help educators presents their courses. For this reason, Moodle has been accessed in over than 100 different languages in order to achieve a collaborative online learning between both teachers and students all over the world (Singh, 2010). The website offers educators a unique teaching experience through the latest interactive online algorithms (ibid).

1.1.8.2 Skillshare

Skillshare is an American learning online community that provides project based classes for people who want to learn from educational videos. The courses are available by subscription and controlled by experiences educators in many domains. Moreover, Students are assigned with different assessments at the end of each course in order to encourage students their newly acquired skills to use (Skillshare Teacher's Handbook, n.d).

1.1.8.3 Codecademy

Codecademy is an online platform that offers learners predominated programming courses. It aims at enabling learners to build meaningful goals with technology in order to make an impact on the world around them (Codecademy Teacher's Handbook, n.d).

1.1.8.4 Udemy

Udemy's name is a combination between two words which are you and the academy. It is an online platform where learners from all around the world will get access to both paid

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and free courses related to any educational content. In sum, this website is so useful for many students because of the various training program offers for learners (Udemy Teacher's Handbook, n.d).

Conclusion

This chapter attempted to provide a preview about the nature of e-learning, and its important role in students' career. Initially, it submitted different definitions according to many scholars' perspective. Furthermore, several important elements, methods, processes of e-learning were discussed in this chapter. Moreover, the current chapter outlined some of the advantages and disadvantages of e-learning. Finally, the chapter ended by introducing some of the famous e-learning platforms for online learning.

In sum, the mastery of online education is a complex task, which requires both teachers and learners to have some necessary techniques and knowledge in order reinforce the teaching and learning processes.

On the other side, the following chapter will attempt to introduce the impact of e-learning on students' cognitive development during the pandemic of COVID-1

Chapter Two: Students' Cognitive Development

Student's Cognitive Development

Introduction

The following chapter an in-depth investigation of EFL cognitive development, it is within the range of this chapter to spotlight Piaget's theory and its major points, as well as the four important stages of the cognitive development theory and the characteristics of each mentioned stage, which indicate the features of each stage and its sub stages, will be thoroughly discussed. Also, it will provide a clear cut about the differences of Piaget and Vygotsky's cognitive development. The chapter concludes with setting lists of the major constructs of Piaget's theory of cognitive development.

2.1 Piaget's Theory of Cognitive Development

Jean Piaget (1896-1980), a biologist by calling, is a Swiss psychologist who contributed developmental psychology during the 20th century; His theory attempts to explain the nature of cognitive development in human's intelligent by studying the nature of knowledge and how humans perceive, acquire and use this knowledge (Huitt & Hummel, 2003).

The theory of cognitive development (1936) mainly explains how child construct a mental model of the world, Piaget disagrees with the thought that intelligence is fixed and agrees with the idea that cognitive development is a process that can be attributed to biological maturation and a direct interaction with the environment (Macleoad, 2018).

Piaget studied his own children from their tender infancy for teenager years. Piaget was able to determine how children develop their cognition, i.e., mental processes involved in the acquisition of knowledge and understanding. As a result, he (Piaget) set up stages of cognitive development (ibid).

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Piaget (1964) believed that all humans pass through four stages of cognitive development, "although the order of succession is constant, the chronological ages of these stages vary a great deal" (P,178).

2.1.1 Sensorimotor Stage

Sensorimotor stage is described as the first stage of development through which people pass, because its period starts from the birth of the babe to two years. Throughout this stage, children's behavior suffers from lack a sense of thought and logic, children at this stage coordinate sensory experiences such seeing and hearing with motor actions like reaching and touching. That is enhances the thought processes of the little child through their actions, after that baby in this age start to form and organize some ideas and concepts that do not change. At the beginning the infant here cannot make a some specific and suitable sense towards particular toys, but when he step by step use his sense of touching by manipulated the object and see it carefully (sight) here they are capable to form the object in their minds easily. And here we are ready to observe and analyses the existence of logical knowledge in babies' mind since they are showing a reaction of understanding towards objects (lefa & Baken, 2014).

Piaget (1963) illustrated in-depth this stage by experiments with a babe who concludes from it the concept of " object permanence ". Piaget brought a little child and spent with him half of the day playing with a toy as he wanted to investigate how the children acquire the concept of object permanence and at which age.

Piaget hid the previous toy under a blanket at the same time the child still watching the action carefully, the aim of this experiment is to observe whether the child search about the hidden toy as evidence of object permanence of achieving mental presentation of the object (toy) in the child's mind. Thus, Piaget observed that infants start the process of

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searching for hidden object when they are around 8 months-old because children at that age they are able to form the schema of the hidden objects in their minds even if they are out of sight (Piaget, 1963).

The sensorimotor stage divided into other six (6) sub stages that are mainly built upon the development of a new skill:

Number of the stage	Name of the stage	Period of the stage
1	Reflexes	(0-1 month)
2	Primary Circular Reactions	(1 – 4 months)
3	Secondary Circular Reactions	(4 – 8 months)
4	Coordination of secondary circular Reactions	(8 – 12 months)
5	Tertiary Circular Reactions	(12 – 18 months)
6	Beginning of Representational thought	(18 – 24 months)

Table 2. 1: The sub stages of the sensorimotor stage (Harris, 2005)

A/Reflexes

In this first substage the newborn babe till one month later gain knowledge about his world and the environment around him through the use of their reflexes such reaching, sucking, and grasping. The use of those reflexes becomes more purposeful to babies in this period to achieve their needs (Cherry, 2019).

B/ Primary Circular Reactions

During this next sub stage when the babe is between one month and four months, the little baby automatically starts to use his own body in any repeated actions by involving himself through activities that happen in his day each time. At this stage the baby by an accident may acquire an action than he finds it interested, so he repeats for many time like making vocalization, motivated action allows the little baby to gain a new behavior that in fact he get it by coincidence. What makes this sub stage as a primary and circular because of the behavior that is centered on the body of the baby (Cherry, 2019).

C/ Secondary Circular Reaction

The infant in this following substage from four months to eight starts to build his interaction with object founded around him in his environment, at the beginning he interacts with tools by accident but then this action starts to be repeated for many times. The baby becomes more active than he was before toward his outside world and also make a challenge to himself to make things happen when he wants it (Cherry, 2019).

D/ Coordination of Secondary Circular Reaction

In this fourth sub stage where the baby is between eight months to twelve months he starts to make a combination between his reflexes and uses planning to get his purposes, in this stage the little baby is totally ready to organize a thought and he carries out a planned goal and directed activity. For instance; with the same animal toy seen by the baby up the table he crawls towards the table in order to reach the toy, here seems that the little baby combines internal and external activities in order to achieve his goals (get the animal toy) (Cherry, 2019).

E/Tertiary Circular Reactions

In this following sub stage, exactly in the period from twelve months to eighteen months, the little baby considers himself as a researcher since he involves himself in the process of exploring the world and the environment that he belongs to by using both his motor skills and planning activities. For example; the baby while he is lying on his own bed, he throws his animal toy from above to discover what happen. The little baby engages himself in a real experiment to learn new things (Cherry, 2019).

F/ Beginning of Representational Thought

In this following last substage, where the baby is between eighteen months to twenty-four months. The stage of sensorimotor end with the learnable concept of symbolism, the little baby here totally convened that the external materials can be presented by symbols. Furthermore, the child at this stage is capable to some mental methods such memorizing old experience and repeated the same action or remembering old sounds and pronouncing the same as it was heard. The first movement taking the little child towards the external world is actually more to the mental world (Cherry, 2019).

Sensorimotor sub stage	Examples	Object permanence
Reflexes (0 to 1 month)	Sucking	Making no effort to find object
Primary circular reactions (1 to 4 months)	Bringing thumb to mouth	Still making no effort to find object that disappeared

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Secondary circular reactions (4 to 8 months)	Raise up a glass	Start searching about object that is hiding from sight
Coordinated secondary circular reactions(8 to 12 months)	Uncover, then grasp	Still searching about hiding object, but makes the A not B error
Tertiary circular reactions (12 to 18 months)	Throw up a toy from a high place	The baby ready to keep track of visible object
Beginning of symbolic representation(18 to 24)	Opening and closing mouth	His capable to follow invisible object

Table 2. 2: (the characteristic of the sensorimotor stage's sub-stage, n.d)

2.1.2 General Characteristics of Senserimotor Stage:

- Children and kids learn about the environment and the world around them through the concept of sensation.
- Babies at senserimotor stage depend on processes such listening, looking, grasping, and sucking.
- Kids built their knowledge through an invisible object that they exist even if they are not seen (object permanence).
- They finally know that they can make things happen by their actions.

2.1.2 Pre-operational Stage

According to Lazarus (2010) the second stage occurs between the fourth stages of Piaget's theory of cognitive development, which start just after the end of the first stage (senserimotor stage) from two (2years) to seven (7years). This stage characterizes those

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children moves directly from toddlerhood to very early childhood where they are using only symbols to present their language or thoughts, what make it pre (before) operational is that children still not ready to use logic or mind to engage in such processes like thinking, but they feel enough for using symbols to send the message they want. For example; when the child uses a symbol of steering wheel to indicate that he wants go out by car. In addition to that Piaget described the little kids in this stage of being "egocentric", because he thought that the baby support only his own perceptive, but more he is under control of his thoughts and ideas without making any consideration of others interaction.

Moreover, He stated that the pre operational stage divided into two other important sub stages that are mainly considered as the basis of the second stage Piaget's theory of cognitive development:

2.1.2.1 The Symbolic Function Substage (2-4 years)

In this following sub stage represent that children have the ability to think about an invisible object without being viewed or present next to them, this is lead to the important role that language play in the role of kids to serve their needs, because sometimes kids find a lot of difficulties in presenting objects and events with symbolic capacity, but it still serves according to their familiar things such as cars, hours and animals (Piaget, 1952). Due to 'egocentrism' in sub stage of the symbolic function, children find a hard trouble in separating between their perspective and others perspective. Also the concept of sharing things, persons, and toys is unacceptable, they considered things as their own and it's difficult for them to share with others. For example, most the kids in this stage feel jealous about their sister/brother newborn baby when they come because they cannot accept the idea of having the same mother and treated in the same way. For some kids it counts so hard for them finding others children sharing with them the same feeling and thought it

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lead to difficulty in play role later on when they meet about how they play should be ended.

The main purpose within this stage is externalized children's thinking more than supporting the process of communication with the external environment (Crain, 2005).

In addition, Piaget in this substage used the term of 'animism' in his explanation within this stage for many times, he claimed that kids have a real believe about the nature alive of their own object like animals' toy and teddy bears. For that reason, (Crain, 2005), he identified four (4) stages within the concept of animism of the object:

- **Up to the age 4 or 5 years;** at this level most children believe that all objects are alive and have goals.
- **Up to the age 5 or 7 years;** here children start to think that only object that move is alive.
- **Up to the age 7 or 9 years;** in this level seems the same as the previous one, but only object that move spontaneously is alive.
- **Up to the age 9 or 12 years;** in this last stage children start to understand that only plants, humans, animals are alive.

2.1.2.2 The Intuitive Thought Substage (4-7 years)

In this sub stage children start to appear their primitive reasoning, because in this period of age children's thought has a complete change from the symbolic capacity to the intuitive thinking process. Children are totally ready to organize their object into a primitive collection but not proportionate manner, because they can only concentrate or center that refer to the objects. They rely on their organization on shape for one time and the color for another time (Cowan, 1978).

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Piaget stimulate on the process of 'centration' as a thinking style taking by most children in this stage. It means that children focus on one characteristic of the object and from their perspective due to that particular characteristic (Ibid).

2.1.2.2 Characteristic of Pre Operational Stage

- Children in this stage their thinking based on symbolic capacity by learning symbols, gestures, and pictures to represent objects and send the message to achieve their goals.
- Kids are describing of being egocentric and facing some problems within accepting different perspective of other people.
- Despite that most children are getting developed each time with language and thinking process, they still rely on thinking of things in concert words.

2.1.3 Concrete Operational Stage

Woolfolk (2007) stated that "some students remain at the concert operational stage throughout their school years, even throughout life. However, new experiences, usually those that take place in school, eventually present most students with problems they cannot solve using concert operational" (p, 35).

Furthermore, in this third stage of cognitive development, children from seven (7years) to eleven (11years) old where the intellectual and logical thinking is developed, kids tend to present operational thoughts and are capable to use a systematic language such rules but this process relate the logical thinking to physical object only (Baken, Lefa, 2014).

In the same vein, Piaget spot a light in the concrete operational stage on how kids acquire the abilities of conservation; is the process where children and kids built

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knowledge on understanding that something does not change even if there is a clear change in appearance shape, volume, mass, number... (ibid)

In this stage, the infant can use his logical thinking (by the mind) to solve problems and achieve his needs based on his different previous experiences, but he still faces a hypothetical problem when it is come to deal with abstract objects and problems. Piaget in his theory presents the process of 'inductive reasoning' in which is the process where kids use logical thinking in many different situations and built a believe where tend to be true to obtain a specific conclusion. For example, a kid has a rough neighbor, and also has another rough neighbor, and another kind third neighbor. The kid here may believe that all neighbors are bad people. Thus and due to the inductive reasoning we will observe that the thinking of that infant will totally change from the old one (Lazarus, S, 2010).

2.1.3.1 Abilities of Concrete Child in the Third Stage

Classification

One of the major abilities that children in concrete operational stage show is classification, children keep going in development their experience and vocabularies by making outline for organizing their different objects, in addition to, they gain the ability of understanding classification by arrange objects into classes and subclasses (Piaget,1954).

Identity

Another important feature within the children in the concrete operational stage is that he understands that each object has some fixed quality that does not change even if it has some modification of the object. For example, the first picture of a pen, the second pictures the same pen but are broken. The pen is still one pen even if is broken and

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even we are rearranging in a different way as the first picture he was before (Lewis, 2020).

Reversibility

In this following feature children know that things in their natural appearance when they are subjected to modification they change but at the same time they can return in their first original look. For instance, when we deal with an experiment of defrosts the plastic to become a liquid, and then we can return it to its original state again (Lewis, 2020).

Conservation

Children in the concert operational stage specifically in conservation concept they understand that when something or a visible object has a changes in the shape or the physical appearance is still the same, whatever there is a change in quality (height, mass) that does not change in the fact but the object still the same, a comparison to other young kids in another level who will think totally different. For example, at first we bring two cups of milk with the same level of milk, then we bring two different baby milk bottle one is short and the second is taller than the first one. We added the first cup milk in the first short baby milk bottle then we added the second cup of milk that contains the same amount of milk as the first cup. After that the kid will answer that the two battles (the short/the long battle milk) are the same. Whereas, if we bring a younger kid in this recent level will answer that the long battle has more quantity of milk than the shorter one (Piaget, 1954).

Decentration

In the decentration concept children they become more aware of their developmental level than they were before; they concentrate on all details of the object even the

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changes that happened later on (height, width...) this lead to the concept of conservation to exist (Lewis, 2020).

Seriation

Another important concept in the theory of cognitive development where children are able to arrange and rearrange objects and visible material according to quantity order such as the length or weight by determining the methodological way of it. For example, kids in this level are able to range a large amount of chalk sticks according to the longer one till the shorter one. And even if we bring to them a mixed list of numbers like 4086129537 they will rearrange it to 0123456789. While, if we bring a younger child he will make a haphazard order and he will neglect the methodological orderly way (Ibid).

2.1.3.2 Characteristic of the Concrete Operational Stage

- Concrete children will start to think logically and begin to use logic in their concrete event and experiences.
- Children within the concept of conservation they start to accept the fact as it is determine that the amount quantity of any liquid in short tool is the same as it in the tall tool, and they shouldn't rely all the time on what is viewed through exterior shape.
- Yes, it is true that children at this level are thinking logically in many situations and in different cases, but their thinking still under control of the concert domain.
- Concrete children now are capable to use inductive logic and have the capacity to organize thoughts and ideas from the specific information till the general one and vice versa.

2.1.4 The Formal Operational Stage

Baken & Lefa (2014) asserted that the formal operational stage counted as the fourth and the final stage of the cognitive development theory, where children from the age of twelve (12) years till adulthood period begin. In this level thinking process become more advanced than before. In addition to, children now are thinking logically and their logical thinking is no more limited to the visible object but they can also think about those abstract and invisible objects in order to they come up with suitable solution that help them to achieve goals or solve a problem. Furthermore, kids at the formal operational stage gain more abilities such imagining abstract actions, engaging calculation and others mathematical materials.

2.1.4.1 The Formal Operational Thought

In this following last stage, where it characterized by the ability to formulate hypotheses and test them systematically has two major concepts;

2.1.4.1.1 Hypothetic Deductive Reasoning

A process where children think successfully in order to generate a predication or hypotheses. The kids will approach a problem should be solved in a very scientific and systematic way with an organized rule (McLeod, 2010).

2.1.4.1.2 Abstract Thoughts

Due to McLeod (2010), abstract thoughts is a process where should be applied in the formal operation stage as he carried out about the ideas and thoughts in itself. Children have the ability to think about abstracts and invisible concepts they have not experienced before or yet they will deal with them in the future.

2.1.4.2 Characteristic of the Formal Operational Stage

- In the formal operational stage children using their logical thinking in various situations, even in the abstractal and hypothetical concepts.
- Children are able to deal with abstract thoughts and invisible actions.
- Children in the formal stage are totally ready to deal with complex process concerns many domains such, ethical, abstract, mathematical issues.

3.1 Vygotsky's sociocultural theory of cognitive development

Lev Vygotsky (1896-1934) is a Russian psychologist who believes that factor of culture has a direct influence on a child's cognitive development. He (vygotsky) argues that from the factor of culture we arise language, writings, and concepts that contribute to elicit the highest level of cognitive thinking (Vygotsky, 1978).

Also, Vygotsky believed that social interaction with different people from adults and learners between each others can help to facilitate the process of learning of children, he argued on the idea that children's mind and their knowledge would be more developed through their own discoveries based on their interaction with social cultural field (Ibid).

3.2 Vygotsky Theory Verses Piaget Theory

As those two theories deals with children's cognitive development and they contributed to the field of education by offering different learning style and abilities, still each one is differs from the other in a set of points;

Firstly, vygotsky believed that social life is primary in learning process. While, Piaget believed the individual was primarily in the learning process (Blake & Pope, p, 62).

Chapter Two: Students' Cognitive Development

Second, Vygotsky thinks that if students were not improving academically their instruction was inappropriate. Whereas, Piaget's reasoning that the students may have "plateaued" in a specific development stage (Blake & Pope, p, 62).

Thirdly, Vygotsky stressed the important role that social interactions play to influence in cognitive development. While, Piaget in his theory stressed how a child's interactions and explorations influenced development (Woolfolk & Anita, 2004).

Fourthly, Piaget theory stressed in the approach discovery of learning, as he (Piaget) argued for discovery learning with teacher's intervention. Whereas, Vygotsky promoted guided based on classroom, and mainly achieved as the teacher offer a set of question and leave them to discover the right answer to solve the problem through testing and clarifying the previous hypothesis that was suggested before (Woolfolk & Anita, 2004).

Fifthly, one of the main concepts of Vygotsky theory is private speech in which children's may use in order to access thinking as a self-directed regulation of talk. On the other side, Piaget may categories private speech as an egocentric or immature concept. (Ibid)

Sixthly, due to Woolfolk & Anita (2004) Scaffolding is again another important aspect of the Vygotsky theory of social cultural cognitive development by offering to learners some hints that belonging to the giving task in order to help students solve the problem successfully. On the contrary, Piaget conducts that student they did not arrive to the level where they have mental structure that allow them to solve problems.

Sevently, Piaget set a several aspects in development and learning those are; Equilibration, schema, adaptation, assimilation, accommodation. Unlike Vygotsky's aspects Zone of proximal development, scaffolding, language/dialogue, tools of culture (Ibid).

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Berk & Garvin (1984) set a table that shows some others differences;

Theoretical predictions	Piaget	vygotsky
Developmental significance of private speech	Represents an inability to take the perspective of another and therefore to engage in truly relational and reciprocal communication	Represents externalized thought; its function is to communicate with the self for the purpose of self-guidance and self-direction
Course of development	Declines monotonically with age	Curvilinear, increasing at the younger ages but gradually decreasing as it loses its audible quality and becomes internal thought
Relationship to social speech	Negative; is eventually replaced by social speech	Positive at the younger ages
Influence of environment contexts; task difficulty		Increase with task difficulty; the greater effort needed to reach a solution necessitate the action regulating role of private speech

Table 2. 3: Differential predictions of Piaget's and Vygotsky's theories (Berk & Garvin, 1984).

4.1 Major constructs of Piaget's theory of cognitive development

3.1.1 Schema

Piaget, J, (1983) introduced the concept of the schema in his theory as a basic concept that allows people to comprehend and interpret knowledge.

The schema is defined as a cognitive structure that serve a new building of knowledge that it's a main concern with behavior of the individuals. Its major purpose is how to facilitate the process of both understanding and organization of information and thoughts, to enable people interaction with their lintier world.

3.1.2 Assimilation

According to Piaget (1983) assimilation refers to a logical scope used among people to understand and organize different information. The main concern within the concept assimilation and accommodation that is determined as a mechanism and a very systematic for the cognitive development theory by assimilating new information acquired by people to their background, and accommodates the old knowledge of the new information as an addition.

In other words, it is simply referring to the process of gaining and classifying a new information more concern when it does not conflict the already background exist.

3.1.3 Accommodation

Accommodation simply refer to the process of forming a new logical and mental structure exactly when the new information acquired does not fit and go in parallel with the old information that is already found in the structure (Piaget, J, 1983).

3.1.4 Organization

It is the process where the mind automatically arranges and organizes several types of information into relevant and interrelated structures of information (cherry, 2014).

3.1.5 Adaptation

Adaptation is defined simply as the process of changing someone cognitive and mental structure or his interact with their environment in order to enhance a better understanding of the environment and the world around him. (Cherry, 2014)

Piaget in his theory makes an emphasis within the concept of adaptation by demonstrating the function of it as it involves both assimilation and accommodation and organization. And it is achieved through restructuring of the schema or through making a comparison between the new information and the older one. (Ibid)

3.1.6 Disequilibrium

Is the concept where it involves cognitive imbalance that is happening when encountering a knowledge that impose people to develop and organize a new schema or submit the old schema one into some modification. In some cases, and due to some individuals the concept of disequilibrium seems uncomfortable that what requires a quick back to the state of equilibrium simply as if people they do not count things in their environment that does not really fit and goes with their existing schema, then here they may dedicate their logical and mental power to develop a new acquiring schema or they can try to adapt with their old one. (Ormorod, 2008).

3.1.7 Equilibration

Is the process where defined of founded a state between people's mental schema and his environment. Piaget (1896-1980) defined equilibration as the process that intended to

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refine and transform a mental structure which forms the basis of the cognitive development theory. And he suggests that the concept of equilibration takes place in three phases;

At the beginning the child lives in a state where he feels comfortable and satisfied with his thought and mode of thinking therefore he is exactly in a state of equilibrium.

Then secondly, the child starts to be more aware about the shortcoming about their background and they seem dissatisfied (Piaget, 1983).

Finally, in the third phase the child starts to adopt the most progressing modes of thought and information that remove the shortcoming of the excitement.

Conclusion

This chapter has attempted to cover the basic elements of Piaget's cognitive development theory. Also, it has provided relevant knowledge about the four key stages of the cognitive development theory. Furthermore, it discussed the sub-stages of each stage. Additionally, to comparison between Vygotsky and Piaget theories.

In accordance, the following and final chapter will provide information on the practical analyses of this current study. It will provide insight on the effectiveness of e-learning on students' cognitive development.

Chapter Three: Field Work & Data Collection

Field Work and Data Analysis

Introduction

In the previous chapters, we have submitted a detailed literature review to the current study that aims to improve the impact of e-learning on students' cognitive development during the pandemic of COVID-19. To follow the exact research methodology design is to drive us to move to the next step of practical work, that is why this chapter will devise the fieldwork and the analysis of the collected data. This recent chapter covers different aspects; each part from it will convey a trial towards the explanation of our data collection. Starting with the first essential part in this chapter in which the general theoretical part that serves a background and literature review mainly in the research methodology in the case of the approach used in this work, the strategy that is applied, and finally the suitable kind of data collection used that suits this research (questionnaire and interview).

Additionally, the second part focuses on the real reasons behind choosing a specific data collection method and how much it is effective to the credibility of this research. To end up with the third and the final part within this recent chapter in which researchers who are interested in this research problem to have an opportunity to discuss and analyze the giving results from the data collection we have.

Subsequent to all that have we been saw previously, the reason that we should take it into consideration is to clarify the extent validity of the tested hypothesis on which this research relies on to reach the desired conclusion.

3.1 Theoretical Background Concern Research Approach

A literature overview concerning the qualitative research as the descriptive method should be applied in this following research topic;

3.1.1 Research Approach

This following research is mainly depending on a qualitative approach, since we are dealing with a descriptive research that involves deep insights to humanities, social sciences in such variety of important subjects like anthropology, sociology, education, health science and history, ect.

Shank (2002) defines the qualitative approach as ‘‘ a form of systematic empirical inquiry into meaning’’(P,5) what he means by using systematic is that the researcher’s work will be well designed in terms of planning, ordering in a very methodical way based on fixed rules that are agreed upon by researchers. And what he means by the term empirical as a second key word in his definition is to make it sufficiently clear that those kinds of research problems deriving from daily life experiences are from the competences that qualitative approach deal with it. And concerning the rest of his definition (inquiry into meaning) simply refers to how researchers are interested community of the domains interpreted different points of view regarding how people try to make sense of their different daily life experiences.

There are many advantages that feed this research behind choosing the qualitative approach. In terms of giving the flexibility of the research to pursue such unexpected ideas and thoughts while gaining knowledge and information about this topic to explore and discover new strategies and techniques that suit this subject effectively. Moreover, the qualitative approach enables researchers to engage in such investigation that cover symbolic dimensions for variety social factors and fields that need to be solved.

Furthermore, by opting for a qualitative approach increases opportunities for the researcher to develop empirically support towards research problems and theories such is the one that we deal with (namely, Piaget cognitive development theory).

Chapter Three: Field Work & Data Collection

The current research that discusses the impact of e-learning on students' cognitive development is obviously the main concern on the one hand is to put an emphasis on achieving objectivity among researchers to observe and measure the two variables (e-learning/ student's cognitive development) and at the same time to show the logical relationship between them and how much they complete each other (integral relationship). On the other hand, the focus on the research design by building a set of hypotheses that should be verified and tested by investigators in a very systematic methodology to conclude in the end of this search by summarizing data collection into numerical statistics.

3.2 Qualitative Data Collection Methods

Qualitative data collection methods are generally understood to be techniques used to promote the research work in order to analyze and gain different perceptions, opinions, and experiences about a giving topic.

3.2.1 Students' Questionnaire

The questionnaire is simply defined as a research instrument used among many researchers as much they relay a lot on it in gathering a large amount of data collection that serve their research problem (Sabo, 2019).

A questionnaire consists a series of different types of questions that are submitted to respondents in order to gather a variety of answers and information concern a giving topic (Sabo, 2019).

A questionnaire is considered an effective method of collecting data through measuring different behaviors, opinions, attitudes and beliefs from a large sample of learners to whom the research work is addressed (Ibid).

Chapter Three: Field Work & Data Collection

Usually many researchers looking forward in depth for a better selection a high structured questionnaire that facilitates and serves the task of obtaining different kinds of information, thus leading to the systematic methodology in designing the questionnaire to consist from a list of different types of questions.

3.1.2.1 Closed-Ended Questionnaire (Structured)

According to Sabo (2019), a closed-ended questionnaire is a type of questionnaire which consists of a series of questions that require only 'yes' or 'No' response no more. For example:

A: have you investigated in a research work before your master's graduation dissertation?

B: yes.

A: Do your teacher allow you to use electronic dictionary in classroom?

B: No.

3.1.2.2 Opened-Ended Questionnaire (Unstructured)

Is a second type of questionnaire that build upon several kinds of questions that requires more than yes or no answers, but it require more justification in the form of lists, long sentences, paragraphs and sometimes essays (Sabo, 2019). For examples;

A: please state the challenges that you have faced in online learning as an EFL students?

1. Suffer from the bad quality of the internet service.
2. Struggle with organizing time.
3. Not effective much as the traditional way (face to face lectures).
4. Unmotivated.

3.1.2.3 Close-Ended and Open- Ended Questionnaire (Semi-Structured)

Simply, it is a questionnaire that is designed to combine both features from the two previous types of questionnaire. And it consists a set of both close-ended question and open-ended questions that demand an acquire answer up to the question arises (Ibid). For example;

A: Do you support the idea of receiving educational materials at home? If yes / No, please set a clear justification to persuade your choice?

B: No, since studying online as an academic method cannot be effective at all times and places. As well as, it does not suit all kinds of educational materials in terms that are some modules rely much on teacher's explanation during classroom to prevent interaction between classmates and teachers in an effective way.

The initial purpose behind designed this following questionnaire is to examine the student's awareness towards the role of e-learning and its impact on students' cognitive development during the current situation of Covid-19 as an alternative strategy should be working on it. Also, its attempt to show whether it is effective due collecting different kind of interpretation from students at University of Mohamed Khider Biskra.

3.2.2 Rational and Aim

In the following study, we have selected questionnaire as a collecting data methods as it serves the research work in gathering large numbers of participants- those who are considered EFL learners- to obtain a variety of different views, reactions and perspectives about this topic.

Chapter Three: Field Work & Data Collection

The giving questionnaire has been designed to indicate the role of e-learning on students' career by putting an emphasis on the beneficial aspects that plays when it is applied to learners. Also, its attempt to recognize from learners the challenges and difficulties that they face while receiving their educational needs in case of updating lectures in different kinds of platforms or in online/live applications and websites to attend teacher's explanation .Moreover, it aims to explore to which extent learning online influentially effect learners with a comparision to the traditional way (face to face learning).In addition to, this questionnaire guides a several question to measure reflection about supporting collaborative work or the individual work. And more importantly, it tends to look for different perceptions concerning the impact of e-learning on students' cognitive development.

3.2.3 Population and Sample

This study was prepared specially for 1st year level students at Mohamed Khider University of Biskra, and due to the deterministic situation within the spread of virus (COVID-19) which the world crossed it as a serious pandemic, it paralyzed the process of distributing copies of the questionnaire and make it a hard task to meet learners to submit to them copies hand to hand. Despite the complexity of the assignment we come up with the solution to re-prepare an online questionnaire shared in facebook groups and messenger chats.

50 students from 1st years level in the English department at University of Mohamed Khider Biskra giving their answers to the questionnaire. The reason behind choosing this simple (1st year's students) is the fact that student at this level are at their first time facing the challenge of studying online at university at the same time they considered as an EFL

beginner in English so their reactions and interaction is beneficial towards this research work.

3.2.4 Description of The questionnaire

This recent questionnaire was sake to gather the necessary data collection about the following discussing subjects as it has been mentioned before. The questionnaire made up from (25) question which were methodologically organized in a certain order and divided into separated sections (4 sections). Concern the design of the questions we set seven (7) closed-ended questions, thirteen (13) opened-ended question and the rest were five (5) semi structured question. Regard to the four sections in the questionnaire was prepared to cover specific objectives from the variables we have (dependent/ independent) to achieve specific objectives from gathering data.

Sectionone: general information (from item 01 to item 03).

Concern the first section, it consists three questions on general information that pertain the respondent about their gender, the fact behind choosing English language as a branch to study it at University. And the most important question is to give an evaluation towards their level and background they have in English.

Sectiontwo: E-learning (from item 04 to item 12).

Concern the second section that it was designed on purpose to explore learner's insights towards e-learning in terms of whether it is used among large numbers of students in their specific levels. Additionally, it serves improvement in allowing using different online platforms and application. Also, suggesting others techniques and unfamiliar tools to enhance different skills and aspects of English.

Section three: Student's Cognitive Development (from item 12 to item 22).

According to the third section in the recent questionnaire which aims to evaluate the comprehensibility of the second variable in which is Piaget's theory of cognitive development. Moreover, the main focus within this section is to show the impact of e-learning on the acquisition of information and gaining a new knowledge. In addition to, it examines different interesting sides such the nature of the content, the quality of online services using in educational and target needs, the timing and styles preferable to use in learning.

Section four: opinionative (from item 24 to item 25).

The main concern according to the last section is an opinionative; this opinionative was prepared to evaluate the designed work of those questions included in the recent questionnaire by spotting their judgment towards the content of the research topic. Also, to examine the core of each question how it serves positively our research, whether the questions are related enough to the points that it should be discussed later on the next steps of the work. Moreover, it gives the chance to each respondent to leave any comment he/she want whether it is positive (to show their admiration), or negative (ambiguous questions, or to criticize).

3.2.5 Analysis and Interpretation of Student's Questionnaire

With reference to the previous questions mentioned in the questionnaire, respondent was requested to answer each question obligatory by putting a tick next to the appropriate option that suits them. The correct answer is close-ended question, and gives a descriptive long answer to the open-ended question and for the rest both semi structured questions in

order to at least obtain the correct statistical result by using ‘Google drive form’ to facilitate the task of gathering data collection (online questionnaire).

3.2.5.1 Section one: General information

Q1: What is your gender?

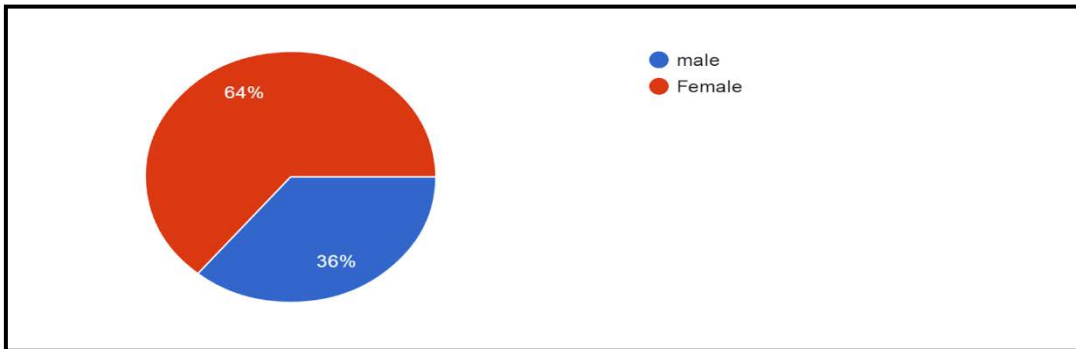


Figure3. 1: student’s gender

This question seeks to know respondents ‘gender, it provides the number of respondents who answered. The pie chart reveals that female students are greater in number (64%) from the whole percentage a comparison to males (36%). It shows that female students are more interested in studying English language and it is expected since foreign language learning seems to be targeted more by females than males’ students.

Q2: Was English your own choice?

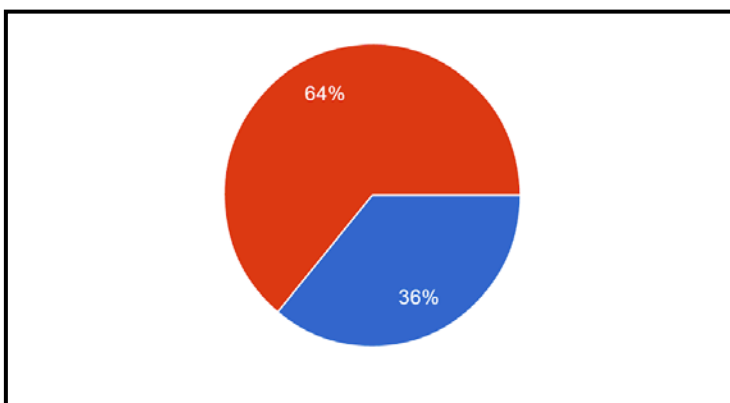


Figure3. 2: student's choice of English language

The focus concern this question is to examine whether the student chooses English as a branch to study is their own decision or not. And according to the pie chart above shows that (64%) of students answering by 'yes' it is their own choice since English is an international language and one of the most interesting languages they should acquire for many different purposes (occupational, professional, ect). However, (36%) of the majority answering 'No' they were obligated or they have other worthy reasons behind choosing studying English.

Q3: How do you evaluate your level in English?

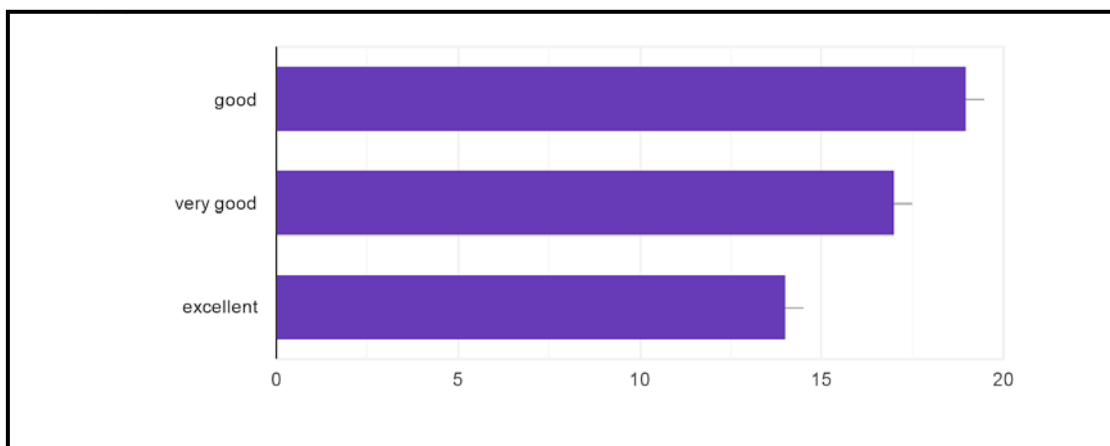


Figure3. 3: student's level in English language

The essential concern with this question is to give students the chance to evaluate freely their level, skills, capacities, knowledge, and background in English language. Due to the question above they are politely asked to rank themselves from good to the excellent option. The majority of the student evaluates their language as well language probably they already have a limited background of English and they are interested to ameliorate their level by acquiring new knowledge and information, the second category considers

themselves as a very good level in English. Whereas, the rest of the students seem themselves more advanced in English because they have an excellent knowledge.

Section two: E-learning

Q4: Personally, do you prefer studying online?

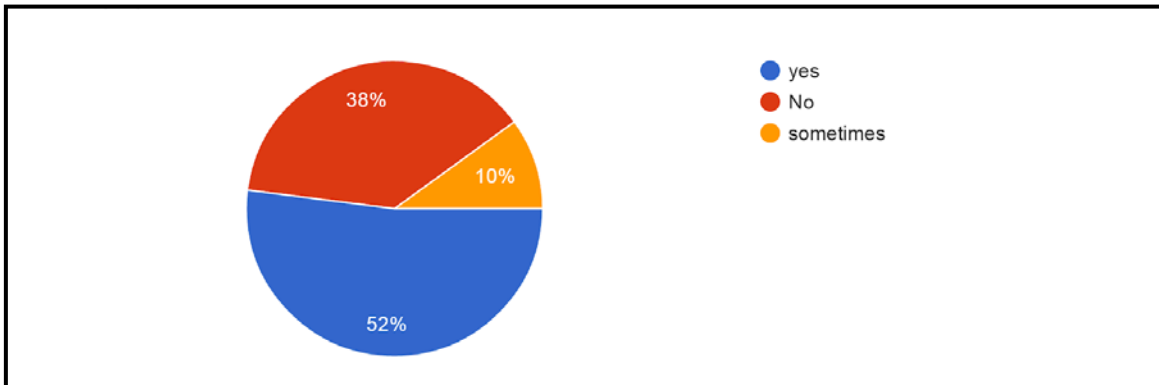


Figure3. 4: Student perception towards studying online

This question sought to present the student's opinion about learning online whether they like to study online or not. They are expected to choose between three options above, back to the previous rate we will notice that the majority of students (52%) they agree and accepted learning online since they are beginners in English and they like to try new methods in learning process. Whereas, (38%) of student refuse to study online by answering 'No' because they are fired to engage in such new challenges that it may be not effective enough. And for the rest (10%) they answering by the third option (sometimes) it mean that they support blending learning to combine between learning online and classroom learning.

Q4.1 Whatever your answer says why?

Concern this sub question that it required a clear justification for student's answer, it aimed to get student's reasons about their thought on studying online. Unfortunately, (7)

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student they leave the blank empty without any explanation. whereas, the majority whose answer was yes they said that it is counted comfortable to study in the place they feel rested and more relief that is easy to access to information without being obliged to move to college, the other said that studying online is unmotivated and distracted way.

Q5: Does e- learning help you to ameliorate your four skills of English?

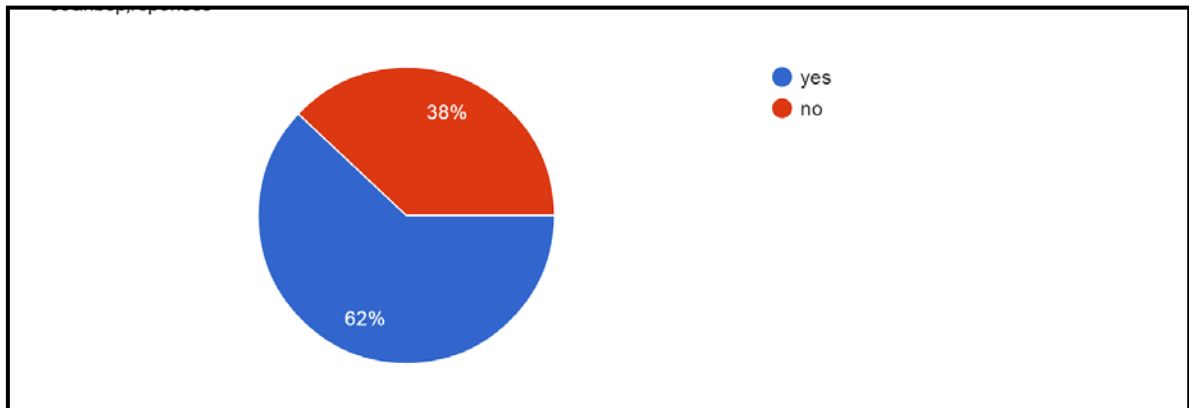


Figure3. 5: student's opinion about skills of English language

This question above was designed to show student' point of view towards the capacities including the four skills of English that supplies students with them in order they become more advanced in English. The pie chart above shows that the majority of students (62%) agree that studying online gives them a better improvement for their knowledge in English as they practice reading, listening, speaking and writing via the different e-learning resources and tasks, and for the rest of students said 'no' there is no amelioration.

Q6: Does e-Learning enhance:

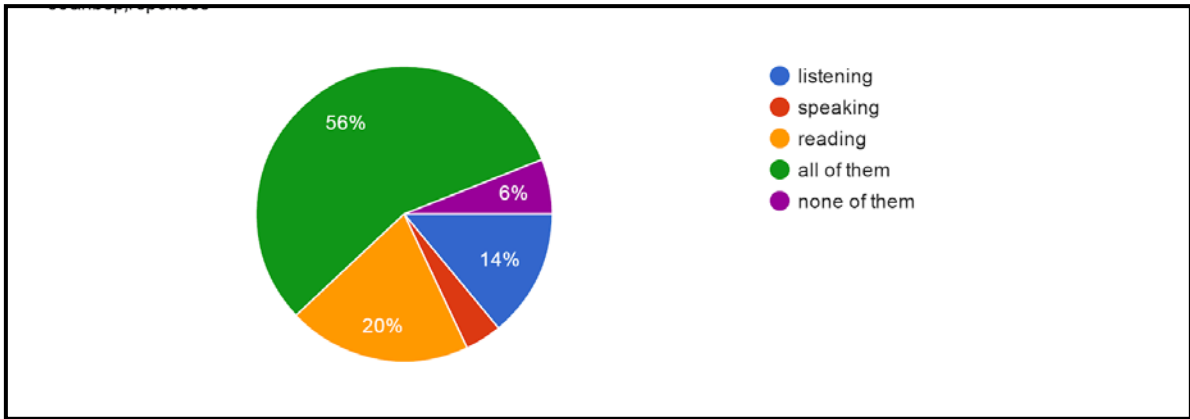


Figure3. 6: the four skills of English language

This recent question shows the role of e-learning in student's career due to the development of their four skills of English language, and what we extract from the graphic above is that the dominated answer (56%) student said that E-learning enhance all the four skills together (speaking, listening, reading, writing) in terms they complete each other and stand for a different function to develop their English language, some of the students (20%) said that e-learning ameliorate only the reading skill for the sake of searching and reading books and chapters. Than (14%) for student agrees on listening skill due to E-learning enhance audios, videos, documentaries... and (6%) their answer was for none of the skills being achieved through online learning, and finally the rest agreed with the speaking skills as the fewest percentage as matter of lack performances and oral presentation at classrooms.

Q7: Which aspect of English language do you intend to improve when you study online?

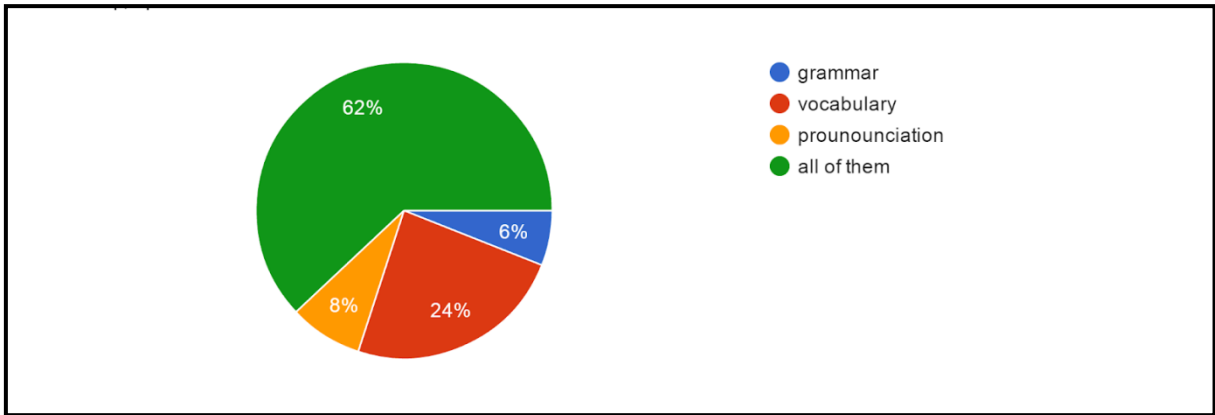


Figure3. 7: aspect of English language

In this following question, it aims to investigate on the student's perception on e-learning and its relationship in achieving the different aspect of the English language. In the above graphic shows that the majority of the students (62%) indicate that e-learning promotes all of the aspects (grammar, vocabulary, pronunciation). the other side, (24%) in the rank agreed that vocabulary is the only aspect is proved while studying online in case of the deferent investigation in research. The third percentage (8%) for pronunciation that enable students to gain each time new knowledge and different technical terms and for (6%) as the fewest percentage for grammar aspect in applying different rules and exceptions.

Q8: How often do you use platforms for educational purposes?

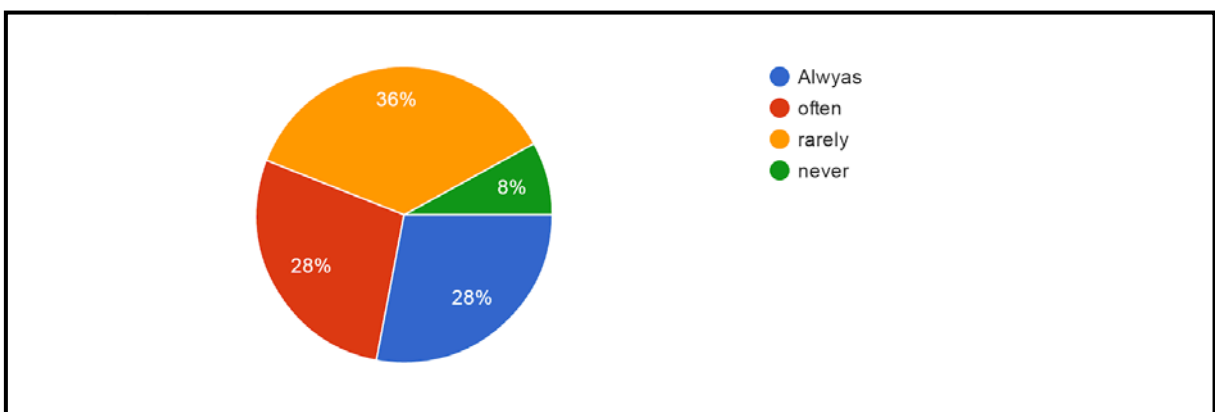


Figure 3. 8: Student use of platform

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In this item, the subject was designed to state whether student uses the online platforms to access their educational materials or not, following the statistics shows by the pie chart above will provide us that the largest number of students (36%) their answer was for the rarely to head for platforms to get their academic assignments. Whereas, there is an equal in answer between some (28%) use all of their time platforms for educational goals, the other equal category (28%) has a predominately use. (8%) they never use platforms at all.

Q9: To which extent do you think e-learning is effective?

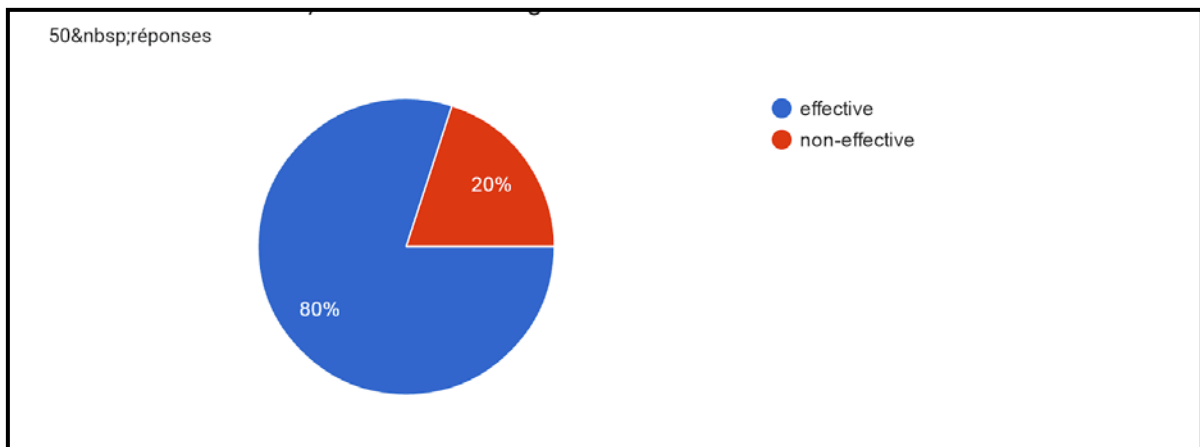


Figure3. 9: effectiveness of E-learning

According to the pie chart above the number of percentage that is divided into two options between whether e-learning is effective or non-effective, clearly shows that the largest numbers of student (80%) seems learning online is effective and officially sufficient as a method should be take it into consideration to deal with it more to access learning process successfully. While, the other students (20%) only from their perception said that e-learning is an inoperative much that we should ignore.

Q10: Do you use one of the following applications?

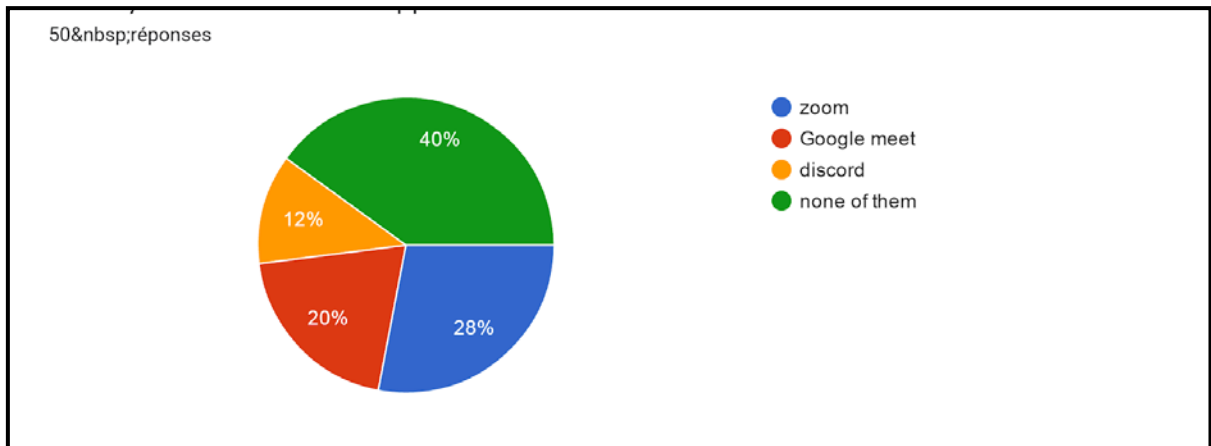


Figure 3. 10: E-learning platforms

As the following pie chart shows, we try to mention some of online platforms used among learners in order to build our statistic under their honest answers. As the statistic indicates (40%) of the majority of student has no idea about the previously mentioned options. Despite of the huge number who announce with ‘none of them’ option still has (28%) of students who they use ‘Zoom’ application to reach their educational materials, plus (20%) for students who they use Google meet to also access easily to their assignment, and only (12%) for Discord application.

Q11: Do you use another application?

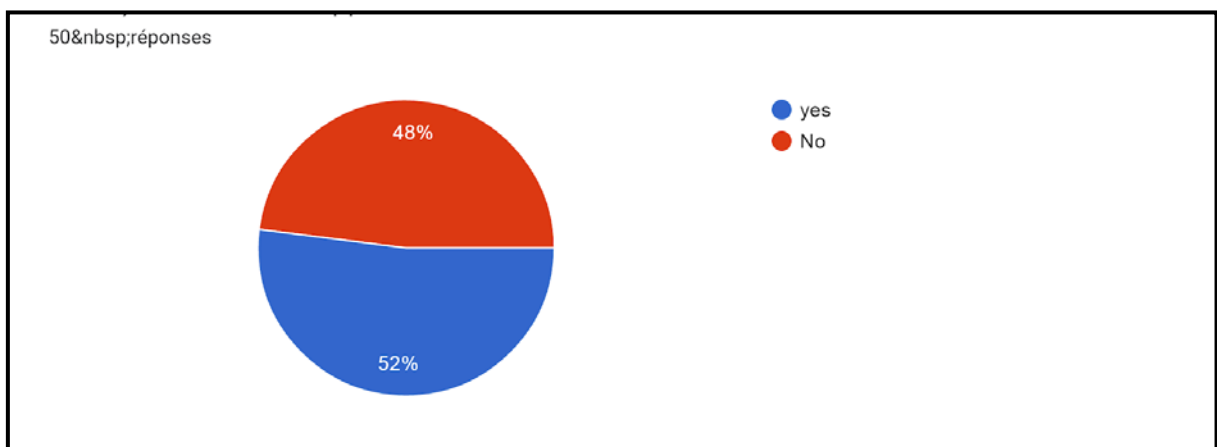


Figure3. 11: student’s use of application

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The present question intended to investigate whether student uses other different platforms that we did not mention it above in the previous options since there are many others platforms and it count impossible to mention all of them. The statistical result more than half of the students use others platforms that we did not suggest. While, less than half (48%) of student they do not use any kind of platforms.

Q11.1 If your answer is ‘yes’, please mention them?

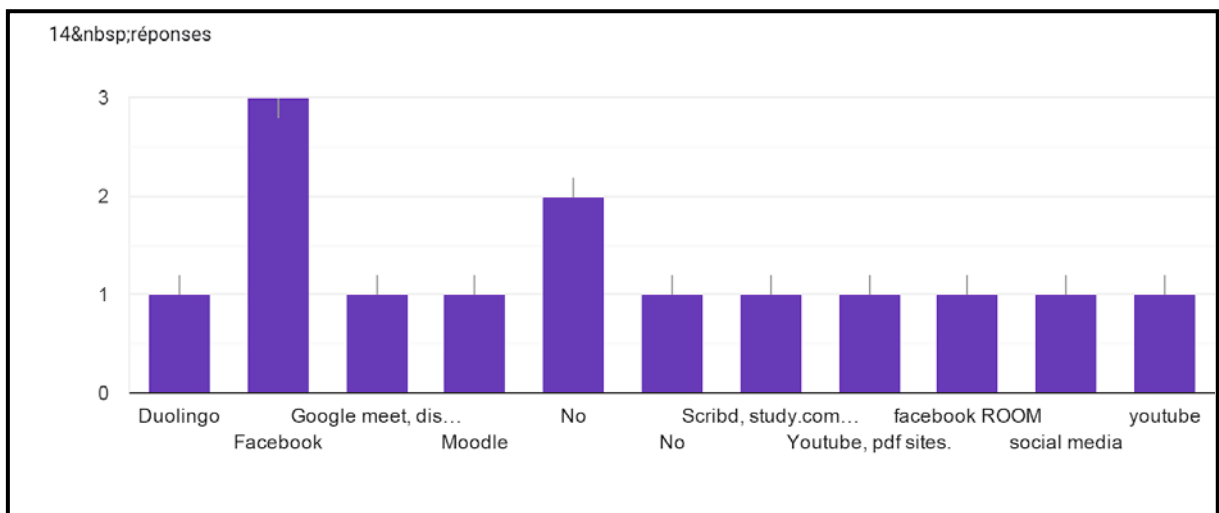


Figure 3. 12: Student’s justification

This second sub-question aimed to go deeper in the understanding concern the previous question for a clear clarification about a student’s answer by mentioning new platforms that they use. The pie chart above shows student’s suggestion by giving different kinds of others application they use to study online.

Q12: Do you use one of those online websites to updates your lectures?

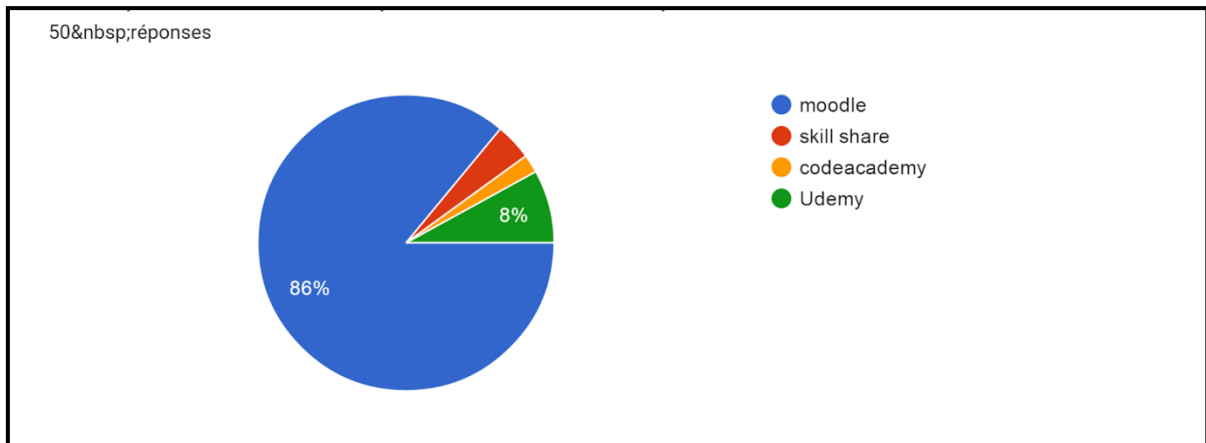


Figure 3. 13: Online websites

This following question aims to determine student’s percentage of use towards a list of the above options. With the intensify of the search we turn out that the prepared suggestion list contains the most familiar websites by many students, what the pie chart shows is that Moodle website rank in the first state (86%) as the most website application used among the students to serve their needs. Whereas, the rest percentage begging from (8%) for Udemy, (3%) code academy, and (3%) for skill share in use.

Section three: effectiveness of E-learning

Q13: Do you think that e-learning effect learners in their cognitive development?

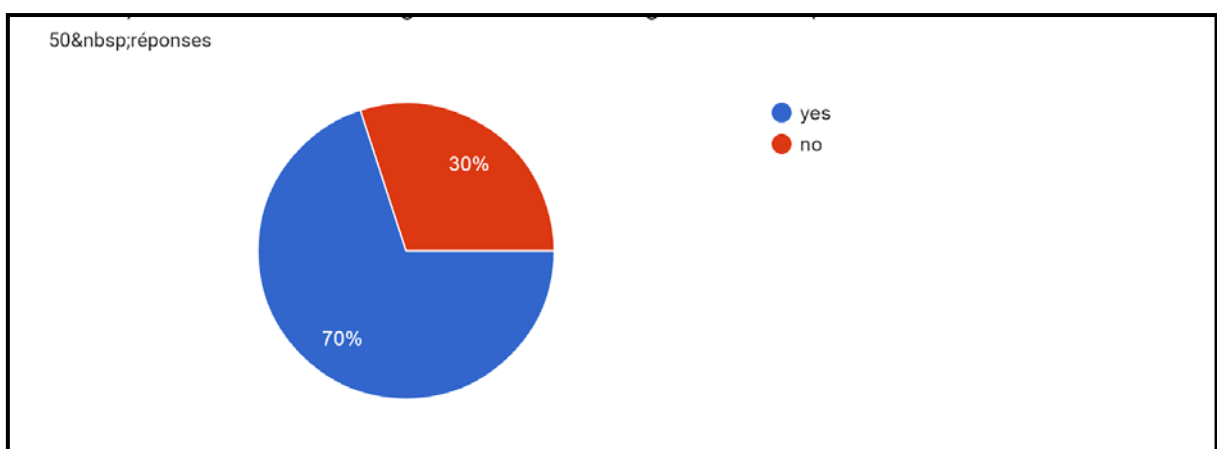


Figure3. 14: Effectiveness of E-learning in student cognitive development

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As the pie chart above shows, we seek to record student's perception toward the effectiveness of e-learning in enhancing their cognitive development for different varieties of mind processes. We recorded the majority of (70%) respondents agreed on the concept that e-learning has a strong influence on their student's cognitive an effect as it is counted as an effective method of learning. While, only (30%) for the rest respondents are against to declare that it has an effect on them.

Q13.1: If yes, give a clear justification to support your option

This sub question was designed in order to gain detailed reasons for the answers positively by 'Yes'. (70%) of the students have declared a different justification most of them said that any kind of learning should be effective automatically and it is counted as a great way to develop one's cognitive skills since it involves active participation of the learner in the learning process as well as it enhances their higher order thinking skill for better improvement. Moreover, it makes them active learners as they become more aware of the need to look for alternative sources of knowledge and also understanding the lessons and checking multiple platforms

Q14: How is the Internet service in Algeria?

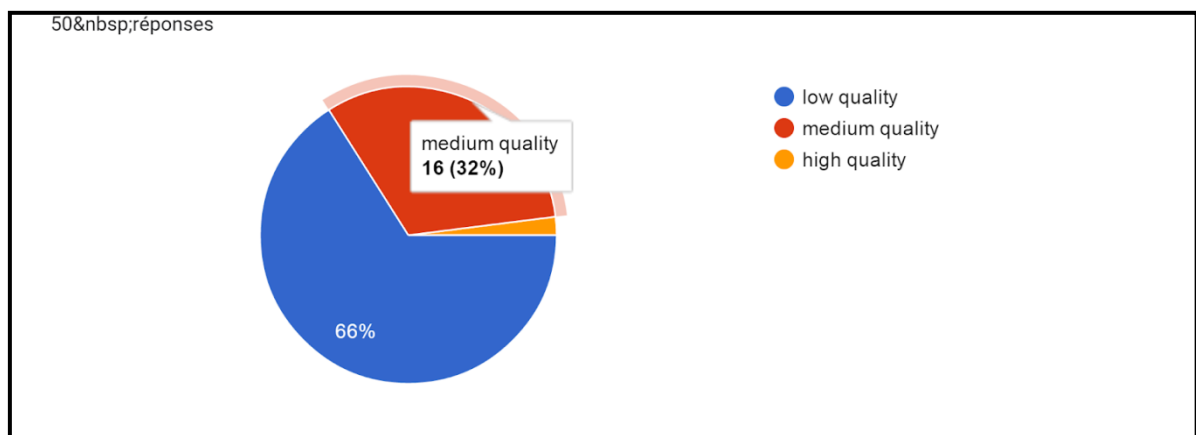


Figure3. 15: Internet quality

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This following item tries to examine the quality of the internet service in Algeria. The pie chart above revealed that most of student in percentage (66%) of the whole evaluates the quality of the internet as a low and the worst it poses an obstacle for them to reach their educational materials and assignments. Than (32%) of respondents counted it as a medium quality it suits them time from time and for the rest percentage in a fewer number as a high quality to allow them access all their needs.

Q15: Does Internet service allow you to update your educational needs?

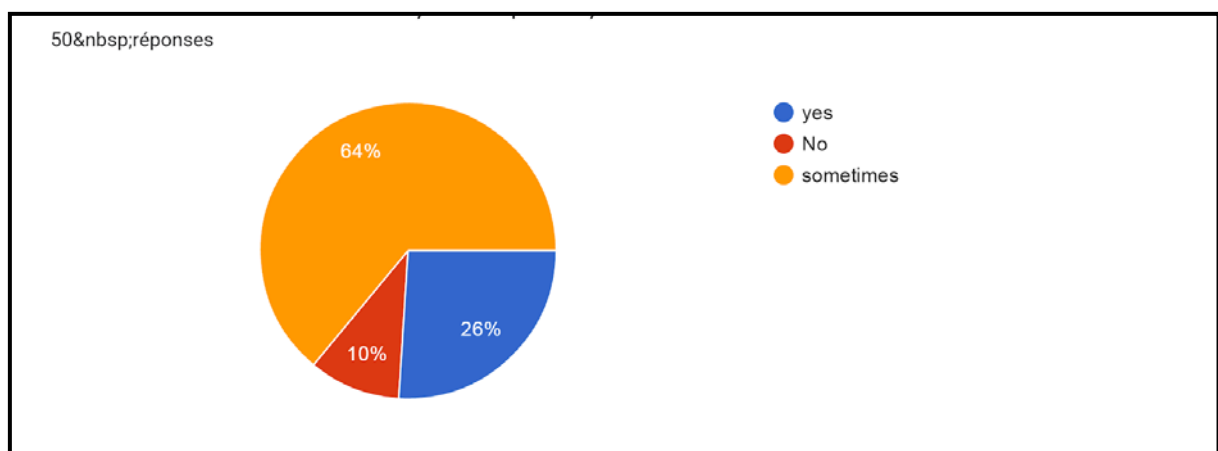


Figure 3. 16: usefulness of the Internet in updating student's needs

This question aimed to investigate students' involvements in using the Internet for accessing their educational materials and practicing their attitude toward their carrier. The pie chart above shows that the largest proportion is for the option 'sometimes' for more than half (64 %) it means that students resort to Internet from time to time when it required to. Whereas, the second rank option is (26%) for yes as it counted an easy way to update lectures, activities, assessments with no need to travel to college or any pedagogical building. And for the rest of the percentage (10%) respondents 'No' they do not use the internet at all.

Q16: Do you find 1hour for each online lecture is enough?

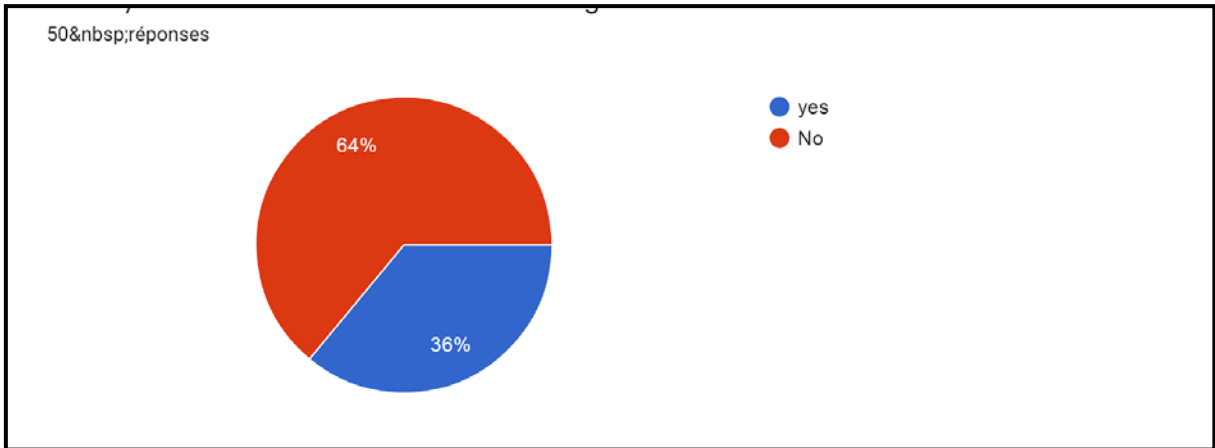


Figure 3. 17: Student’s perception towards timing

This following item was used to check out student’s opinion among the time been spent during taking lectures online with the use of platforms to update their materials and presenting live explanation with their teachers. From the data collected, we notice that the majority of students (64%) are not satisfied with the timing as it 1hour cannot cover all the lessens point to make the section successful much they interact with their teacher and ask for more information, to at the end of each lecture they find themselves literally in the content. whereas, the minority of (36%) students they are with that 1hour it is enough in terms they easily receive information and their levels so advanced much they access important parts of the lecture in an easy way.

Q17: How do you evaluate the content of online lectures?

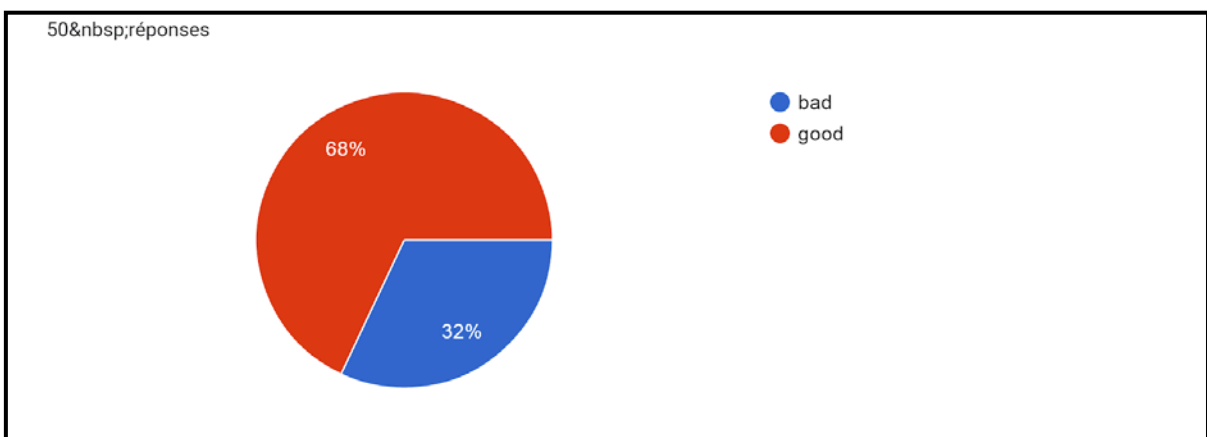


Figure3. 18: Student’s evaluation towards the content

A quick glance at the pie chart above reveals that (68%) more than half of the percentage of respondents are evaluating the quality of the content taking online is good for a method should be taken into consideration to preserve the continuity of education regarding the deterministic situation of Covid-19.on the other hand, for (32%) as the percentage of students who counted as a bad content in terms of their perception because it misses validity and the kind of information been given cannot be received by all students at the same time because it depend on student’s level and their way of understanding.

Q18: In the context of comparison, what is better effective?

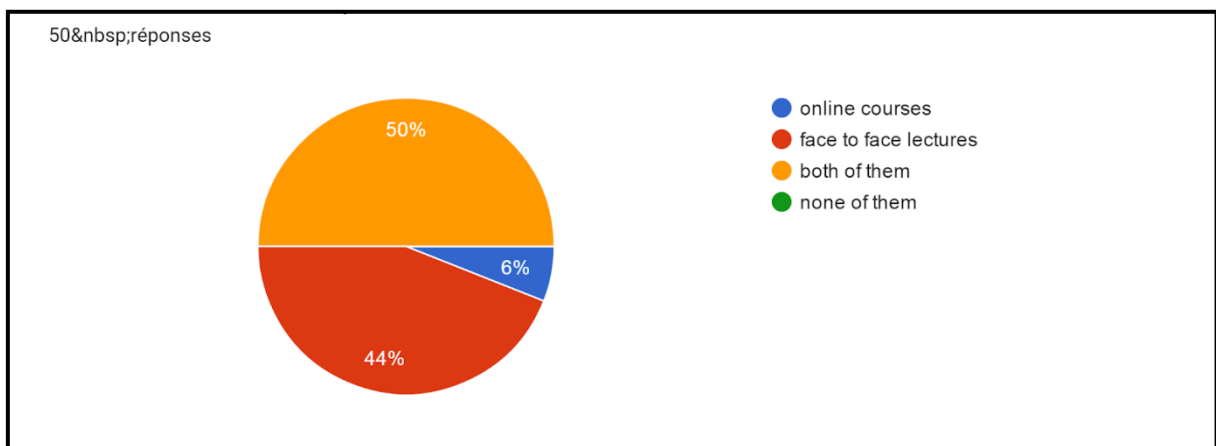


Figure3. 19: effectiveness of lectures

This recent question aims to investigate a student’s point of view in distinguishing between what is more effective in learning. Thus the pie chart above suggests several suggestions in which respondents are free to choose the appropriate option honestly, what we notice here that half of the percentage (50%) of the students their answer was between face to face courses and online lectures it means that learners support blending learning as combination between face to face learning and online learning. While, in the second rank (44%) student’s answers were with face to face lectures as they used to study and it’s

always the most effective way for many years ago. And (6%) only give their voice to online lectures.

Q19: Do you find classroom atmosphere more motivated than receiving lectures at home?

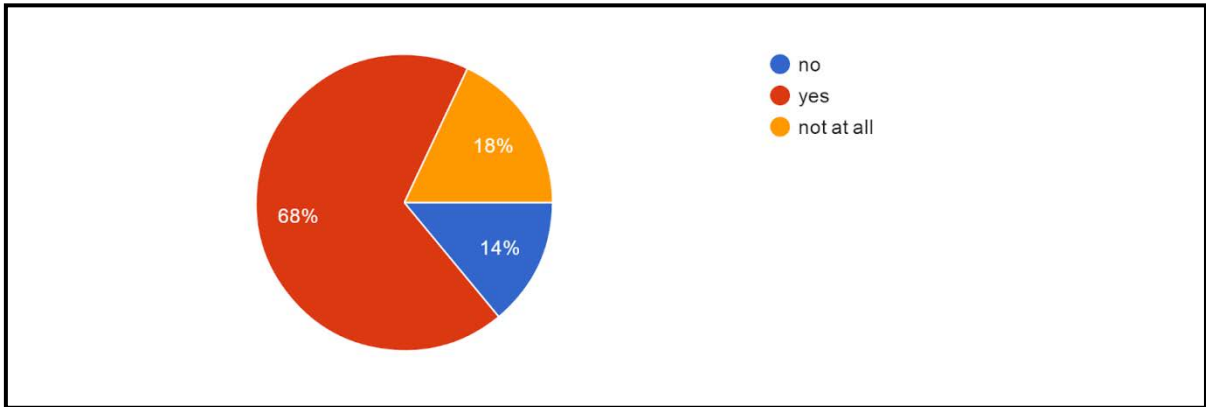


Figure 3. 20: Student's motivation

This following question seeks to examine student's motivation among being presented in classroom verses receiving lectures at home. From what we conclude the pie chart above that most students (68%) said that classroom atmosphere is motivated as they support collaborative work that enhance direct interaction with their teachers and classmates as much as they find themselves conformable in an educational space. While, (18%) of respondents stay neutral and (14%) refusal option as it clearly shows that it's not motivated.

Q20: Do you prefer to learn individually?

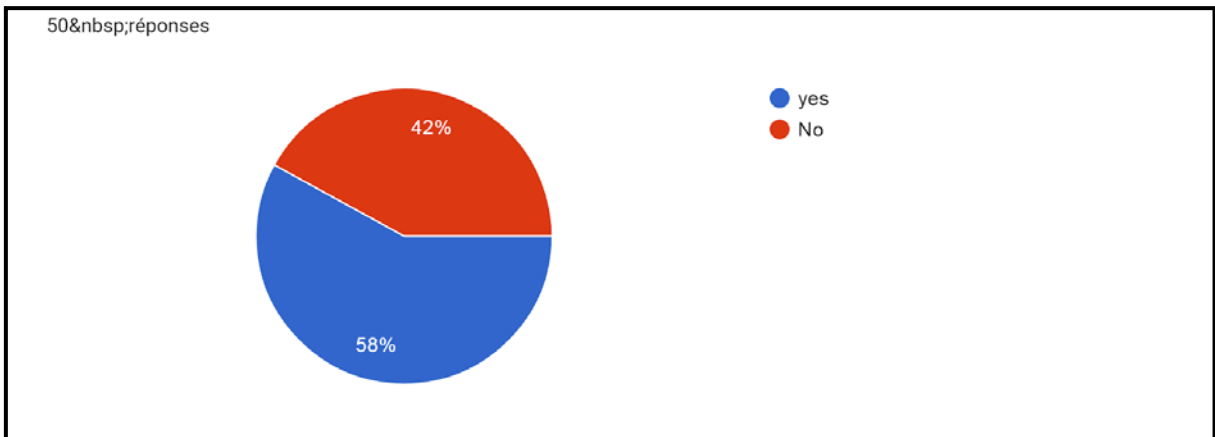


Figure3. 21: Learning individually

This question sought to identify the preferable style of learning according to the numbers of respondents who they answered this questionnaire. Referring back to the above pie chart it shows that (58%) of students prefer to study individually as a matter of independence to enhance their level in English better and control their study environment in an effective way. Otherwise, (42%) for respondents who they are against studying individually for their personal reasons unfortunately they leave the justification empty.

Q21: Do you support collaborative work?

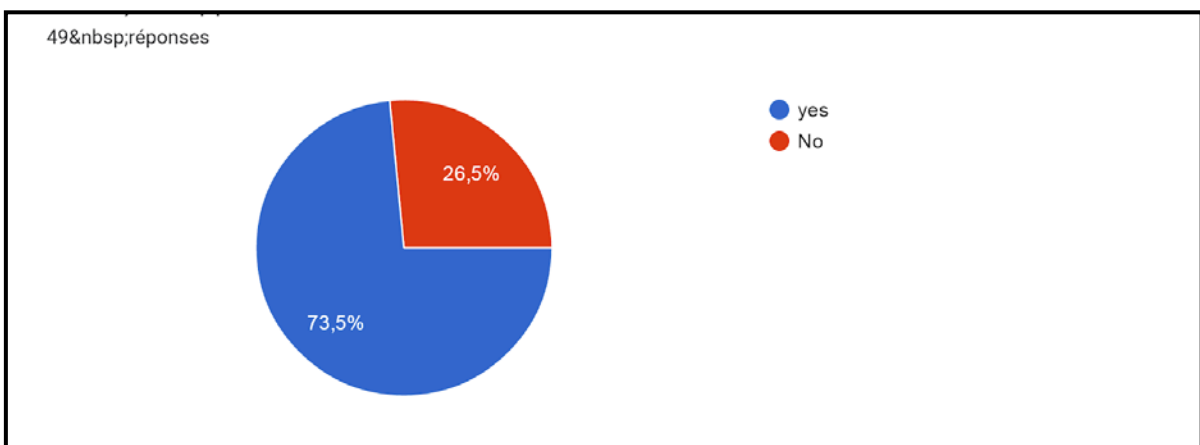


Figure3. 22: Collaborative work

This question above is designed to reveal that the majority of students (73,5%) do prefer studying in cooperative work as well as the role that this learning style play it to emulate

their skills of English by helping them enhancing peer performance and exchanging each time new information and knowledge. However, we recorded the opposite for some of students (26, 5%) who they do not support collaborative work but they do support individual learner style.

Q23: If your answer is yes, which one do you find it better in enhancing your level in English?

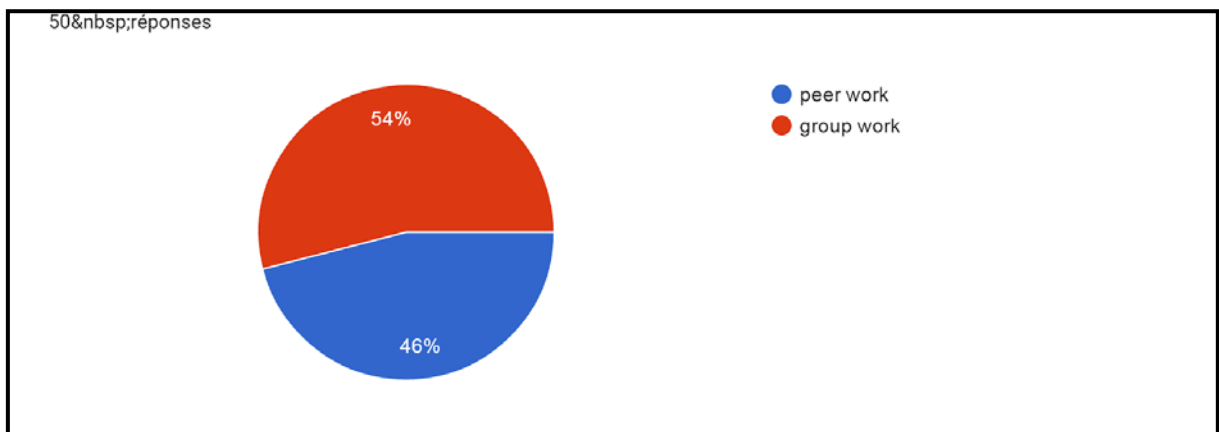


Figure3. 23: Types of collaborative learning style

This recent question was designed on purpose to gain more detailed reasons about the previous question being asked already (Q.22) for those who were their answers 'Yes'. We record from the above graphic that more than half of the percentage (54%) supports learning in group work as it can be an effective method that motivate students and encourage them developing their key critical thinking by engaging decision making skills. In comparison, (46%) for students whom they support peer work as they feel more comfortable in opining when interacting with their similar partner.

3.3 Teacher's Interview

The main purpose behind designed the following teacher interview is to gather different point of view from different teachers concern questions that discuss the major points on this research topic. The interview deals with teacher's perception toward teaching online and teacher's evolution toward the student's performance online. Also, it discusses their different use of online platforms and websites. Furthermore, the interview aimed to extend from teachers whether they support teaching online or not beside to their suggestion.

3.3.1 The Sample

The interview was held with five (05) teachers who teach at University of Mohammed Kheider Biskra. The selection of the sample was based mainly to English teachers of sociolinguistic branch as much as they can provide us with a valued feedback from their own perception toward our research topic as a matter of help and contribution.

3.3.2 Description of the interview

The following teacher interview was designed to sociolinguistics teachers of Mohammed Khieder Biskra. It is intended to discuss the impact of e-learning on student's cognitive development by examining the role of e-learning in teaching field.

The interview above consists of ten (10) items. At first, (Q01) tend to know how long they have been teaching in terms that experience should be taken into account. Second, (Q02) aimed to know what course do they teach because of the importance of the specialist they are involved in. Third, (Q03) seeks to know whether they like teaching online to extend the role of e-learning according to each teacher. Fourth, (Q04) sought to teacher's evaluation about student motivation when they taught online. Fifth, (Q05) was devoted to know the impact of e-learning on student's cognitive development. Sixth, (Q06) was

designed to evaluate student's performance online. Seventh, (Q07) was stated to know teacher use of different names of online platforms. Eighth, (Q08) examines teacher's perception towards the sufficient of collaborative learning. Ninth, (Q09) investigates on teacher's point of view toward timing. Tenth, (Q10) tends to explore whether teacher support learning online and their suggestion for another solution.

3.3.3 Analysis of the Result

Q1: How long have you been teaching English at University of Mohammed Khider of Biskra?

Interviewee A: "05 years."

Interviewee B: " 07 years. "

Interviewee C: " 13 years."

Interviewee D: " 20 years."

Interviewee C: " more than 25 years the whole career (20 years at the UMK)."

This following question aimed to know how long their career in teaching at University is, as it is clearly shown, teacher's answers are ranging from five years (05) to twenty-five (25) years of teaching career. And the purpose behind asking this question is that their valued experience and their contribution to this research topic will really offer a great help in discussing the result later on.

Q2: Which course do you teach?

Interviewee A: " phonetics and grammar."

Interviewee B: "written and literature."

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Interviewee C: “Written Expression, language mastery, and ESP.”

Interviewee D: “RML and academic written.”

Interviewee E: “ Discourse analysis, TEFL, Oral expression.”

This question designed to intend from teachers their specialist as we try to make a variety of different courses from different teachers to collect different point of view at the same time we gather their perception among student’s performance from each different course.

Q3: Do you prefer to teach online?

Interviewee A: “No, I do not.”

Interviewee B: “ I do prefer both.”

Interviewee C: “ only when needed, I actually prefer in class teaching.”

Interviewee D: “ No at all, I do prefer teaching in classroom.”

Interviewee E: “ Not particularly, I believe classroom interaction is more beneficial.”

The question was asked to see whether teachers like to teach online or not. What is clearly shown in the previous answers above is that the majority of the interviewees agree on one common answer in which that they prefer classroom teaching, this could be referring to their teaching method of the course based on the face to face explanation, or according to the student’s interaction with the course in itself. Only one answer (Interviewee B) whose answer was in making combinations between classroom teaching and online learning thus mean that he believes in blending learning as it achieves a better result.

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Q4: According to you, teaching online make you notice that your students are better motivated in learning process than they were before?

Interviewee A: “ Yes but not all of them, some they interact positively and they like studying online. While, the others they do not prefer it at all.”

Interviewee B: “ Yes, somehow.”

Interviewee C: “ I disagree; many students enjoy the classroom environment that allows them to feel the real meaning of learning.”

Interviewee D: “Yes Somehow, the majority of student does really show a good result comparing to how they were before.”

Interviewee E: “ To a certain extent Yes, a great number of student do interact and take a place in the activities.”

This question focuses on teacher’s perception toward student’s motivation while they taught online. The vast majority of the answers were ‘Yes’ e-learning has motivated learners to study online, in terms their interaction is clearly achieved in resulting good result and attendance of their activities and assignments that take place in different online websites and applications. Whereas, only one answer (interviewee C) was ‘No’ since he notices that most students motivate better in classroom teaching because student they like to interact only in atmosphere of the classroom.

Q5: In your view, do you find that e-learning has an impact on student’s cognitive development?

Interviewee A: “ Yes, but it depends on student’s level.”

Interviewee B: “ probably Yes, I’m not really sure.”

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Interviewee C: “ I cannot tell! Since I have taught for a short period of time with a very limited numbers of students.”

Interviewee D: Yes, and they show that.”

Interviewee E: probably online learning is more incitating with regard to student’s analysis and discussion.”

This recent question seeks to know the impact of e-learning on student’s cognitive development according to teacher’s point of view among their students. What most of the interviewee answers show that e-learning strongly effect learner’s cognitive development as it considers as a method of learning and it motivate them in many different processes of mind in enhancing their levels in English. However, the interviewee ‘C’ was not sure about his answer.

Q6: How do you evaluate your student’s performance online?

Interviewee A: “ the majority of students their performance online much better because they feel comfortable that is make them shows their better capacities and skills.”

Interviewee B: “ they are very interactive and they have positive responses.”

Interviewee C: “ some of them appreciated the experience and find it innovative. While, others are axioms to participate in online session.”

Interviewee D: “ an excellent performance.”

Interviewee E: “ positive appreciation, great motivation and participation.”

This question sought to know from teachers how they evaluate their student’s performance when they taught online. What we get from all answers make that all teachers agree on one concept that student perform better when they learn online.

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Q7: Do you use platforms application for teaching online or updating lectures in websites?

If yes, please mention them?

Interviewee A: “ Yes, Moodle most of time and Zoom from time to time.”

Interviewee B: “ Audio visual courses are the best as they mimic the classroom work and mostly are Moodle.”

Interviewee C: “ Yes, the main platform is Moodle and others are Zoom and Google meet but this last one it was not really useful.”

Interviewee D: “ Yes, Moodle and Zoom.”

Interviewee E: “ Still find some technical problems concerning online teaching but updating lectures (on the Moodle platforms), the protocol usually functions.”

This question above was devoted whether teachers use online platforms to teach or not. And they are demanding to mention platforms names they use. Thus what results show that all the interviewee agreed on the use of Moodle platform as the most useful online platforms using among teachers and learners too.

Q8: Do you find that learning individual for each student is better beneficial than his existence in classroom atmosphere dealing with peer/group work?

Interviewee A: “ It depends on what kind of learning style do students prefer to learn, whenever they select it they perform better.”

Interviewee B: “ each has its pros and cores.”

Interviewee C: “ learning is meant to be collaborative. Individual learners feel more involved when learning in groups.”

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Interviewee D: “ No, personally my students suffer a lot and they already complain about the situation.”

Interviewee E: “ As far as foreign language teaching is concerned, peer/group is essential in view of the necessary interaction (in the FL) that should take place (e, g. Oral expression, discourse studies).”

This question tends to explore teacher’s perception about learning style that is beneficial to students comparing being in classroom to interact with peer/group work. The majority of teacher’s answers agree that learning should be in collaborative and group work is more effective for students to a better motivated and performance. While, two of the interviewees were confused and they leave it for students.

Q9: Is timing (1hour) suitable to students to get what they need from each particular lecture?

Interviewee A: “ No, at all.”

Interviewee B: “ No.”

Interviewee C: “ it is not sufficient at all.”

Interviewee D:” No, personally my students suffer a lot and they already complain about the situation.”

Interviewee E: “ Time allocation depends on the objective assigned to the lecture (session).”

This recent question aimed to extent teacher’s point of view among timing whether 1 hour seems useful for students to get their all essential points during the lecture. Teacher’s

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answers show that all teachers agree 100% that 1hour is not sufficient or enough to cover all the messes that students need to receive during the lecture.

Q10: Do you really support teaching online? You can suggest another solution that can be useful for students to deal with this current situation (spread of Covid-19)?

Interviewee A: “ Yes, for the time been it seems the right solution. That’s why learners should take it into consideration.”

Interviewee B: “Yes, it is more motivating, up to date, exciting amusing, less time and effort-wasting.”

Interviewee C:” teaching online has its pros and cons. The solution is to make the best of the two (blended learning). However, if the situation necessities virtual learning for the safety of learners and teachers than online learning should be adopted as a medium of learning”

Interviewee D: “Yes, I do support. But I suggest blended learning as a combination between the two of them. I mean TD as a necessity to attend and for lectures they suffices with online lectures.”

Interviewee E: “ online teaching still faces some technical and practical problems. However, it represents an acceptable solution due Covid-19 pandemic. As it has been explained above, classroom instruction (interaction) is irreplaceable.”

This question was designed in purpose to collect different perception from teachers whether e-learning has gained support from them and also if they have a successful suggestion that must be helpful for students. What the majority of interviewee answers were ‘Yes’ they do support online teaching because it is motivated and sufficient for a huge number of students in terms their performance and results. While, the minority

answers that blended learning is the best solution for students to make a combination between online courses and face to face learning.

3.4. Discussion of the Results

To recapitulate what we have seen previously in this recent chapter about the impact of e-learning on student's cognitive development was the main aims of this present research study. This study has spotted the light on many interesting outcomes, starting from the role of e-learning on student's career during the hard situation of the pandemic of COVID-19 the way that student of 1st years at University of Mohammed Khider Biskra can improve their English as they consider EFL. Furthermore, we intended throughout this following study to make an emphasis on the effectiveness of e-learning on student's performance and levels to enhance their skills and different capacities. In addition, we try to discuss the different problems and difficulties that learners face while they are taught online by using a variety of online websites and platforms.

During the analysis of the gathered data collection from the two (02) data collection method used previously in the third chapter; student's questionnaire, as well as teacher interview shows that the finding analysis illustrates many different positive and important points.

At first, student's questionnaire revealed from its analysis that females are more interesting than males to learn English since they welcomed to contribute in answering questionnaire compared to the minority of males who they answered. Yet, it revealed that the majority of students are consider themselves have a good level in English and that is probably because they are beginners (1ST years students) and they still need to acquire new basics of English and different types of knowledge and background. Also, the majority of

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boys and girls answers they do prefer to study online and they do resort to it but regarded this fact still the minority do not prefer at all to study online due to many difficulties they suffer from that makes them feel bored to take refuge towards e-learning. Moreover, most respondents agree with the concept that e-learning help in the amelioration of both skills and aspects of English and it achieved effectively. In addition to, most of the students they do use platforms rarely to access their educational materials. Nonetheless, other students are in parallel between always and often use, may be because it seems hard to get their target need with regard to the hard issues of the internet quality in Algeria that all students suffer from.

As well as, the majority of students concur with the main idea that e-learning is effectively fed them in enhancing good result in different online assignments and activities. Furthermore, student shows a negative feedback in the use of several lists of some platforms who did not know them in the first place but concern the rest a few students' answers who they contribute in their use. Likewise, the majority of students with a high rate of agreement they do agree on the use of 'Moodle' platform more than any other type. Also, the analyses show that e-learning has an impact on student's cognitive development effectively among the majority of learner's answers. Besides that, we try to highlight some several issues that learners face by analyzing the quality of internet service whether it allows students to update their needs and content to conclude that the majority answers were disrupted with a 'low quality' possibly what make them do not prefer to learn online that most of student like to resort to the easiest way and where they feel more comfortable not to the complex and the boring way. In addition, we attempt to show interest in problem of timing that obviously from students 'answers were not enough much they allow them to cover all the mess and weaknesses in English language. Also, we make a comparison on the effectiveness between online learning and face to face learning thus, student's answers

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show that they select that both online learning and face to face learners is effective according to the concept of motivation that encourage students to learn and gain new information. Despite the fact that student does show a positive reaction towards learning individually. Still, the majority of students confirmed that they prefer group-work and the pair work concerning classroom arrangements that help them to improve their English language through several benefits, it supplies them to practice the language appropriately in a good way, it helps them to exchange different meaningful thoughts and information, and mostly important it contribute in the development of self-confidence and reduce their shyness.

Concerning teacher's interview, provided us with valued feedbacks and precious point of view that it feed this research topic in many different sides, teachers interview shows that teachers of English language division at University of Mohammed Khider Biskra they do not prefer to teach online at all differently to what students announce, and that's may be belong to the fact that learning online reduce the concept of interaction between their students what make the mission for them little bite difficult to deliver the information effectively. Also, teacher's interview display that the majority of teacher's answer show an agreement on the idea that online learning motivate successfully learners since it motivate students to give effort towards giving online assessments and the good result as a reaction towards the positive effect that online courses provide. Moreover, we try to ask the main important question concern the impact of e-learning on students' cognitive development, and we receive the majority of answers was approval on the thought that there is a clear influence in a positive way but even that we cannot ignore that there is a minority who they were not sure about how much was e-learning inspire students' cognitive development and that perhaps it belong to the absence of direct interaction between teachers and their students. Furthermore, teacher's perception among students' performance online was

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perfectly achieved in terms that students exhibit a positive results and they appreciate the challenge of learning online by offering a great feedback of motivation and participation and this goes back to a great performance. In addition to, we seek to see the most platforms used among teacher and it was 'Moodle' who they all shows strongly agree on how much is useful. Also, teacher's interview reveals that teacher's perception of cooperative group work and learning as an effective technique to achieve the main academic goals was absolutely positive as much they were aware of its benefits to enhance student's participation during classroom interaction and teaching in general, due to them individual learning is meant to be stemmed from student's determination to learn individually to make efforts to get a single rewards and a good result. Plus, to, we subtracted the problem of timing to teachers and they also show a strong disapproval on the idea that 1 hour can be enough to complete the fullest way lecture's goals, but most teacher's answer was that it is not sufficient at all and it may be because of the shorter time that obliged teachers to limit the lecture due to time to offer the most important ideas and their explanation should be more general to avoid wasting time with details. Finally, we try to get teacher's point of view toward learning online and their suggestion, the majority shows an approval since we are obliged to come up with an alternative solution that aligned with the current situation. Even that there is a suggestion on resorting toward blending learning to make a combination of the two of online learning and face to face learning in order to develop student's level and at the same time we reduce the problems of e-learning that can harm student's career.

Conclusion

This following chapter has discussed the fieldwork of the current research study and its analysis of gathering data. Firstly, we provided a theoretical background concerning the research approach and the qualitative data collection methods in order to design a right comprehensive review of the methodology of the recent study. Then, two data collection methods (student's questionnaire, teacher's interviews) were used to obtain data from different perspectives. The result of student's questionnaire was appropriately analyzed and illustrated descriptively in the form of figures. In addition to, teacher's interview shows result that was analyzed carefully in order to provide clear ideas that contribute to the success of this study.

After this detailed descriptive analysis of the participants (teachers and students) perception we have concluded that e-learning has an Impact Students' Cognitive Development. Thus, this following result reveals in this research work have successfully confirmed our hypothesis.

General Conclusion

General Conclusion

E-learning has played an important role recently in English foreign learner's career. For that reason, and as it has been stated before in previous chapters, this following research study attempts to investigate on the impact of e-learning on students' cognitive development during the pandemic of COVID-19. Furthermore, this recent study aimed to determine some solutions for students' difficulties faced when they taught online in order to access their educational needs and materials.

This current study consists of three major chapters, the first chapter was designed on purpose to highlight the theoretical part concern the first variables in determining the role of e-learning as well as its elements and strategies. In addition to, we set several advantages and disadvantages of e-learning as an important concept we should mention it. Plus, to we make a detailed comparison between e-learning and face to face learning. The second chapter submits a deep explanation of Piaget's theory of cognitive development by indicating all the important point that complete each other's such stages, substages, subtitles and characteristic. Also, it provided a clear comparison between Piaget and Vygotsky theories. The third chapter, which is mainly the practical part was an interest of submitted a literature of the fieldwork and analysis of the obtained results recorded by the two data collection methods (student's questionnaire, teacher's interview).

This recent study was depending on one major hypothesis; that e-learning has an impact on student's cognitive development. And in order to examine and confirm the credibility of this hypothesis and research problem, a qualitative research approach was used in order to at least of this study we achieve the intended purposes behind this study work. Moreover, we employed two data collection tools to gather data and different perceptions from both students and teachers.

Pedagogical Recommendations

Eventually, some recommendation can be drawn out from this recent study for both learners and teachers:

For Learners

1/ Students should give more importance to learning online and make it into consideration as a real method of learning in order to achieve their goals successfully.

2/ Students must grab the opportunity that e-learning offer as it makes them updating in the media to increase the chances of making them more intelligent by going deeper in technology and digital tools.

3/ Students should devote much time to learning online even if they are free in time and they are not controlled with the necessity of attendance.

4/ Students have to be aware about the necessity of updating their online platforms to achieve their target needs if they want to obtain good results.

For Teachers

1/ Teachers too are recommending updating in the media and different kinds of online platforms to facilitate the process of learning to students, it means that content and knowledge should be available to students at any time they want and wherever they are.

2/ Teachers should work professionally with their students, trying to create a suitable atmosphere in order to allow students access their assignment and activities online.

3/ we can recommend that teachers should play a significant role to increase student's chances to learn online in comfortable and motivating environment.

4/ teachers are recommended to focus more in learner's difficulties that students face while they taught online and try to find alternative solutions for not leaving students feeling bored and dislike learning online.

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APPENDICES

Appendix 1: Student's Questionnaire

Dear student,

You are kindly requested to answer the following questionnaire that is designed to investigate about 'online education and its impact on students' cognitive development during the pandemic of COVID-19'. Your contribution will be useful for the success of this research, so please try to choose the appropriate options that suits you with a clear justification when it is required.

So thankful for your effort.

Section one: general information

1/What is your gender:

a- Male

b- Female

2/ was English your own choice:

a- Yes

b- No

3/ how do you evaluate your level in English:

a- Good

b- Very good

c- Excellent

Section two: Online education

4/Personally, do you prefer to study online?

a- Yes

b- No

c- Sometimes

5/ is learning online help you to ameliorate your four skills of English?

a- Yes

b- No

Why...?

6/Study online enhance:

a- listening

b- Speaking

c- Reading

d- Writing

e- All of them

f- None of them

7/ which aspect of English language you intend to improve when you learn online?

a- Grammar

b- Vocabulary

c- Pronunciation

8/ how often do you use platform for education in studying online?

a- Always

b- Often

c- Rarely

d- Never

9/ to which extent do you think online education is effective?

a- Effective

b- Non-effective

10/Do you use one of those applications:

a- Zoom

b- Google meet

c- Discord

d- None of them

11/ Do you use another application?

a- Yes

b- No

If yes please mention them ...

Section three: Students' cognitive development

12/ do you think that online education effect learners in their cognitive development:

a- Yes

b- No

If yes/no give a clear justification ...

13/ how is the internet quality service in Algeria?

a- low quality

b- Medium quality

C- High quality

14/ Does internet service in Algeria allow you to update your educational needs?

a- yes

b- No

c- Sometimes

15/ do you find 1 hour online for each lecture enough?

a- yes

b- No

16/ how do you find the content of online lectures is?

a- bad

b- Good

c- Very good

d- Excellent

17/ in the context of comparison, what is better effective:

a- Online courses

B- Face to face teaching

c- Both of them

D- None of them

18/ do you find classroom atmosphere is more motivated than receiving lectures online at home?

a- yes

b- No

c- Not necessary at all

Why...?

19/ do you prefer learn individual?

a- yes

b- No

20/ Do you support collaborative work?

a- yes

b-No

c- Sometimes

21/ if yes, which one do you find it better in enhancing your level in English?

a- peer work

b- Group work

Justify your answer ...

Section four: opinionaire

23/ How do you find the questions are, in this questionnaire?

a- easy

b- Difficult

c- Some of them easy, whereas the others difficult

24/ Do you think that the design of the questions are suitable to the content of the topic?

a- Yes

b- No

25/ If you have any comment, please leave it here ...

Teacher's Interview

Dear teachers,

This following interview aims at investigating '**the impact of E-learning on student's cognitive development during the pandemic of COVID-19**' your answers for those questions are so important for the validity of this research, you will provide a great help for me. I am so thankful for your contribution.

Q1/ How long have you been teaching English at university of Mohamed kheider of Biskra?

Q2/ which course (module) do you teach?

Q3/ Do you prefer to teach online?

Q4/ according to you, teaching online make you notice that your student are better motivated in learning than they were before?

Q5/ in your view, do you find that learning online has an impact on student's cognitive development?

Q6/ how do you evaluate your student's performance online?

Q7/ do you use platforms application for teaching online or updating lectures in websites? Please mention them?

Q8/ do you find that learning individual for each student is better beneficial than his existence in classroom atmosphere dealing with peer/group work?

Q9/ is timing (1HOUR) suitable to student to get what they need from each particular lecture?

Q10/ do you really support teaching online? You can suggest another solution that can be useful for students to deal with this current situation (spread of COVID-19)?

ملخص الدراسة

بسبب الوضع الصعب الذي شهده العالم مؤخرًا بسبب جائحة COVID-19 ، وفي ظل هذه الظروف حدثت العديد من التغييرات الدراماتيكية في جميع المؤسسات التعليمية. أُجبر مليون من طلاب المدارس والجامعات على إرسالهم إلى المنزل لقضاء إجازة مفتوحة من أجل الحفاظ على صحتهم من خطر الإصابة بالفيروس. ما دفع العديد من الدول في جميع أنحاء العالم إلى اتخاذ الاحتياطات اللازمة من أجل الحفاظ على استمرارية عملية التعلم بنجاح وأمان ، حيث تبنت العديد من المدارس والجامعات فكرة متابعة التعلم الإلكتروني لحل مشكلة إغلاق المدارس و الكليات طالما استمر فيروس COVID-19. هذا العمل التالي هو محاولة لتسليط الضوء على أهمية التعلم الإلكتروني في حياة الطالب المهنية خلال الموقف الحتمي الذي يعيشه العالم ، تركز هذه الدراسة الأخيرة على فرضية رئيسية واحدة تم اقتراحها في أن التعلم الإلكتروني له تأثير على التطور المعرفي للطالب ومدى فاعلية متعلمي اللغة الإنجليزية الأجنبية (EFLL) من الناحية المنهجية ، نختار النهج النوعي المناسب كعملية وصفية تتناسب عملنا البحثي. لإجراء هذا البحث وتأكيد الفرضية التي نقترحها ، نقوم بتصميم طريقتين لجمع البيانات النوعية ؛ استبيان طالب لطلاب السنة الأولى (LMD) ، ومقابلة المعلم مع خمسة مدرسين من قسم اللغة الإنجليزية في جامعة محمد خيدر بسكرة. بعد تفسير البيانات التي تم جمعها ، توفر النتيجة التي تم الحصول عليها من خلال التحليلات بعض الأدلة التي تدعم فرضيتنا وتتحقق منها ؛ التعلم الإلكتروني له تأثير على التطور المعرفي للطالب أثناء جائحة COVID-19. أخيرًا ، أوصت هذه الدراسة ببعض الاقتراحات للمعلمين والطالب لمساعدتهم على تطبيق عملية التعلم هذه بشكل أفضل.