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The Impact of Web-based Education on Students' Affective Filter to Enhance ESP Learning: The Case of Third Year Fundamental Chemistry Students at Djillali Liabes University of Sidi-Bel-Abbes

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DECLARATION OF ORIGINALITY

I declare that this submitted thesis is my work and it has not been published or written by any person, nor has it been accepted for the qualification of any other degree or diploma of a university or other institution. Furthermore, I certify that all of the information offered here contain both completely original results of my own study and other previously cited works.

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DEDICATION

To my parents who pushed me reaching my goals

To my sisters and brothers who believed in me

To everyone who encouraged me to overcome this work challenges: teachers, colleagues, friends and students too.

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ABSTRACT

In the Algerian higher education, English instruction encompasses both the teaching of general English and that of English for specific purposes. Prior to the onset of the COVID-19 pandemic, regardless of their field of study, students attended traditional face to face classes. However, with the advent of the pandemic, there was a transition to online teaching. This shift not only impacted the mode of course delivery, but also influenced students' emotions. Hence, the current work investigates the correlation between students' affective filter (motivation, self-confidence and anxiety) and web-based education. In this correlational research, one teacher and sixteen chemistry students from Djillali Liabes University were the sample population. The study relied on two tests adapted from Attitude Motivation Test Battery and a diary. Accordingly, the former tests were analysed quantitatively via a statistical software using descriptive and statistical test results. In contrast, the data gathered from the diary were qualitatively analysed by thoroughly interpreting the descriptions and observations collected during the online teaching process. The main results of the current work highlighted that web-based education improved students' motivation and self-confidence while it reduced their anxiety. This research also focused on the fact that it was possible to successfully maintain a low affective filter by applying six main implemented strategies, which are creating a motivational learning environment, applying the expectancy value theory, integrating group communication, respecting the students' individual differences, providing students with technical support and an online learning orientation, in the study as suggested recommendations to facilitate the production of comprehensible input.

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LIST OF ABBREVIATION AND ACRONYMS

ADL: Advanced Distributed Learning

AMTB1: Attitude Motivation Test Battery One

AMTB2: Attitude Motivation Test Battery Two

AT1: Anxiety Test One

AT2: Anxiety Test Two

COI: The Community of Inquiry

CT1: Confidence Test One

CT2: Confidence Test Two

DE: Distance Education

DL: Distance Learning

DL: Distributed Learning

EFL: English as a Foreign Language

EL: E-Learning

ESL: English as a Second Language

ESP: English for Specific Purposes

FLCA: Foreign Language Classroom Anxiety

GE: General English

IBT: Internet-Based Training

ICT: Information and Communication Technology

m-Learning: Mobile Learning

MOOC: Massive Open Online Course

MT1: Motivation Test One

MT2: Motivation Test Two

NIA: Needs Identification and Analysis

OBS: Open Broadcaster Software

OL: Online Learning

OT: Online Training

OTPD: Online Teaching Professional Development

SPSS.V25: Statistical Package for the Social Sciences

TPD: Teachers Professional Development

WBI: Web-Based Instruction

WBL: Web-Based Learning

WBT: Web-Based Training

WWW: World Wide Web

GENERAL INTRODUCTION

GENERAL INTRODUCTION

Nowadays, English is a global language, which is dominant in many fields. For this reason, many people want to learn it in order to meet their needs and reach their goals whether academic or professional. In the Algerian educational context, English has gained significant ground, capturing the interest of educators and students across various levels and different educational backgrounds. In fact, the educational demands of that language are rapidly increasing reaching all levels of schooling from the primary to the tertiary level.

At the university level, English is present within a wide range of specialities such as chemistry, biology, pharmacy, economics and mathematics as a compulsory module. In these departments, students are not taught general English, but specialized English related to their speciality. Thus, the focus of each speciality and its content guide the design of the English course referred to as English for Specific Purposes (ESP). Indeed, the ESP course main objective is feeding students with pre-defined targets set at the beginning of each course. It aims at defining the students' needs, providing them with their wants and bridging the lacks they face through English language where everything is provided in reference to the subject matter.

In the department of chemistry at Djillali Liabes University of Sidi Bel Abbes, ESP teachers are designing courses tailored to the needs of their students. Till February 2020, these students were receiving their ESP course at the university classrooms and laboratories according to a timetable displayed by the administration. After the COVID-19 outbreak, Algerian educational institutions locked down as a precautionary measure to curb the spread of the virus, prompting educators to transition to online teaching, where teachers were required to deliver lessons through online platforms, and students were compelled to adapt to a virtual learning environment. Though the concept of online education was not widely spread or applied by both students and teachers in Algeria, educators were obliged to find alternatives to on-site classrooms in a very short time. Indeed, various platforms and applications such as Google Meet, MOODLE platform, Zoom,

Skype and the University platform, served the situation and enabled students to pursuit their education virtually. Besides, researchers seized the opportunity and started investigating different case studies related to web-based education procedures, implications, hindrances, advantages, disadvantages and consequences.

In the field of psycholinguistics, researchers became interested in exploring web-based education consequences on the students' psychology. In other words, they have focused on investigating the impact of online education on students' affective filter while learning. Along this line of thought, this work aims at examining the impact of the virtual classroom environment and the use of digital tools on students' affect mainly on the three variables: motivation, self-confidence and anxiety. This study is designed in reference to Krashen's (1982) affective filter hypothesis, which holds that learners can grasp and understand their courses only if their affective filter is low. In other words, the teacher should first create a classroom atmosphere that promotes the students' motivation and self-confidence and lowers their anxiety and stress before delivering knowledge. Thus, this hypothesis maintains that if students have low motivation and self-confidence levels and suffer from high anxiety levels, the comprehensible input, the course content and its major points, will be blocked and students will find difficulties to understand the course due to their high affective filter.

Similarly, the purpose of the current work goes in line with Krashen's hypothesis, which explores the type of impact of web-based education reflected on the students' affective filter and the strategies to sustain a low affective filter within the virtual classroom. Hence, the present research is directed by the following research questions:

1-What is the impact of web-based education on the ESP students' affective filter?

The first research question is fragmented into three sub-questions, which are:

Sub-question 1: What is the impact of web-based education on the ESP students' motivation?

Sub-question 2: What is the impact of web-based education on the ESP students' self-confidence?

Sub-question 3: What is the impact of web-based education on the ESP students' anxiety?

2-How can teachers maintain a low affective filter in web-based education?

Accordingly, the following hypotheses are put forward:

1- Web-based education lowers students' affective filter.

The three drawn sub-hypotheses that correspond to three sub-questions are:

Sub-hypothesis 1: Web-based education raises the ESP students' motivation.

Sub-hypothesis 2: Web-based education raises the ESP students' self-confidence.

Sub-hypothesis 3: Web-based education lowers the ESP students' anxiety.

2- Teachers can maintain a low affective filter in the online classroom via implementing different supportive strategies that target high motivation and self-confidence and low anxiety.

Since the current work is based on Krashen's affective filter hypothesis, the most important objective is reaching the students' comprehensible input. Thus, this work has selected ESP students at the department of chemistry of Djillali Liabes University of Sidi Bel Abbes as a sample population. This sample consists of sixteen students who belong to third year fundamental chemistry group. In addition, the researcher is also a participant in the current research as an ESP teacher as she proceeds in keeping a pedagogical diary during the online semester to record students' reactions and emotions.

The first step of this research is to conduct a Needs Identification and Analysis (NIA). This procedure aims at designing and tailoring an English course that goes hand in hand with the selected sample (third year chemistry students). Moreover, the present NIA relies on two main data collection tools: an observation and a questionnaire. Once, the findings of both tools are analyzed qualitatively and quantitatively, the ESP teacher will design courses that fit these students. The following step relies on selecting an online teaching tool. Between the use of Coursera, edX and Udemy platforms, the selection is based on various criteria and Udemy platform utilization is selected as being relevant for the current work.

This case study design is a correlational one. As its name suggests, it aims at extracting the correlation and the relationship between third year fundamental

chemistry students' affective filter, which are their motivation, self-confidence and anxiety and the learning environments, i.e., the traditional and the virtual classroom environments. This correlational design will detect whether these environments promote or hinder the students' comprehensible input.

The present thesis progresses through four different chapters. The review of literature is set as the first chapter. It is devoted to previous works and researches in relation to the current topic. It is planned to enlighten the readers' awareness of both web-based education and the affective filter variables. Thus, it covers definitions, types, importance and different aspects in relation to web-based education around the globe. Then, more details are devoted to Krashen 1982 hypothesis, affective filter hypothesis, which includes three main variables motivation, self-confidence and anxiety. Indeed, each variable is displayed in details including its definitions, characteristics and factors affecting it. This chapter is concluded via revealing the previous findings of how web-based education influenced the students' affective filter.

The second chapter presents the research design and methodology. It informs the reader about the different elements related to methodological framework such as: Firstly, the description of the context of the work and its case study. Secondly, it assists readers understanding the process of the Needs Identification and Analysis used and its findings in details. Thirdly, it also describes the process of piloting studies and its findings, which affected the current research outline. Moreover, much information is provided in regard to the type of research, correlational research, the research progression including the tools and instruments used, two tests and the teacher's diary, in order to collect data. Finally, this chapter serves also highlighting information about both of samples' population who were third year *Licence* students and the ESP teacher at the department of chemistry.

The third chapter is called data analysis as it encompasses the analyses of both findings, which are shaped in quantitative and qualitative data analysis. The former type of analysis relies on the SPSS.V.25 analysis. In addition to that, each variable is analyzed separately using both types of analysis descriptive statistics

and statistical test results that are based on three main tests: normality tests, tests for each item and the t-test. Consequently, the data analysed from the two tests is used in order to cross check data and test the first research hypothesis and its sub-hypotheses. The former type of analysis, the qualitative analysis relied on the teacher's diary interpretation of the gathered observations. In fact, it aims at providing an answer to both of the first and the second research hypotheses. Accordingly, this work hypotheses are tested based on the interpreted findings.

The fourth chapter deals with implications and recommendations. It covers different strategies used by previous researchers and applied by the ESP teacher in the current work in order to better the students' comprehensible input, which will work consequently for a lower affective filter mainly higher levels of motivation and self-confidence joined with less anxiety provoking items. Therefore, the main target of this chapter is to integrate practical psychological and educational strategies to improve the students' comprehensible input in the online classroom when learning ESP module. Indeed, these strategies are highlighted in relation to the three variables of the affective filter in which creating a supportive and a motivational e-learning environment and applying the principles of the expectancy value theory application go for a higher motivation among ESP students. Besides, integrating group communication and granting a space for the students' individual differences work for a better self-confidence. Finally, providing students with both of technical support and online learning orientation are crucial for a virtual free-anxiety atmosphere.

CHAPTER ONE: Web-based Education and Affective Filter Hypothesis

CHAPTER ONE: WEB-BASED EDUCATION AND AFFECTIVE FILTER HYPOTHESIS

1.1. Introduction

As the world continues to flourish in many fields, the educational context also witnessed various progressions. Indeed, the implementation of web-based learning is one of the major evidences of the world's prosperity brought to the learning context. It has introduced new changes for both teachers and students. Web-based learning has been accelerated all over the globe due to the pandemic of COVID-19. Therefore, there has been a requirement to build a sense of awareness about the importance of using web-based learning, its different applications, advantages reflected on the educational context and learn about the different drawbacks that can be avoided or reduced.

The current review of literature sheds light on the main important previous researches in link with ideas related to web-based learning, definition, applications, requirements and tools that allow students and teachers to communicate via web. Besides, this chapter lists the types of web-based learning. Furthermore, the literature related to the importance and the effectiveness of web-based learning is cited.

The current chapter is also relying on a psycholinguistic perspective. A great focus is devoted to the fifth hypothesis of Krashen, affective filter hypothesis, which shapes the students' psychological side: motivation, anxiety and self-confidence. Thus, the current research investigates the impact of this implication on the students' affective filter whether it raises or lowers it.

Through exploring the available researches, previous works findings and recent literature, there are researches, which encourage and promote the utilization as well as the implementation of web-based education for a successful foreign language learning. However, other researchers found that web-based learning has many weaknesses and it may cause various teaching and learning difficulties. Hence, the current chapter presents both sides of work.

1.2. Web-based Learning

"The learners of the 21st century are good at using computer-based technology during their learning activities, and educators have to ensure that they are equipped with all the necessary skills and competencies that allow them to succeed." (UNESCO, 2014 as cited in Iyamuremye *et al*. 2023, p. 5586). Similarly, the current generation is relying on technology and internet more than the previous ones. They do not need internet in specific field or purposes, but a wide range including learning. In fact, Goh, Bay, and Chen (2015) say that "the young generation is fully aware of the benefit of personal computer and tablet devices, and almost every student has for accessing the internet, mainly for e-learning and playing games." (As cited in Astuti *et al*. 2020. p.90).

In the view of Wasim *et al.* (2014, p.446) "the web is increasingly used both as a learning tool to support formal programmes and as a means of delivering online learning programmes." In fact, it is widely known and used tool, which serves many objectives and that of learning and teaching online especially after the COVID-19, which encouraged and accelerated the integration of the web-based in the learning environment. Moreover, Indriani *et al.* (2023, p.257) believe that "the pandemic opened up new innovations in the world of education, through the integration of technology and education." Hence, this term caught the interest of many researchers who provided a wide range of definitions.

Web-based learning can be possible through various approaches and it can also be characterised by continuity. One possible approach to web-based learning is "a 'pure' distance learning in which course material, assessment, and support is all delivered online, with no face-to-face contact between students and teachers" (Judy *et al.* 2003). Another possibility is "an organisational intranet, which replicates printed course materials online to support what is essentially a traditional face to face course" (Judy *et al*. 2003). In the views of the previous mentioned researches, websites are considered to be stores and repertoires that contain information and data and share it using e-tools that enable the transmission from any distance. It may include also aspects as in the traditional learning as communication and tests.

1.2.1 Definition Web-based Learning

In order to define web-based learning, the term is divided in two main parts: 'web-based' and 'learning'. The former word implies all actions that can be done via web that is "the system of connected documents on the internet" (Cambridge Dictionary, 2023), while the latter refers to the "Knowledge that you get from reading and studying" (Oxford Learner's Dictionary, 2023). If we link both dictionaries' definitions together, web-based learning can be referred to as the action of gaining new information in a way that relies on the use of internet or web.

According to Judy *et al.* (2003) "web-based learning is often called online learning or e-learning because it includes online course content." They added that the learning done by email, video conferencing and live lectures are web-based type as they access from web. The researchers highlighted the role of web-based learning in its capacity to enrol many hyperlinks to the same web page. Thereby, it provides huge information within a web page. In addition, Radha *et al.* (2020, p. 1088) share the same views where they say that "the use of a desktop, laptop, or smartphones and the internet forms a major component of this learning methodology."

The ability of sharing information via the internet using an e-learning tool is referred to 'web-based learning' as seen by (Storey *et al*. 2002, p. 91). Besides, Astuti *et al.* (2020, p.90) define web-based learning as "the technology of choice for distance education, given the ease of use of the tools to browse the resources of the web from any devices, and the relative affordability of accessing the ubiquitous Web." Hence, to call a learning as a web-based type is related to the manner, the way or the method of transmitting the knowledge, which is e-tools as a platform, web or an application and internet.

In the views of Rubens and Southarda (2005, p.1), web-based learning can be defined in relation to the way it is applied. They list that "web-based environment that includes using websites for course content, email to interact and send attachments, instant messaging, and listservs or threaded discussions." There are overlapped concepts of web-based learning as mentioned by O'Neil and Perez

(2006, p.4) (See table 1.1). These types are classified according to each category purpose in which "we list nine somewhat overlapping conceptions of Web-based learning, varying from "traditional" or more formal uses to environments where learning is incidental to achieving other goals."

Table 1.1: Types of Web-Based Learning Experiences

1. Formal course or module of distance learning—goal focused and wholly delivered through a distributed network. Place and time of instruction partially unconstrained.
2. Blended course—goal focused, core instructional delivery and interaction is shared by live and computer-supported instruction. Some synchronous instruction required.
3. Technology-supported courses—course materials, assignments, chat and other features are available to augment a traditional live teacher, but the balance is on live instruction
4. Technology-enriched environments—practice opportunities or simulations particularly for subtasks are provided by the Web. Most instruction is live.
5. Discretionary Web activity—enrichment or other activities supporting computer literacy skills.
6. Tool use—learning that occurs related to the use of interactive tools involving search, document preparation, and spreadsheet and database design and collaborative work.
7. Focused games and simulations—goal focused or goal emergent with a set of learning expectations including content, strategy, and persistence.
8. Exploratory games and simulations—goal-focused, emergent, and unpredictable learnings occur; processes outcomes with opportunities to investigate relationships among procedures, constraints, and processes.
9. Domain specific incidental learning—relevant to learning rules and rewards of using (usually) commercial sites.

O'Neil and Perez, 2006

1.2.2 Importance of Web-based Learning

In a variety of fields and domains, the key of growing and developing over time is following what is happening around and adapting it. Hence, people need to follow the flow of society and the advancement of the educational technology to keep growing and melting within the worldwide trends. Hence, the traditional way of teaching has many advantages, but fulfilling the world's continuous needs, requirements and updates are of a paramount importance to the success of the educational institutions.

As a matter of fact, Kim *et al.* (2022, p.1) conduct the Canadian study entitled, Comparing Web-Based and In-Person Educational Workshops for Canadian Occupational Therapists and Understanding Their Learning Experiences: Mixed Methods Study. Indeed, they added that "the quantitative results of this study reported no difference in knowledge acquisition between the in-person and web-based groups, indicating that web-based education is as effective as in-person workshops."

Because of the spread of the pandemic of COVID-19 all over the world, the shift to web-based learning in all domains including teaching and learning was compulsory. Among many research done about the COVID-19 and the use of technology, Mahalakshmi and Radha (2020, p.2410.) investigation found that the effects of this crisis was fatal for the human health, but advantageous in the educational context. They added "it provides an efficient method of learning practices through various applications using online. As we all expect "COVID 19 to be negative but it is POSITIVE towards e- learning." Therefore, the paramount importance of web-based learning gained the ground due to this crisis. Accordingly, Radha *et al.* (2020, p.1088) added that this transformation has been necessary and more importantly effective in which

> E-learning has become the mandatory component of all educational institutions like schools, colleges, and universities in and around the world due to the pandemic crisis of COVID-19. This deadly situation has flipped out the offline teaching process. E-learning provides an effective teaching method that brings out the best in students.

In the views of Fink (2013 as cited in Ng'ang'aa *et al*. 2020, p. 23) "whenever web technology is used in educational settings, its importance is based on its ability to vitally reflect on its effects on learners, teachers, courses and institutions." Hence, if the implementation of web-based has advantages more than drawbacks, its use will be beneficial and supportive to both users, teachers who share their knowledge through their e-devices and learners who receive the information through a network system.

According to Ng'ang'aa *et al*. (2020), web-based education is important because of these reasons: First, its ability to solve students' problems and difficulties to be present in the classroom following a mandatory schedule. Besides, it aids and works for the financial issues of the educational institutions via sizing students' interest and freedom of having access any time and from everywhere. Furthermore, "it promotes individualized learning and reaches students who are unable to attend classes in a classroom environment because of time or distance constraints." (Ng'ang'aa *et al*, 2020.p. 24).

In the views of Al Lily *et al.* (2020), web-based learning is useful due to its capacity to use multi-sources while utilizing variant formats. Besides, it allows users to join their courses according to their personal availability especially time and space (as cited in Pregowska *et al*. 2021). This characteristic is absent within the traditional method, but it is valid through web-based learning which enables the students and teachers as well to review, check, search and revise the courses at any time and everywhere (Suresh, 2018 as cited in Coman *et al*. 2020).

According to Taylor (2002), the importance of online and virtual learning stands on the different characteristics provided by this type of learning. Taylor has summarized the characteristics of online learning in sixteen advantageous points (See table 1.2). among these beneficial points there are extra resources in each course, less restricted timetable for students in the asynchronous learning, better participation opportunities in the synchronous learning, gaining knowledge of updated multimedia usage that are required in the future and less absences where students can access courses from any geographical place with less cost and more time is saved.

Table 1.2: Advantages and Disadvantages of Online Learning-Teaching

Online Learning-Teaching Characteristics	Advantages	Disadvantages
Using Online Learning Effectively	Very effective for most academic courses and training programs with cognitive learning.	Programs on changing student attitudes do not work well.
Team Effort	Instructors can bring their teaching styles, working with a web team to create a practical online course.	Variation in instructors' experience requires the knowledge to achieve a practical online learning experience.
Add-On to Classroom Presentations	Forwarding additional materials, articles, etc., can enhance student learning, and communication is significantly sped up.	Students may prefer not to attend class if they feel the material is sufficient.
Asynchronous Program	Students do not have to be in a classroom; instructors can teach in different time zones.	It prevents immediate discussions, and students may need immediate responses to questions and submissions.
Synchronous Classrooms	Instructors and students are all simultaneously so that they can talk, discuss, and participate in class.	Students cannot participate all at the same time; limited duration of lessons, and have difficulty with time zones.
Faculty Learning Curve	Instructors will be more prepared with computer knowledge, resulting in better and faster communication.	It takes some time to fill the knowledge gap, and expensive to upgrade outdated equipment and software.
The Cost of Online Learning Implementation	The benefits of online learning justify the costs, and organizations may support the cost of upgrading the systems.	The costs may be heavy and require convincing, and possible program delays.
Using Multimedia to Enhance Lessons	Programs such as Microsoft Office and others assist in teaching and building sites.	Multimedia slows learning if done too much, and repetitive, and requires storage space.
Reaching Distant Learners	The possibility of teaching students in different geographical areas and instant communication through online communication.	Dealing with different time zones and student demographics requires heavy coordination.
Assessing Learner Needs	A well-designed and distributed questionnaire can help instructors to understand students' needs.	If the questionnaire is not well-designed or interviews are not possible, students may not feel understood.
Ability to Access Course Materials	Good opportunity to know students and act as a reinforcement for students to cope with the materials presented.	Reaching all students requires learning their computer specifications, and some countries do not have or permit internet access.
Distributing Information	Materials can be distributed immediately, and faculty can focus on upgrading the course once it has been developed, tested, and made online.	Students unaware of the materials distributed could miss out on essential lectures.
Feedback	Feedback is made easy using e-mail and student forums by encouraging students to give and receive feedback from their peers and instructors.	Issues with time lag and restriction are placed on forums to ensure that those who can access the forums are students and instructors.
Class Management	A variety of existing classroom management programs, with a good one, would help instructors organize and instill students' confidence while also tracking students' performance.	With many distractions, difficulty in controlling student participation exists inside and outside of the classroom.
Measuring Results	Interactive questions and quizzes help instructors eliminate tedious work to review their scores and give students feedback.	Relying too heavily on true or false questions will not be sufficient to judge students' ability and knowledge.
Updating Material	Updating materials can be done easily and quickly, removing time lag.	Not everything can be easily updated, and some upgrades require scheduling.

Taylor, 2002.p.13 as cited in Hokianto, 2023.p.70

Online learning stands as an opportunity for the widening access that includes students who work, or cannot attend the university courses and even the charging fee will be reduced via the online mode. Indeed, Pregowska *et al.* (2021, p.18) viewed that "the distance between their home and the nearest school was too far, or because the fees charged by other educational courses were too high." Therefore, students will benefit from this learning financially. In addition to that, the present generation is more familiar and comfortable while using web for any reason. Besides, the world is getting digital day after day and the coming generations may support the use of web-based for learning as result of its wilderness and availability. Also, Garrison, (2011 as cited in Soussi, 2018.p. 937) lists the benefits of web-based learning including

> Self-pacing (slow or quick learners), which reduces stress and increases focus and retention, self-evaluation; learners can track their own learning, flexibility in terms of learning styles; learners can choose the materials and learning resources that suit their learning styles, familiarity and updating of the learners' knowledge and use of the latest Internet technologies, developing personality and values, such as responsibility for own learning and success and intellectual interest.

1.2.3 The Requirements of Web-based Learning

"With the development and popularization of web technologies, web-based learning is becoming more and more acceptable by people." As seen by (Peng, Jiang and Zhang, 2013.p.95). In fact, educators opted for it as a solution to overcome the problem of COVID-19. Thus, many researches emerged to spot various aspects of the crisis period on the learning and teaching such as Wirani (2018) working on the entitled research, The Importance of Using a Web-Based Learning Model to Prevent the Spread of COVID-19. Besides, Chiemeke and Imafidor (2020) explored the COVID-19 impact on the educational context. In addition to that, the research of Mahalakshmi and Radha (2020) who worked on, COVID-19: A Massive Exposure Towards Web Based Learning. Their research explored the fast transition to web-based learning during COVID-19.

When it comes to investigating the crucial and practical aspect related to web-based implementation, an important work has been invested by Cook and Dupras (2004, p.698). Their research focuses on the main steps and processes to create a course on web, which is described as "teaching on the Web involves more than putting together a colourful webpage. By consistently employing principles of effective learning, educators will unlock the full potential of Web-based medical education." Therefore, teachers are supposed to possess and work on a range of requirements that are different from the traditional teaching demands.

In other words, the concept of web-based education requires from educators these needs, firstly, the availability of information and communication technology as denoted by most definitions of this concept. Secondly, the teachers have to develop a sense of awareness about the web before starting web-based teaching\learning such as its features. These features can be key steps and implementations wrote by Cook and Dupras (2004) to reach a successful webpage for teaching and learning. Thirdly, enabling students to build a sense of autonomy and self-directed learning is of paramount importance in the success of this e-implementation. Finally, training its users (teachers) to use it effectively is important so as to enhance the quality of online teaching. Indeed, the success or the failure of the implementation of online learning is highly linked with the teachers' professional development in the online context.

1.2.3.1 Information and Communication Technology

In the views of Soussi, (2018, p.936) "e-Learning is the reliance and use of Information and Communication Technology (ICT) to share information for education in circumstances of distant instructors and learners, either through time, space or both in order to improve the learners' learning experience and performance." Accordingly, this definition highlights first and foremost important requirement that is the presence and the use of the web, internet and ICT.

The concept of Information and Communication Technology (ICT) refers to "a diverse set technological tools and resources used to communicate, and to create, disseminate, store, and manage information." (Das, 2019, p. 97). Besides, it can be defined as the new implemented pedagogies in the educational context

that serves its improvement via the use of technology in order to share, receive and exchange information. He describes its purpose as "information communication technology serving as curriculum/subject transformation tool, it used properly to create an environment with learner centred. Information and communication technologies are used by the teachers to instruct the students to know and access the new pedagogy." (Das, 2019, p. 97).

When it comes to the impact of the Information and Communication Technology on learning and teaching, "ICT has the potential to bring real life issues into classrooms in a way that was not possible before in a traditional classroom setting. The flexible nature of ICT and the internet especially provide pupils (and others) with the opportunities for research, interaction, cooperation and collaboration." (Cole, 2000 as cited in Cener, Acun and Demirhan, 2015, p. 192). In other words, it is due to the use of ICT that students can have access to many options that cannot exist within the traditional classroom such as the constant availability of unlimited resources with the ability to transfer information between teachers and students simultaneously.

Thereby, the learning and teaching through the ICT extends over the four walls of the traditional classroom. Indeed, the same idea is supported by Lawal and Olawale (2020 as cited in Bibi, Ayub and Ismail, 2023, p.270) "The technology behind computers, laptops, smartphones, hardware, software, the Internet, search engines, and video conferencing makes it possible for us to do things with information, like create, collect, recover, activate, assign, and move data."

1.2.3.2 Features of Web-based Learning

According to Judy *et al.* (2003), there are various features related to a typical web-based course in which: First, the existence of a course information with a remarkable board and a structures timetable. Then, the curriculum map which ought to be clear and understandable. Next, the availability of teaching materials including slides, handouts and articles. Besides, the presence of an email to exchange, communicate and access the board's discussion is among the main characteristics.

Furthermore, a web-based course is characterized by the availability of tools such as records, statistics and student tracking, which are grouped with the student management tools in the application. In addition to that, using and adding various links including both internal and external relevant websites such as library, online databases and journals are important aspects that shape the most beneficial aspects of the online course. (Judy *et al*. 2003).

Finally, the users' ability to be assessed by both types of e-assessment is necessary as a final step in the learning process that should be within each web-based course. Indeed, they add that "one of the values of using the web to access course materials is that web pages may contain hyperlinks to other parts of the web, thus enabling access to a vast amount of web-based information." (Judy *et al*. 2003, p.870)

In the views of Liu and Wang (2009), if there are these six features in any course, it can be called a web-based learning course. This course includes these main requirements:

1. E-learning is a learning activity mainly based on the Internet.
2. Information spreads in the form of network courses.
3. Worldwide distribution and sharing of learning resources.
4. A virtual study environment is created.
5. E-learning is one method of studying.
6. There is flexibility of study (anytime, anywhere).

Benchicou *et al.* 2010.p. 329

In other words, they defined a web-based course as the one that should be first based on the use of internet connection to access it. Then, its information accepts to be shared among students through the different multimedia virtually. Next, it allows adding various resources within the course materials such as links, documents and extra files, which can be downloaded by students. After that, web-based course does not require the four walls environment as the traditional classrooms. In addition to that, it allows the students to learn, study and exchange its contents and knowledge through internet. Finally, the last characteristic of web-

based course shapes its most common advantage, which is the freedom of spatial and time dimensions.

1.2.3.3 Students' Autonomy

Autonomy before the 1970's has existed within moral and politics philosophy, sociology, and developmental psychology. Then, it was introduced to the educational context precisely in the language learning. In fact, Holec (1981, p.3) was the first researcher who dealt with autonomy in education. "To say of a learner that he is autonomous is to say that he is capable of taking charge of his own learning, and nothing more...to take charge of one's learning is to bear responsibility for all the decisions concerning all aspects of this learning." (As cited in Hadi, 2015, p.58). In other words, an autonomous learner is the one who is able to plan, arrange, and take charge of his own learning and does not rely on the teacher all the time, but uses and builds capacities related to the learning process.

> Learner autonomy grows out of the individual learner's acceptance of responsibility for his/her own learning. This means that learner autonomy is a matter of explicit or conscious intention: one cannot accept responsibility for her/his own learning unless s/he has some idea of what, why, and how s/he tries to learn. (Çakıcı, 2015, p.32).

In fact, Çakıcı refers to the idea that autonomy grants learners the freedom of the selection of any learning aspect including materials, activities and techniques. In fact, this autonomy will raise learners' motivation when choosing their own and convenient style of learning. Thereby, the learning is meaningful and customized with each learner.

When it comes to learners' autonomy in web-based learning, Serdyukova and Serdyukov (2013, p. 231) say "one of the goals of contemporary technology-based education is to engage students in truly independent, life-long learning where the motivation is to attain excellence in learning that leads to higher performance on the job." In other words, web-based can be supported and strengthen by the learners' autonomy. As a matter of fact, the concept of autonomy

embodies several descriptive adjectives that work for a better learning as mentioned in (figure 1.1) by Anderson (2001, p.66).

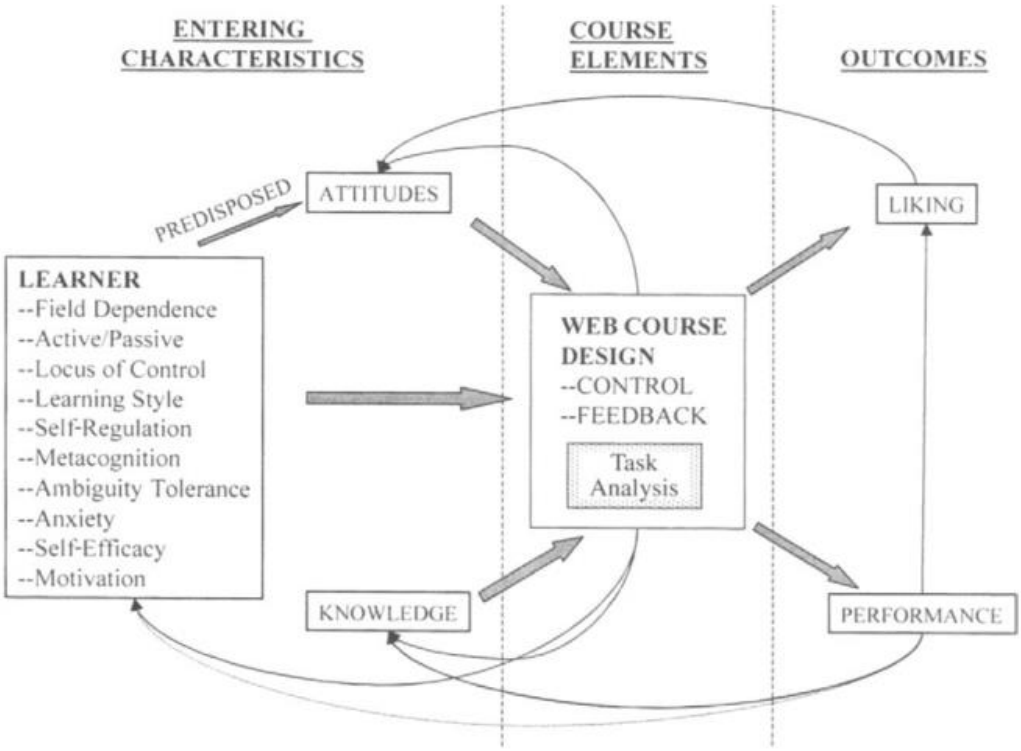


Figure 1.1: Model of Learner Characteristics and Web-Based Courses

Anderson, 2001, p.66

The above figure illustrated that the learners have to develop a sense of responsibility toward their learning. This requirement enrols various attitudes including: tolerating ambiguity, self-regulated learning, motivation and anxiety. These psychological features and others mentioned within the figure are the key features required from learners to develop and acquire for the sake of better learning especially a web-based learning.

First, the students' ability to tolerate ambiguity, which refers to their efforts to adapt the new situations and manage its problems and difficulties in order to reach improvement. In fact, welcoming the use of web-based learning for the first time as a new experience is a concreate example of tolerating ambiguity. Indeed, Jonassen and Grabowski (1993 as cited in Anderson, 2001.p.49) describe these students as "individuals who are able to tolerate ambiguity are likely toper

form well in situations that require complex problem-solving and divergent learning approaches.". Therefore, students have to build a sense of awareness when it comes to this term as it plays a crucial role in solving and succeeding to overcome any challenging learning situation.

Next, both of the features of self-regulation and motivation play a crucial and highly recommended role not just to put efforts to reach a learning objective, but also to maintain the motivation and the willingness along the learning process. Self-regulated learning and students' motivation are among the psychological items that work for an effective learning via the web. In fact, Anderson (2001, p.56) says "one critical aspect of motivation, and especially of self-regulated motivation, is the ability of the student to establish goals and to monitor progress toward those goals."

Finally, the feeling of anxiety comes as an opposite feature if compared to the previous mentioned psychological aspects, tolerating ambiguity, self-regulation and motivation, simply because the less anxiety is felt, the better learning occurs. Similarly, Horwitz (2001 as cited in Oteir and Al-Otaibi, 2019, p.314) says that "studies have reported that a negative relationship has been found between foreign language anxiety and academic achievement as well." Therefore, controlling the levels of anxiety by students and being able to adapt strategies to lower it, is a requirement for a better web-based learning.

1.2.3.4 Teachers' Professional Development

The use of digital tools and ICT has been introduced in the educational context years ago in the developed countries first and because of COVID-19, the spread of the online learning and its types has been imposed as a necessity in the globe. Indeed, "the increase in student demand for education in online and blended modalities has created a need for instructors who can competently teach online." (Leary *et al.* 2020, p.255) Teachers and educators were collecting knowledge and adapting themselves to the new changes in their field of interest. Accordingly, these efforts refer to "Professional development of teachers may ensure that teachers are better prepared to use information and communication technology (ICT) to promote 21stcentury learning." (Twining *et al.* 2013, p. 426).

"The online TPD was not that effective because the teacher was not able to reflect the experience through features available in digital applications, while the digital skill constrained as the primary focus." (Collins and Liang, 2015 as cited by Wuryaningsih *et al.* 2019, p.124). In other words, the teachers' lack of digital skills, knowledge about online learning implementation and being unexperienced hinder them to perform best in its usage.

Therefore, teachers are supposed to put efforts in order to fill their lacks in the online teaching frame. Accordingly, both of a technical knowledge and personal features are required. The former need, technical knowledge, requires from teacher to be aware and capable of seven implementations, which are

(1) knowing and creating the course content
(2) designing and structuring the online course
(3) knowing the students
(4) enhancing teacher-student relationships
(5) guiding student learning
(6) evaluating online courses
(7) maintaining teacher presence.

Baran, *et al.* 2013 as cited in Baran and Correia, 2014, pp.96-97.

The above figure, figure 1.2, suggests a coherent framework for a better online teaching. It focuses on three main categorizations, which are organization, community and teaching, which are interrelated items needed in the context of higher education in which, "The model clearly shows how community encompasses teaching and institutional support encompasses community." (Baran *et al*. 2004, p. 97). In other words, the framework intention is to build a bridge to collaborate between all levels that exist so that the outcomes, online professional development, which will be strengthened by the collaboration from the higher level, institution, to the core level, which is the teacher.

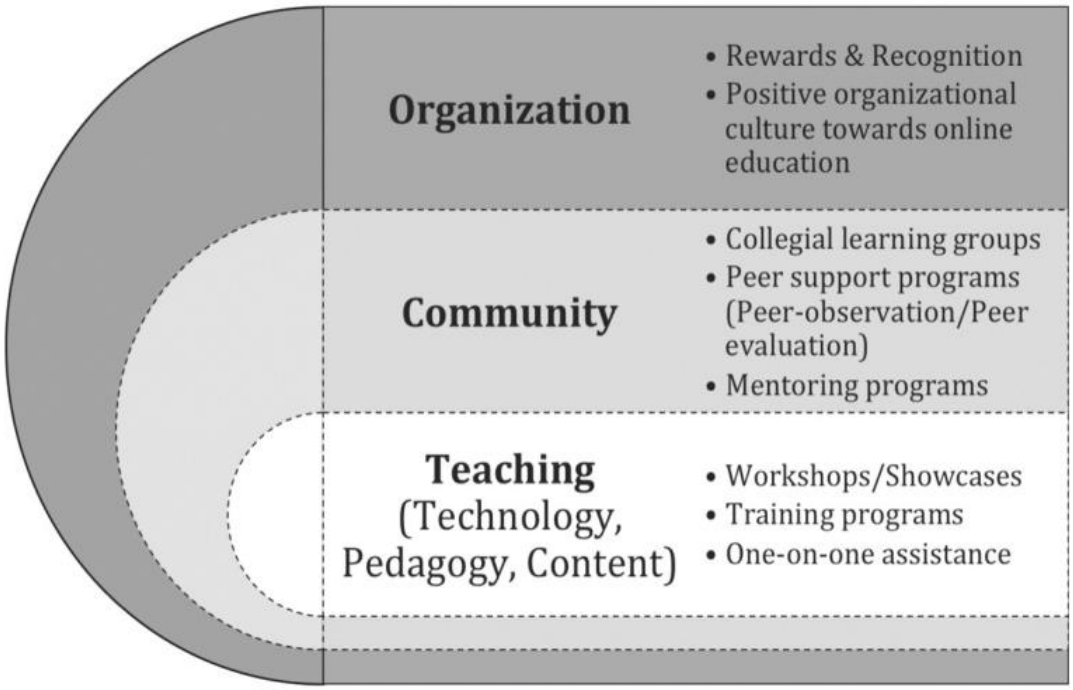


Figure 1.2: Professional Development Framework for Online Teaching

Baran and Correia, 2014, pp.96–101

The latter necessity, personal features, includes the teacher's sense of responsibility in which "it invites ordinary teachers to recognize and accept the responsibility for improving not only their own practice, but the shared practice of the profession." (Hiebert, Gallimore, and Stigler, 2003 as cited in Kedzior *et al*. 2004, p.1). Besides, online teaching professional development (OTPD) lists both of motivation and self-disciplined toward new teaching pedagogy, the how and the what to use the online, is a key component.

Indeed, Li and Akins (2005 as cited in Baran and Correia, 2014, p.101.) emphasize that "quality online education programs are created with committed faculty members, administrators, and staff who are motivated to apply new knowledge and skills to the online learning context." As a result, the produced web-based education does not rely and does not reflect only the teacher's efforts and competence, but also it refers to the collaboration established between various members of the educational institution to assist the different roles required to publish successful web-based courses.

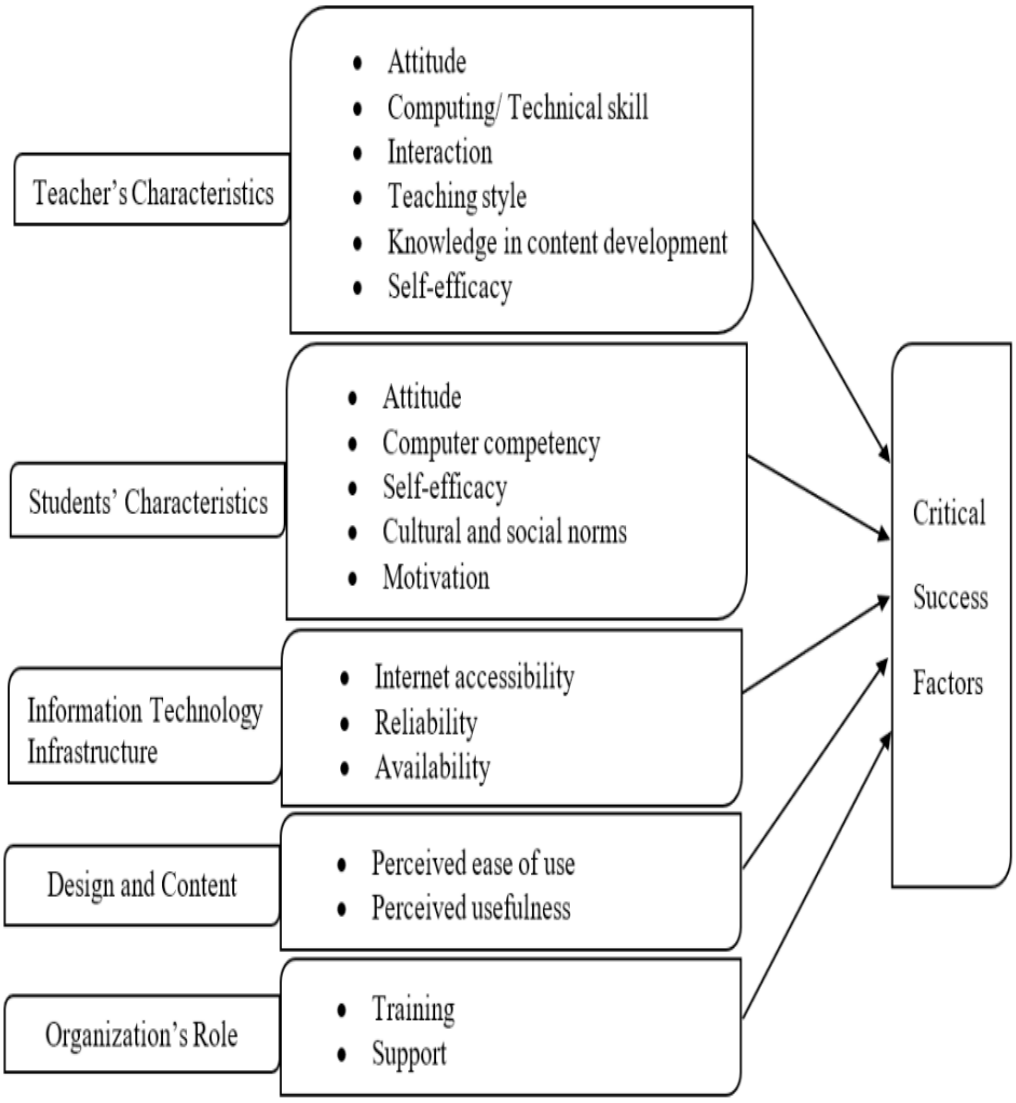


Figure 1.3: The Key Factors for Implementing E-learning Successfully

Raman, Othman and Danaraj (2019) as cited in Madi and Ouarti 2022.p15

To conclude, there are various parameters, which may differ from one researcher to another, that should be reviewed and considered by the teacher before designing a web-based course. As a matter of fact, most researches have a common point where their features and common points are displayed. Indeed, the success or the failure of web-based courses relies on the summarized requirements proposed by Raman, Othman and Danaraj (2019) as cited in Madi and Ouarti (2022) in the above figure.

1.2.4 Different Types of E-learning

An important question is raised by researchers, which is about whether web-based learning, the online and e-learning and other interrelated concepts refer to the same learning practice. The answer is highlighted by Judy *et al.* (2003, p.780). They say “web-based learning is often called online learning or e-learning because it includes online course content. Discussion forums via email, videoconferencing, and live lectures (video streaming) are all possible through the web. Web based courses may also provide static pages such as printed course materials.” Therefore, these learnings share the aspect that all happen and take place via the internet and the use of webpages using different and various tools, applications and methods.

In the same line of thought, Chitra and Raj (2018, p.11) see that “the term e-learning comprises a lot more than online learning, virtual learning, distributed learning, networked or web-based learning”. They believe that “the letter "e" in e-learning stands for the word "electronic", it would incorporate all educational activities that are carried out by individuals or groups working online or offline, and synchronously or asynchronously via networked or standalone computers and other electronic devices”.

As a consequence, both of distance learning and online learning are considered to be faces of the same coin. Similarly, Badrul (2023, p.2) added other related acronyms referring to this concept such as:

> Numerous names are used to describe Web-Based Learning (WBL) activities, including Web-Based Training (WBT), Web-Based Instruction (WBI), E-Learning (EL), Distance Learning (DL), Distance Education (DE), Distributed Learning (DL), Advanced Distributed Learning (ADL), Internet-Based Training (IBT), Online Learning (OL), Online Training (OT), Mobile Learning (m-Learning) to name a few.
>
> Badrul, 2023, p.2

However, if this learning combines a traditional one, which takes place in the classrooms, it is called blended learning. In fact, it can be a mixture and an

interchangeable usage of the face-to-face learning and the distance learning or its types. Indeed, it is the combination of both types together the traditional and the distance.

1.2.4.1 Distance Learning

The starting point of the distance learning dates back to the 18th century and it has been via correspondence courses in Boston, USA (Pregowska *et al*. 2021). However, the pandemic of COVID-19 raised the attention on the distance education as being a safe solution that promotes learning in quarantines. Indeed, "In 2020, to slow the spread of the COVID-19 pandemic, schools were forced to limit face-to-face teaching and move to the digital world, i.e., online remote learning, at least for a while." (Mackenzie, 2020, as cited in Pregowska *et al*. 2021, p.14).

DL can be defined as the learning, which does not require the learners and teachers to share the same geographical place, but it is the one, which takes place in distance (Schlosser and Simonson, 2009 as cited in Sü˘gümlü, 2021). Similarly, Pregowska *et al.* (2021, p.1) described it as "A type of education in which students and their lecturers are separated." According to Yildiz, and Cakmak (2021, p.1) "as the education is made possible in digital environments, most institutions offer educations by means of distance education". In the views of Garrison (2009 as cited in Qayyum and Zawacki-Richter, 2018, p.6).

The numerous terms can cause conceptual confusion. DE and online education overlap, but not all distance education is online and not all online education is via distance. Some have argued that online education originates separately from distance education, with the former more focused on collaborative learning while the latter still has a focus on independent learning

When it comes to the DL requirements, the use of digital tools in which "it is a learning-teaching system in which the interaction between students and teachers who are far apart takes place through technological tools." (Karataş, 2008 as cited in Sü˘gümlü, 2021, p.174). In addition to that, the presence of distance between the people who are interacting is essential. Indeed, "it is seen that the main

feature of this type of education is that there are no face-to-face lessons". (Sü˘gümlü, 2021, p.175).

According to Judy *et al.* (2003), there exist two aspects of the main development in web-based learning. On the one hand, the adaptation of communication technology for the development of learning. On the other hand, the changes in distance learning strategies which are a part of the online courses. The researchers added that "both aspects should be considered when designing or delivering web-based learning programmes. Lessons can be learned by considering how distance education evolved." (Judy *et al*. 2003). Similarly, the selection of both technology and distance learning strategies are the cure element in defining the type of distance learning.

1.2.4.2 Online Learning

During the pandemic of COVID-19, the attention switched from the face-to-face classes to the online ones. In fact, "this provides a massive exposure of web-based learning or online learning (ON) or e-learning which is the most prominent in the field of education especially during this quarantine" (Mahalakshmi and Radha, 2020, p.2405). They added that, this type of learning between students, administration and teachers relies on the World Wide Web (WWW) and can be accessible via different e-learning tools. Besides, Law (2021) define it as "the process of educating others via the internet. Various methods can be used, such as one-on-one video calls, group video calls, and webinars."

Indeed, Bhatia (2011, p.3) listed the most common e-learning (EL) tools in which "e-learning is being implemented today in various forms and through various tools emails, blogs, wikis, e-portfolios, animation, video links, specialised software, etc. We can create through these tools a learning situation spread over distance and location that is picturesquely termed as a virtual classroom."

Thereby, the online learning is tightly defined in relation to the way it happens and takes place. Similarly, Law (2021) believes that online learning can possibly takes place through sharing and transmitting data and information via the different online learning tools, which relies on "messaging platforms email, and video calls. Also, many online teachers need to create digital resources to share

with their students, such as PowerPoint presentations, videos, audio lectures, and pdf guides."

1.2.4.3 Blended Learning

The blended learning dates back "since early 2000, educational institutions have adopted different forms of mixing online with traditional face-to-face instructions; commonly referred to as blended, hybrid, and flipped or inverted - which are categorized based on the sequence of integrating face-to-face and online sessions." (Rasheed, Kamsin and Abdullah, 2019, p.1). In other words, the blended learning is a combination of both the traditional classrooms and the online ones (Müller and Mildenberger, 2021).

In addition to that it is due to the blended learning importance and usefulness that its spread is so fast among different universities across the globe. Indeed, Lamri (2020.p.6) denotes that

> Nowadays, internet technologies are at the very heart of the educational process. It is not surprising that blended learning solutions are intensively used to overcome teaching difficulties. Webmasters created learning platforms to allow students and teachers to gradually move from traditional classrooms to e-learning. Some of these new tools can be used by English teachers in Algerian Universities because the required devices (internet access, PCs, tabs and Iphones) exist among students.
>
> Lamri (2020.p.6)

When it comes to the importance of blended learning, Garrison (2011, p. 9) added "blended learning is the inspiration of much of the innovation, both pedagogically and technologically, in higher education." In other words, the role of blended learning is to implement the technology in the learning context in an innovative way, which works for the sake of involving those learners in their learning and giving them the full access to take part in it. Another crucial advantage of the blended learning usage relies on reaching the students' satisfaction as there may be students who work best in the traditional class and

others who find it interesting and beneficial to study virtually, so this teaching stands as an agreement point between the students different learning preferences.

1.2.5 Synchronous VS Asynchronous

In the online education context, teachers and educators are in charge of the choice and the selection of course material, content and assessment. In fact, "by leveraging online platforms and resources, educators can deliver course materials, lectures, and assessments that students can access and complete at their preferred time and pace". (Bilad, 2023, p.67). Hence, two key terms are often used to describe the online delivered course, which can be either synchronous or asynchronous (Nasrullah, 2014).

The former option of e-learning is defined as "in synchronous mode, instructor and learners interact with each other in real time (same time). A traditional classroom, two ways closed circuit TV, and video conferencing are examples of synchronous methods of learning." (Nasrullah, 2014, p.933). In other words, when the teacher and students share a fixed schedule of the distance courses and they connect at the same time where discussions happen, the learning is synchronous.

However, the asynchronous learning, goes in contrast to the synchronous one in terms of time. Therefore, the asynchronous learning can take place at any time without limitation and there is no imposed timing for students to take the e-courses. Besides, there are many ways to teach asynchronously. Pregowska *et al.* (2021, p.1) viewed that "asynchronous distance learning is based on the interactions between the teacher and the learner at different times, such as learning from instructions on paper, listening to recorded lectures, or watching pre-recorded visual tutorials in a flexible timeframe."

When it comes to the advantages and disadvantages of both and types of learning, Bakioğlu and Can (2014) believe that:

> Despite the advantages of the synchronous model, such as real-time discussion, effective feedback, and less isolation of the student, it can be said that it has disadvantages in terms of planning the lessons in terms of time and duration, measuring and evaluating success of the students, providing technological facilities and ensuring effective participation of the students in courses. (As cited in Sü˘gümlü, 2021, p.175).

Although both have weaknesses, the asynchronous learning fits the students' spatial preferences and allows them to have full access to the available e-courses, in which Bilad (2023, p.67). says that "the ability to access content 24 hours a day, seven days a week encourages students to balance their academic pursuits with work, family, or personal obligations, reducing stress and improving overall well-being." Therefore, both types of distance learning serve particular objectives and meet specific needs. Accordingly, it is up to teachers to choose a convenient type of learning based on the teaching and learning situation. The table below compares between the advantages and disadvantages of the synchronous and asynchronous platforms.

Table 1.3: The Differences between Synchronous and Asynchronous Learning

Features	Asynchronous Learning	Synchronous Learning
Freedom of time	Yes	No
Repeatable teaching	Yes	No
Feedback fluency	No	Yes
Direct User Interaction	No	Yes

Hokianto, 2023.p.69.

1.2.6 E-learning Tools

According to Lazhar and Belhocine (2023, p.199), the exchange of information between students and teachers without the conditions of sharing the same place and time can take place through the e-learning. This learning occurs

via platforms, applications or social networking. However, this learning requires "the provision of a PC or at the limit of a Smartphone and a high-performance internet connection." In addition to that, an investigation was undertaken during the pandemic of COVID-19 revealed that "it was concluded that the percentage of students familiar with the analysed e-learning tools has increased significantly during the pandemic". (Stecuła and Wolniak, 2022, p.1). Hence, the e-learning tools spread among students and varied from one to another according to the characteristics of the tools and students' needs, which can be an application or an educational platform. The table below highlights the most common e-learning tools used in the educational context.

Figure 1.5: E-learning Tools

Mahalakshmi and Radha, 2020, pp. 2407

1.2.6.1 Applications

According to Stecuła and Wolniak (2022), it is due to the COVID-19 that the e-learning accelerated and has spread in many universities all over the globe. This unpredictable shift from the traditional classroom to the online one, imposed

on educators to take quick and instant decision for carrying the learning without previous planning though the online learning already existed before this crisis. In other words, "despite the fact that e-learning tools were available long before the pandemic". (Martin *et al.* 2020 as cited in Stecuła and Wolniak, 2022).

According to the statistics gathered from the research entitled "Influence of COVID-19 Pandemic on Dissemination of Innovative E-Learning Tools in Higher Education in Poland", the COVID-19 has a great and positive role in pushing students to gain knowledge about different e-learning tools. Indeed, "the largest increases can be observed for the two most popular tools for synchronous communication: MS Teams increased by 73 percentage points and Zoom increased by 62 percentage points." (Stecuła and Wolniak, 2022, p.7)

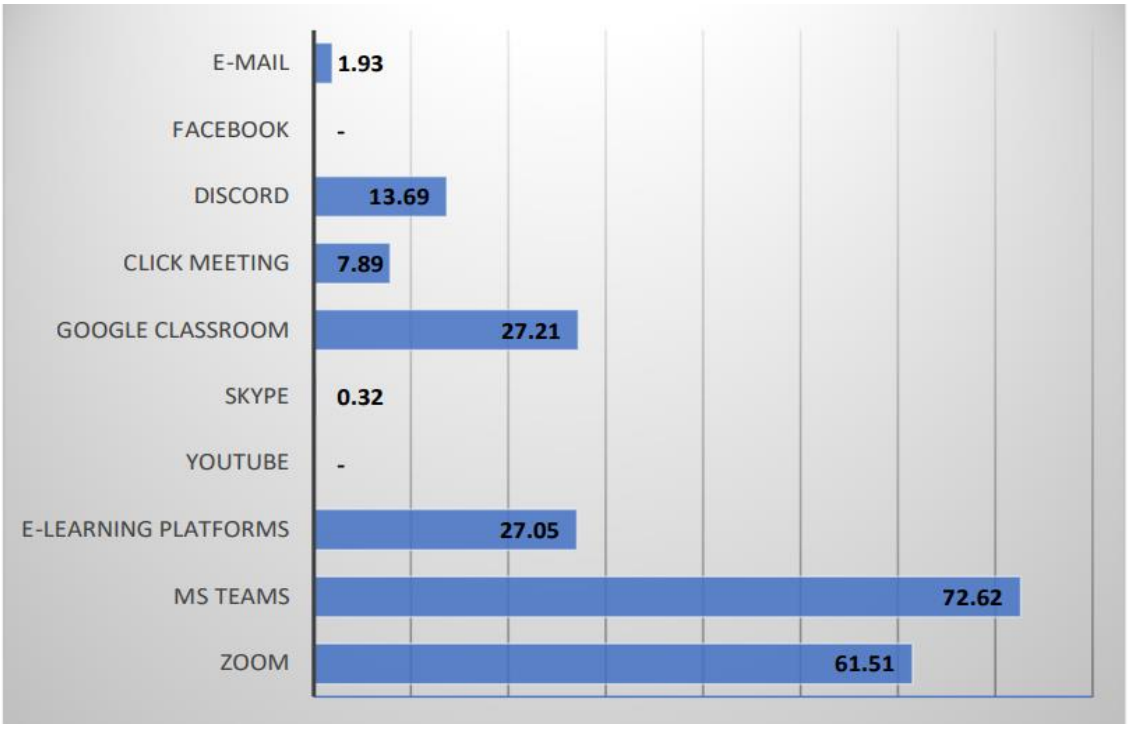


Figure 1.6: Knowledge about E-learning Tools from the Pre-pandemic to Current Days.

Stecuła and Wolniak, 2022, p.7

As demonstrated by the above table, there have been progression in the use of various applications downloaded and utilized by students in different universities to support online learning such as: "Facebook, Twitter, or WhatsApp, or emails or through synchronous mode that provides a virtual environment by

using educational platforms like Moodle, Blackboard, or Teams. These educational platforms are supported by informal modes like Zoom, Google Meet, Jitsi apps, etc." as said in Ghounane, 2022, p.493. Furthermore, Blanchet *et al.* (2022, p.1) added that "in most universities, E-learning is ensured through the use of videoconferencing applications such as Zoom, Google Meet, Microsoft Teams, and Skype which are widely used."

Hence, different educational institutions opted for these common e-learning tools, which can be synchronous or asynchronous. These applications allow the online and the blended teaching and facilitated the exchange of information through internet. The selection of e-tools is based on each tool purpose such as "communication tools, A Video Conferencing Tool or A File Sharing Tool." (Maaziz and Ghendir, 2023, p.137)

1.2.6.2 Platforms

Web-based learning can take place through different platforms, which rely on ICT. As a matter of fact, "in this digital era, there are more than 100 million of people in the world who have taken online classes offered by massive open online course (MOOC) platforms" (Shah, 2018 as cited in Nurhudatiana and Caesarion, 2020, p.44). Besides, the utilization of the web-based learning can be accomplished via a wide range of available online platforms.

a. Moodle

> In fact, the most common platform in Algeria is Moodle. it is defined as Moodle is an acronym for "Modular Object-Oriented Dynamic Learning Environment". It is an online learning platform that provides students with individualized learning environments. Teachers may use Moodle to create lessons, manage courses, and communicate with both students and other teachers, while students can use it to check the 18 classes calendar, submit assignments, and connect with other students.
>
> Boudjemia and Abdelaziz (2022. pp.17-18).

Indeed, Maaziz and Ghendir (2023, p.138) found that Moodle "has been used at all Algerian universities". However, researchers investigated the different

challenges faced by students while learning virtually and Moodle platform was no exception. Indeed, Madi and Ouart (2022) explored the weaknesses of Moodle at the University 8 Mai 1945-Guelma and described it as being low quality. They add "it was difficult for students to obtain relevant material for their studies. When a server fails to serve a client, it implies a technical issue or an overload; users connected to that server are unable to access the site, and errors such as "404 Not Found" or "Server is not responding" are frequently seen." As seen by Madi and Ouart (2022. p.12)

As different researches criticized the use of Moodle, which is created by the Algerian university and each institution has got its proper Moodle, it is crucial to review other available platforms, which may have less technical problems and are simple, practical and efficient for online learning. Hence, Nurhudatiana and Caesarion (2020.p.45) has listed various platforms such as "popular MOOC platforms including Coursera, edX, Miriada X, Udacity, Udemy, and MIT Open Courseware.". Similarly, these platforms can be synchronous or asynchronous. Thus, choosing the type of platform depends on selecting the purpose of online teaching in order to determine the most appropriate educational platform that fits the learning.

b. Udemy

At the end of the academic year 2020-2021, the researcher started reviewing platforms, applications and web pages in order to select the most appropriate one for this doctoral work and which helps third year fundamental chemistry students, the research's participants, to study online in the best possible environment.

Thus, following the findings gathered from research of Cetina, Goldbach and Manea, (2018) entitled: Udemy: A Case Study in Online Education and Training, the researcher has selected Udemy platform as the most appropriate one to be used. Indeed, they provided the above table, which clarifies Udemy's strength over other platforms. (See table 1.4)

Table 1.4: Comparison between Udemy and Other Online Platforms

Platform	Price	Quality	Area
Udemy	small prices/ 11.99/course	good quality	large area
Coursera	medium/ 49 USD/month	very good/ universities partner	medium area
Lynda	small price/19,99 USD/month	good quality	medium area
Udacity	big prices 499 USD/ 199 monthly	very good	medium area
Khan Academy	"For free. For everyone. Forever."	-Very good -Translated into more than 36 languages.	-large area schoolchildren and students
Codecademy	medium price 199 USD/course	good	Very small area. Learn to code only.
Bloc	big price 8500 USD for a program	very good quality	Oly 2 programs: - Web Developer - Designer
Iversity	big price 399 EUR	good	small area

Cetina *et al.* (2018.p.40)

Once Udemy has been selected, the researcher applied the piloting studies. Indeed, it is defined as "a small-scale experiment or set of observations undertaken to decide how and whether to launch a full-scale project" (Collins English

Dictionary, 2014 as cited in Fraser, 2018.P.261). Besides, it has been piloted via first, creating an account via following their instructions. Then, creating a sample course in form of two videos less than 30 minutes in order to stay on the free mode. Finally, publishing it online via Udemy and providing students with access to the videos who were only five students from the research's sample. They agreed to have this course online to test its efficiency and usefulness. Consequently, the piloting study has succeeded and the students reported no problem in the process of accessing the course. Accordingly, the first semester has been taught online via Udemy platform where the whole population, sixteen students, used it.

In the words of the Online Education Steps Up report of (2020), Udemy is: "uniquely positioned to provide a multifaceted snapshot of the current state of online learning." In other words, it is an online teaching platform, which represents an updated way to learn virtually and free. It is a platform used by individual learners as well as teachers. According to Cetina, Goldbach and Manea, (2018.P.49) "Udemy is one of the most important online learning platforms in the World." They added that its statistical data describe its usefulness and power as it has "20 million students; 65000 online courses; 14 categories; over 142 topics."

Udemy (2021) denoted that it is defined to be a: "platform that allows instructors to build online courses on their preferred topics. Using Udemy's course development tools, they can upload videos, PowerPoint presentations, PDFs, audio, ZIP files and live classes to create courses. Instructors can also engage and interact with users via online discussion boards".

Following the requirement of Udemy the teacher is supposed to respect these requirements such as: "courses must have at least 30 minutes of video content and at least 5 lectures or learning modules". Regarding Udemy Inc (2021). In other words, the online instructor is supposed to plan courses with a time-consuming length to ensure a well reception of the sent information. Besides, the online instructor is required to utilize videos as teaching materials with a syllabus of more than 5 lectures. Besides, According to Udemy Inc (2021), to become an instructor means to be able to teach online: "what you know, or teach what you love, on a

platform that millions of students use to learn". Furthermore, "There is no fee to open or to maintain an instructor account".

In order to possess an account in Udemy and publish online courses, the teacher is required first to create an email address to receive emails. Then, she/he can follow the steps provided by Udemy Inc (2021) so as to create an instructor account in which:

1. Go to Udemy.com on your browser.
2. If you have a student account, click Log in in the upper right corner of the screen; if you do not have a Udemy account, click on Sign Up to create an account.
3. Click Teach on Udemy.
4. Next, click Become an instructor.
5. You will be asked to answer some questions about your teaching experience. Please follow the instructions on the screen.
6. Once you have completed the questionnaire, you will be redirected to the instructor dashboard, a dedicated screen for instructors to create and manage their courses.

Udemy Inc (2021)

Among the different advantages of Udemy there are: first, Udemy is special the fact that "what's also unique about Udemy are the variety of instructors who create our courses. While some teach formally, many are everyday experts in their field. We like to say that not all teachers are found in classrooms and anyone with something to share can become one" as seen by Online Education Steps Up report of (2020). The above quotation refers to one of the major advantages of using Udemy that is not only teachers and experts can create online courses, but anyone who has got data and information can participate, share and teach within this free platform. The latter is mentioned by Empson *(*2013) "courses on Udemy can be paid or free, depending on the instructor.

Then, its objective that targets the development of learning to its highest degree in which the report reveals that they "remain committed to being a learning partner for every phase of life, providing people around the world affordable access to the skills needed to meet the demands of our changing world", which

enables learners and teachers to share, exchange and develop their body knowledge via a free platform. Besides, it is said that "as learners looked to Udemy to up skill, stay busy, or increase productivity."

Next, according to Udemy for Business overview (2016, p.3) the opportunity to see a modern and new content in which latest topics, courses and skills are controlled and shown. Also, the fact that it includes various specialists all over the world with a special content and information sources that makes it real and reliable. Furthermore, it's engaging learning where: "people enjoy engaging with our content. Our courses have been vetted by 11 million people around the world. We offer the highest quality business relevant courses that drive learning and development". Finally, the Udemy is characterised by its availability and easiness as being accessible both: anytime and anywhere. "accessible on any mobile device, and lets people to learn on their own time" Udemy for Business overview (2016) that stands as a remarkable advantage.

According to Padraig Nash, Ph.D., Director of Learning Science and Instructional Design at Udemy 2020:

> As a result of this pandemic, we are all being forced to learn. Some of us are learning how to work from home and how to work from home with kids at home. Others are learning out of necessity because of job loss or an uncertain professional future. Learning requires effort, but it can help us make progress from where we are today to where we want to be. We are in a unique time in history where a platform like Udemy can provide us with more opportunities for learning than ever before. Learning can also be a salve to stress. We find ourselves looking to pick up new skills, whether it's gardening, a musical instrument, or a new coding language in part because there can be a pleasurable effect of being challenged in the right way.... this is all very satisfying.
>
> Padraig Nash (2020, p.10)

1.2.7 Hindrances of Web-based Learning

Although web-based learning (WBL) stands as a new and an updated learning and teaching style, which facilitates and has unlimited number of advantages, it has some gaps and lacks that can be counted as following: first, "in today's world, the lack of computer education is a serious problem." (Saminathan, 2020, p.3). In other words, the problem of lacking the needed computer materials for all students can be a challenging and demanding task to be solved. By the same token, if the internet access is weak or poor students may face the difficulty of accessing web pages and downloading different parts of the course within the web. In addition to that, the unavailability of the internet service that cannot be afforded to all students hinders web-based learning and stands as a barrier to e-learning (Aboagye *et al*. 2020 as cited in Tartari and Kashahu, 2021). Whether the problem is related to the students' internet connection quality or the platform quality, the students' motivation, interest and eagerness would be interrupted and lost while waiting for things to get fixed and access the course material which was the case for the Algerian university Moodle of Guelma University. (See figure 1.7)

Figure 1.7: Moodle Technical Problems at Guelma University

Madi and Ouart (2022, p13)

The above figure illustrates that students faced different hindrances while learning online in the academic year 2021-2022 at the university of Guelma where the platform Moodle was not well designed as it had several weaknesses especially once a lot of students access it simultaneously.

When it comes to the online teaching, the main obstacle that face teachers is the lack of training in which, "majority of the teachers, mostly aged teachers, are not familiar with operating online teaching devices" (Shaheen and Hoque, 2021, p.61) such as e-platforms, software and digital tools. In practice, the Algerian universities do not grant the TPD much attention where it is crucial in nurturing teachers updated ways and techniques to meet the continuous worldwide teaching fashion.

Moreover, the e-learning requires from learners to develop a psychological state characterised by a sense of self-motivation to study by themselves and follow up their courses, but these requirements cannot be reached by all students (Saminathan, 2020, p.3). Finally, teachers' guidance is needed due to the web's wideness data. Hence, students' guidance and direction are very necessary, so that without it, students may generate a negative attitude toward web-based learning that is isolation. Consequently, isolation can stand a psychological barrier that prevents the e-learning. According to Gillett-Swan (2017, p.22)

> While group work is an important element within education that aids in developing numerous interpersonal and transferable employable skills, an increasing number of potential hurdles to achievement beyond those commonly associated with traditional group work experiences may serve to further alienate isolated learners causing their disengagement, withdrawal, or ultimate exclusion from engaging with and accessing the course materials and associated learning activities.

Between the advantages and disadvantages of web-based learning, the main objective of the distance learning is working to "supporting education and development." (Justice, 2005 as cited in Yildiz, and Cakmak 2021, p.14). Thus, this learning is needed and required to promote and facilitate the learning whether it is purely distance learning or both, traditional joined with web-based.

Therefore, it is crucial working on an improved learning despite its type. This objective can be reachable through granting the students' psychology attention and importance especially when learning virtually. In other words, it is one of the duties of a successful teacher to consider her/his students' psychology such as: motivation, self-confidence and anxiety levels as they have great effects on the students' learning outcomes.

1.3 Psychological Factors and Foreign Language Learning

According to Purba (2018, p.47), psycholinguistics is a compound concept composed of both of psychology, "the study of mind and behaviour" and linguistics, "the study of language." Lumentut and Lengkoan (2021, p.17) add that "through psychology we can learn about how students' attitudes and behaviours in acquiring and learning languages while through linguistics we can learn about language concepts and structures." Hence, building the language learning process while referring to the students' psychology, leads to efficient teaching and learning because psycholinguistics assists teachers to select appropriate teaching methods, be aware about students' learning disorders and problems and finding solution to the students' difficult learning situation (Purba, 2018)

In the views of Haidara (2016, p.1501) "in every learning situation or environment, human psychology plays a significant role". Indeed, students' psychology while learning a foreign language is very important and has a significant role in the success of that learning. These psychological factors can take place in the learning environment and affect it either positively or negatively.

Among the literature available about these psychological aspects and its effect on the students' learning, many research focused on the affective filter variables. According to Zheng (2021, p.1518), this hypothesis can be defined as "affective Filter Hypothesis describes the relationship between emotional factors and the process of second language acquisition, which is one of the five hypotheses of Krashen's Monitor Model." Indeed, the affective filter hypothesis denotes that learners' motivation and self-confidence should be high and they should be less anxious in order to grasp the foreign language learning input.

1.4 Affective Filter Hypothesis

"Affective filter hypothesis is first proposed by Dulay and Burt (1977) and is incorporated by Krashen as one of his five input Hypotheses in 1985". (Du, 2009, p.162). the American applied linguist Stephen Krashen has developed this hypothesis, which is related to the second language acquisition (Krashen and Terrell, 1983). Krashen's five hypotheses are the acquisition-learning hypothesis, the monitor hypothesis, the input hypothesis, the natural order hypothesis and the affective filter hypothesis.

According to Wang (2020, p.983), "in the 1980s, Krashen comes up with the Affective Filter Hypothesis, and he believes that the affective factors influence the foreign language acquisition." Besides, Wang (2020) cited many research that took place within the same frame work including Arnold (2000), Brown (2002), Snezana Kirova (2012), Wu Xue (2014) and Li Ping (2017), in which they agreed that "there is a common agreement on the impact of the learner's affective filter on the success or failure of SLA" (Mouffok *et al*. 2023, p.82)

The affective filter hypothesis denotes that "the affective filter acts as a barrier to acquisition. The filter is up when the acquirer is unmotivated, lacking in confidence, or concerned with failure. The filter is down when the acquirer is not anxious and is trying to become a member of the group speaking" (Du, 2009, p.162). In other words, this hypothesis indicates two main types of the affective filter, which can be either high or low. The former filter, high, prevents and hinders the input. It is characterized by high anxiety joined with low motivation and lack of self-confidence. The latter filter, the low, takes place when the motivation and self-confidence are high and in contrast to anxiety level. In addition to that, "Krashen sees the learners' emotional state or attitudes as an adjustable filter that freely passes, impedes, or blocks input necessarily to acquisition." (Krashen and Terrell, 1983). The below figures explains both cases in details.

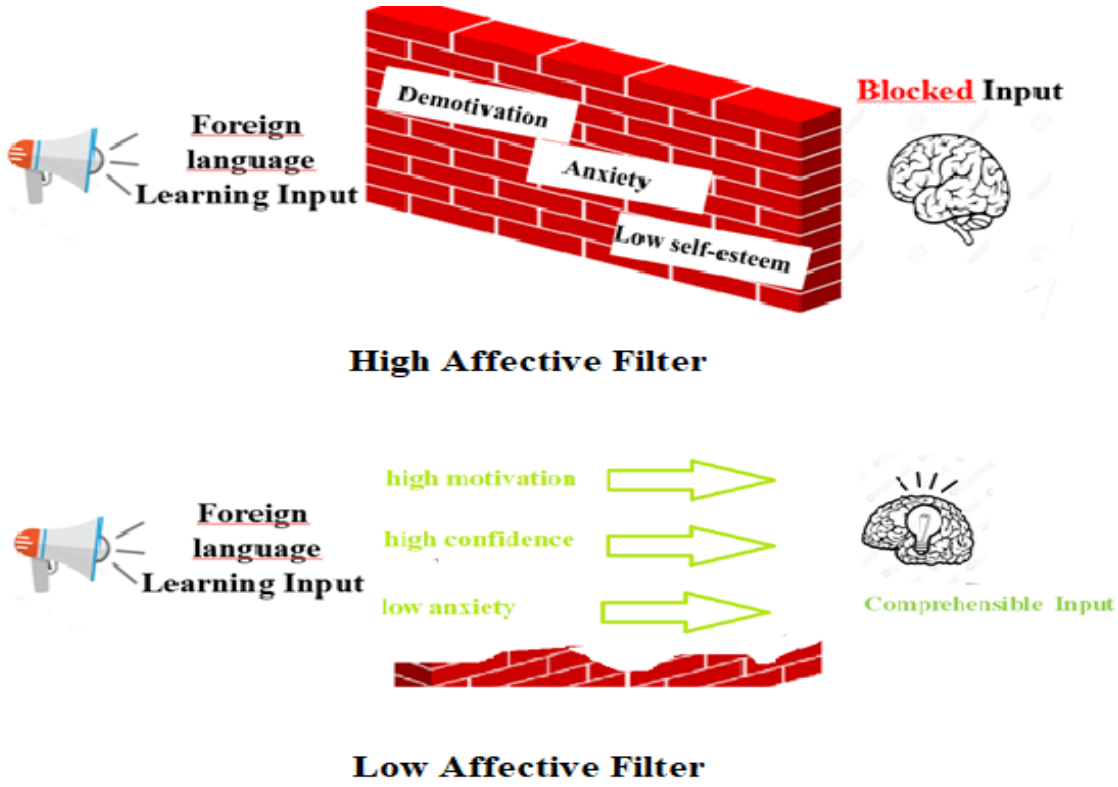


Figure 1.8: High and Low Affective Filter

1.5 Variables of the Affective Filter

In the views of Hui Ni (2012, p.1508), learning a foreign language does not rely only on learning its four skills and the linguistic aspects of the language, but also the psychological side of learners. The later can assist, foster and faster the learning process. Indeed, he said "with the development of applied linguistics and psychological analysis, linguists are no longer satisfied with surface-level linguistic description, but turn to seek deeper psychological factors, that is, affective factors in English learning."

More precisely, these psychological factors are called affective variables. They are described as being "emotion, feeling, mood, manner, attitude". (Hui Ni, 2012 as cited in Abdumuhammadovna, 2023). Furthermore, Krashen and Terrell (1983) list three variables of the affective filter including "motivation, learners with high motivation generally do better. Self-confidence, learners with self-confidence and a good self-image tend to be more successful. Anxiety, low

personal anxiety and low classroom anxiety are more conducive to second language acquisition."

1.5.1 Motivation

Motivation refers to "a complex psychological process that involves many aspects such as cognition, behaviour, emotion, decision-making process and biological aspects" (Gonzalez, 2008; Marshall, 2010; Woon *et al*., 2016 as cited in Escobar Fandino *et al*., 2019, p.1). In other words, it is the person's psychological and biological state such as power, willingness and want to reach a specific goal. (Gonzalez, 2008; Marshall, 2010; Woon *et al*., 2016 as cited in Escobar Fandino *et al*., 2019, p.2). Moreover, Batubara *et al.* (2020, p.77) described motivation as "an energy that can stimulate someone 'enthusiasm to get the goal. Motivation cannot be separated with education."

Indeed, Batubara *et al.* (2020, p.76) agreed that there are various elements in the environment that can raise or lower the students' motivation while learning. He added "school isn't always the most exciting place for young kids to be, so teachers need to set the classroom environment in ways that stimulates the students' motivation." Accordingly, the teachers' role in bringing the best of each student takes place as the key of a successful learning. In other words, "The first step that teacher should do is motivate the students." (Batubara *et al*. 2020, p.77).

According to Yazigy (1991, p.2), various aspects can influence students' motivation when learning English as a foreign language including the learner, the teaching process and the environmental context, "which are in turn believed to influence achievement in the language learning." These factors are in figure 1.9.

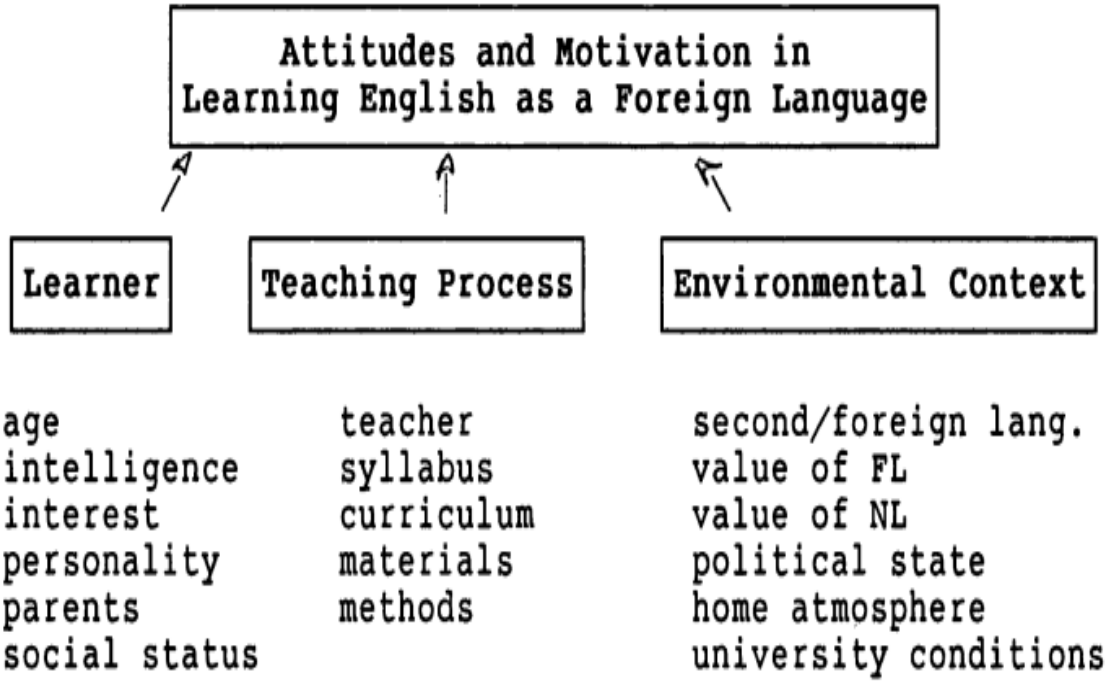


Figure 1.9: Factors Influencing Attitudes and Motivation in Learning

Yazigy, 1991, p.1

In practice, teachers got different ways to raise their students' motivation including "Use "pair work" or "Group work" appropriately, Language is best learned through the close collaboration and communication among students." (Abdurakhimova, 2019). In other words, when the students work in class with other students, they feel less isolated and more engaged in learning and develop a sense of higher motivation to help each other and accomplish the activities.

1.5.2 Self-Confidence

Self-confidence is one of the affective filter variables. According to Cambridge Dictionary (2023), self-confidence is defined as "the quality of being certain of your own ability to do things well". Besides, it is "the feeling that you can trust, believe in and be sure about the abilities or good qualities of somebody/something." (Oxford Learner's Dictionaries, 2023) In other words, if self-confidence is linked to the educational context, it can be described as a psychological state that empowers the students' cognition and push them to reach any learning objective by helping them to see their capacities and rely on it.

From a psychologist point of view, self-confidence is "the belief in one's own abilities to perform". (Bandura, 1977, Chemers *et al.*, 2000 and Clark *et al.*,

2008 as cited in Greenacre *et al.*, 2014, p.170). Furthermore, Rubio (2007 as cited in Nath *et al.*, 2017, p.1360) adds the word "social self-evaluation of one's own competence and worthiness" which is about each individual self-image.

If self-confidence is linked to the foreign language learning, Krashen (1982 as cited in Chen, 2020, p.71) said that "if learners have strong motivation, strong confidence and low anxiety, comprehensible language input will enter the brain smoothly, and learners will be able to complete the learning process better." However, if students lack self-confidence, their input will be reduced and they will face other psychological problems, which hinder the learning such as being "shy and afraid of making mistakes." (Nath *et al*. 2017, p.1362).

Thereby, the presence of students' self-confidence in class has great effects on the students' achievement. Indeed, teachers are supposed to help their students to build and develop high confidence. Reaching this objective is possible through the practical techniques of Bao *et al.* (2021, p.467). Firstly, "in order to build students' self-confidence, teachers can help the students to list their own strengths, of what they know or what they have already accomplished so far in the course. In this way, students can have a clear mind in what they have already learned, self-confidence can be built in this way." In other words, proving to students that they already did well and eventually they can and will do well, will encourage them to take the next step.

Secondly, at all levels, students spend a lot of time with their teachers, and they tend to believe in their teachers' words, expectations and follow their pieces of advice. Hence, if the teacher shows confidence in the students that they are self-confident, they will believe him and their confidence will be raised accordingly. Indeed, Bao *et al.* (2021, p.467) affirm that "teachers' attitudes do count in the students learning, especially in learning an unfamiliar language".

Finally, teachers' awareness and respect of his\her students' feelings can empower their self-confidence. For example, being able to show appreciation and give awards to students who did well in their tests or exams, will better their self-image to them and to the other students who may made some mistakes. Also, choosing a convenient way to treat and correct low grade students can encourage

them to do better next time. Indeed, Tuncel (2015, pp.2576-2577) adds that "encouraging students to act and speak correctly, giving them feedback - especially positive feedback - instantly, and offering them in-class activities they will enjoy can improve their self-confidence."

1.5.3 Anxiety

Regarding the literary definition of anxiety, the Dictionary of Psychology by Reber (1985, p.43) views this psychological state as "more generally, a vague and unpleasant emotional state with qualities of apprehension, dread, distress, and uneasiness". In psychology, anxiety is one of the variables included within affective filter hypothesis. It is defined as "almost the biggest affective obstacle in language learning. It is closely related to negative affective experience, such as tension, sadness, unease and so on". (Bao *et al.* 2021, p.466).

In other words, it is a student's feeling of stress generated when being exposed to a foreign language classroom. Besides, Horwitz, Horwitz and Cope (1986, p. 128) view it as being "distinct complex of self-perceptions, beliefs, feelings and behaviours related to classroom language learning arising from a uniqueness of the language learning process" (As cited in Botes, 2020, pp.26-27). From the mentioned definitions, anxiety is a negative feeling that hinders the students' foreign language learning and reduces their comprehension.

The negative effects of anxiety on the students' achievements and learning have been studied by many research including: Shen (2021, p.1), who said "cognitive factors are not the fundamental determinants of success in language learning. Foreign language attainment depends on both cognitive and affective factors, highlighting the deeper impacts of the former." Indeed, anxiety is one of the aspects included within each individual affective factor. Moreover, Dewaele *et al.* (2018) research found that the more language classroom is successful, the less its students suffer from foreign language classroom anxiety (FLCA) as cited in Shen (2021). In addition to that, Morgan and Katz (2021, p.3) see that "though FLCA is a well-studied and defined aspect of L2 learning, a majority of empirical studies place focus on its negative relationship with L2 acquisition".

Indeed, there is a reasonable theory that justifies these negative consequences of anxiety in a foreign language learning classroom. In fact, it is Krashen's affective filter hypothesis, which justifies the contradictory aspects of comprehension with anxious learners. In other words, the more students feel anxious, the less they can grasp and understand the course. Hence, Rahman *et al*. (2020, p.60) explain Krashen's theory focusing on its relationship with anxiety in which

> Krashen, therefore, suggests an affective filter, which is actually the level of anxiety or stress. If the filter is up, due to stress, it will prevent the input from passing through; as a result, there can be no acquisition. If, conversely, the filter is low or down, which means a low or no stress, and if the input is comprehensible, it will reach the acquisition device, which according to Krashen represents the mind, and acquisition will take place.

The teacher's observations of their students' behaviours can help them to decide whether their students are experiencing natural anxiety or high anxiety. Indeed, the signs that can help educators to discover the latter type of anxiety are many, including: "they experience apprehension, worry, even dread. They have difficulty concentrating, become forgetful, sweat, and have palpitations. They exhibit avoidance behaviour such as missing class and postponing homework" (Horwitz, *et al.*, 1986, p.126). Besides, they helped educators to find the anxious students through tests, which are often good indicators. For instance, if students already knew the grammatical rule or answer, but they have forgotten it during test and remember it later, they are considered to have anxiety problems.

1.6 ESP Learning and the Affective Filter

An ESP learning context refers to "situations where the student has some specific reasons for wanting to learn a language" (Harmer, 1983, p.1 as quoted in Bouabdallah, 2017, p.218). The success of this type of learning can be built based on a series of conditions including the consideration of the ESP students' affective filter, which accordingly works for the comprehensible input. Therefore, "serious consideration, given to the psychology of learning and individual learning

differences such as preferred learning styles, strategies, needs, and interests, has made ESP programs of growing importance." Hence, the learners' linguistic and psychological background was of great importance.

Hence, "ESP teachers should follow a comprehensive adulthood–oriented approach, not only focusing on the linguistic needs of learners but also paying particular stress on the learners' psychological needs and preferences" (Ghafournia and Sabet, 2014, p.1). In other words, considering the learners' emotions and psychology while teaching the subject matter is one of the ESP practitioners' objectives.

If the students' affective filter is low, the comprehensible input can be reached easily in all classes including the ESP classroom. In other words, "strong emotional filters block information from the inherent language learning system, while weaker ones let the data through displaying the regulated mechanism." (Jelisaveta *et al*, 2022, p.447). in addition to that, they added

> The creation of a context in which ESP learning takes place is significant because it can exemplify interactions in the group in which an individual learns ESP, as well as with the teacher with whom he/she adopts the learning process, to help and keep pace with his/her language abilities, motivation, and level of mastery, which are the components of self-regulation of learning that an individual possesses.

Indeed, if the students' affective filter including their motivation, self-confidence and anxiety variables are taken into account by the ESP teacher, the production of the comprehensible input is possible. In other words, it is due to the students' high motivation and self-confidence joined with less anxiety provoking aspects in the classroom, that the course content can be grasped and understood by students.

1.7 Web-based Education and Students' Affective Filter

According to the available literature, the effects of web-based education on the students' affective filter, precisely on their motivation, self-confidence and anxiety, go through two main directions. In other words, web-based learning can either work for a better comprehensible input, by lowering the students' affective

filter, or it can go through the opposite way via raising their anxiety and lowering their motivation and self-confidence.

On the one hand, some researchers found that web-based learning is positive and it has many advantages to students. Firstly, web-based education targets raising students' motivation. In fact, "Chang and Lehman (2002) also found that when students are learning from instructional computer-based language-learning programs, they perform better academically and are more motivated intrinsically." **(**Tan, 2023, pp.15-16), Hence, allowing students to take charge of their own course enrolment supports them to develop a sense of motivation and autonomy.

Furthermore, "by using web-based language instruction, students and teachers can truly create interactive experiences by utilizing websites as a learning foundation, a conduit for communication, and an integrating medium."(Alessi and Trollip, 2001 as cited in Paul Juinn Bing Tan, 2023, p.15). In other words, students and teachers are integrating the daily use of internet to achieve various learning objectives such as having access to wide range of data through websites and being able to reach each other over miles with the least difficulties. Besides, Chotipaktanasook's research findings indicated that (2016, p.61) "overall, the qualitative findings have revealed Thai EFL learners' positive feelings about communicating in English in social media." Hence, these e-opportunities target lowering anxiety and helping students to maintain a state of easiness and stability.

In addition to that, Wan *et al.* (2014) research "showed that interactive web 2.0, such as in Facebook, supports learners' meaningful English informal learning and provides life-long learning experiences. It helped them to express positive experiences and perceptions toward learning" (as cited in Ahdab, 2015, p.119). Consequently, the use web-based education through Facebook, enables the production of the comprehensible input, which leads to a better learning. In the views of Chametzky (2013, p.41), it is thanks to the characteristics of the e-learning such as anonymity, that students' self-confidence is increased and their affective filter is lowered. The below figure explains the process.

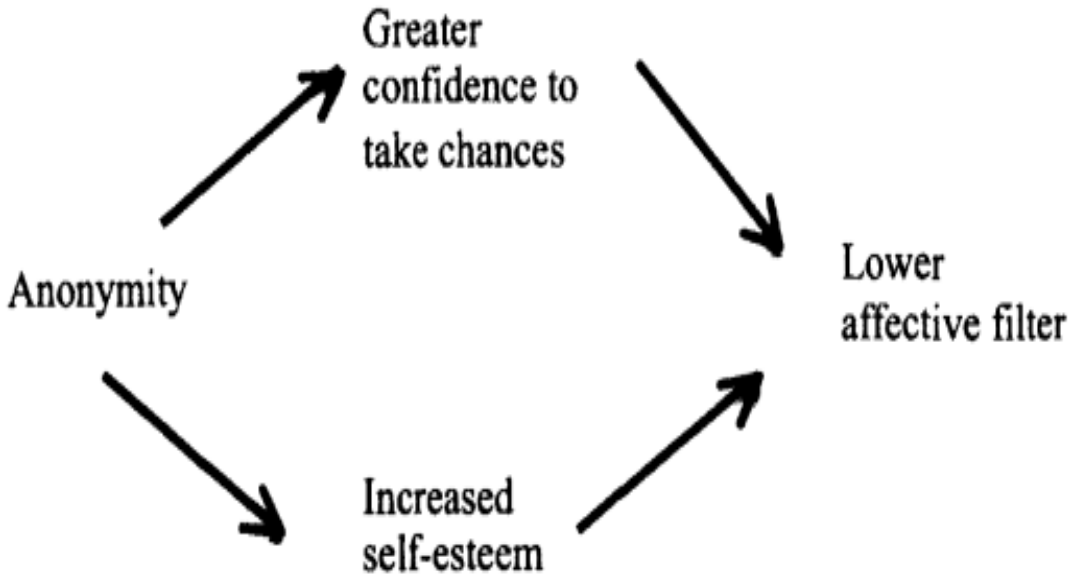


Figure 1.10: The Effects of Anonymity in the Online Environment

Chametzky, 2013, p.41

On the other hand, web-based learning can stand as a barrier to reach a comprehensible input. Some researchers found that the impact of online classes on the students' affective filter was negative especially during the COVID-19. Indeed, Gallardo and Matts (2021) conducted the research entitled "The impact of the COVID-19 pandemic on the affective filter of EFL learners in an online classroom". They found that the students' input was blocked because of their sufferance from high filter.

In the views of Deepika (2020, p.788), the online classes may raise a feeling of disinterest between students due to the fact that attending on-site classes are no more compulsory especially during the pandemic. Deepika's research concluded that the e-classes lower the students' motivation and interest. Indeed, he says

> Among Lack of student interest and involvement was reported by a majority of teachers. They reported that during online classes the main issue they faced were that students made a lot of excuses about not being able to attend classes, for e.g., network issue, dysconnectivity, poor audio and video quality, etc. and it is difficult for them to know if they are giving genuine reasons or just escaping from attending the classes.

In addition to that, the rapid spread of distance learning can have negative side effects on its users. Indeed, Pregowska *et al.* (2021, p.17) views that "it is also worth stressing that growing Internet consumption and the advantage of online life over everyday life may lead to psychological and/or even psychiatric disorders, such as depression and anxiety, as well as harassment". Hence, internet may also cause a feeling of loneliness and isolation if it is not well studied and organized by educators. Besides, the research of Quintiliani *et al.* (2021, p.9) confirm the same findings in which they said "our findings suggest that students' stress levels increased due to the spread of the COVID-19 epidemic and lockdown". This research took place while the world was fighting with deadly the pandemic of COVID-19, which affected highly the health and psychology of everyone including teachers and students.

The implementation of web-based learning is a coin with two faces as it may affect the students' psychology positively or negatively where many aspects such as the selected tool, the students' awareness, the facilities available and the efforts of teachers, students to reach a successful online learning play a key role in the direction of its sails. Indeed, it may work for a better affective filter for some students as it may cause negative effects on other students' affects. Consequently, it is up to the teacher to focus on the web-based learning strength points and stretch them to reflect their advantages on the three variables of the affective filter, motivation, self-confidence and anxiety, in order to benefit from low affective filter and to higher the production of the comprehensible input for ESP students.

1.8 Conclusion

This chapter included definitions of key terms and concepts related to the study including web-based learning definitions, types, tools and applications. Learning via web-based tool is a fertile field of research. In fact, it has been investigated by both ancient and new research works especially after the pandemic of Covid-19 where it has been implemented as a compulsory type of learning to ensure safe and secured classes.

In addition to that, the researcher spotted light on the three variables, motivation, confidence and anxiety, proposed by Krashen 1982 in his fifth hypothesis. Besides, these variables have been also the core interest of the learner centred approach in the ESP context. Hence, the research gained its importance from this crucial shared common point.

The current work focuses on the relationship between web-based education and the students' affective filter in the ESP context. In fact, the literature cites both sides: Advantages and disadvantages of web-based education on the students' motivation, confidence and anxiety. Indeed, it reveals how students' emotional factors can be controlled, raised or lowered, to reach a comprehensible input while teaching ESP.

This chapter, the review of literature, targeted presenting ideas and information related to both of web-based education and Krashen's hypothesis. Hence, detailed data related to the impact of web-based education on the affective filter is provided and explained. The next chapter is devoted to research design. It shapes the work methodology. It also includes definitions of the used data collection tools and describes its design.

CHAPTER TWO: Research Design and Methodology

CHAPTER TWO: RESEARCH DESIGN AND METHODOLOGY

2.1 Introduction

This study targets revealing the impact of implementing web-based education on students' psychology precisely: motivation, self-confidence and anxiety while comparing it the students' psychology in the traditional classroom. In order to make it possible, a defined methodology has been followed, research tools have been selected and specific information about the research design are determined.

The current chapter is entitled research design and methodology because it covers all the important aspects undertaken and followed in this research including the context of the study that is Djillali Liabes University of Sidi Bel Abbes precisely the department of chemistry. In addition to that, detailed data are provided to define and reveal the importance and the significance of the selected design that is the correlational study.

For the sake of clarification, detailed information is provided to describe both the Needs Identification and Analysis process via two main tools and also the piloting studies where the teacher first experimented and piloted the research adjusting the procedures and refining the steps and the stages of the experiment. Moreover, attention is given to the case study as being the framework of the selected topic.

As the current work includes a case study, an important phase of this chapter is devoted to the research sampling who were third year Fundamental chemistry students. Sixteen students took place and contributed to this doctoral study. The researcher opted for two research tests and a diary in order to collect and gather various type of data about the sampling. Hence, this chapter goal is to clarify and display the selected methodology so as to clearly understand this phenomenon.

2.2 Context of the Study

According to Bazire and Brézillon (2015, p.2), the context in general psychology can be defined as a "set of situational elements in which the object (i.e., stimulus considered above) being processed is included" (as cited in Bastien, 1998). In other words, the context of the study is a predefined area with its specific details and unique characteristics where the research can take place.

The context of the current study encompasses two main elements, including the educational context where the research took place and the participants who greatly influenced the research topic and its findings. To narrow down the context of the present research, one department from the university has been selected for the research that is the department of chemistry as being convenient in regard to the administration who allowed the research case study to take part.

Besides, the participants were third year Fundamental chemistry students who helped the researcher to identify and capture their specific issues and concerns that motivate the research. One group composed of sixteen students agreed to participate and provide valuable information about their experiences and expectations about this research topic.

2.2.1 English in the Department of Chemistry

The English language has become one of the most widely spoken and influential languages in the world. Defining the English language encompasses its historical development, linguistic characteristics, and global impact (Crystal, 2003). "For speakers whose native language is not English, being up to date in their scientific field demands at least an instrumental knowledge of it." (Villalobos and Díaz-Ducca, 2017, p.154).

In the Algerian context, the English language is not only limited to the faculties of letters and languages, but a variety of faculties including the faculty of exact sciences, which embodies six departments: chemistry, computer science, probability and statistics, physics, math and materials and sustainable development. The type of English taught in these departments is not general English (GE) rather, it is English for Specific Purposes (ESP).

In the department of chemistry, at the faculty of exact sciences, in Djillali Liabes University of Sidi Bel Abbes, students attend the English courses since their first year at the university. One hour per week is the devoted time for the ESP module in both semesters. The ESP teachers rely on a summative assessment, which takes place at the end of each semester in order to evaluate the students' learning. Additionally, absences in the ESP course are not taken into account. Besides, one is the coefficient devoted to this module. In fact, it is the lowest coefficient if compared to the other modules.

In the academic year 2021-2022, the total number of third year students was 25. There were two main specialities for them: fundamental chemistry and analytical chemistry. The latter group included 9 students while the former one had 16 students. Thus, the fundamental chemistry students were selected as the current sample population because they were numerous if compared to the other group and expressed their willingness to participate in this study. Fundamental chemistry students were informed that the first semester would be online via Udemy platform and the second one would take place at the university classrooms and laboratories. Their curriculum included three main units. Each unit included two courses. Thus, the total number of the courses taught in the virtual classroom were six main courses. Similarly, the on-site curriculum relied on six sessions related to three main units as well.

2.2.2 Web-based Education in the University

Around the globe, web-based education, also known as online learning or e-learning, refers to the use of the internet and digital technologies to transmit educational content and facilitate interactions between instructors and learners. With the advancements in technology and growing accessibility to the internet, web-based education has gained significant popularity in recent years (Cavanaugh, 2001).

In the Algerian educational context and at Djillali Liabes University of Sidi Bel Abbes, web-based learning has been generalized during the pandemic of COVID-19, which forced all teachers in all departments to shift from face-to-face classes to online ones. The latter were possible through the university platform

MOODLE, an online platform that allowed teachers to both display their courses in different files as WORD, PDF or WinRAR using their accounts, provided by the university technicians and have access to launch a synchronous video course with their students.

Most teachers and students had difficulties to access MOODLE and faced technical problems related to their accounts, passwords or visibility of the courses. Thus, teachers searched for an alternative asynchronous e-tool where they opted for some free web-based email services such as Gmail, by creating a collective Gmail account, where they sent courses and provided their students with the Gmail address and password so that all students could access it with fewer difficulties, but without synchronous contact with each other.

Another group of teachers prioritized the synchronous online course over the asynchronous type due to its benefits. Hence, they opted for some communication platforms such as Zoom, Google Meet and Skype to deliver their courses in addition to the e-handouts via the Collective Gmail. Using these synchronous e-tools, learners felt less isolated, less stressed and better guided.

2.3 Needs Identifications and Analysis

According to Hutchinson (1984, p.108) “most ESP courses are based on the sponsor's needs: in other words, on what the parent university, the company, or the agency thinks the needs of the student are.” Hence, this process is named Needs Identification and Analysis (NIA) as it enables professionals to identify and prioritize the needs of a specific target population.

To tailor the most appropriate course for a particular type of learners, the ESP teacher is supposed to identify different types of needs. (See figure 2.1) Firstly, the learning needs, which refer to the way crossed starting from the lacks to reach the necessities of the target situation in which “learner’s needs should always be taken into consideration. Course designers need to analyze the learner’ learning needs according to their motivation, the conditions of the learning situation, and their existing knowledge and skills.” (Lamri *et al*, 2025.p.2)

Figure 2.1: Types of Needs

(Hutchinson and Waters,1987)

Secondly, the target needs, as shown the above figure, encompasses three main types, which are: necessities, lacks and wants. Accordingly, they are defined as

> …what we have done so far is to consider the starting points (lacks) and the destination (necessities), although we have also seen that there might be some dispute as to what the destination should be. (wants). What we have not considered yet is the route.

Hutchinson and Waters, 1987.p.62 as cited in Massouleh and Jooneghani, 2012

Bhatia (1989) adds that "the purpose of need analysis is to restrict and focus the syllabus on a selective range of language elements which are selected and subordinated to the specific needs of the learner" (as cited in Janoušková, 2015, pp.14-15). Thus, whether the field of interest is education, business or healthcare, understanding the needs of individuals or groups is crucial for designing effective interventions and strategies. Indeed, Benlakhdar (2019) believes that any ESP course has to consider the needs of learners that is the crux of its success. Similarly, Rehman *et al.* (2017) consider that the main objective of

NIA is to identify the needs and requirements of individuals or groups in order to address them appropriately.

2.3.1 Process of Needs Identifications and Analysis

As the current work belongs to the ESP context, in the department of chemistry, the researcher conducted NIA to design and implement effective course design. The latter process was possible via the common techniques of NIA. According to Haddad and Draxler (2002), there are various methods to gather data such as surveys, interviews, questionnaires, focus groups and observations. In the current work, two main data collection tools are used: an unstructured observation and a questionnaire.

2.3.1.1 Observation

According to Taherdoost (2021), observation is one of the most used qualitative methods. In order to collect data for the NIA about the research sampling, third year Fundamental chemistry students, an unstructured observation was used. The teacher relied on this qualitative research instrument in order to reveal what students do not really want to mention when asked in written questions, but they show in their behaviour in class unconsciously or sub-consciously. According to Taherdoost (2021, p.11)

> Both nominal and descriptive non-numerical data which cannot be shown as numbers are known as qualitative data in words or sentences format. This type of data answers to "how and why" questions in a research study and mostly covers data regarding feelings, perceptions, and emotions using unstructured approaches.

Thus, an attention has been devoted to catch up data from the same sample. The data collected varied from general information about the sample needs, lacks and wants. This instrument took place for 4 weeks, from June to July 2021, before the starting of courses. Furthermore, the sample population were not informed that they were observed. In fact, the observation was based on asking them oral questions and reporting their answers. Moreover, taking notes, remarks and reporting comments, replies and behaviours of the sample was done in order to identify three main elements: what they needed to learn, needs, what they lacked

concerning language and content, lacks, and they wanted and were motivated to learn, wants. Consequently, these findings have been analysed quantitatively and summarized in form of nine sentences constructed as answers to the students' needs, lacks and wants as required in NIA.

When it comes to the advantages of this tool, Merrill *et al*. (2015, p.55) believe that "an important principle of qualitative description is naturalistic inquiry, research that takes place within real-world settings and [in which] the researcher does not attempt to manipulate the phenomenon of interest". In other words, observational research instruments involve systematically observing and recording behaviours, events, or phenomena in their natural settings. Observations are conducted in a participant's natural environment. Similarly, Leech and Onwuegbuzie (2007, p.560) add that these types of data collection instruments "they provide natural occurring information that allows school psychology researchers to increase their understanding of phenomena".

2.3.1.2 Questionnaire

The questionnaire is one of the most common and used quantitative research tool. Indeed, Taherdoost (2021, p. 11) defines the quantitative data as "numerical data which is mathematically generated and computed is recognized as quantitative data". Furthermore, Leech and Onwuegbuzie (2007, p.559) highlight it benefits as being able to provide detailed information through calculations about the studied phenomenon. They say "quantitative research is most helpful when "answering questions of who, where, how many, how much, and what is the relationship between specific variables" (as quoted in Adler, 1996).

According to Lee (2006, p.768), "sometimes questionnaire developers combine close-ended responses with an open category or option. Such questions are called mixed questions and they are used when the questionnaire developer is concerned that the set of close-ended options is not exhaustive." Indeed, it is composed of both types of questions, close-ended questions and open-ended questions. It includes three main categories. The goal of the first section is to draw the profile of the sample population. For the second section of the questionnaire, six questions were addressed to shed light on the students' affective filter. The

third section, the linguistic aspect, is devoted to these students' needs, lacks and wants in order to tailor suitable courses for them.

Table 2.1 Questionnaire Structure

Section 01	Section 02	Section 03
Background Information	Learners' Psychology/ Affective Filter	Content Selection/ Linguistic Aspect
8 Questions General Information	6 Questions about Motivation Self-confidence Anxiety	9 Questions about Lacks Needs Wants

2.3.2 Results of Needs Identifications and Analysis

The results of the process of NIA have been based on the findings of both tools: the unstructured observation and the semi-structured questionnaire.

2.3.2.1 Observation Results

Based on the gather data from the unstructured observation, the researcher summarized the gathered elements into major key aspects related to the population's wants, needs and lacks and general information about the same sample. We found that:

1- Third year Fundamental chemistry students are willing to study themes related to chemistry.

2- They have ambition toward developing the reading and writing skills over the listening and speaking ones.

3- These students need to master the frequently used rules of grammar in order to understand the general meaning of a given piece of writing.

4- The students lack vocabulary and terminology related to the chemical context.

5- The sample had average to good capacities on both sides: the English language and the content related to chemistry in French language, technical words.

6- They find it difficult to acquire at the same time the content related to chemistry and the language.

7- These students used different strategies to develop their English language level far from chemistry. However, they lack linking it with their main interests: chemistry.

8- Most students want to achieve better levels in the English module for the sake of reaching higher grades. Thus, their targeted objective turns around academic purposes.

9- Third year Fundamental chemistry students had high levels of motivation and self-confidence and low levels of anxiety.

10-The sampling has been aware of their needs, wants and lacks, which helped the teacher to tailor a suitable course accordingly.

Based on the identified needs, lacks and wants, the researcher could adjust and refine the courses for third year Fundamental chemistry students.

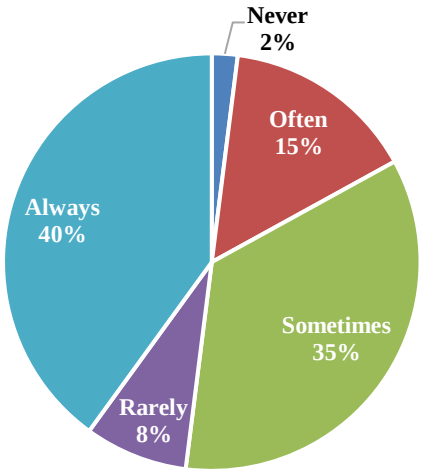
2.3.2.2 Questionnaire Results

The semi-structured questionnaire has been analysed via the Excel 2007 software program. The main findings of this tool are presented in three main sections: general information findings, findings about learners' psychology and findings about the courses content.

Section 01: General Information Findings

1- How often do you attend the English sessions?

Figure 2.2: Students' Attendance



The above figure illustrates that the majority of third year students were interested in their English module as most of them were frequently attending their classes (55%). Only 10% replied that they rarely or never attended their classes.

2- How do you assess your proficiency level in English?

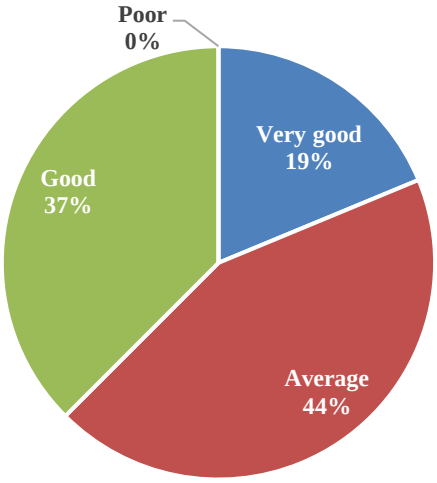


Figure 2.3: Students' English Proficiency

The above figure presents students' proficiency level in English. Most respondents (56.25%) considered being good or very good at English. The remaining students believed that they were average in English.

3- What is the required English teaching time per week for you?

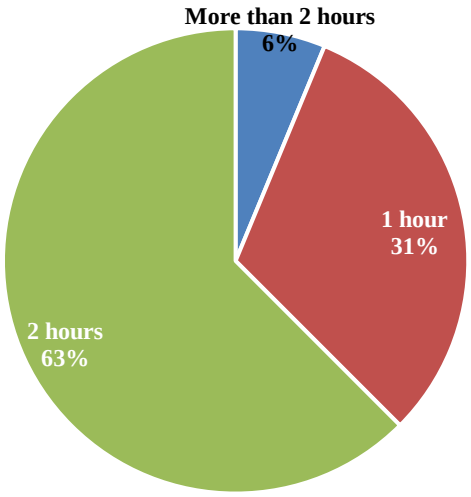


Figure 2.4: Required Timing for the English Module

This figure explores the needed hours for the module of English. 63% of students agreed on 2 hours per week. 31.25% of them, thought that one hour is enough. A minority of them answered that they needed more than2 hours.

4- Have you ever used an educational platform?

The students were asked whether they had used an educational platform for their online learning. Only 37.5% of students used an educational platform. They explained that they used Google Classroom and the University Platform.

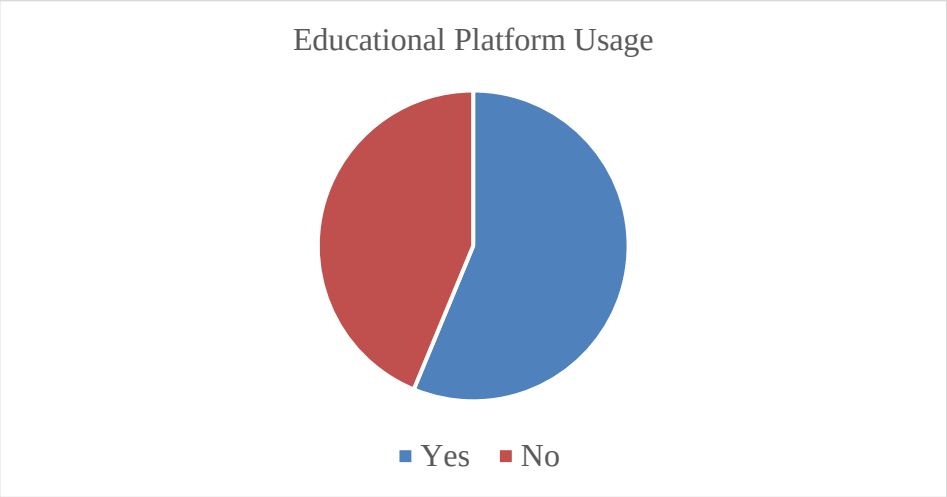


Figure 2.5: Educational Platform Usage

5- Have you heard of Udemy platform?

This question inquires if the students know Udemy. More than half of students did not recognize it, but 43.75% replied that they had just heard about it.

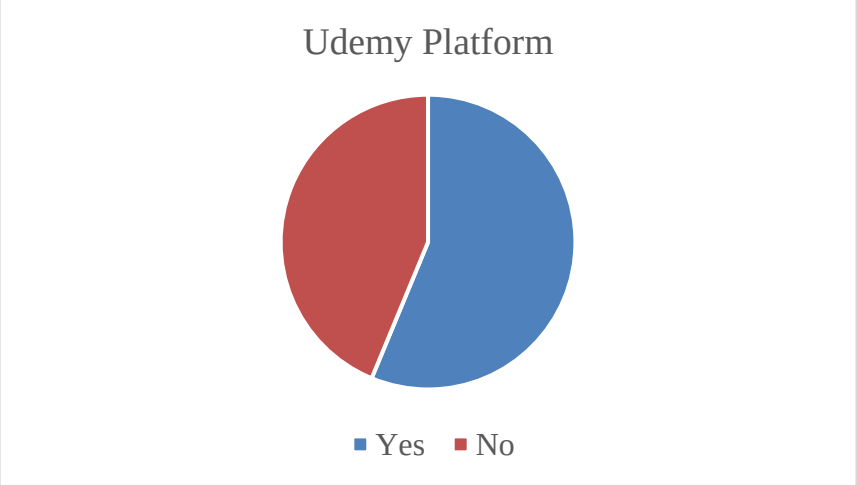


Figure 2.6: Udemy Platform

6- What is your style of learning?

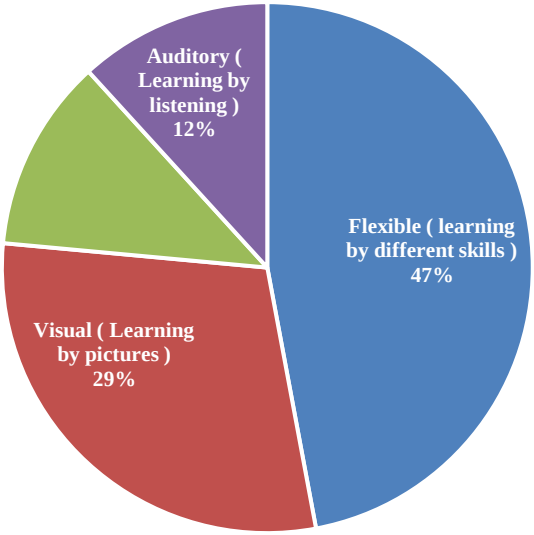


Figure 2.7: Students' Learning Style

The above figure displays the students' four main learning styles. Half of the population considered themselves as flexible learners. Then, 31.25% answered that they were visual students. After that, equal percentages were shared between students who saw that they were auditory and kinaesthetic.

7- How much specialised knowledge about chemistry do you possess?

When the students were asked about their knowledge in regard to chemistry, all of them considered their knowledge as being basic.

Section 02: Learners' Psychology\ Affective Filter

a) Motivation

1- Which way of learning English courses suits you more?

The majority of students tend to learn virtually. 25% of them preferred the traditional classroom over the online one.

If it is online, what do you prefer?

More than 80% of them were motivated to study asynchronously, in different timing with the teacher, rather than synchronously.

2-What technique makes you more motivated in online learning?

The below figure shows the different techniques which raised the students' motivation in the online classroom including: learning through videos, where 87.5% of students had selected it. Followed by learning via Pdfs and Word format in which they were selected by half of informants. After that, a minority opted for handouts, printed Pdfs, and LIVE videos. Finally, none of them was motivated to study via the use of PPTs, pictures or Gifs.

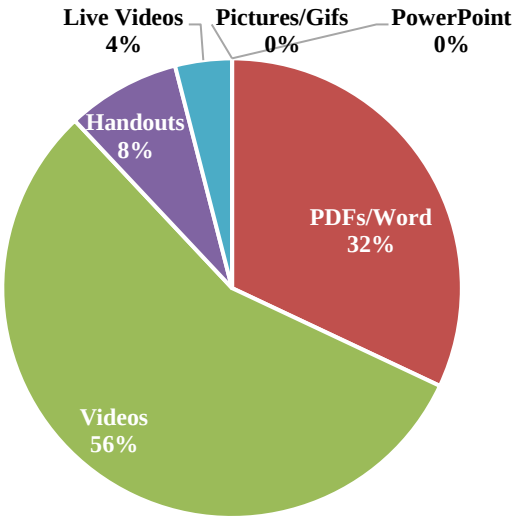


Figure 2.8: Motivational Techniques in the Online Classroom

b) Self-confidence

1-When do you feel self-confident most?

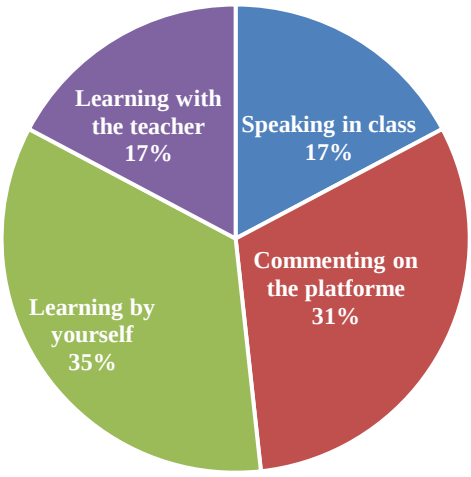


Figure 2.9: Students' High Levels of Self-confidence

The above figure searches for the best tool that could raise the students' self-confidence. Firstly, 62.50% of students said that they were most confident

once they learnt by themselves. Secondly, half of the students considered themselves as self-confident when commenting on the platform. Finally, equal percentage was shared between students who said that their self-confidence was high once they learnt with the teacher and while speaking in class.

2-Do you feel confident when choosing your learning technique?

The informants were asked about their self-confidence levels once they were given the choice to choose their own learning technique and all of them agreed that this freedom made them feeling self-confident.

c) Anxiety

1-What provokes your anxiety when learning English?

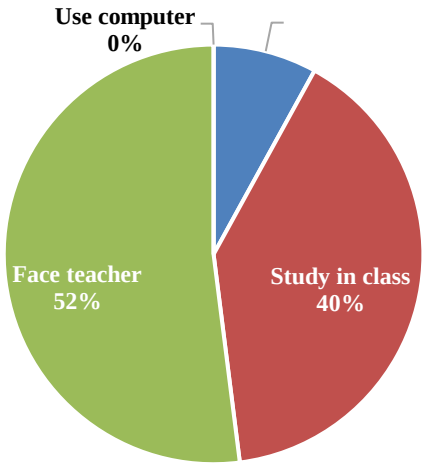


Figure 2.10: Anxiety Provoking Aspects

The above figure highlights the different reasons that might provoke the students' anxiety when learning English. Thus, 81.25% of students said that facing the teacher is the highest anxiety provoking item. Followed by 62.5% of them who believed that studying in class in the second reason. After that, only 12.5% of them selected studying at home as a reason of stress. Finally, none of them believed that using the computer raises their anxiety levels.

2-What are the causes that stress you when learning English?

When the informants were asked about the different reasons that might raise their stress and discomfort in the classroom, they answered using these reasons such as lack of terminology, mispronunciation of words, grammatical mistakes, others' critics, teachers' comments and shyness for the traditional

classroom. However, the lack of internet, technical problems and the environment, home, were considered as major problems when studying virtually.

Section 03: Content Selection/Linguistic Aspect

a) Lacks

1- Do you face difficulties when:

The students mentioned that they face difficulties to write simple and compound sentences, pronounce the terminology correctly, memorize the different Laboratory materials, use grammar rules, read articles and to listen to specialists.

2- What do you lack?

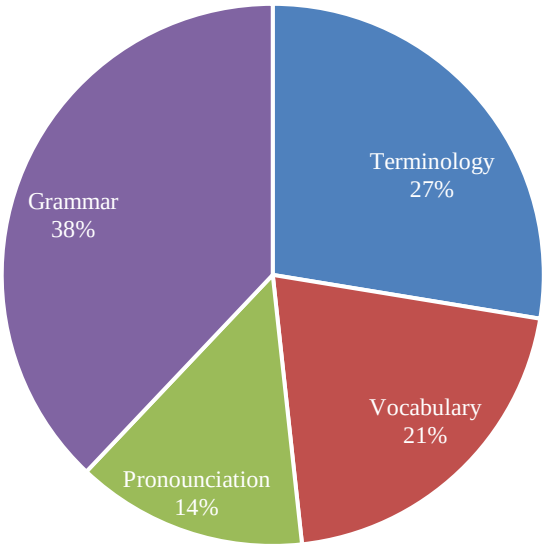


Figure 2.11: Students' Lacks

Students were asked about what aspects they lacked most in English. They answers ranged from the most to the least, where the most aspect they lacked was grammar. Followed by terminology and vocabulary. Finally, they considered pronunciation as the least aspect they lacked.

3- Have you tried to bridge your lacks by searching for solutions to improve your weaknesses?

The students were questioned whether they did efforts to bridge their lacks in English or not. The figure shows that 93.75% of students tried to improve their English language by attending English classes, reading books and articles related to chemistry and watching English classes via YouTube videos.

b) Needs

1- What skills do you need?

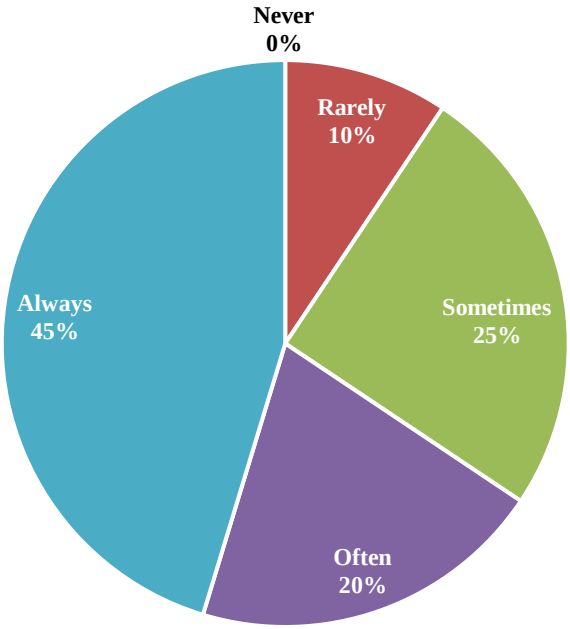


Figure 2.12: Needed Skills

The below figure describes the frequency of the needed skills. 45% of students answered that they always needed writing. Then, 25% of them said that they sometimes need reading. Next, 20% of students answered that they often need listening. Finally, the least needed skill according to the students was speaking which is rarely needed and represents only 10%. None of the students used the option 'never' to describe any skill.

2-To what extent do you need the following courses?

The students replied that they considered the listed courses as important ones. Thus, a need to teach the students these courses is present.

c) Wants

1- What do you expect from the English courses?

The whole sampling replied that they are eager and motivated to develop both the language and the content.

2- Do you want to benefit from the English courses in your:

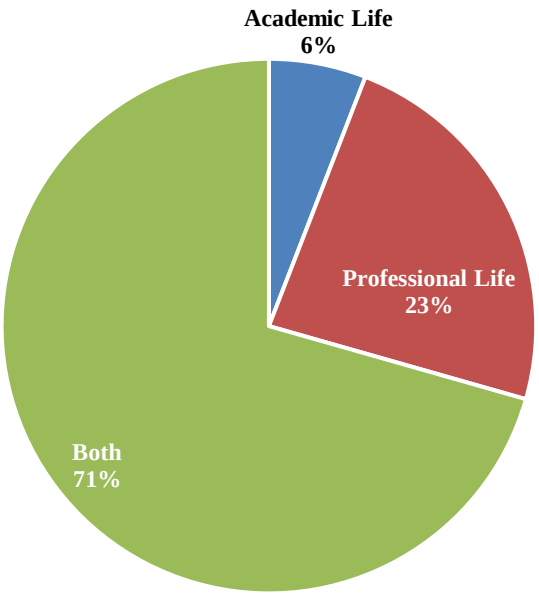


Figure 2.13: Students' Intentions toward Learning English

The above figure expresses the students' desire and want from the way they benefit from their English courses. Indeed, the majority answered that they want to both develop the academic life and the professional one. 25% of students want to develop their professional life via English. Only 6.25% of them targeted only their academic life.

3- How does the English module help you in your studies?

The students replied that the English module helped them in their studies in developing knowledge related to chemistry, learning of how to write an article in English, learning the language, participating in international conferences, registering at international universities and having access to multiple resources online.

2.3.3 Discussion of Needs Identification and Analysis

The discussion of the Needs Identification and Analysis is built on the gathered findings from both the observation and the questionnaire results. These tools were used in order to deduce general data about this sampling, the students' language needs, lacks and wants. Then, its secondary objective is to uncover their attitudes towards the online classroom.

Regarding the deduced data from the background information answers and the teacher's observed attitudes, data were crossed checked and they indicated

that third year Fundamental chemistry students are a group of leaners whose proficiency level of English ranges from average to very good and their knowledge in regard to chemistry is considered as basic. Besides, they possess a high motivation towards learning ESP since their attendance and interest are high as they used different strategies to better their English language though these strategies fitted the general English and not English for specific purposes. These students are fully aware of ESP courses importance as they highly recommended extra timing for this module.

The below table presents the identified needs, lacks and wants that are used in order to tailor an adequate ESP syllabus for third year Fundamental chemistry students at Djillali Liabes University of Sidi-Bel-Abbes.

Table 2.2: NIA Discussion

NIA Discussion		
Lacks	**Needs**	**Wants**
Grammar	Writing skill (Writing report)	Contextual Learning: Chemistry-related topics.
Terminology: Technical and field-specific	Reading skill (Reading articles)	Academic: Higher grades Occupational purposes: Professional tasks
Pronunciation	Listening and Speaking Skills (Access online resources)	Develop both Language and content

Regarding the above table and from both tools, the observation and the questionnaire, that the students' lacks were different, but most students agreed that grammar and terminology are the considered among their greatest lacks. In addition to that, pronunciation was also another aspect they lacked. They needed lectures in English related to the chemical context with a focus on the writing, reading and then speaking and listening skills. Third year fundamental chemistry students had great willingness to develop language and content of the ESP courses in order to meet their academic and also for future professional purposes. Hence,

they were very ambitious toward the ESP lectures. As a result, these findings succeeded to guide the design of online and on-site courses. (See table 2.3)

Regarding the students' affective filter, the researcher deduced that the sample's motivation to study in a virtual classroom asynchronously through the use of videos and Pdf/Word format documents was very high among the majority of them. Besides, online learning is believed to raise students' autonomy and self-confidence as they would be given the freedom to choose their own learning style and to learn by themselves. The informants added that they felt less stressed while learning online via the use of computers and commenting on the platform rather than facing the teacher and speaking in the classroom.

Table 2.3: Third Year Fundamental Chemistry Students ESP Online Syllabus

Third Year Fundamental Chemistry Students ESP Online Syllabus			
	Unit One	**Unit Two**	**Unit Three**
Content	In the Laboratory	Basic Experiments in Chemistry	Chemistry Around Us
Number of Courses	Two Courses	Two Courses	Two Courses
Course One Title	1- Laboratory Materials	1- Water Distillation	1- Chemistry in our Daily Life
Courses Two Title	2- Safety and Security in the Laboratory	2- Solution Preparation	2-Acids and Bases

Moreover, these students were aware of their personal learning style. In fact, the four ways of learning, visual, auditory, flexible and kinaesthetic, are found among the learning style of the informants. The provided answers are crucial in selecting the most adequate teaching materials such as pictures, audios, texts.

Table 2.4: Course One

Unit 01: In the Laboratory **Course 01: Laboratory Materials**	
Objectives	Learn the different materials used in the laboratory and its pronunciation.
Outcomes	At the end of this session, learners should be conscious about the different materials in the laboratory, the correct pronunciation and the purpose of each one.
Warm up	Introduce the most common categorization of the laboratory materials.
Function	Identify the different laboratory materials functions.
Language Points	❖ Expressing purpose using: "to/in order to/so as to". ❖ Learn the vocabulary: Verbs in the infinitive and other parts of speech. ❖ Enhance the pronunciation of the used materials.
Techniques	Pictures- ID Cards.
Activities	Activity 01: Name each list and cross the odd word. Activity 02: Complete the following dialogue.

In the above table, the first course is designed where the targeted ESP course main element is expressing purpose, joined with the presentation of the different laboratory materials, while focusing on the gathered data from the students' who confirmed that these materials are frequently used in chemistry and they lacked its pronunciation.

Table 2.5: Course Two

Unit 01: In the Laboratory **Course 02: Safety and Security in the Laboratory**	
Objectives	Learn what to do and what not to do in the laboratory.
Outcomes	At the end of this session, learners should be able to express obligation and prohibition correctly.
Warm up	A video shaping the risk of working in a laboratory without safety and security terms and rules.
Function	Respect the different laboratory instructions, safety precautions and laboratory safety symbols.
Language Points	❖ Learn vocabulary using adjectives and adverbs. ❖ Express obligation and prohibition. ❖ Enhance pronunciation.
Techniques	videos – images - gifs.
Activities	Activity01: Name the different personal protective equipment shown. Activity02: Express obligation/prohibition in the following sentences. Activity03: Tick the right answer.

In the above table the second course is designed where the ESP course main elements are targeted such as targeting the language, using the both of obligation and prohibition, and content, defining the different safety and security rules and instructions while working in the laboratory. Indeed,

this course is taught within the first courses each year at the beginning of the semester due to its importance.

Table 2.6: Course Three

Unit 02: Basic Experiments in Chemistry **Course01: Water Distillation**	
Objective	Describing the chemical process called distillation using sequencers.
Outcome	At the end of this session, learners are supposed to use sequencers correctly while describing any chemical process.
Function	Learn how to distil water in the laboratory.
Language Points	❖ Use sequencers. ❖ Read and listen to scientific paragraphs. ❖ Learn vocabulary.
Techniques	Images- Text - Drawings.
Activities	Activity01: Say true or false. Activity02: Order the following sentences using sequencers. Activity03: Try to the used technical words in this course.

The above table, table 2.6, the first course of the second unit is presented where students are exposed to develop their technical knowledge about the most used experiment that is distillation using the English language parts of speech such as: verbs, adjectives, nouns, including the learnt materials in the previous course, and focusing on sequencers in order to express addition while distilling water.

Table 2.7: Course Four

Unit 02: Basic Experiments in Chemistry **Course02: Solution Preparation**	
Objective	Learn how to write simple sentences.
Outcome	At the end of this session, learners are supposed to write sentences and identify their types while preparing a solution respecting punctuation and capitalization.
Function	Learn how to write the four types of simple sentences respecting punctuation and capitalization.
Language Points	❖ Write simple sentences. ❖ Respect punctuation and capitalization. ❖ Learn the language structure: "subject, verb, object" ❖ Learn the rules of capitalization and punctuation.
Techniques	Warm up- paragraph-pictures-translation (Arabic).
Activities	Activity01: Order the following words respecting the grammatical rules. Activity02: Identify the types of the sentences.

The above table presents the second course of the second unit, which is entitled solution preparation. It targeted introducing to the students the different steps of preparing a solution in laboratory with various materials as warm up via respecting punctuation and capital letter usage when using simple sentence types especially the imperative form as being a very important language aspect frequently used in order to describe the steps undertaken while writing scientifically.

In table 2.8, the first course of the third unit is presented. This course aimed at helping students to discover the different domains where chemistry is present and needed. For the language aspect, the course targeted expressing the conditional type zero which is very common in English as it expresses scientific facts.

Table 2.8: Course Five

Unit 03: Chemistry in our Surroundings **Course01: Chemistry in our Daily Life**	
Objectives	Identify the different domains where chemistry takes place.
Outcomes	At the end of this session, learners are supposed to express the conditional type zero.
Function	Writing compound sentences expressing facts related to chemistry.
Language Points	❖ Express the conditional type zero. ❖ Write scientific paragraphs including the if clause type 0. ❖ Use the present simple tense. ❖ Respect its punctuation.
Techniques	Text – images-Google Translation.
Activities	Activity01: Match the following items (Main clause / dependent clause) Activity02: Link each pairs expressing the conditional type 0. Activity03: Formulate sentences expressing the conditional type 0.

Table 2.9: Course Six

Unit 03: Chemistry in our Surroundings **Course02: Acids and Bases**	
Objectives	Compare acids and bases.
Outcomes	At the end of this session, learners are supposed to express contrast correctly while describing the two different pH density of objects.
Function	Present different materials and describe their pH.
Language Points	❖ Express contrast using « However,but ». ❖ Write correct compound sentences. ❖ Use adjectives. ❖ Respect punctuation of the compound sentence.
Techniques	Text- pH scale reference drawn – pictures-translation (Arabic).
Activities	Activity01: Fill in the gaps. Activity02: Match the following items (acids /bases). Activity03: Link the 2 sentences expressing contrast.

In the above table, the last course of the semester is summarized into its main key aspects including expressing contrast and focusing on the use of adjectives, regarding English, and learn about acids and bases, which is an important chemical phenomenon that can be very helpful inside and outside the laboratory.

2.4 Case Study Design and Methodology

The Research design is "a blueprint for conducting a study with maximum control over factors that may interfere with the validity of the findings" (Themes, 2017). In other words, it is the skeleton of the research, which should ensure that the research is purposeful and organized. The design and the methodology of the study includes, describes and explains for readers the research key points such as the framework, type of research conducted, data collection, data analysis techniques, and solutions and implications (Creswell, 2014).

The current research took place at the department of chemistry where one group from third year Fundamental chemistry students' class of 2021-2022 shaped its respondents. It relies on correlational research design. Indeed, it targets extracting the correlation, that is the relationship, between students' affective filter when studying in both classrooms: online and on-site. It is relevant to investigate the research question that aims at revealing the type of impact of web-based education on the students' affective filter.

In order to test the level of students' affective filter online and on-site, two tests were used: Attitude Motivation Test Battery One (AMTB1) and Attitude Motivation Test Battery Two (AMTB2). Both of them were delivered online via Google forms. These tests were adapted from AMTB. (See appendices B and C). A teacher's diary is used as another research tool in order to reveal the different strategies that may teachers maintaining low affective filter in the virtual classroom. It serves also reaching triangulation through cross checking the impact of web-based education on the students' affective filter. The approach to analyse data combines both qualitative and quantitative approaches. The quantitative approach includes the use of SPSS.V.25 to analyse the two tests, which are AMTB 1 and AMTB 2. Both tests serve revealing the impact of the type of classroom on the students' three main affective filter variables, motivation, self-confidence and anxiety. Thus, each variable is analysed separately using both of descriptive statistics and statistical test results. For the teacher's diary a qualitative data analysis has been used. It is possible through the interpretation and the discussion of the collected observations and notes gathered from the online classroom diary

(See appendix D). Indeed, the diagram below outlines the present research design giving the essential elements and steps involved in conducting this research in order to test the hypotheses.

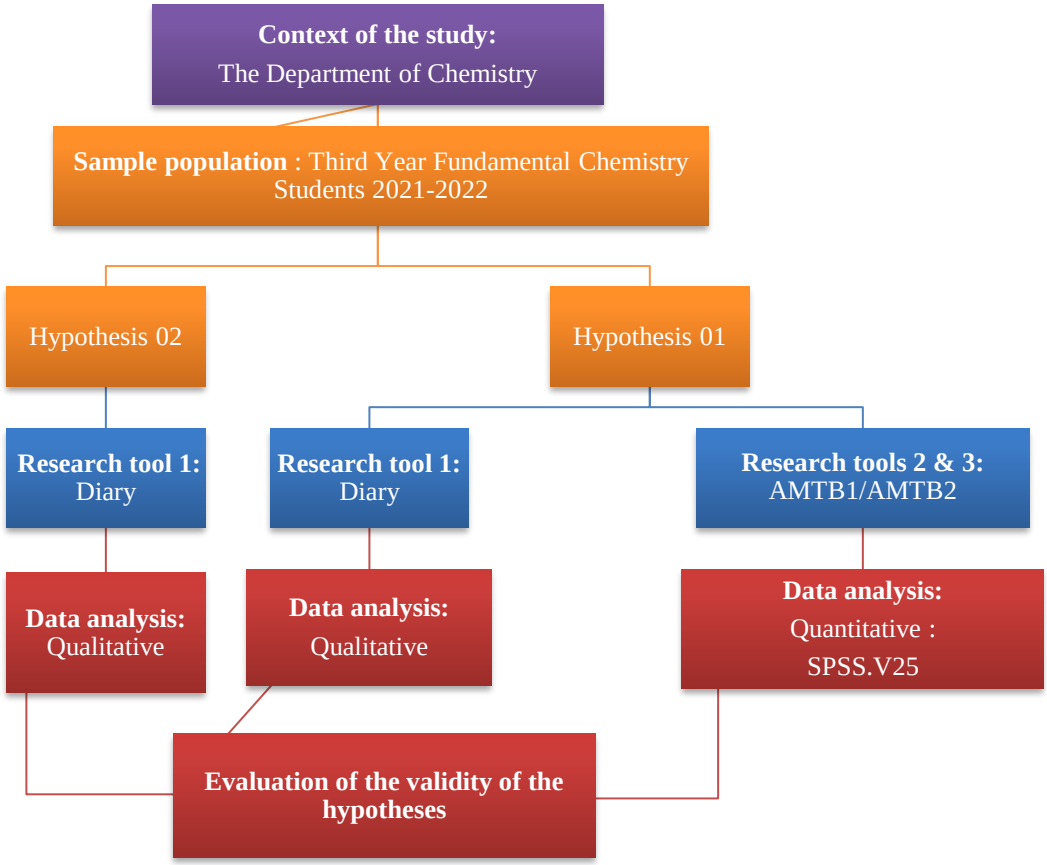


Figure 2.14: Research Design

2.5 Case Study

The case study is defined as "study of the complexity of a single case, coming to understand its activity within important circumstances". Stake (1995, as cited in Agba and Okonkwo, 2018, p.2). In other words, it is narrowing down a large and vague theory or research into one single framework with its specific characteristics. Similarly, Schoch (2020, p.245) highlights that "a case study involves a detailed and intensive analysis of a particular event, situation, organization or social unit". Thus, a research based on a case study is useful to just

and only the specific case studied. However, this type of study lacks generalization since its results are relevant to the particular situation studied and not every other situation. Indeed, Steinberg (2015, p.155) believes that "No aspect of case studies has received more criticism than their purported inability to generalize."

However, one cannot deny the benefits of undertaking case study research. According to Meredith (1998, as cited in Ebneyamini and Moghadam, 2018), there are various advantages for conducting a case study including its ability to observe the natural setting where the research is taking place, and consequently gathering real-life situation results. In addition to that, it serves well-comprehending and providing appropriate and relevant answers to the research questions. Consequently, the current case study has allowed the researcher to collect data from real life context: the classroom, and it also contributed to answering the two research questions as it provided a contextual understanding to the current research.

2.5.1 Definition of Correlational Research

According to Babbie (2016), correlational research involves the measurement of two or more variables to determine the degree of relationship or association between them. It focuses on examining the strength and the direction of the relationship without manipulating the variables or establishing causation. In other words, the correlational research refers to the type of research design that aims at examining the relationship between variables and measuring the extent to which they are related with each other. Similarly, Euclid (2019, p.176) adds "Correlational research is a type of none-experimental research that facilitates prediction and explanation of the relationship among variables." Besides, it is said that "A correlational study seeks to ascertain relationships between two or more variables. Simply put, it examines whether an increase or decrease in one variable corresponds to an increase or decrease in another variable." (Tan, 2014, p.269). Thus, the current research is a correlational one since it studies the relationship between the students' affective filter (motivation, self-confidence and anxiety) and the learning environment, i.e., the online classroom as opposed to the on-site one. Accordingly, its results target answering the first research question:

1- What is the impact of web-based education on the ESP students' affective filter?

The research hypothesizes that:

1- Web-based education lowers students' affective filter.

As a result, this research hypothesizes that the online classroom environment decreases the students' affective filter by raising their levels of motivation and self-confidence and lowering their level of anxiety. Accordingly, the use of a correlational research design is going to find out whether the correlation between the two variables is positive or negative.

2.5.2 Procedures of Correlational Research

In order to test the first hypothesis, the researcher followed a correlation research design by investigating the impact of the online classroom on students' affective filter precisely: motivation, self-confidence and anxiety. The target population selected for this study was one group composed of 16 *Licence* students from the department of chemistry of Djillali Liabes University of Sidi Bel Abbes specialised in Fundamental chemistry.

These students studied their first semester of the academic year 2021-2022 online via Udemy platform. This virtual semester started in October 2021. At the end of the first semester, January 2022, the students agreed to fill attitude motivation test battery one (AMTB1), which aimed at determining their affective filter, motivation, self-confidence and anxiety, while learning online.

Then the traditional teaching took place within the same academic year starting in February 2022 and ending in May. Students had the opportunity in the second semester to attend their classes at the university and made their experiments in the university laboratories using chemical compounds and English language content. Once the sampling finished their on-site courses, attitude motivation test battery two (AMTB2) was addressed to students to measure their affective filter while learning in the traditional classroom.

In the process of data analysis, statistical analyses for (AMTB1) and (AMTB2) to examine the relationships between variables is the software SPSS.V.25. Indeed, the study of Pourghaznein *et al*. (2021) and Sunandang *et al*.

(2023) have used the same approach to analyse its data since both relied on the SPSS and the correlational design. Thus, the data analyses tests compromise two sections: descriptive statistics via counting the Mean, Median and Standard Deviation because the sampling size is fewer than 30 students. The other tests are Wilcoxon Test for each item, the Normality test and the T-test. They are used in the second type of analysis, statistical tests analyses in order to extract the correlation between the online and the on-site classrooms with the affective filter variables.

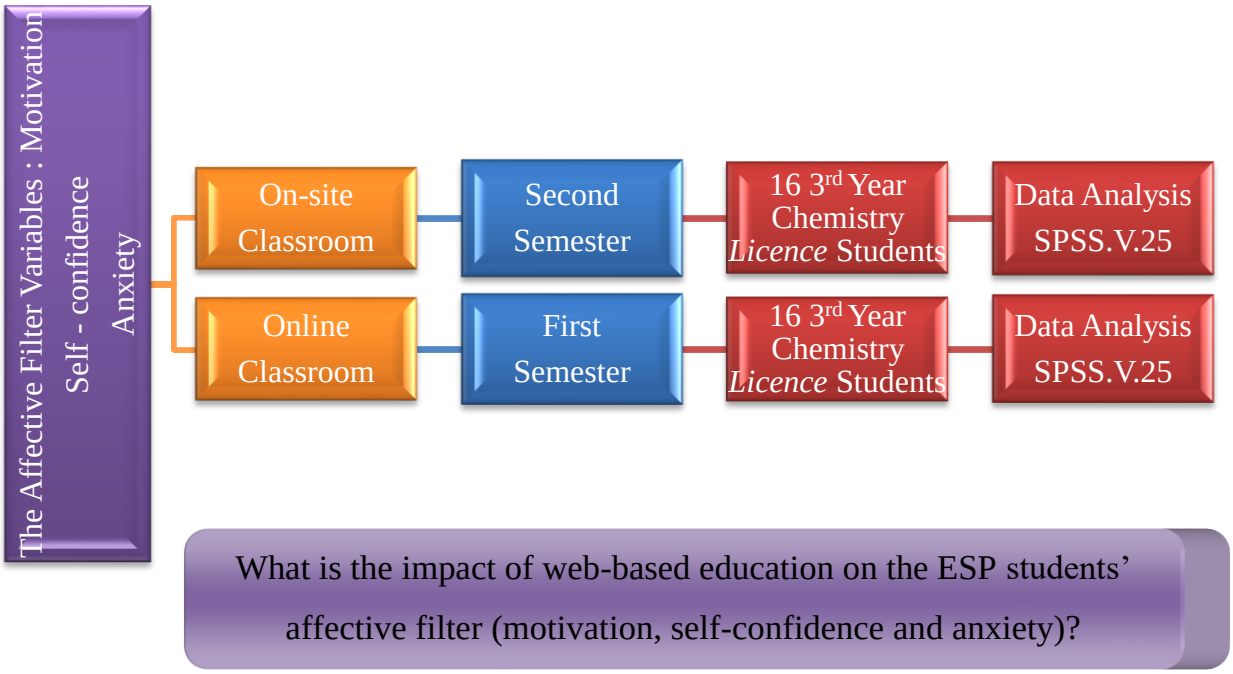


Figure 2.15: Procedures of Correlational Research

The above figure clarifies the elements of this correlational research design. This procedure targets providing an answer to the first research hypothesis.

2.6 Pilot Study

The initial stage of piloting studies, also known as pilot testing or pilot studies, is an important step in the research process. Thabane *et al.* (2010) view that piloting studies are in line with "feasibility study intended to guide the planning of a large-scale investigation" (as cited in Fraser, Fahlmen, Arscott and Guilot, 2018, p.161). In other words, conducting a smaller version of the overall

study to test and refine the research design, procedures, and instruments before implementing them on a larger scale is called piloting studies.

Scholars have highlighted the significance of pilot studies and provided insights into their purpose and procedures. Clarke and Braun (2019) in their book "Thematic Analysis: A Practical Guide" discussed the role of piloting in qualitative research. They suggested that pilot studies help researchers refine the coding framework, test the coding process, and ensure the reliability and validity of the analysis. Pilot testing allows researchers to identify potential challenges and ambiguities and make necessary adjustments. Thus, "A retention model provided the conceptual framework for this investigation to identify and organize various factors that influenced students' decisions to either discontinue or continue their educational programs." (Fraser *et al*.2018, p.260).

Accordingly, the researcher piloted the study before starting the first semester. Reviewing the existing literature about Udemy was possible through checking different web sites about Udemy and YouTube teachers who taught via Udemy and identify the possible challenges or platform's gaps. Before teaching the whole semester via Udemy, some students from the same research sample were asked to attend one asynchronous course online in Udemy as a trial. After gathering details of Udemy platform, defining the sample population and selecting a course content, the piloting study started.

Indeed, the selected course has been shifted from a hand-out into a video course. After following many instructions and respecting the standard rules of Udemy platform. The course has been accepted and published in the platform. The students could easily login and had access to the course content using the available application in mobile phones or via the web using their computers or laptops. None of the students reported a technical problem about the platform in the piloting study level.

Many options were provided within the teacher's account such as privacy control, whether the published courses are seen by everyone or limited to particular students. Also, the instructor's account provided a step-by step process of how to publish well-designed course instructions. However, the teacher faced technical

difficulties while publishing her first attempt e-course on Udemy. Creating the teacher's account on Udemy as an instructor has been very detailed, strict and confidential since the platform required scanned documents as the identity card, the tutor's photo and a driving licence though the platform did not ask about any scanned diplomas or degrees of the teacher. Thus, everyone from any geographical sphere had the possibility to create an account and share educational content despite his or her academic level and achievement.

For the technical problems related to the course content: the platform required a high video quality, appropriate content, quality and clarity of the course's audio and short video size for the free mode which must be less than 30 minutes otherwise it shifts to payment mode. However, the researcher managed to overcome these problems with guidance of professional technician where the instructor's account has been successfully created and saved for all the coming courses. Besides, the online course has met Udemy's conditions and has been published online.

Despite the encountered difficulties in the first attempt to teach online via Udemy platform, the teacher observed other advantages of the platform such as its ability to track the students' learning. In other words, the platform displays in percentages students who watched the course video and where they stopped using a detailed phase where dates, timing of watching videos and diagrams of their platform frequency. Thus, the teacher could easily discover the students' absences and learning consistency.

Furthermore, the platform allowed the students to know about all the details of each course such as its title, written course objectives, possible outcomes with a well-organized manner and very clear display of the whole syllabus. In addition to that, each published course is added automatically to the video transcription written under each course video, which is very beneficial for visual and slow learners.

Finally, among the most advantageous aspects of this platform reported as feedback by students is their accessibility to download the video, in case they do not have a good internet service. In addition to that, reviewing the course content

video unlimited times with three main suggested speeds: fast, medium and slow, depending on each learner's capacities, played a vital role in the selection of the platform. Thus, Udemy provided interesting details included within students' individual differences and learning styles such as auditory, visual, or reading\writing one.

To conclude, Nashwa *et al*. (2018) add "Do not take the risk. Pilot test first". After finishing the publication of the course, the researcher reached the pilot study objective that is testing the online platform, Udemy, usability, adequacy and cost-free and constructing a smaller idea of the online teaching process through Udemy platform and testing whether this platform is adequate and practical e-learning tool as reviewed in the literature available.

Thus, the results of the pilot study relied on two main sides: the students' reviews and the teacher's opinion about the platform. Hence, the participants had positive attitudes toward studying online via Udemy. Similarly, the teacher decided to teach the online semester via Udemy as the faced technical problems of her account were solved and the other instructions were understandable. Additionally, the teacher and students deduced that the platform advantages exceeded its limitations and obstacles for both processes, the virtual teaching and learning, which promoted its usage for the whole semester of the academic year 2021-2022 with the whole class.

2.7 Sample Population

According to Babbie (2016), sample population refers to the larger group or target population from which a researcher selects a subset (the sample) to study and draw inferences. In other words, it represents the individuals, objects, or events that are of interest and relevant to the research study. Moreover, the sample population selection relies on various elements explained by Saunders and Townsend (2018, p.480)

> Our choice of research participants involves choosing and gaining access to a small subgroup or sample from a larger target (that is bounded) population comprising the potential participants who are the focus of our research (Miles et al., 2013). Our choice and the subsequent gaining of access are, invariably, fraught with problems and subject to challenges. Although ideally, we may wish to collect data from particular participants, this will depend upon being able to gain access to these people.

As a result, choosing a sample for the current research is based on choosing the most available and accessible students. Indeed, a group composed of sixteen students who belonged to third year *License* students of Fundamental chemistry, accepted to take part in the current research via answering a spoken consent in class. This group has been shaping the current work case study, which is entitled: "The Case of Third Year Fundamental Chemistry Students at Djillali Liabes University of Sidi Bel Abbes". The participants of the research contributed to test the first research hypothesis via fulfilling the two test, Attitude Motivation Test Battery 1 (AMTB1) and Attitude Motivation Test Battery 2 (AMTB2).

Another participant took part in the study. The researcher who is the ESP teacher of the sample students (third year Fundamental chemistry students) contributed to the current work through a written diary. The below diagram summarizes the current research population, in which two main types participated and contributed to gather the data.

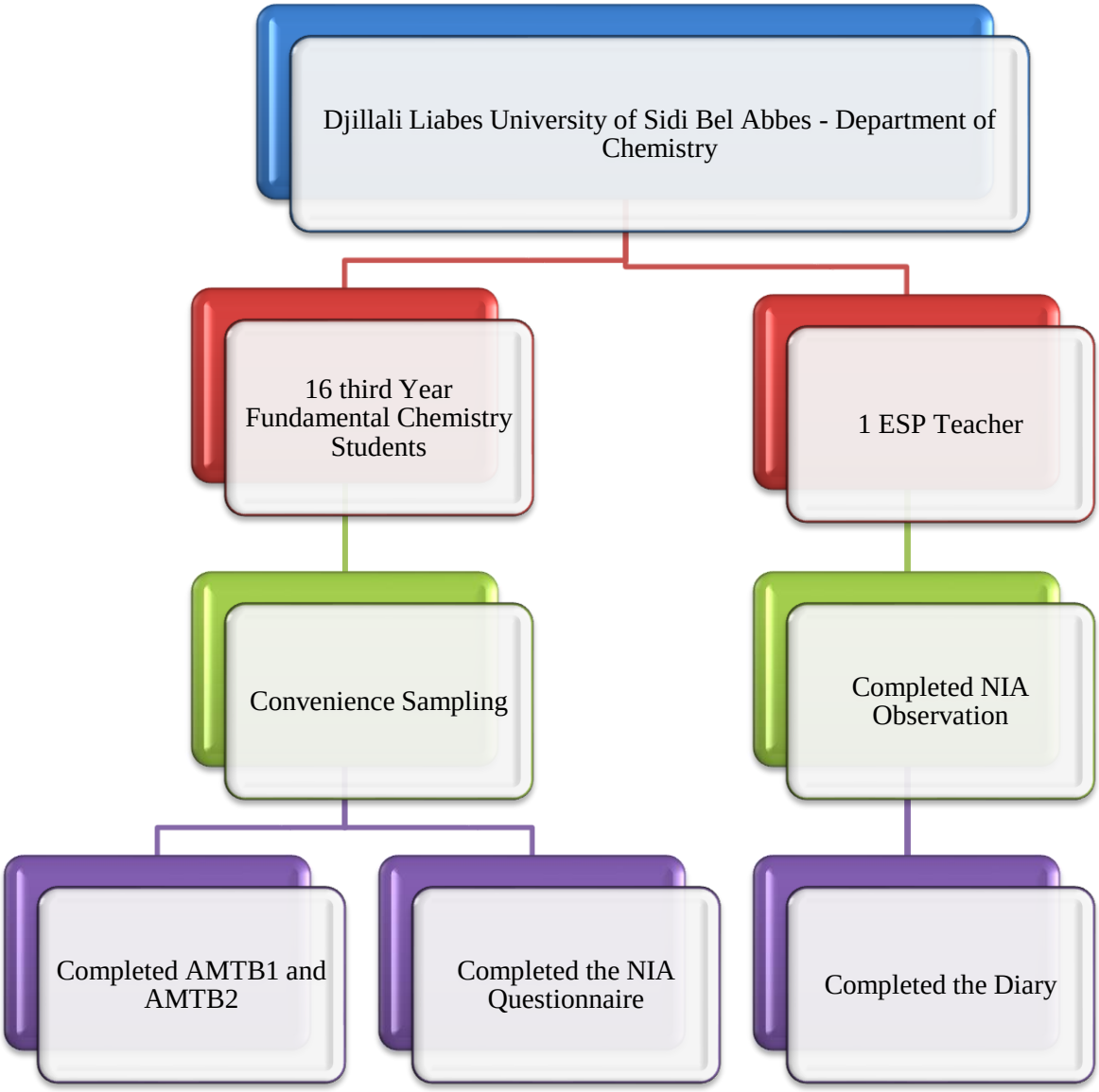


Figure 2.16: Sample Population

2.7.1 Students' Profile

The current sample population is considered as a homogenous sample because the sixteen students share various similar aspects such as age. They all belong to the same age: from 16 to 20 years old. Next, their common interest is Fundamental chemistry. The sample group is composed of 10 female and 6 male students. In fact, Saunders and Townsend (2018, p.489) describe it as

> homogenous sampling relies upon the researcher's judgement to identify one particular relevant group or sub-group and then choose participants from within. The data collected from participants is there for likely to be similar allowing for both greater in-depth exploration and minor differences to be more apparent.

Besides, various sampling techniques are used to select a representative sample from the population. Creswell (2014) mentions common methods such as random sampling, stratified sampling, cluster sampling, and convenience sampling. Each technique has its advantages and limitations, and the choice depends on the research objectives and available resources. For the current sampling, it is a convenience type as it meets the four main reasons explained by Farrokhi and Mahmoudi-Hamidabad (2012, p.785)

> Convenience sampling is a kind of non-probability or non-random sampling in which members of the target population, as Dörnyei (2007) mentions, are selected for the purpose of the study if they meet certain practical criteria, such as geographical proximity, availability at a certain time, easy accessibility, or the willingness to volunteer.

Indeed, Saunders and Townsend (2018) emphasize on the same reason of sample population acceptance to volunteer for the research he said "For both non-probability and probability sampling techniques, the challenge is to choose one or more participants that will enable us to answer our research question. Where the focus is on gaining understandings and insights that enable information rich" (as cited in Patton, 2015).

Additionally, Dörnyei (2007) mentions another crucial example that is very similar to the current work population selection where he says "captive audiences such as students in the researchers‟ own institution are prime examples of convenience sampling." In other words, the researcher opted for third year Fundamental chemistry students at Sidi Bel Abbes University as she was the

responsible teacher of the group there and she was in a direct contact to the sixteen students for the whole academic year 2021-2022.

2.7.2 Teacher's Profile

The second informant is the ESP teacher of the sample students who is the researcher herself. She has been teaching the module of ESP at the department of chemistry at Djillali Liabes University Sidi Bel Abbes since 2020. As a result, taking part and providing data related to the sample is purposeful as she has been considered as the closest person to the population and the most knowledgeable about them. Thus, the researcher took part as both an observer and the diarist.

Taking part in the ESP context as an observer in collecting data for the Needs Identification and Analysis was suffice since many unmentioned details within the NIA questionnaire could be easily noticed by the teacher and deduced from the students' behaviour. Moreover, the teacher experienced teaching a complete academic year with the same sampling as she already taught them in their second year at the same university. Thereby, rich data and real-life observations are added to the present work.

In addition to that, the teacher contributed in providing an answer from real life environment that is the online classroom to the second research question:

2- How can teachers maintain a low affective filter in web-based education?

Indeed, testing its current hypothesis:

2- Teachers can maintain a low affective filter in the online classroom via implementing different supportive strategies that target high motivation and self-confidence and low anxiety.

is possible via a diary that relied on the teacher's experience with her students while teaching online via revealing what techniques and strategies worked best for the sample.

2.8 Research Instruments

According to Taherdoost (2021), research instruments, also referred to as data collection instruments or tools, are techniques used by researchers to gather data or information for their study. Indeed, these instruments are designed to systematically collect data that are relevant to reach the research objectives,

answer the research questions or test hypotheses under investigation that can be either qualitative or quantitative. On the one hand, "quantitative research uses questionnaires, surveys and systematic measurements involving numbers." On the other hand, "qualitative research uses participants' observation, in-depth interviews, document analysis, and focus groups." Yilmaz (2013, p.315).

The figure below illustrates two types of data collection where the present data collection tools are considered as first source primary data. According to Taherdoost (2021, p.12), "data that is not published yet and is the first-hand information which is not changed by any individual is known as primary data."

Figure 2.17: Data Collection Methods

Taherdoost, 2021, p.13

Thus, the present selection of data collection relied on two tests adapted from Attitude/Motivation Test Battery (AMTB1) and (AMTB2) model (2004) proposed by Gardner's were addressed to answer the first hypothesis joined with a diary to cross check data. For the second research hypothesis, the research relied on a qualitative research tool that is a diary.

As a result, this research implies a mixed-method approach, which is "one in which the researcher incorporates both qualitative and quantitative methods of data collection and analysis in a single study". (Creswell, 1999, p.455). Moreover, this process also refers to triangulation that is "the mixing of data or methods so that diverse viewpoints or stand points cast light upon a topic." (Olsen, 2004 as cited in Schweiger, 2023).

2.8.1 Attitude Motivation Test Battery One

At the end of the first online semester, students were asked to fill in the Attitude Motivation Test Battery One (AMTB1) via a Google Forms file. It was an anonymous questionnaire that targets revealing the impact of web-based education on students' affective filter focusing on their: motivation, self-confidence and anxiety variables. This test includes 39 questions. These questions included both kinds of questions open-ended questions and close-ended questions "(1) closed-ended, or structured, fixed-response questions; and (2) open-ended, or unstructured, free-response questions." (Lee, 2006, p.768). The 39 questions were classified into three main sections corresponding to the students' affective filter variables. The table below describes the structure of AMTB1. (See table 2.10)

Table 2.10: Attitude Motivation Test Battery One (AMTB1) Structure

Test Parts	Number of Questions	Type of Questions
Part One: Motivation	11 Questions	9 Likert Scale Questions 2 Open-ended Questions
Part Two: Self-confidence	12 Questions	10 Likert Scale Questions 2 Open-ended Questions
Part Three: Anxiety	16 Questions	13 Likert Scale Questions 2 Open-ended Questions 1 Yes/No Questions

For the close-ended type of questions, the respondents were limited with the selection of precise given options where no space is available for adding extra details. In other words, this type of question is "closed-ended responses are designed to provide respondents with specific responses, which can be standardised and classified into fixed alternative responses" (Dalati and Marx Gómez, 2018, p.184).

There are various types included within the close-ended questions. In this test, two types of questions are used including: yes/no question (See figure 2.18) and Likert scale.

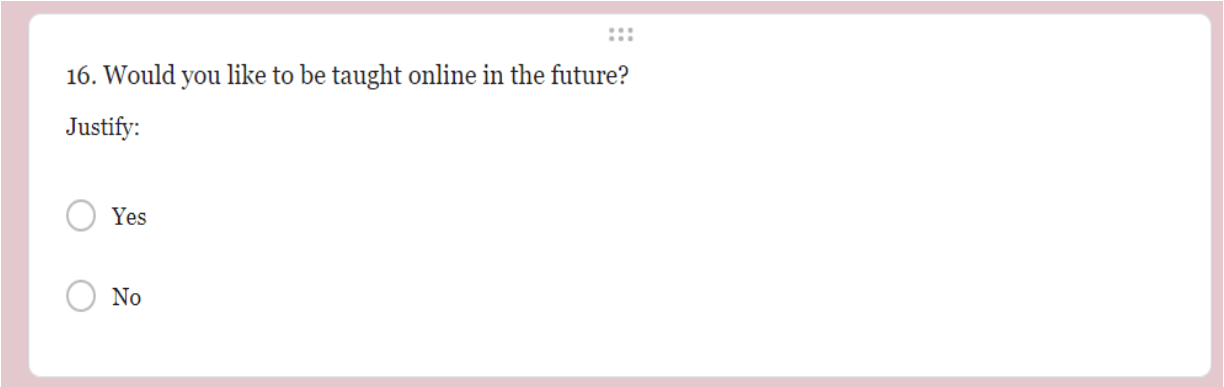


Figure 2.18: Yes\No Question from AMTB1: Part Three: Anxiety

Figure 2.19 shows the Likert scale question used in AMTB1. They are the most used questions, which are 6 points scale. According to Miller (1956), "it is usually a good idea to construct scales with fewer than seven points, because psychological research indicates that people have difficulty reliably making more than seven distinctions" (as cited in Lee, 2006, p.770).

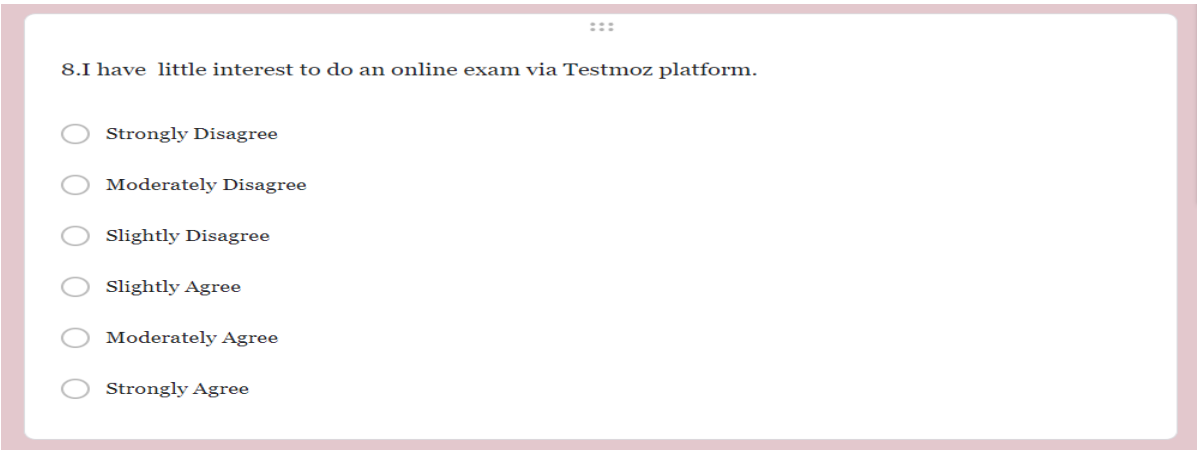


Figure 2.19: Likert Scale Question from AMTB1: Part One: Motivation

According to Roopa and Rani (2012, p.274), open-ended questions are defined as "The options or predefined categories are not suggested. The respondent replies in their own words without being constrained by a fixed set of possible responses". Thus, students are given the opportunity to describe and retell their personal experiences, opinions and attitudes to provide qualitative data serving the clarity and understanding of the students' psychological aspect with no restrictions. (See figure 2.20).

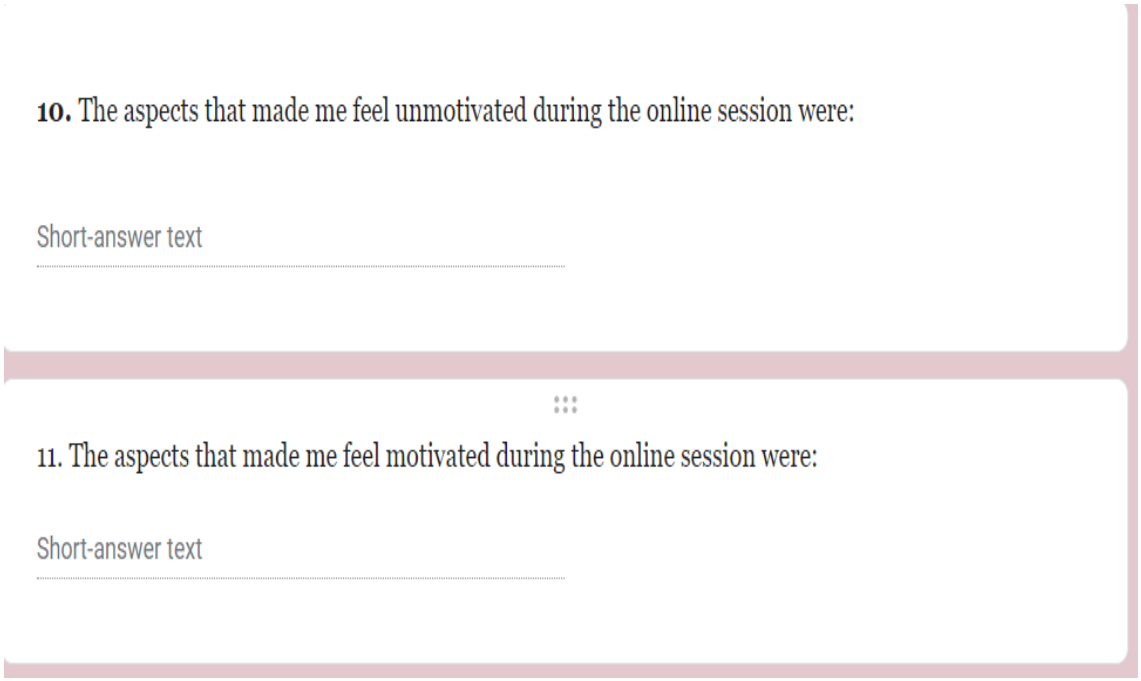


Figure 2.20: Open-ended Question from AMTB1: Part One: Motivation

2.8.2 Attitude Motivation Test Battery Two

From February 2022 to June 2022, students have attended their ESP courses at Djillali Liabes University classrooms and laboratories. In order to measure their affective filter while learning on-site, Attitude Motivation Test Battery2 has been administered to the same sample. This test considers and quantifies the students' motivation, self-confidence and anxiety levels in the traditional classroom.

The AMTB2 is built in accordance to AMTB1 since the test relies on open-ended questions and close-ended questions where the Likert scale type is mostly used. It also shares the same overall structure as it consists of three main

sections. The below table indicates the AMTB2 structure where 41questions has been addressed to the same sample. However, it is specific to the traditional classroom. (See table 2.11).

Table 2.11: Attitude Motivation Test Battery Two (AMTB2) Structure

Test Parts	Number of Questions	Type of Questions
Part One: Motivation	12 Questions	▪ 9 Likert Scale Questions ▪ 2 Open-ended Questions ▪ 1 Multiple Choice Question
Part Two: Self-confidence	13 Questions	▪ 10 Likert Scale Questions ▪ 2 Open-ended Questions ▪ 1 Multiple Choice Question
Part Three: Anxiety	16 Questions	▪ 13 Likert Scale Questions ▪ 2 Open-ended Questions ▪ 1 Multiple Choice Question

As the above table indicates, additional questions are added in AMTB2 if compared to AMTB1. Indeed, the added type of questions in the three sections are called multiple choice questions. According to Roopa and Rani (2012, p.274), in multiple choice questions "The respondent has several options from which to choose." In other words, these kinds of questions are considered to be close-ended ones because the respondents are restricted with multiple choice answers. The below figure explains an example used in AMTB2 in part two: self-confidence. It indicates that the students are not limited to two main options, rather they are restricted with multiple choices such as the four suggested responses in figure 2.21.

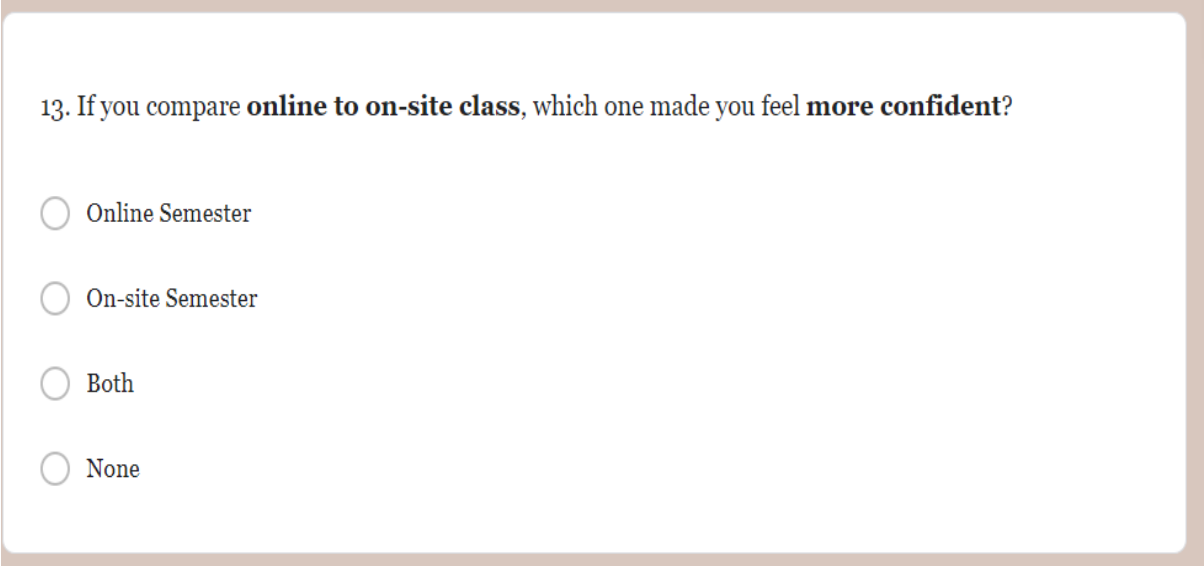


Figure 2.21: Multiple Choice Question from AMTB2: Part Two: Self-confidence

2.8.3 Diary

According to Leech and Onwuegbuzie (2007, p.559) "Qualitative research can address such process-oriented questions." Indeed, searching for the strategies that enhance the students' affective filter and serve better comprehensible input is a process orientation based on the second research, which explores:

3- How can teachers maintain a low affective filter in web-based education?

Accordingly, the diary is chosen as being relevant tool to test the second hypothesis that is

2- Teachers can maintain a low affective filter in the online classroom via implementing different supportive strategies that target high motivation and self-confidence and low anxiety.

According to Wiegerová and Lampertová (2013, p.22), "The teacher diary is however a mirror of reality and of what the teacher in the given moment, in the given situation actually goes through." Thus, the teacher has used it in order to retell web-based implementation for a better comprehensible input. Accordingly, Brown (1984, p.124) identifies two types of diaries in which "the researcher may or may not be the diarist". In this study, the researcher is the diarist. Hence, fruitful and concrete data are gathered since "the diarist studies his own

teaching or learning." (Bailey and Ochsner, 1980 as cited in Brown, 1984, p.127). This type is also called a non-participant diary.

Diaries can be utilized in various research contexts, such as psychological studies, social sciences, health research, or ethnographic research as seen by Wiegerová and Lampertová (2013). They enable researchers to gather rich, contextual data that may not be easily accessible through other data collection methods. Indeed, it holds high status as it is described by Matsumoto (1987, p.26) as "Not only research tool, but may also be used for other practical purposes such as self-evaluation, self-improvement, and for other learners it can be of immediate use for diarist-learners as an aid to their second language learning."

Table 2.12: Diaries Advantages and disadvantages

Advantages	***Disadvantages***
1. It enables to describe situations that are harder to handle in person.	**1** demanding attracting of subjects for research sample (due to the length o research, time required for frequ writing)
2. The subject can come back later to his/her statements later (The subject can e.g. add something later).	**2** From the aspect of participating subje recording their ideas instead of an interview which is shorter;
3. It has therapeutic effects.	**3** Possible briefness in writing in case o non-structured form of diary;
4. It enables reflection of one's own work.	**4** Possible complexity, disputability in t interpretation of the acquired data
5. It minimises the feeling of the subject that research is involved	
6. It creates better conditions for preventing distortion of statements, since they are recorded by the subject him/herself.	
7. The subject him/herself can decide when the diary is to be written and how much time will be devoted to it.	
8. The subject can choose the form in which he/she will write the diary – electronic, written.	

Adapted from Wiegerová and Lampertová, 2013, p.24

In terms of educational research, it is important to provide an evaluation of both the advantages and disadvantages of using diaries as developed an instrument. (Table 2.12)

The teacher's diary, contributed to this work first, via capturing real-time data. The researcher started writing her diary at the beginning of the first semester describing in details how online teaching through Udemy occurred. Next, it allowed the teacher to examine how daily events, stressors, and other factors affected the students' affective filter providing a micro-level understanding of virtual learning experience. Moreover, this diary provided insights into the students' daily processes learning including their timing, attitudes and arrangements of their e-learning. Finally, amongst the most relevant benefits of this tool is its ability to recount how the teacher implemented various practical teaching strategies within the online process to lower students' affective filter. (Tennen and Affleck, 2002)

2.9 Conclusion

The current chapter is about the used methodology and the followed research design. The process of collecting both qualitative and quantitative data in respect to the set of objectives, questions and hypotheses is explained in details. The chapter also provides definitions, justifications and advantages of the selected instruments and design.

A correlational research design has been selected as the most appropriate design to reveal the effects of online learning on students' affective filter. This study took place at Djillali Liabes University of Sidi Bel Abbes where 16 third year Fundamental chemistry participated as the research sampling. These students accepted to take part in the current work by answering the research's NIA questionnaire and AMBT1 and AMBT2.

Another participant contributed to the data collection, who is the researcher herself via an unstructured observation to collect the NIA data. Also, as being the diarist in order to provide an answer to the second research question and test its corresponding hypothesis. As a result, qualitative and quantitative research tools are used so as to cross check data and ensure the validity of the work.

The following chapter is devoted to data analysis. It will tackle the qualitative and quantitative analysis of the used tools, which will result numerical and non-numerical statistics. Furthermore, a deeper section is devoted to the description and discussion of the obtained results from Excel 2007, SPSS.V25. and qualitative research analysis.

CHAPTER THREE:

Data Analysis

CHAPTER THREE: DATA ANALYSIS

3.1 Introduction

The third chapter is concerned with the data analysis of the obtained information from the different methods. In fact, the current research is based on these main tools, Attitude Motivation Test Battery one, Attitude Motivation Test Battery two and the diary. The overall purpose from this chapter is to analyse the findings qualitatively and quantitatively via statistical procedure, the SPSS.V.25.

The statistical analysis is divided into three main sections. The first section is called motivation. Its findings aim at shedding light on the students' levels of motivation in the online class. The second analysis calculates their self-confidence when learning English via Udemy. The last part is devoted to depict the students' levels of anxiety in the online mode. Besides, the same analysis procedure of Attitude Motivation Test Battery one is followed in Attitude Motivation Test Battery two, which presents the results gathered from the on-site class, to compare both findings.

Moreover, teacher's diary is used as another data collection tool. It targets both, detecting the type of impact of web-web education on the students' psychology and explaining how teachers can maintain a better comprehensible input in the online teaching through the selected strategies. It has been analysed qualitatively as it deals with explanations, remarks and observations.

The last part of this chapter is the discussion of the main results where both main findings are displayed in order to cross check data and confirm or reject the two research hypotheses. Indeed, both diary and the two tests have been used to test the first hypothesis, which is divided into three main sub-hypotheses to analyse each variable separately. Besides, the teacher's diary is used to answer the second hypothesis.

3.2 Data Analysis

The third chapter is left for the analysis of the research tools: Attitude Motivation Test Battery one, Attitude Motivation Test Battery two and the teacher's diary. The data has been retrieved from two main types of populations: students and one ESP teacher. Firstly, each test is composed of three main sections, which are motivation, self-confidence and anxiety. Indeed, the data analysis process of the two tests relies on analysing two main sections descriptive statistics and statistical tests results of each part (motivation, self-confidence and anxiety) separately.

In fact, the descriptive statistics compare the calculated Mean, Median and Standard Deviation of the traditional class to the ones obtained from the online class where the participants belong to the same group. Besides, the statistical tests results are referred to as the second section. It is composed of three main tests, which are ordered as follows: First, normality test, which indicates whether the findings have a normal distribution. Secondly, Wilcoxon test for each item. This test describes and analyses all items in a separate way with explanation. Finally, the student t-test unilateral for the same sample that compares the Means of both means of instruction and provides the Mean difference results and the p-value. Hence, the results of the p-value decide whether the null hypothesis is accepted, in case the resulted p-value is above 0.05 (5%), or rejected.

3.2.1 Tests Analysis

The two tests were given to students at the end of the first semester (online teaching), and at the end of the second semester (face to face teaching). Thus, information about the samples' psychology mainly the studied items, motivation, self-confidence and anxiety were the gather data from same sample in relation to both semesters. In the analysis, the students' answers were analysed via the SPPS.V.25 using both descriptive statistics and statistical tests results of each part. The researcher applied these two statistics on each part of the test separately.

3.2.1.1 Part One: Motivation

It provided fruitful and detailed data about the students' level of motivation toward different aspects of motivation included in both remote learning and the traditional classroom. It included nine (9) closed-ended questions and two (2) open

ended-questions. The analysis of the first part, motivation, embodied both of descriptive statistics and statistical tests results.

3.2.1.1.1 Descriptive Statistics

The students answered the questions related to the variable of motivation using six points scale from strongly disagree to strongly agree. However, the calculated Mean of each test of motivation resulted in an interval measurement. (See table 3.1).

Table 3.1: Descriptive Statistics of Motivation Scale

	Mean	Q1	Median	Q3	Std-Dev	Min	Max
Online Semester	4,5764	3,694	4,7778	5,333	0,828	3,22	5,67
On-site Semester	3,5347	3,138	3,5	4	0,803	2,11	5,22

Q1: First quartile: One quarter of the population: 25 %

Median: Two quarters of the population: 50%

Q3: Third quartile: Three quarters of the population: 75 %

As shown in (Table 3.1), the calculated Mean of the online class is 4,5764. Similarly, it refers to 'Moderately Agree'. Therefore, students felt motivated when studying online. Indeed, the results of the Q3, three quarters of the population, confirmed the same results, which is 5,333 out of 6 that was 'Moderately Agree'. When it comes to the second section analysis, the on-site semester, the overall Mean calculated is 3,5347 which is similar to the results of the Median. Therefore, the result of the on-site semester is 'Slightly Agree'. As a result, if we compare the Mean of both classes, the descriptive statistics confirm that the students' motivation in the online class is higher than the on-site one with a 1.05 Mean difference. In fact, this difference between the two classes is a significant difference that would be tested via the t-test. Furthermore, the standard deviation found in the online class is 0,828, which is close to the on-site one that is 0,803. Hence, this small value in comparison to the two Means, which indicated that the research participants shared the same characteristics and features. It is a uniformed class.

3.2.1.1.2 Statistical Tests Results

The statistical tests results were built based on three main tests including the normality test in the first stage as a requirement and it was applied via the Shapiro-Wilk test. Indeed, if its results showed that motivation is naturally distributed in both classes, it would allow the second test, the Wilcoxon test for each item of motivation scale, and the student t-test as the final test to indicate the most motivating class for students.

a. Normality Test

The normality test is used to check whether the findings were normal in the same sample. Besides, it is done before the t-test as naturally distribution should be first confirmed. In fact, this test is possible via Shapiro-Wilk test because the participants' number was 16 students.

Table 3.2: Normality Test for Motivation Scale

	Shapiro-Wilk test	
	S-W statistic	p-value
Online Semester	0,220	0,052
On-site Semester	0,112	0,951

In table 3.2, the p-value in the online class is 0,052 and 0,951 in the on-site one. Hence, both values are greater than the 0.05%, which means that the variable of motivation has a normal distribution in both semesters. These results allowed the analysis of two tests.

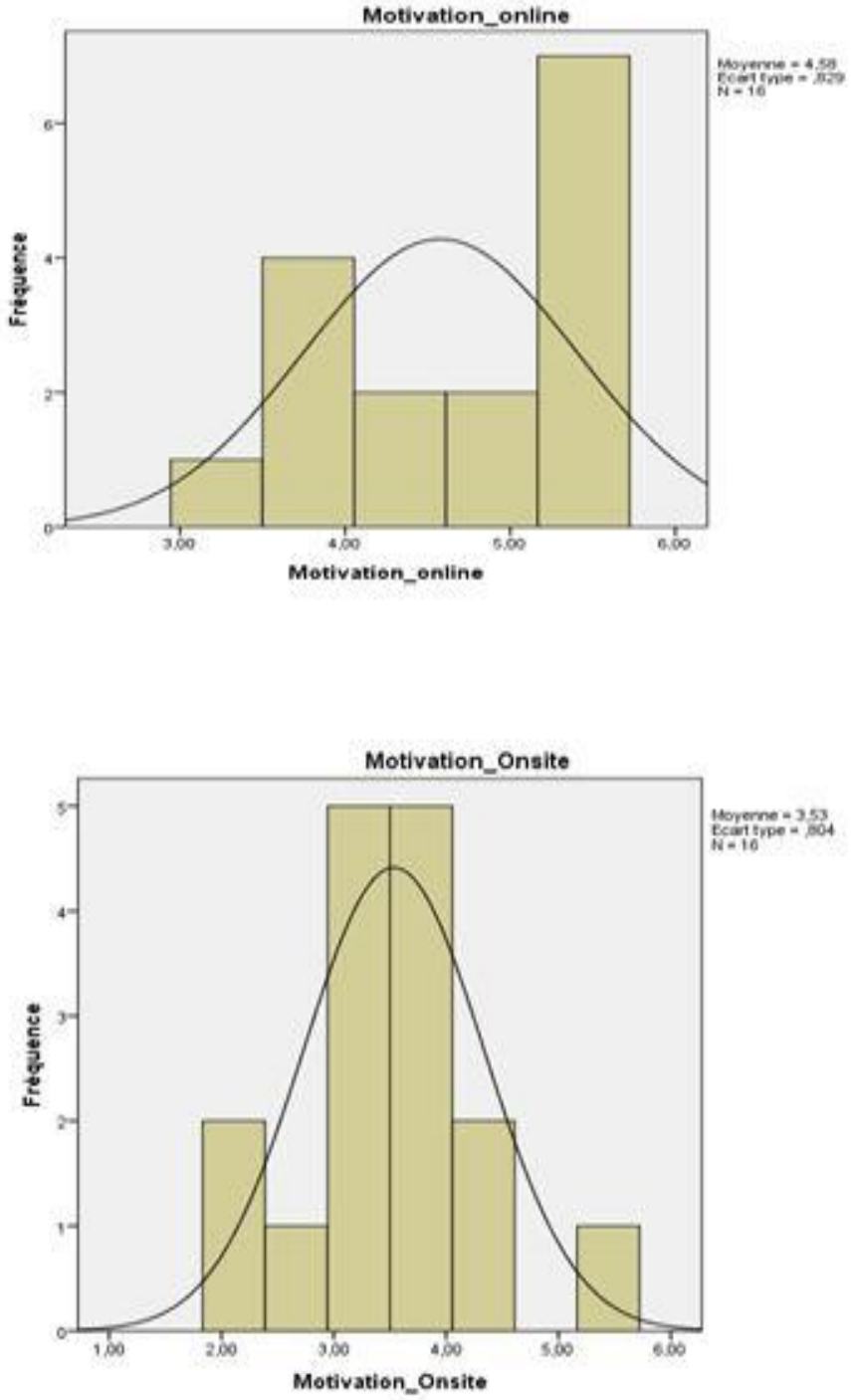


Figure 3.1: Histogram of Motivation Scale

Using the SPSS.V25, another figure has confirmed the same findings of the normality test. The histogram of motivation scale is identical in both classes in which its centre is on the Mean. (See figure 3.1).

b. Tests for Each Item of Motivation Scale

Table 3.3 displays the results of both online and on-site motivation test, which consist of ordinal data ranging from 1 to 6. In order to compare the students' motivation levels, the most suitable statistical test utilized was the Wilcoxon signed rank test for paired samples. This test analysed each motivation item individually.

Table 3.3: Wilcoxon Test Results for Each Item of Motivation Scale

	Online vs On-site		Decision
	W-statistic	p-value (One-tailed test)	
Item1	-0,238	0,812	No difference
Item2	-0,319	0,750	No difference
Item3	-2,910	0,004	Online
Item4	-2,886	0,004	Online
Item5	-0,921	0,357	No difference
Item6	-1,862	0,063	No difference
Item7	-0,406	0,685	No difference
Item8	-0,984	0,325	No difference
Item9	-3,557	0,000	Online

No difference: the null hypothesis is accepted

Online: the null hypothesis is rejected at 5% (0.05%) level of significance

Table 3.3 reveals that the levels of the psychological aspect of motivation remained relatively consistent for elements 1, 2, 5, 6, 7 and 8. However, the elements 3, 4 and 9 displayed a higher motivation in the virtual class to the on-site one, with a significant level of 5% (0.05%). These results are backed up via the answers collected from the open-ended question, which exhibited that students' motivation was influenced by various factors including their appreciation for taking charge of their online learning by utilizing the platform. They tailored their learning process based on their understanding capabilities and personal methods to reach understanding, such as

repeatedly watching videos, reading transcriptions, taking notes and relying on auditory comprehension. Another motivational factor was the flexibility to choose the timing of their courses, which means that whenever they felt motivated to study, they could easily find a course that suited their schedule. Additionally, the students' geographical location was no longer a hindrance to attend the course. However, the on-site class imposed both of the learning options and the schedule on students regardless to their willingness to study or location. In addition to that, the teacher's e-learning approach utilizing Udemy platform and various digital devices like computers, smartphones and laptops was widely appreciated by most students who were youngsters approaching the internet almost daily. Lastly, most of students added that their familiar setting, their own homes, had a remarkably positive impact on their overall enthusiasm and motivation if compared to the four walls classroom.

c. T-test

By granting approval for the normal distribution requirement, the paired samples t-test is used to analyse the different levels of motivation between the two semesters. Table 3.4 displayed that the p-value probability is below the 5% (0.05) significant level. Consequently, the null hypothesis is rejected and the alternative hypothesis H1: the students are more motivated in the online learning environment over the on-site one, is accepted.

Table 3.4: Paired T-test Results

	Mean	Std.dev	95% confidence Interval		t-statistic	Df	p-value (One-tailed)
			Lower	Upper			
Mean Difference	1,04167	1,03984	-0,4875	1,5957	4,007	15	0,001

Consequently, there is a notable significant difference at the 5% (0.05) level, which distinguished the Means of the two classes. Thereby, the implementation of the e-learning method had a favourable impact on the students' motivation levels. Indeed,

the findings demonstrated that students exhibited a greater tendency to engage in the online learning compared to the on-site one.

3.2.1.2 Part Two: Self-confidence

The second part of the test was concerning students' self-confidence in the remote mode and on-site class. It encompassed ten (10) questions with predetermined answers and two (2) questions that required open-ended responses. The collected answers are analysed through a meticulous analysis of self-confidence, depicted through descriptive statistics and statistical tests results.

3.2.1.2.1 Descriptive Statistics

Table 3.5 estimation of the measures of the overall Mean provided a quantitative variable with an interval measurement though the self-confidence scale was made up of six items with ordinal measurement arrangements. The results are shown in the below table. (See table 3.5).

Table 3.5: Descriptive Statistics of Self-confidence Scale

	Mean	Q1	Median	Q3	Std-Dev	Min	Max
Online Semester	3,9250	3,725	4	4,175	0,561	2,50	5,10
On-site Semester	3,9438	3,6	3,8	4,250	0,424	3,40	4,90

Q1: First quartile: One quarter of the population: 25%

Median: Two quarters of the population: 50%

Q3: Third quartile: Threequarters of the population: 75%

According to the above results, the Mean in the online classes is defined as "Slightly Agree," which is 3,9250. According to the descriptive statistics, students are often confident. Besides, the calculated Mean of both half (50%) and three quarters (75%) of the population indicated that students were confident and the Mean reached 4 and 4,175, which refer to 'Slightly Agree'.

Because the Mean in the on-site classrooms is likewise the online once, within the "Slightly Agree" range (Mean = 3,9438) and 75% of students were categorized as

"Slightly Agree" (Q3= 4,250), there is no significant difference between the students' levels of self-confidence in the on-site semester and the online one. The two Means are thus separated by 0.01, which did not appear to be a significant difference at the level of 5% (0.05). As a result, another test will be undertaken that is the t-test.

The results of the standard deviation are described as being small value if compared with their Means, online = 3,9250 and on-site = 3,9438. These results indicate that there was little discrepancy between the participants regarding their level of confidence. Hence, the results in both classes refer to the uniformity and the homogeneity of the sample.

3.2.1.2.2 Statistical Tests Results

As required by both the Wilcoxon test and the student t-test, the normality test was applied using the Shapiro-Wilk test. Next, to analyse each component related to the self-confidence separately, Wilcoxon test results for each item of the self-confidence scale was used. Finally, a t-test usage to analyse the overall self-confidence.

a. Normality Test

The normal distribution of the data subject is necessary for the parametric test known as the t-test. Thus, Shapiro-Wilk test is required since the sample size was 16 students, necessitating its use. Table 3.6 displays the outcome of the test.

Table 3.6: Normality Test for Self-confidence Scale

	Shapiro-Wilk test	
	S-W statistic	p-value
Online Semester	0,162	0,177
On-site Semester	0,195	0,076

According to the normality test, both tests p-values are bigger than the 5% (0.05) significance, indicating that both groups' confidence is evenly distributed.

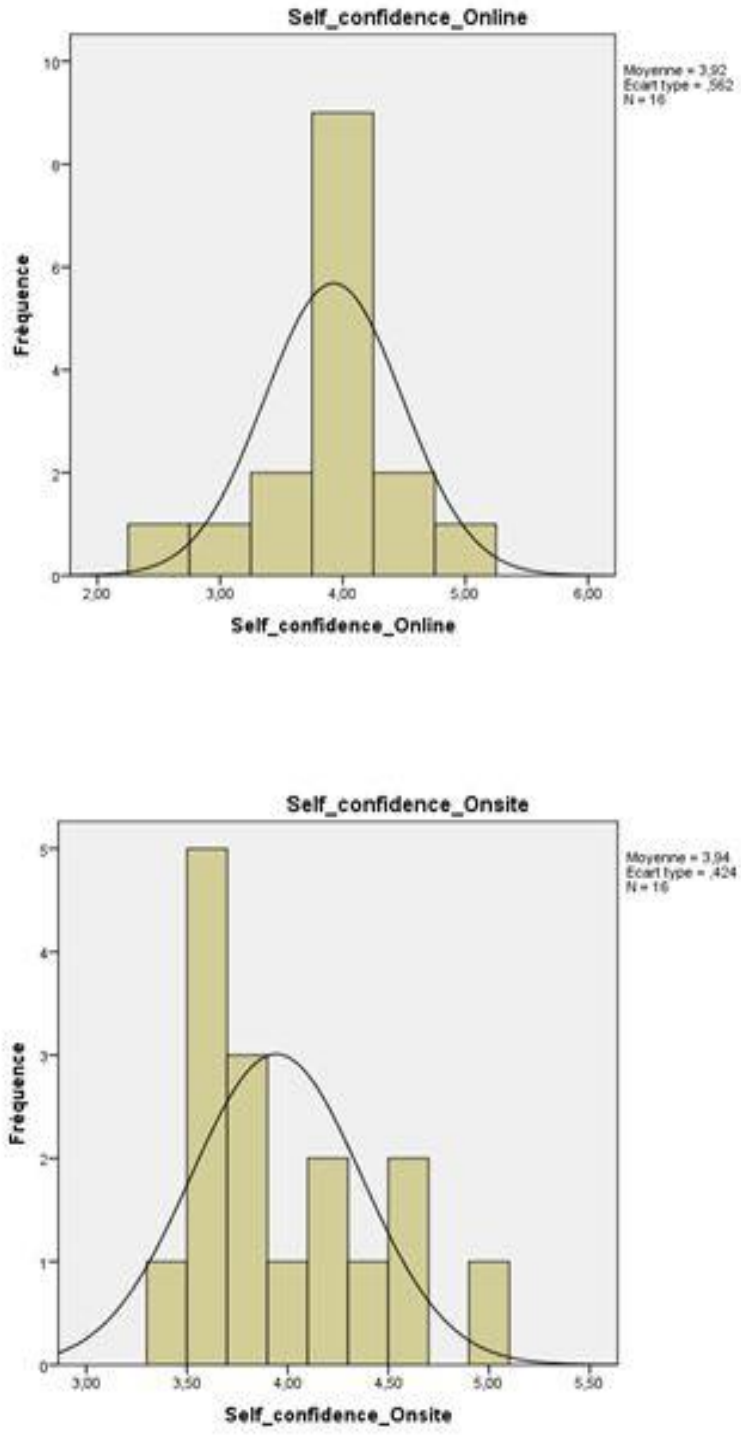


Figure 3.2: Histogram of Self-confidence Scale

The probability distribution depiction in the above figure displayed a symmetrical distribution centred on their mean, further supported the latter findings. In other words, the students' levels of self-confidence in both classes were equivalent.

b. Tests for Each Item of Self-confidence Scale

The Wilcoxon signed rank test for paired samples, which examined each component of the self-confidence test independently, is the most suitable statistical test to evaluate students' levels of confidence since the components of the self-confidence test are ordinal data ranking from 1 to 6. (See table 3.7).

Table 3.7: Wilcoxon Test Results for Each Item of self-confidence Scale

	Online vs On-site		Decision
	W-statistic	p-value (One-tailed test)	
Item1	-0,574	0,566	No difference
Item2	-0,159	0,874	No difference
Item3	-2,712	0,007	Online
Item4	-1,280	0,201	No difference
Item5	-1,364	0,172	No difference
Item6	-3,316	0,001	Online
Item7	-1,823	0,068	No difference
Item8	-2,809	0,005	Online
Item9	-1,121	0,262	No difference
Item10	-1,245	0,213	No difference

No difference: the null hypothesis is accepted

Online: the null hypothesis is rejected at 5% (0.05%) level of significance

As shown in (table 3.7), there is no significant difference in students' levels of confidence in the following elements: 1, 2, 4, 5, 7, 9, and 10. At a significant level of 5% (0.05%), the results indicate that students were more confident in the virtual class than they were in the traditional one for components 3, 6, and 8. Indeed, the three components, which promoted the students' self-confidence in the online class, were the teacher's online teaching method, using comments to answer questions, and e-mailing written inquiries. Besides, additional factors that contributed to students' self-confidence were mentioned in the open-ended question in CT1 (See appendix 1), which exhibited that students were confident when they studied independently, watched the e-

courses multiple times until they understood them, benefited from recorded lessons, studied freely without following a set schedule, and using Google translation.

c. T-test

The paired samples t-test could compare the Mean of the students' self-confidence in both semesters because the normal distribution criteria was approved. (See table 3.8). The null hypothesis is accepted and proved, as shown by the t-test findings, where the p-value probability value, p-value = 0,919, is larger than the 5% (0.05) significant level.

Table 3.8: Paired T-test Results

	Mean	Std.dev	95% Confidence Interval		t-statistic	Df	p-value (One-tailed)
			Lower	Upper			
Mean Difference	0,01875	0,72867	- 0,4070	0,3695	0,103	15	0,919

As a result, at the level of 5% (0.05), there is no significant difference between the two Means. In light of this, neither the on-site nor the online learning method had an impact on the students' levels of self-confidence. Additionally, (CT2) last open-ended question, which asked participants to choose the environment that gave them the greatest self-confidence, confirmed the same findings, with 50% of respondents picking that both settings gave them confidence equally. However, in the on-site sessions, 31.3% of the students reported feeling more confident. While 18.8% of them indicated that they felt more confidence in the online course.

3.2.1.3 Part Three: Anxiety

The third part of this test deals with third year fundamental chemistry students' anxiety levels. It relies on thirteen (13) close ended questions, two (2) open ended questions and a one (1) dichotomous question with justification.

3.2.1.3.1 Descriptive Statistics

The anxiety scale had 6 elements that were measured following the order strongly disagree to strongly agree. The overall average of the measurements, called the Mean, was a number that fell within a specific range, as shown in (table 3.9).

Table 3.9: Descriptive Statistics of Anxiety Scale

	Mean	Q1	Median	Q3	Std-Dev	Min	Max
Online Semester	4,2067	3,635	4,1154	4,807	0,666	3,23	5,46
On-site Semester	3,9231	3,692	3,8077	4,327	0,14	3	5

Q1: First quartile: One quarter of the population: 25 %

Median: Two quarters of the population: 50%

Q3: Third quartile: Threequarters of the population: 75 %

The analysis of data shows that during the online semester, students were often comfortable and less stressed because the Mean is 'Slightly Agree' that is 4.2. Additionally, most students (75%) tended to agree moderately, as shown by the third quartile (Q3=4.8). However, during the on-site semester, there is no significant difference in how anxious students felt compared to the online semester. This is because the average level of anxiety, Mean, is 'Slightly Agree' and 75% of students also reported feeling 'Slightly Agree' in terms of anxiety. Hence, the gap between the two Means is 0.284, which did not appear to be a significant difference. So, the t-test would be used to check the difference.

The standard deviation is found to be small if compared to both Means, the online Mean is 4.2067 and the on-site Mean is 3.9231. As a result, the levels of anxiety felt between the respondents show that the sample's anxiety was the same and consistent whether they study online or on-site.

3.2.1.3.2 Statistical Tests Results

The results of three tests were included in the statistical tests results in which we checked if the data met the criteria needed for the Wilcoxon test and the student t-test by using the Shapiro-Wilk test. Next, we compared the anxiety parts of the two environments by analysing the outcomes of the Wilcoxon test for each item on the anxiety scale. Lastly, a t-test is conducted to compare the overall level of anxiety.

a. Normality Test

Because the t-test needed a normal distribution of the data subject, the normality test is done via the Shapiro-Wilk test. It can be used when the sample size is smaller than 30, which is the case for the current population. The findings are displayed in table 3.10.

Table 3.10: Normality Test for Anxiety Scale

	Shapiro-Wilk test	
	S-W statistic	p-value
Online Semester	0,956	0,596
On-site Semester	0,931	0,254

The normality test shows that the p-value is higher than the 5% (0.05) significant level in both tests. Thus, anxiety is equally spread out in both classes.

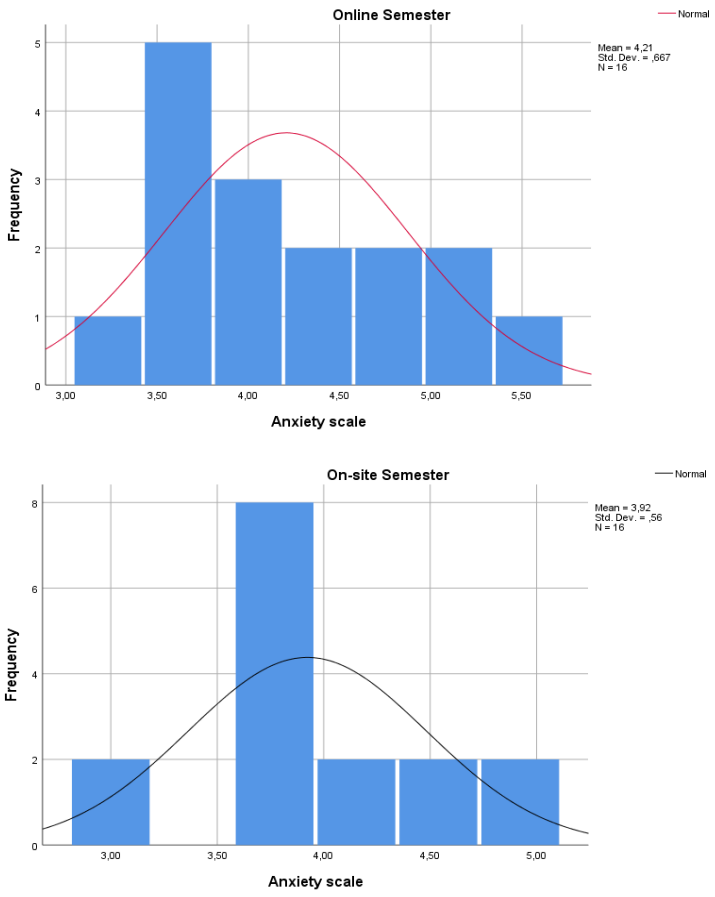


Figure 3.3: Histogram of Anxiety Scale

The results mentioned earlier were also backed up by a graph that showed the similarity of both semesters (figure 3.3). It showed a balanced distribution with the average value in the middle. Consequently, the amount of anxiety students felt in the online semester is the same as the amount of anxiety they felt in the on-site classroom.

b. Tests for Each Item of Anxiety Scale

Wilcoxon signed rank test for paired samples is a useful statistical test. It allowed the comparison of each item of anxiety online and on-site separately. (Table 3.11)

Table 3.11: Wilcoxon Test Results for Each Item of Anxiety Scale

	Online vs On-site		Decision
	W-statistic	p-value (One-tailed test)	
Item1	-0,995	0,16	No difference
Item2	- 0,945	0,172	No difference
Item3	-2,603	0,0045	Online
Item4	-1,724	0,0425	Online
Item5	-0,392	0,3475	No difference
Item6	-1,835	0,033	Online
Item7	-0,669	0,2515	No difference
Item8	-0,933	0,1755	No difference
Item9	-2,374	0,009	Online
Item10	-0,464	0,3215	No difference
Item11	-0,221	0,4125	No difference
Item12	-2,349	0,0095	Online
Item13	-2,172	0,015	Online

No difference: the null hypothesis is accepted

Online: the null hypothesis is rejected at 5% level of significance

As table 3.11 indicates, there is no significant difference in students' level of anxiety regarding the elements: 1, 2, 5, 7, 8, 10 and 11, whilst for elements: 3, 4, 6, 9, 12 and 13 the results show that students were more comfortable and less anxious when learning virtually if compared to the classroom at a significant level of 5% (0.05). Indeed, this is confirmed by the open-ended question which searched for the aspects that made them calm including their ability to control most of their learning aspects: suitable timing for each one, any location, even in France for those who got a scholarship. Besides, the ability to control the speed of the course depending on each learner understanding abilities. Moreover, avoiding of embarrassment using comments. Finally, students found it relaxing to study at home, which was described as calm and secure, which made it less stress-provoking environment. These findings are further supported by the last open-ended question in AT1 (See appendix 01) which revealed that 81.25 % of them had a positive attitude toward being taught online in the future.

c. T-test

The results of the t-test are shown in table 3.12. Indeed, the p-value probability value is 0.109. Hence, the null hypothesis is accepted.

Table 3.12: Paired T-test Results

	Mean	Std.dev	95% Confidence Interval		t-statistic	Df	p-value (One-tailed)
			Lower	Upper			
Mean Difference	0,28365	0,88231	-0,1865	0,75381	1,286	15	0,109

Therefore, the difference between the two Men has no significant difference at the level of 5% (0.05). Consequently, the learning method had no effect on the level of anxiety either in the on-site class or in the online one. Moreover, the last open-ended question of (AT2), selecting the least anxiety provoking environment, proved the same results in which the highest selection was, 31.25%, for those who believed that both classes were equally stress provoking environments. However, 25% considered that none of them was stress provoking. Besides, 25% of them selected the on-site class as

the least anxiety provoking. Whilst, 18.75 % of them selected the online class over the on-site.

3.2.2 Teacher's Diary Analysis

The second research instrument used in the present work is the teacher's diary. It is a non-participant diary written by the teacher while teaching the first semester online. The diary addressed two main objectives. The first one tackled testing the first research question: what is the impact of web-based education on the ESP students' affective filter? In order to cross check data with the gathered results from the two tests, AMTB1 and AMTB2. Besides, its first analysis had been accomplished qualitatively as the teacher summarized the remarks and observations in a daily report (See appendix 3) in order to test whether these strategies affected the students' affective filter positively or negatively.

Besides, the second aim of the diary targeted providing an answer to the second research question that is: How can teachers maintain a low affective filter in web-based education? Thus, the diary served a detailed explanation which displayed the different strategies used by the teacher in the online class to keep the students' affective filter low. Moreover, its analysis relied on describing the teaching experience through the first semester while implementing six main strategies, which are creating a supportive and a motivational e-learning environment, applying the expectancy value theory, relying on a group communication, creating a class where students' individual differences are respected, providing the students with the required technical support in case of any ICT problem and giving a crucial importance to the students' online learning orientation.

Thus, the teacher selected these strategies in order to raise the students' motivation and self-confidence and lower their anxiety levels while learning ESP in the online environment. Furthermore, the second analysis was done qualitatively in order to test the second hypothesis as it included explanations and remarks rather than numbers and percentages regarding the six strategies implemented.

3.2.2.1 Analysis of Section One: Impact of Web-based Education on Students' Affective Filter

The teacher diary was implemented in order to describe and report all significant observations and remarks related to the impact of implementing web-based education on the students' affect mainly, motivation, self-confidence and anxiety. Thus, it aimed at providing an answer to the first research question, which searched for the type of impact received from the web-based on the students' affective filter. As a result, the teacher observed that the web-based had greatly affected the students' three main variables.

3.2.2.1.1 Part One: Motivation

Firstly, web-based learning left a strong positive impact on the participants regarding their motivational levels if compared to the traditional teaching. Indeed, the flexibility of choosing their own course timing was crucial point of strength that differentiated the online from the on-site classes. Students seemed to be more motivated when it came to selecting and managing their own timetables as the e-learning was asynchronous. Conversely, the on-site class imposed a fixed timing organized by the administration which might not suit everybody.

Besides, the availability of both downloading the video courses at any time and the possibility to play the videos once, twice and over again with the ability to control its speed, reinforced the input and bettered their understanding which consequently pushed the students to carry on the online courses with a higher want, inspiration and motivation.

Indeed, the platform provided the instructor with all the needed details about the students' names, their log in, full date of having access to the course, last day of visiting the platform and their progress in each unit. Thus, the teacher assume that students were motivated since they showed interest in the course, they used to be updated with the new lectures and the platform results displayed that most of them attended the lectures within a short period after they were published. (See figure 3.4)

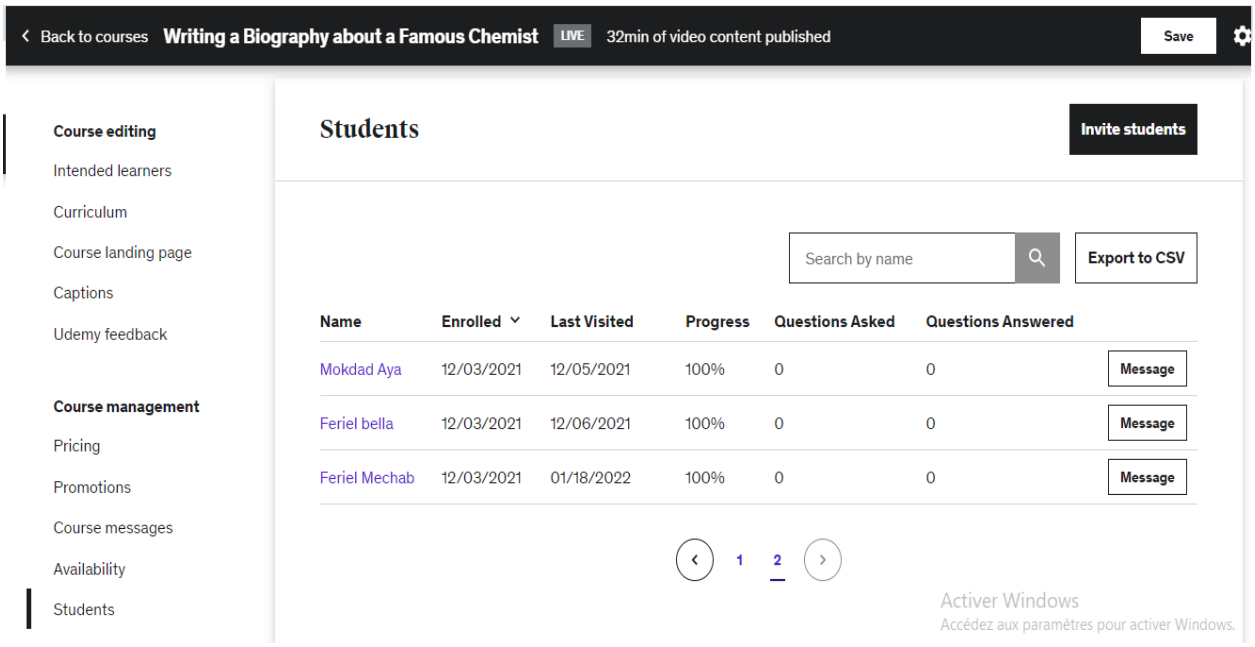


Figure 3.4: Students' Course Progression

Figure 3.4 displayed that at the end of the online semester and before the examination took place the platform statistics showed that all the students succeeded to finish their courses in the required timing, which is also confirmed by the students' course engagement. (See figure 3.5)

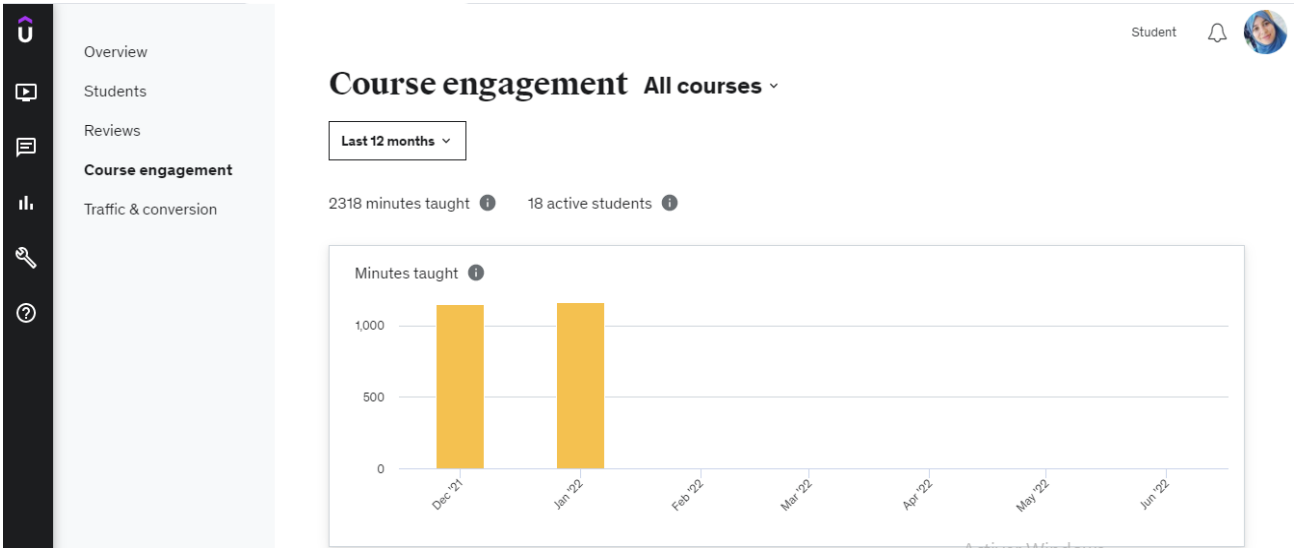


Figure 3.5: Students' Course Engagement

In figure 3.5, the platform has confirmed that all students succeeded to finished their courses, which means that they have the motivation and the willingness to continue their courses before exams take place.

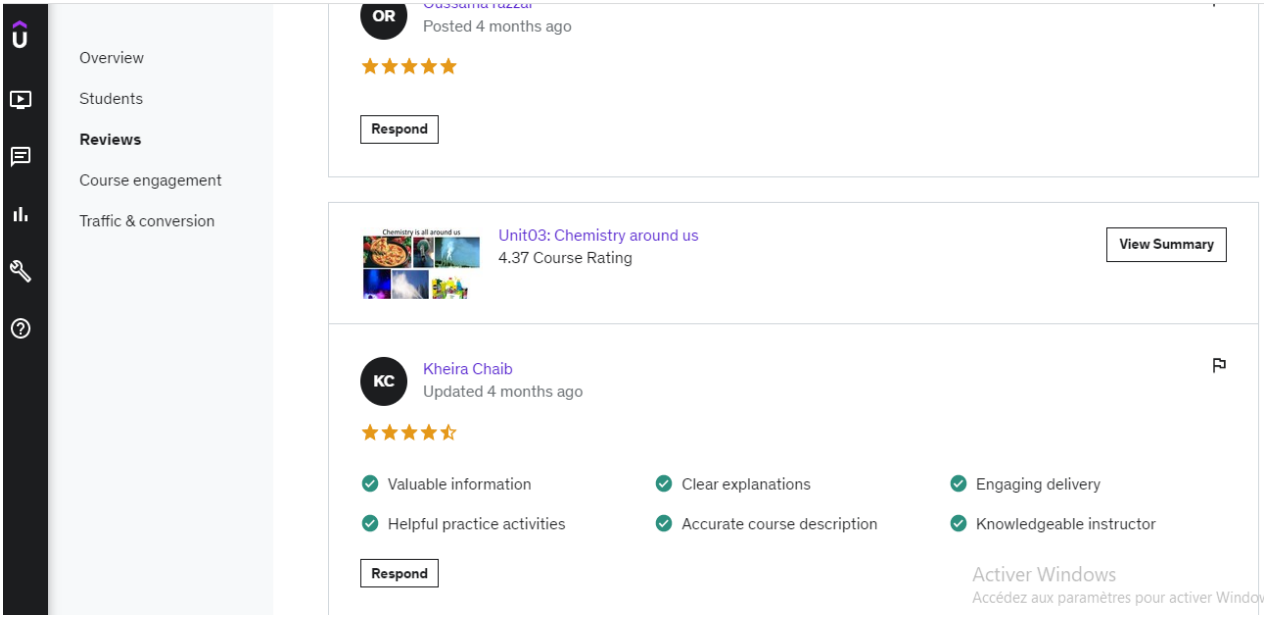


Figure 3.6: Students' Positive Reviews and Reactions

The students' reactions toward the published lectures were considered as positive attitudes where they evaluated their courses from 3 to 5 stars. In addition to that, positive and constructive feedback sent by students to demonstrate their appreciation and motivation toward the e-courses published which is a reflection of their motivational levels and beliefs in regard to the ESP module. (See figure 3.6).

To conclude, the teacher's observations confirmed that the students' motivation in the online class was higher than the on-site as the teacher received all the details from tracking the students via the available options in the platform and recognized that the students managed to attend their courses on time and they finished watching the videos as displayed in details by the platform.

3.2.2.1.2 Part Two: Self-confidence

The aspect of self-confidence was also improved virtually. The teacher noticed that the students were at ease and self-confident while learning online. Indeed, the group discussion took place frequently between the students and between the teacher and the students, especially when a new course was published online. The teacher used to message and update the students each week about the published courses and most of the students were confirming its reception.

Moreover, the participants received notifications from Udemy whenever there were updates. In fact, the teacher informed the students that they cannot send questions using Udemy since it was not an open option in the free courses. Consequently, the

teacher suggested another free, available and practical way that could be used by all students with no exception with the least difficulties that was either sending questions via email or Messenger and all students agreed.

To conclude, the teacher observed that options available on the virtual class including: group communication via Messenger and e-mails to ask questions, the use of various forms, audio, video or text, to learn the course encouraged the students to be more self-confident and less shy, ashamed or embarrassed to participate, ask questions and inquire about repeating the course. Thus, the online class raised the students' self-confidence levels if compared to the on-site one.

3.2.2.1.3 Part Three: Anxiety

Finally, the students' behaviours and reactions in the online learning did not seem to reflect high levels of anxiety. Indeed, the participants were continuously interacting with the teacher and with one another. In addition to that, the students were connected virtually through their daily use of Messenger application. Thus, they felt less provoked and less isolated. Moreover, the students relied on the orientation used in the platform and used in the videos, which was very clear, simple and guiding. Accordingly, the teacher reported that no question was sent in relation to the learning orientation or courses organization.

Additionally, the students were provided with guidance on how to use the platform and how to create an account at the very beginning of the semester. Besides, the participants were informed that any technical help and guidance would be provided within short hours after e-mailing the teacher. Consequently, the students felt less worried and relaxed when it came to the ICTs knowledge and usage due to the presence of a support. Indeed, the teacher reported that three students from sixteen faced technical problems at the beginning of the semester with their e-mails and platform access. Hence, the teacher intervened and fixed their issues in due time not to provoke their anxiety.

In conclusion, the students were anxious in the traditional classroom more than the online one as they had to respect the timetable imposed by the university administration. Conversely, they were less anxious about being limited with both the courses arrangement and punctuality. Besides, the technical support available by the teacher raised the students' comfort in the online class and allowed them to trust the

teacher's support in case of technical problems. The participants did not suffer from isolation, which is a common psychological state that might be felt when learning online, because the teacher relied on a daily used social media for communication that lowered this feeling and allowed them to stay tuned with their courses. Furthermore, the most useful characteristics of Udemy was allowing the courses to be accessed and downloaded via its application in mobiles or accessibility through web made it easy and simple with less stress and nerve.

3.2.2.2 Analysis of Section Two: Maintaining a Low Affective Filter in Web-based Education

The second section of the diary analysis relied on revealing the six implemented strategies that worked for a better affective filter and enhanced the students' psychology when learning online through Udemy platform. Indeed, the six strategies, which lowered the students' affective filter were divided into three main categories where each one included two strategies. Thus, two main strategies were used for higher levels of motivation. Other two strategies targeted elevated levels of self-confidence. Finally, the teacher implemented two strategies to lower the participants' anxiety and stress in the virtual classroom.

3.2.2.2.1 Part One: Motivation

First, the two implemented strategies that targeted a higher motivation were the teacher's creation of a supportive online classroom full of enthusiasm, encouragements and well-being and the implicit application of the expectancy value theory. The former technique relied on the use of verbal and non-verbal communication, which affected greatly the students' power, willingness and driving want to invest more and study harder. In fact, the students had access to some motivational videos available in the platform joined with the course materials and they enjoyed them and considered them as sources of inspiration. Thus, the teacher observed the positive impact of these YouTube educational videos in English on the students' affective filter, mainly motivation. Secondly, the teacher observed that the students were paying attention to the use motivational quotes, which affected positively their motivational levels.

The second strategy, the application of the expectancy value theory, was applied without the students' awareness where the teacher used the continuous encouragements

and inspirations to affect the students' inner mind subconsciously with the beliefs of the ability to succeed and their minds capacities strength. The teacher also emphasized to spread the beliefs of expecting great results from her students once they invest in the ESP course, which was described as valuable to their specialty. As an illustration, the teacher started the courses by welcoming students and emphasizing on the simplicity of the course joined with the expectancies toward reaching the course objectives mentioned in each course. Thus, the students received the idea that the teacher was waiting and expecting acceptable, good and satisfactory results from them. Thus, they were informed and pushed to invest efforts and time to meet these expectancies and gain the value of the ESP module.

3.2.2.2.2 Part Two: Self-confidence

The second strategy implemented for a better self-confidence among the participants was the attention devoted to students' individual differences. Indeed, the students were asked in the NIA questionnaire about their preferred learning method and style. Thus, the teacher received four main different answers regarding these students' learning styles. The first category of students were visual students, those who prefer learning via the use of handouts or pictures. The second ones were auditory students, those who rely on their listening skill to learn better. Kinaesthetic students those who learn by physical activities. Finally, flexible students, who enjoy different skills and adapt quickly to any style of learning.

Indeed, the possibility of respecting and considering every student learning style was not possible in the traditional classroom as the whole class included different styles and the teacher could choose only one way, which might not suit every student and this option hindered and made their self-confidence lower and they might lose both of their interest and self-confidence.

Conversely, the online class promoted the students' individual differences and allowed them to study according to their learning style that enabled them to feel motivated and much self-confident as they better managed their learning and in their preferred way. The teacher spotted that the students were aware of their learning styles. All of them watched the videos. Most of them downloaded the lecture via the available

pdf or Word format joined with it. Thus, the population was considered to vary from visual, auditory to flexible students.

Then, creating a group communication allowed the students to keep high self-confidence in the online semester. As the platform did not offer the messages between the teacher and students for free, the teacher opted for the application of Messenger as it was practical and useful. Therefore, if the teacher succeeded in integrating learning in this daily life social media, they would be reminded of their courses continuously and less isolation would be felt by students.

As a result, the teacher observed that through the use of Messenger, students seemed to be less fearful, less stressed and updated and knowledgeable about their lectures. Most of the students were frequently interacting with one another and with the teacher once a lecture is published. More importantly, the teacher noticed that these students most of the time replied via this application, Messenger, within the 24 hours after her messages were sent as they were always online and available on Messenger.

In addition to that, the teacher discovered that some shy students, who were not participating in the on-site classroom and stayed quiet, acted differently in the online classroom especially in the group discussion. They sent messages, expressed their views, reacted to other students' messages and asked questions while being less timid, nervous or unsure.

To conclude, the students highly appreciated the freedom of selecting their own learning method without the feeling of being forced to follow the teacher's selected style, which may not suit every student in the class. Besides, the teacher observed that students benefited from group discussion as the shy students felt less hesitant and less self-doubting in the online class, using the keyboards and vocal messages. They took advantage from communication through this social media, to be at ease and confident when using texts and messages over the traditional classroom oral interaction. Hence, the teacher insisted on their connectivity and the role of group work discussion in order to build higher levels of self-confidence among the group members.

3.2.2.2.3 Part Three: Anxiety

Maintaining low levels of anxiety in the online classroom was possible through relying on both sharing the learning process details with the students, that was providing

a learning orientation, and providing them with the presence of technical support in case of technical problems or difficulties. Indeed, these two main strategies were observed to be crucial in reducing their levels of being disquiet and uncomfortable when learning virtually.

Orienting the students at the beginning of the semester with all the details needed for the whole e-learning was applied. Indeed, the students gathered knowledge and information about firstly, the platform usage. On-site sessions were devoted to a trial of how a student can log in and access the first course. The teacher simplified the steps and students had the chance to access their courses with the least difficulties. Hence, the teacher observed that the students felt at ease due to the simplicity and clarity of the platform. Only three students from the whole population asked for help to fix their Gmail accounts as Udemy required from students to login via Gmail.

Secondly, the students were also informed about the online learning organization and the details related to it such as: course frequency, once per week, receiving notifications for the new published courses, simple and clear displaying of the syllabus and numbering the courses helped students to feel less stressed about the coming step and next course content, timing, accessibility and arrangements were key aspects to reduce the learning anxiety. Thirdly, students were always reminded via a recall at the beginning of each video about the number, aim and coming course to clarify the learning progression and allow them to locate themselves in the syllabus clearly.

The students seemed to be less worried about the online technical problems and the common virtual difficulties since the teacher emphasized on help, guidance and availability in the virtual class at any time. In addition to that, a Messenger group was created as a way to communicate in case of problem. Besides, students were given the teacher's Gmail to keep in touch and find help when needed. Accordingly, the students showed trust and focused on the learning itself rather than possible problems that might be encountered. The teacher observed that a minority of students faced some technical problems at the two first online sessions then, no complaining was sent regarding technical problems. Thus, the teacher figured out that her students were focusing on the learning and technical problems did not provoke their anxiety.

To conclude, devoting efforts and time to both direct the students, orientate them in the e-learning and showing them the presence of assistance in case of problems, difficulties or hindrances promoted their inner peace and reflected their easiness while learning, which worked for a better understanding and a higher comprehensible input that is the targeted objective from these implications and recommendations.

3.3 Discussion of the Main Results

The section of discussing the main results aims at discussing the overall results of the study. The latter is possible via revealing the findings related to both: hypothesis one and hypothesis two. Firstly, the main results of first hypothesis included the discussion of descriptive statistics, statistical test results of the three variables, which are motivation, self-confidence and anxiety. In addition to the qualitative results gathered via the diary. Hence, providing an answer to the three sub-hypotheses of the first research question is achievable. Secondly, the main findings from the second research tool, the teacher's diary, that was reviewed qualitatively and summarized in order to prove or reject the second hypothesis.

3.3.1 Hypothesis One

The main objective of the first hypothesis is to investigate the impact of web-based education on third year chemistry students' affective filter. Accordingly, it is hypothesized that: Web-based education lowers students' affective filter. As the first research question has been divided into three main sub-questions, the research relies on three main sub-hypotheses in accordance with the sub-questions in which:

Sub-hypothesis 1: Web-based education raises the ESP students' motivation.

Sub-hypothesis 2: Web-based education raises the ESP students' self-confidence.

Sub-hypothesis 3: Web-based education lowers the ESP students' anxiety.

The first sub-hypothesis is related to the first variable discussed by the affective filter of Krashen's hypothesis that is motivation. So as to confirm or reject the H1 and H0, we relied on the findings of both descriptive statistics and statistical test results gathered from both Motivation Test 1, (MT1), and Motivation Test 2 (MT2). On the one hand, the descriptive statistics showed that the students were more motivated virtually if compared to the traditional learning. Similarly, the second type of analysis results

confirm the same results. Hence, the students benefited from high levels of motivation in the online class over the on-site one.

In regard to the qualitative findings gathered from the teacher's diary, the students' motivation in the online class was higher than the on-site one. Similarly with the quantitative findings of the two test, first research tool, the first research hypothesis, web-based education raises the ESP students' motivation, is accepted and proved.

The second sub-hypothesis of the first research question examines self-confidence variable in the online and on-site classes. It aims at revealing the environment that increases the students' self-confidence while learning ESP. Therefore, it is hypothesized that: Web-based education raises the ESP students' self-confidence. In order to test the second sub-hypothesis, the findings of both descriptive statistics, statistical test results joined with the diary are the main proofs. Indeed, both quantitative results, the descriptive statistics and the statistical test results, implied that there is no significant difference between the students' levels of self-confidence when learning via the web-based education or in the traditional classroom.

Conversely with the qualitative analysis of the diary that indicate that the students' self-confidence is considered higher in the online class to the traditional one thanks to the variety of learning styles in Udemy and due to the use of group communication via Messenger. Thus, the findings of the dairy prove that it is true that web-based education raises the ESP students' self-confidence.

The third sub-question embodies the variable of anxiety. It examines the students' levels of anxiety in the online sessions and the on-site ones. This sub-hypothesis searched for the least anxiety provoking class where ESP students experience low levels of stress while learning. Hence, the third sub-hypothesis says that: Web-based education lowers the ESP students' anxiety.

The descriptive statistics, statistical tests results and the diary were used in order to check the correctness of the third sub-hypothesis. In fact, the statistics of the descriptive section and the t-test results denoted that the levels of anxiety were very low in both classes. In regard to the findings of the diary, the way of delivering the course online was less stress provoking if compared to the on-site one. The teacher observed that the students' levels of anxiety were lower in the virtual classroom.

To conclude, the first hypothesis is considered as true and correct because its associated sub-hypotheses are proved. Indeed, the first sub-hypothesis is correct based on the discussed results gathered from both types of analysis related to the variable of motivation and the findings of the diary. Thus, we deduce that the online classroom raises the students' motivation levels better than the on-site one. In the lights of the overall findings of the second sub-hypothesis, both statistics of the self-confidence variable implied no significant difference between the two classrooms. However, if these results are supported by the teacher's diary findings, the online classroom worked for higher levels for ESP students. Hence, the students' levels of self-confidence via web-based education are higher than the on-site classroom. For the third sub-hypothesis, the analyses implied that the students' levels of anxiety were low in both classrooms, but the results of the diary found that web-based education lowers the ESP students' anxiety. As a result, it is concluded that web-based education was the least anxiety provoking learning environment for ESP students.

3.3.2 Hypothesis Two

The second hypothesis of the current work denotes that: Teachers can maintain low affective filter in the online classroom via implementing different strategies that target higher motivation and self-confidence and low anxiety. The overall results gathered from the main analysis of the diary include three main implications, which are in accordance with the affective filter variables. Thus, the variable of motivation was raised through two main strategies. For the self-confidence levels, the students benefited from two main implications to increase their self-esteem in the virtual class. Finally, pushing students to be less anxious was possible via two main techniques implemented in the e-learning.

In regard to the findings of the diary in relation to the students' motivation, it was found that the motivation increased via the implication of both: creating a supportive and a motivational e-learning environment where the teacher focused on the use of adding motivational quotes, educational videos and verbal and non-verbal communication. Besides, applying the expectancy value theory as a second technique to raise the students' motivation was effective as the teacher raised positive, energetic and valuable thoughts in the students' minds to be turned into beliefs and then into actions.

For self-confidence levels, both of group communication and respecting the students' individual differences were considered as practical. Students felt less isolated, less lost and better engaged in the learning though it was a distance learning. Indeed, the selection of Messenger for group communication succeeded to affect positively and highly these students' levels of self-confidence. Moreover, they benefited from the advantageous options and choices available in the e-learning such as learning via video, audio, text or mixing all the methods with various options of speed varying from too slow, slow, medium, fast to very fast according to each student learning ability and capacity, which was not applicable in the traditional classroom. Therefore, the e-classroom is considered as better in regard to the self-confidence variable if compared to the on-site.

Considering low levels of anxiety in the online classroom was possible via implementing these two strategies: providing students with technical support and orienting them in their learning. Indeed, students felt less anxious once informed about the teacher's availability for help in case of technical problems. Hence, they avoided stressing about the online learning known problems such as low internet, lack of materials or knowledge related to ICTs. Besides, once the teacher clarified and displayed explicitly all the required and important details related to the e-learning, students' nerves were released as the next steps and courses were clearly defined and they could build an idea about their progress. Indeed, these strategies enabled the students to control their anxiety and stress, which hinder the learning process.

To conclude, the second research hypothesis is correct. Thus, the teacher's diary indicated that the application of these six strategies, creating a supportive and a motivational e-learning environment, applying the value-expectancy theory, group communication and respecting the students' individual differences, providing students with technical support and orienting them in their learning, empowered the comprehensible input in the virtual class and reduced the challenges of the online learning which accordingly, targeted low affective filter that compromises high motivation and self-confidence and low levels of anxiety.

3.4 Conclusion

During this chapter, the researcher undertook the completion of two tests administered to third-year chemistry students at the end of the first and the second semester. Besides, the implementation of a diary study spanning from November to February was the second research tool. The gathered data were analysed quantitatively and qualitatively. Hence, the analysed findings aimed to either confirm or reject the research hypotheses.

In fact, the first tool, the two tests, were analysed quantitatively via the SPSS.V25 in which its results were organized through tables and figures containing both online and on-site classrooms. Then, a precise description under each table was present to provide a further explanation and description of the ideas and information. The analysis of the two tests also relied on two main approaches: descriptive statistics and statistical test results.

The second method analysis was related to the diary analysis. The teacher's diary targeted answering both hypotheses qualitatively. It consisted of gathering observations and notes about the students' psychology and mentioning the researcher's process of implementing the web-based learning through Udemy platform while using the six teaching strategies in order to lower the students' affective filter.

At the end of this chapter, the researcher confirmed the two hypotheses. Hence, web-based learning served a better comprehensible input. Besides, the six online strategies improved the students' affective filter in the virtual class. The next chapter is called implications and recommendations in which the researcher will shed light on the six solutions which improved the students' affective filter in the online class.

CHAPTER FOUR

IMPLICATIONS AND RECOMMENDATIONS

4.1 Introduction

This chapter includes the thesis recommendations and implications. It targets suggesting practical and useful solutions to overcome the online psychological learning difficulties precisely the ones related to, motivation, self-confidence and anxiety, faced by third year chemistry students when learning ESP module virtually, which help in maintaining a low affective filter.

Thus, the chapter first implication targets recommendations for a better online teaching in terms of quality and techniques. The second recommendation pinpoints the implication of the online evaluation as the last step in the teaching process. Therefore, data related to this way of evaluation are displayed including its definition, advantages and disadvantages.

Most importantly, the chapter aims at recommending the most applicable implications that reduced the students' affective filter while learning online. Thus, the third recommendation is divided into three main parts, which are firstly, solutions for maintaining a high motivation in the virtual classroom. Secondly, three suggested strategies to augment the students' self-confidence while learning virtually and from home. Thirdly, the chapter focuses on two other strategies that were used by the teacher in the first semester and targeted lowering the students' anxiety levels. Indeed, each strategy is provided with its definition, usage and advantages.

4.2 Recommendations for Online Teaching

At the end of the academic year 2020-2021, the researcher started reviewing platforms, applications and web pages in order to select the most appropriate one for this doctoral work and which helps third year fundamental chemistry students, the research participants, to study online in the best possible conditions. This research covered three main characteristics related to the platform which are: its price, quality, type of learning used, synchronous or asynchronous, and the context included.

The recommendations shared within the current case study are shaped in three main applications included within the Community of Inquiry proposed

by Garrison, Anderson and Archer (2000). (See figure 4.1). It is defined as "the Community of Inquiry (CoI) model to describe how the interplay between teaching presence, social presence, and cognitive presence are foundational to the development of deep and meaningful educational experiences in online courses" (Dunlap and Lowenthal, p. 81. 2018)

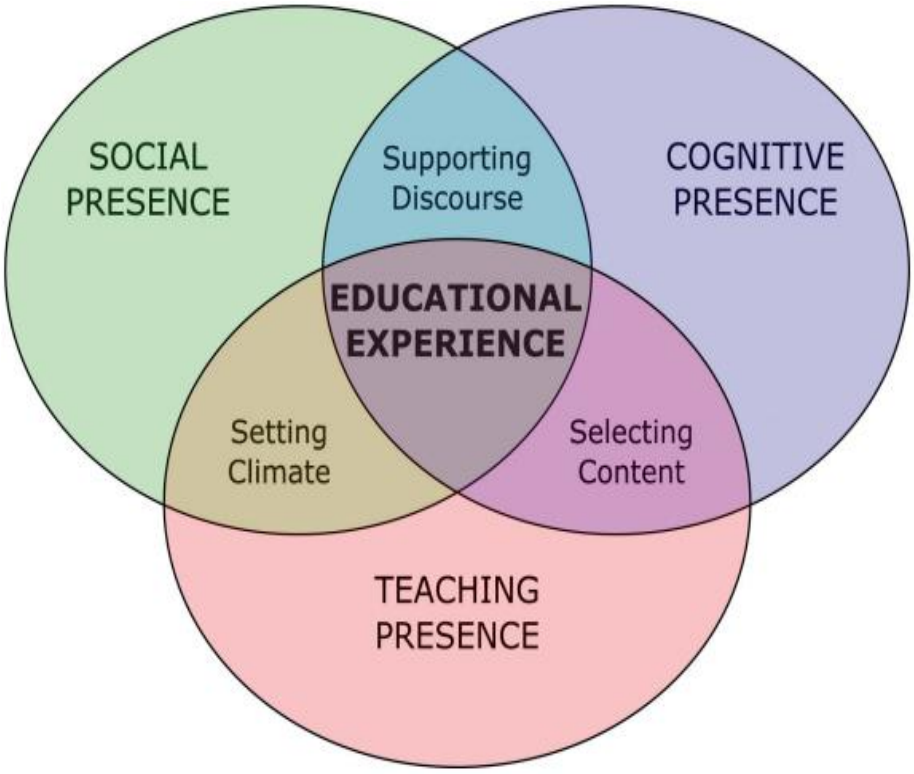


Figure 4.1: The Community of Inquiry (CoI) Model

Adopted from Anderson and Archer, 2000 (As cited in Dunlap and Lowenthal, p. 81. 2018)

Firstly, teaching presence, which is "the decisions educators make regarding the design, direction, and facilitation of social and cognitive-processing interactions in online courses" (Anderson *et al*, 2001 as cited in Dunlap and Lowenthal, p. 81. 2018). Indeed, one concrete illustration included with the teacher presence is the necessity to devote a huge time for the preparation of the online lectures in accordance with the platform requirements. In other words, the teacher is supposed to switch the handout lecture into an e-

lecture that corresponds with the instructions of the platform such as a video format characterized with an x quality, a clear sound, an ethical content and a high-quality video progression. This list of requirements may change and vary from one platform to another. Thus, a great possibility of accepting the first video draft is very weak. Thus, the video lecture might be rejected and the teacher might be asked for a better quality which demands an extra time and work from the designer.

Secondly, the social presence is seen as "social presence involves the connections students and faculty establish in a learning space; social presence is influenced by the quality and quantity of interactions between and among students and faculty, helping all involved to feel more involved and engaged in an online space" (Lowenthal and Dunlap, 2014 as cited in Dunlap and Lowenthal, p. 81. 2018). In other words, though everyone is in different location and maybe different timing, the teacher should connect everyone in the e-class together. This requirement can be possible via the creation of a collective application, which helps to connect every student and manage to keep them up to date within the progression of the lectures. Creating a collective mail or an account on social media, as in the current work, has got a long list of benefits such as: ensuring all the students' awareness of their learning process, avoiding the common problem of the students' loneliness and feeling of being lost, creating a collaborative environment between students who may help each other in case of any difficulties, technical or related to the course context and saving the teacher's time and efforts by connecting to one common application rather than replying to each student individually. As a matter of fact, the outcomes from this implication are mentioned by Chickering and Gamson (1987) "Develops reciprocity and cooperation among students. Uses active learning techniques" (as cited in Dunlap and Lowenthal, p. 79. 2018). The two benefits mentioned by them are considered among the Seven Principles for Good Practice in Undergraduate Education.

Finally, the need of a cognitive presence is shaping the last requirement. In the views of Dunlap, Sobel and Sands (2007), "cognitive presence refers to how students interact with and process the content of a learning experience." (As cited in Dunlap and Lowenthal, p. 79. 2018). Thus, the teacher should work on activities and tasks that fully engage the students in relation to what they have learnt and acquire within the courses. Moreover, the two other requirements of the CoI, teaching presence and social presence, have a great role in affecting the students' cognitive presence. For instance, the teacher's selection of a convent content for the students will improve their cognition. Besides, the students' social presence level will be reflected on their cognitive level shaping the supporting discourse. (See figure 4.1).

4.3 Recommendations for Online Evaluation

"With online exams we mean examinations conducted on a computer which is connected to a network (intranet or Internet) – in contrast to "offline exams". (Halbherr *et al*. 2014, p.1). In other words, the concept of e-assessment refers to the exams and tests that take place via online tools, platforms and web pages. According to Halbherr *et al.* (2014), there are various forms of online tasks, which can be included in the e-assessment for instance: "multiple-choice questions, essay writing, designing a machine part with CAD software, conducting a literature review using online academic databases - or anything else imaginable and technologically feasible".

According to Shraim, (2018, p.185) "online examinations, commonly known as electronic examinations (e-exams) and previously as computer-based assessment". Accordingly, virtual tests and examinations are the ones, which take place via various online testing tools such as Exam.net, Microsoft Teams and Testmoz. Indeed, these platforms were used by Adam *et al.* (2022, p.180) where they added "these platforms were found to be suitable to fulfil our assessment requirements with their enhanced security features and user-friendliness".

Among the recommended techniques for a reliable online testing there are three main related aspects that require collaboration. First, the designers of the e-exams should develop a sense of awareness related to web pages and programs and informatics. Indeed, Rizwana and Oveesa (2020, p.19) added, "teachers must be skilled in the applications of various advanced software and assessment tools." Another possibility is to consult assistance from a technician and learn from him/her accordingly because "tolerance of technological failure is very low and the reliability of all systems involved is therefore of paramount importance." (Halbherr *et al*. 2014, p.5).

Then, collaboration between teachers to design a reliable online testing is highly required for a quality e-assessment. Thus, different views and observations from various angles can enrich and better the assessment. Finally, moving from the teacher to the collaboration between teachers to the third position support, which is the largest, the institution. In fact, it is the university's responsibility to provide students in need of computers or internet access is being among the crux principles of e-assessment reviewed by McCracken, Cho, Sharif, Wilson and Miller (2012 as cited in De Villiers *et al*. 2016). Besides, Doğan *et al.* (2020, p.4) believe that the institution role is very important in the e-assessment where it "should provide easily accessible technical support, and instructors and students should be informed about what to do, how to get help, and from whom they can get help when certain problems arise."

4.3.1 Testmoz

According to Shraim, (2018.p.185) "online examinations, commonly known as electronic examinations (e-exams) and previously as computer-based assessment". Accordingly, virtual tests and examinations are the ones, which takes place via various online testing tools such as Exam.net, Microsoft Teams and Testmoz. Indeed, these platforms were used by Adam *et al*, 2022 where they added "these platforms were found to be suitable to fulfil our assessment requirements with their enhanced security features and user-friendliness" (P.180)

In the current memoir, the participants have experienced online tests through Testmoz. The students' number, sixteen, allowed the teacher to conduct the first semester summative assessment that is the e-exam in the informatics lab of at Djillali Liabes University of Sidi Bel Abbes. Moreover, the researcher ensured that all students have computers and a good internet access to Testmoz page at the same time. Indeed, Rizwana and Oveesa recommended it as very essential in which they said (2020.p.19) "fast and stable internet and advanced versions of online classroom platforms are necessarily required to run any online teaching and exam successfully".

For the two students, who got a scholarship to France in the first semester, they could easily log in the Testmoz web page and have their e-exam at the same time with their classmates and with the least difficulties. Similarly, Shraim's study shares the same procedures to ensure the exam's security "online exams are undertaken in fixed computer teaching labs on the PTUK campus. Such labs are normally restricted to 30 learners in a room, the number of labs is limited and the room layout is often not suitable for high-stakes exams." (2018.p.186). Another possible way is suggested by Rizwana and Oveesa's research in which "it is better to have synchronous exams in order to justify the level of students honestly. Giving one minute for one multiple choice question will suffice for an online exam and there will be no room for cheating." (2020.p.19)

As there exist different applications and web pages for the e-learning, there are a lot of tools that serve the online testing such as Polls-everywhere, Edmodo, Edpuzzle, Testmoz and Rubistar (Sangle *et al*. 2020.p.131). Indeed, they consider Testmoz as a free online assessment. It is secure and confidential because it requires from the user to set a specific code to be shared only with those who are going to be assessed. It can be defined as a very useful e-assessment tool since once students submit their work, a detailed report that

scores the tests is sent to the designer where all students' details are included and in a very short time.

According to Phuong and Ha (2022.p.14), Testmoz is defined as "an automatically graded test platform." In the views of Testmoz official web page, this free online testing tools is not limited to teachers, but trainers and employers can access it too in order to test their workers and employees virtual in a short time if compared to the traditional tests. Besides, they describe it as very simple in three steps which are highlighted in the below figure as displayed in Testmoz home page.

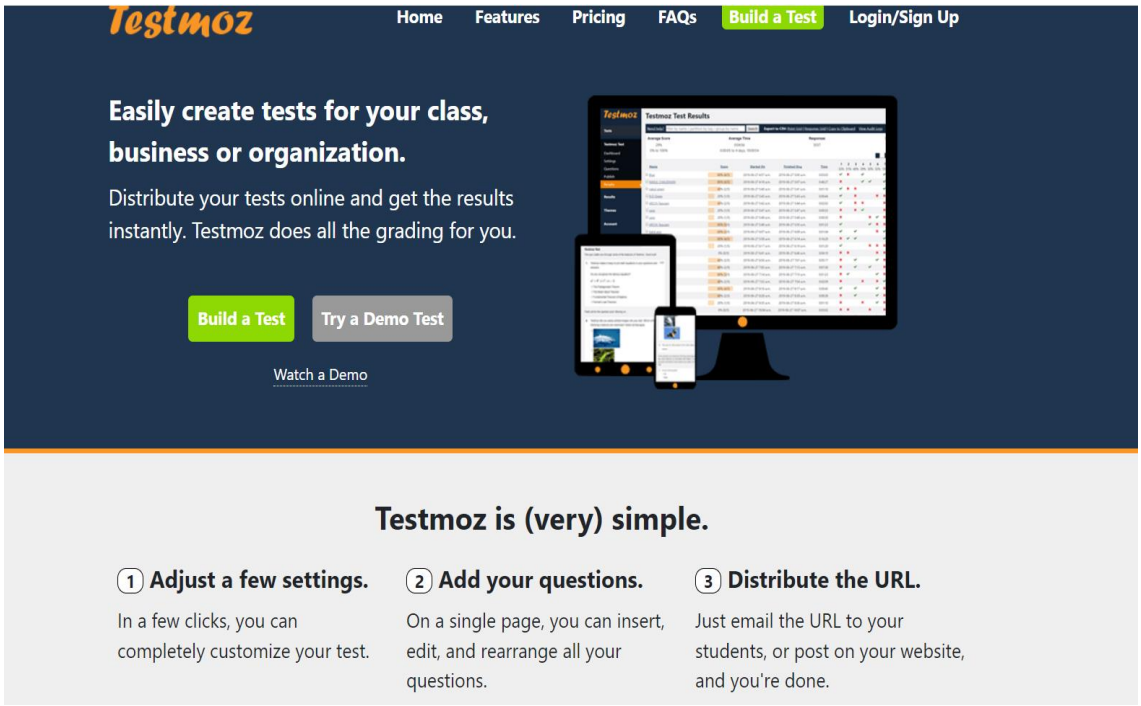


Figure 4.2: Testmoz Home Page

4.3.2 Usage

When it comes to Testmoz usage by teachers, students or employers, it is very simple process whether for teachers or employers who are the designers or the students who are the test takers. Following the instructions displayed in its home page is the key to succeed in both processes. Hence, the following paragraphs illustrate in details the procedures of designing an online testing and the process of how a student can take it online.

4.3.2.1 Teachers' Usage

Designing an online testing via Testmoz is very easy and practical. It does not require high skills of digital tools or a demanding ICT knowledge because of its simplicity and explicit instructions. Hence, following these steps enables teachers or users to create an online testing in a short time with the least difficulties.

Step One: Google Testmoz official web page or type its link: https://testmoz.com.

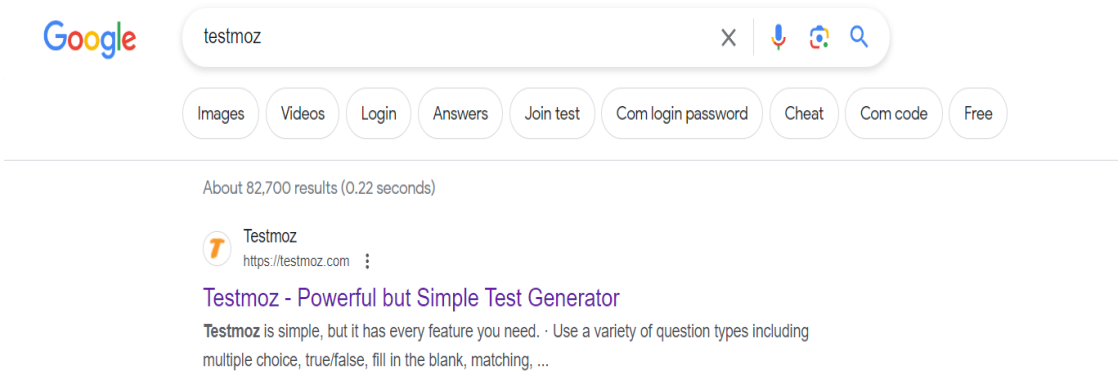


Figure 4.3: Testmoz Official Web-Page

Step Two: Click on build a test, the green icon, found in its homepage.

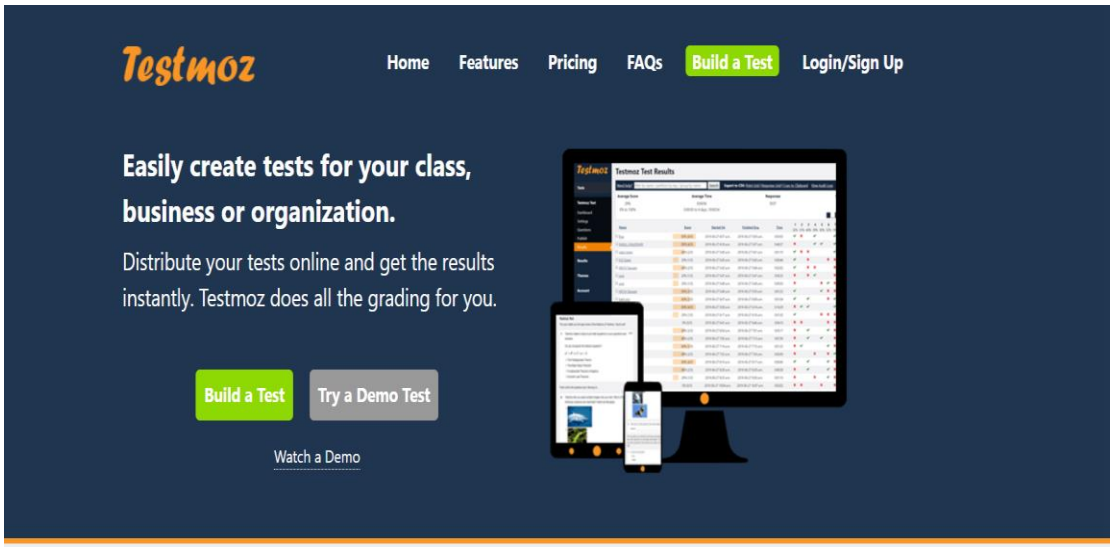


Figure 4.4: Build a Test via Testmoz

Step Three: Choose a title and a password and click create test. The account is ready.

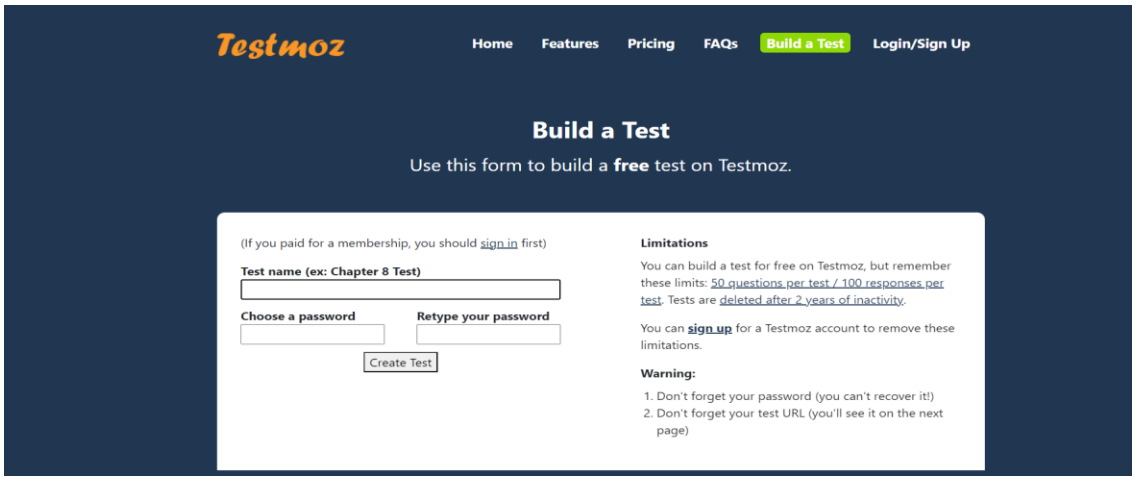


Figure 4.5: Testmoz Account

Step Four: This is your account home page where all options are displayed and steps are numbered. The first option, adjust settings, allows users to edit their details such as basic settings, questions settings, review settings, access control, browser functionality and notifications. Then, the second one enables the designers to add the test's questions. The third option is devoted for publishing and distributing the results. Finally, the last step shows all the details and answers of test takers in details. It is called view results. (See figure 4.6).

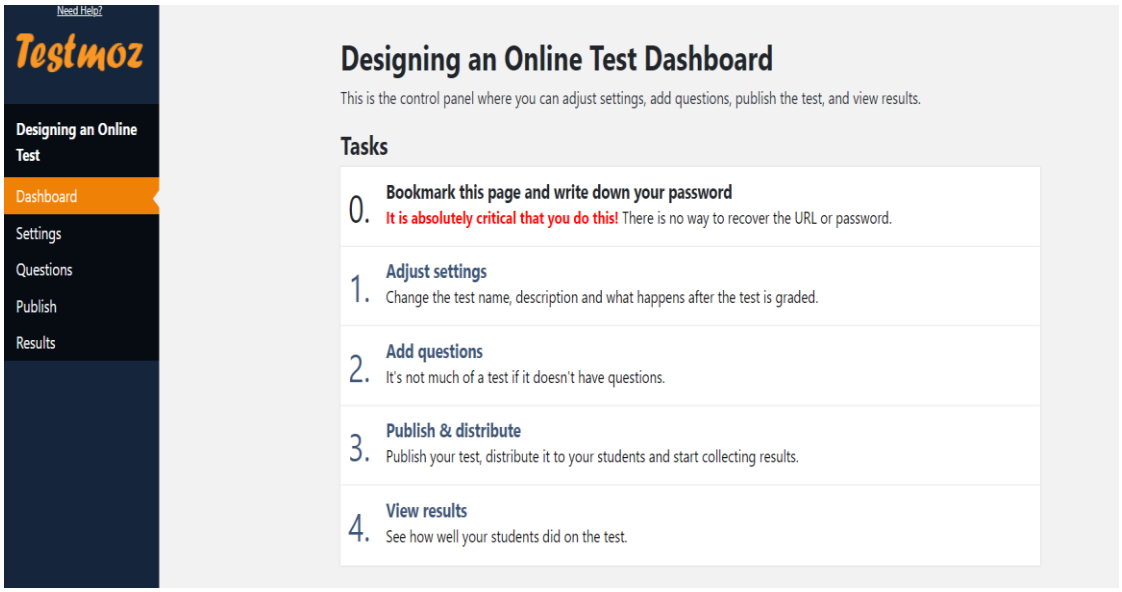


Figure 4.6: Designing an Online Test Dashboard

Step Five: Once the settings and the test appearance are done. Click on step 2. Adding questions. Testmoz provides different of types of questions as graded with 9 types, ungraded 7, and other 5 types of questions users can accomplish. Once the questions are written, they are saved automatically.

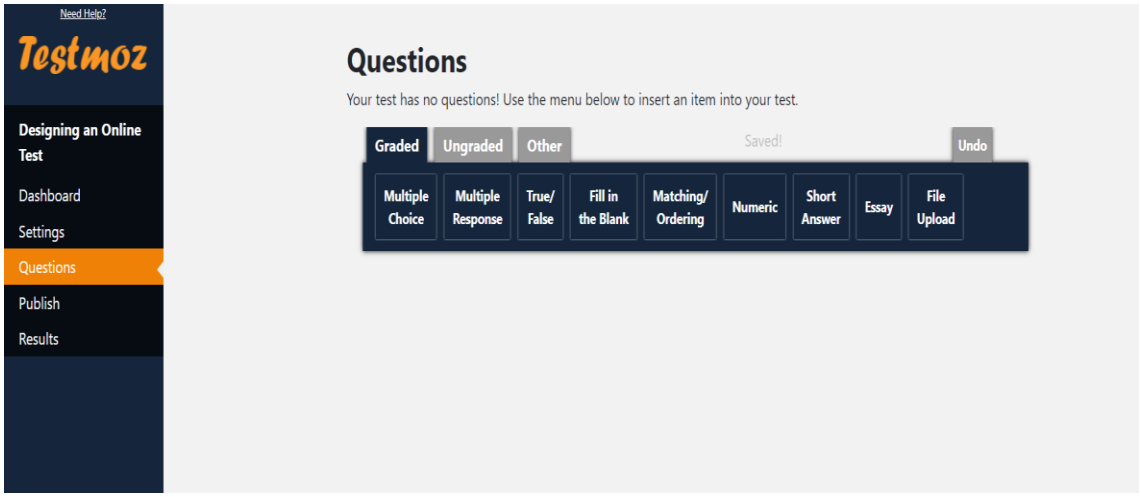


Figure 4.7: Testmoz Questions

Step Six: the below figure is the researcher's Testmoz account in the section of Publishing results. This section enables the results to be published in the browse, printed or download. (See figure 4.8).

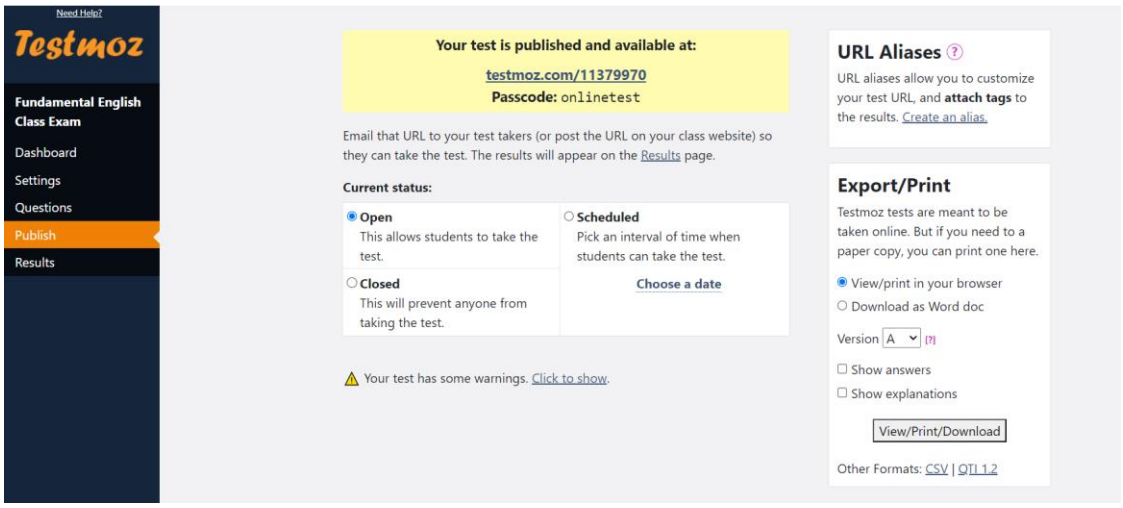


Figure 4.8: Publishing Online Tests

Step Seven: Once you click on results, automatically detailed results are shown in a very organized way. It counts the average score, average time,

number of gathered responses and score histogram at the top of the page. In fact, the teacher has checked the results section the same time the students finished their test. Thus, it saves a huge time and provides unlimited details. Testmoz results' section also shows the names of students joined with their scores, the time they started and finished and the consumed time in the test. Besides, the test questions are displayed in form of number with their percentages. More importantly, with one click the teacher can print or send the results via mail to all promotion. There is also the option of re-grade questions where the teacher can edit and reset the question's mark. (See figure 4.9).

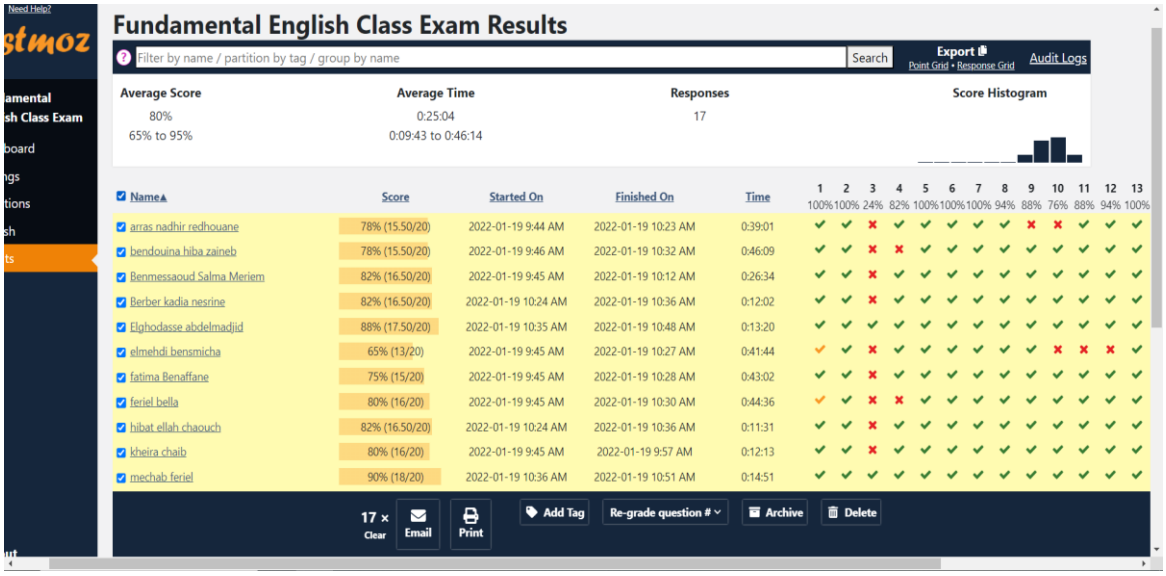


Figure 4.9: Testmoz Results Display

4.3.2.2 Students Usage

In the current work practical part, the research's participants experienced the online testing for the first time and no problem was reported as these simple four main steps were sent to them via email to be followed and it has been a successful experience. The below figures are taken from the researcher's test done in the practical work with the sample population. Indeed, it has all criteria needed in an online assessment and mentioned by Buzzetto-More *et al* (2006. P.257)

• An introduction that provides a narrative and background information.

• A task that is meaningful, realistic, and interesting.

• A set of resources needed to complete the task.

• A clear description of the process or steps for accomplishing the task.

• Some guiding questions or directions on how to organize the information acquired. Templates, timelines, concept maps, or cause-and-effect diagrams as described may also be included.

• An evaluation section that explains how performance will be assessed.

• A conclusion that brings closure and reminds learners about what they have gained.

Step One: Type the link https://testmoz.com/11379970 in order to reach the home page of the test.

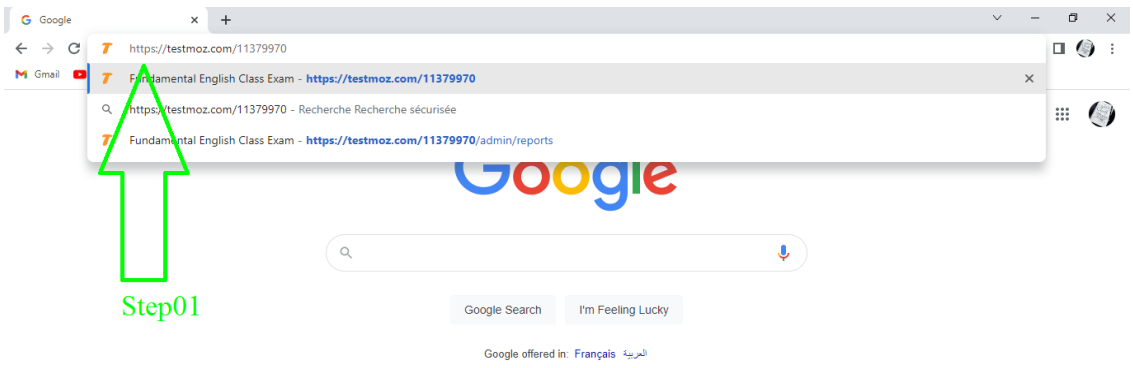


Figure 4.10: Test Link

Step Two: Choose student Login. Enter your full name and the given password and click start.

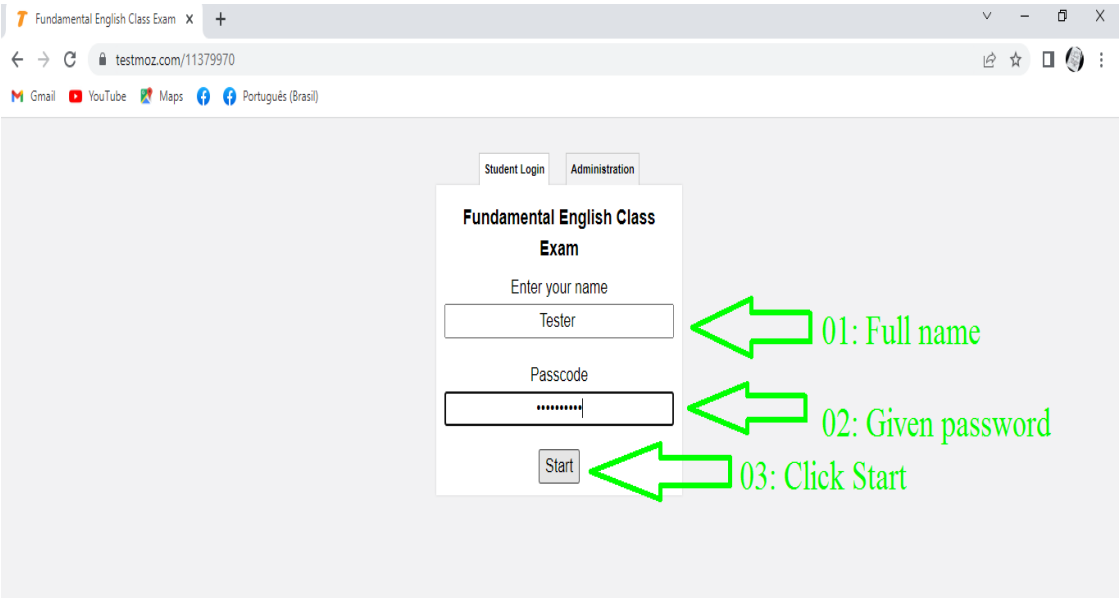


Figure 4.11: Test Account Information

Step Three: Once you clicked start, you will find the test home page where an introductory sentence is displayed with all needed information about the tasks' number, questions, scoring and timing are explicitly mentioned.

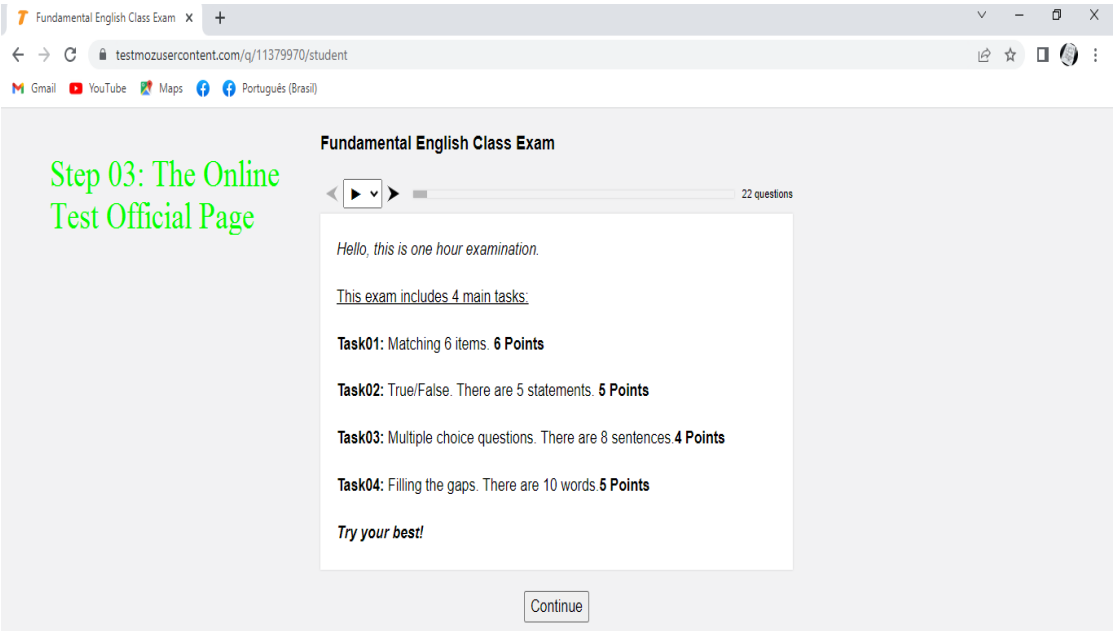


Figure 4.12: Online Test Official Page

Step Four: Once you click continue, the first question from 22 questions will appear. The student has the option of choosing another one or answering the displayed question and clicking submit ones finished. At the bottom of the page, the timing left is presented.

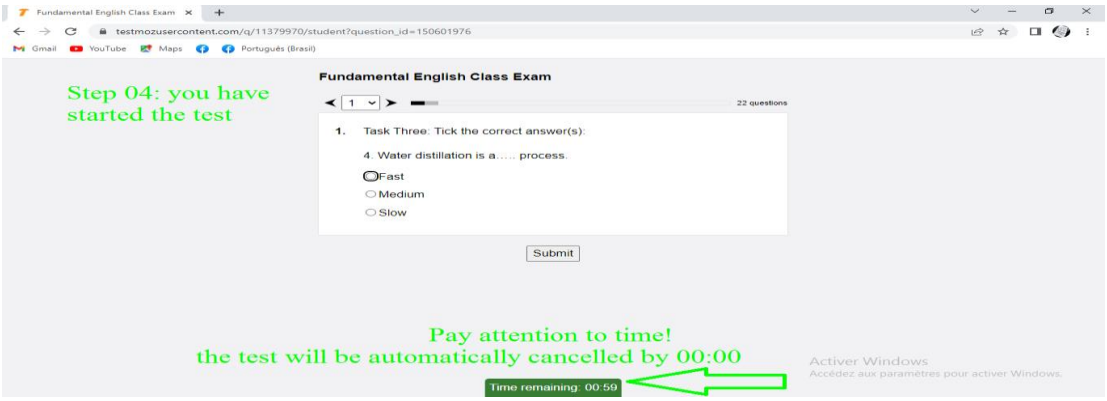


Figure 4.13: Online Test Details for Students

Step Five: Once the student finishes all questions and they click on the last submit, the test closing will appear.

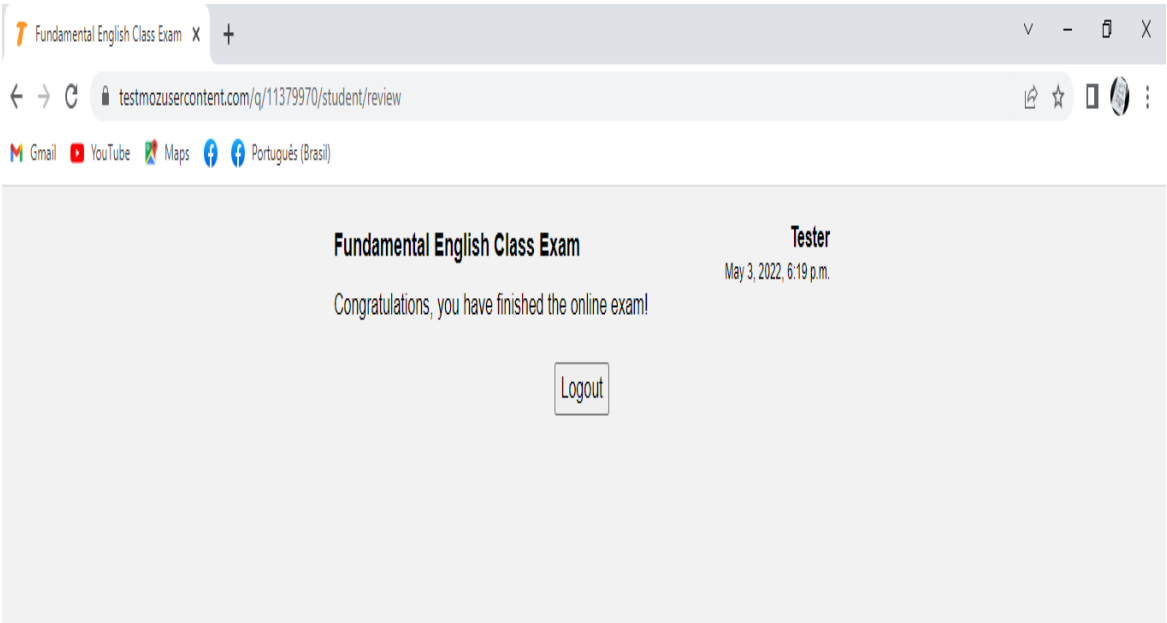


Figure 4.14: Test Closure

4.3.3 Advantages

The first and the most remarkable advantage of the online testing is highlighted by Moodle, (2017) in which "Exams can be configured to allow multiple attempts. Each attempt is automatically marked and the teacher can choose whether to give feedback and/or show the correct answers" (as cited in Shraim, 2018 ,p.185). Thus, this automatic correction and grading of the tests and exams saves time and ensures exact and accurate grading, which is undeniable point of strength if compared to the traditional testing where teachers may take hours to correct the students' exam papers and there is a possibility of wrongness as it is done manually.

Indeed, Sangle *et al* (2020.P.135) listed the advantages of using Testmoz, which are "Efficiency: Less time, Flexible delivery, Automatic processing response, Effective storage results and grades. Effectiveness: Immediate feedback, Analysis of question validity, new question types." Similarly, its ability to serve various other available and possible features distinguishes it from other web pages. Figure 4.3, lists these options in its home page.

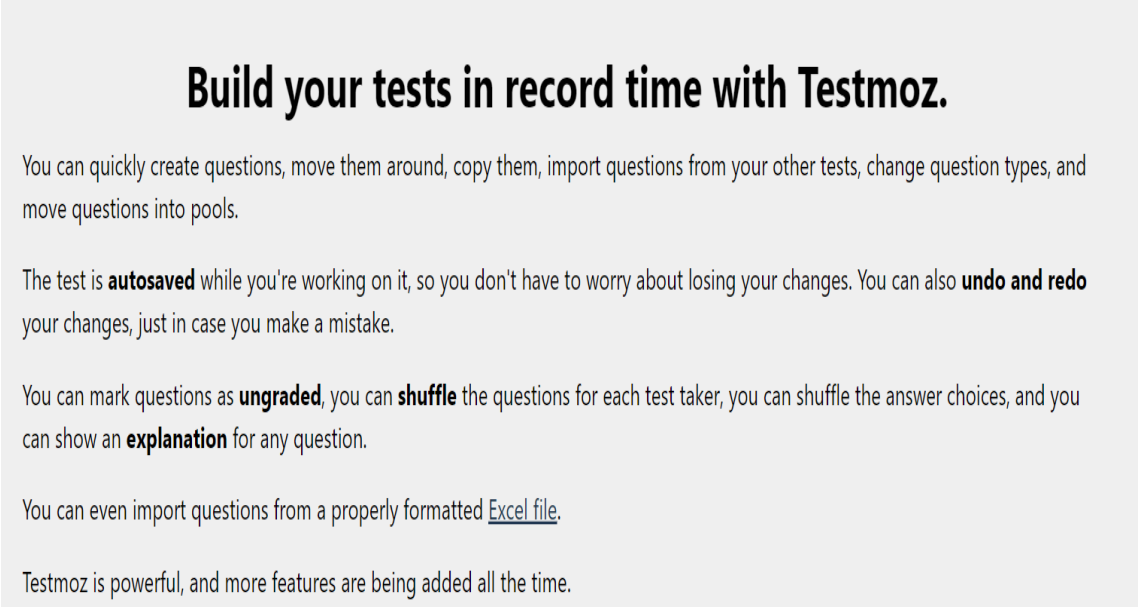


Figure 4.15: Testmoz Features

Adopted from Testmoz Home Page

Another advantage that characterises Testmoz is its ability to display the same test in different shapes. In other words, it has the option of displaying the order of tasks and questions differently, so that each student is going to answer the exact same question, but in different timing if compared to his/her classmates. The latter lowers the chances of cheating and imposes them to answer the given question in due time (Farzin, 2016 as cited by Shraim, 2018).

The characteristic of simplicity is crucial and empowering Testmoz among the first practical online web pages. Indeed, the students who went to France for their training reported its clarity and easiness to have access in which, in their first attempt to have their exam did not contain many steps and its instructions were clear and simple. Thus, it does not require long time training by either the teachers or students in order to use it appropriately. Besides, what differentiate Testmoz from other e-testing tools its usefulness and easiness in delivering and distributing it to students with an unlimited number of options and choices. Indeed, the below figure explains this point of strength. (Figure 4.16)

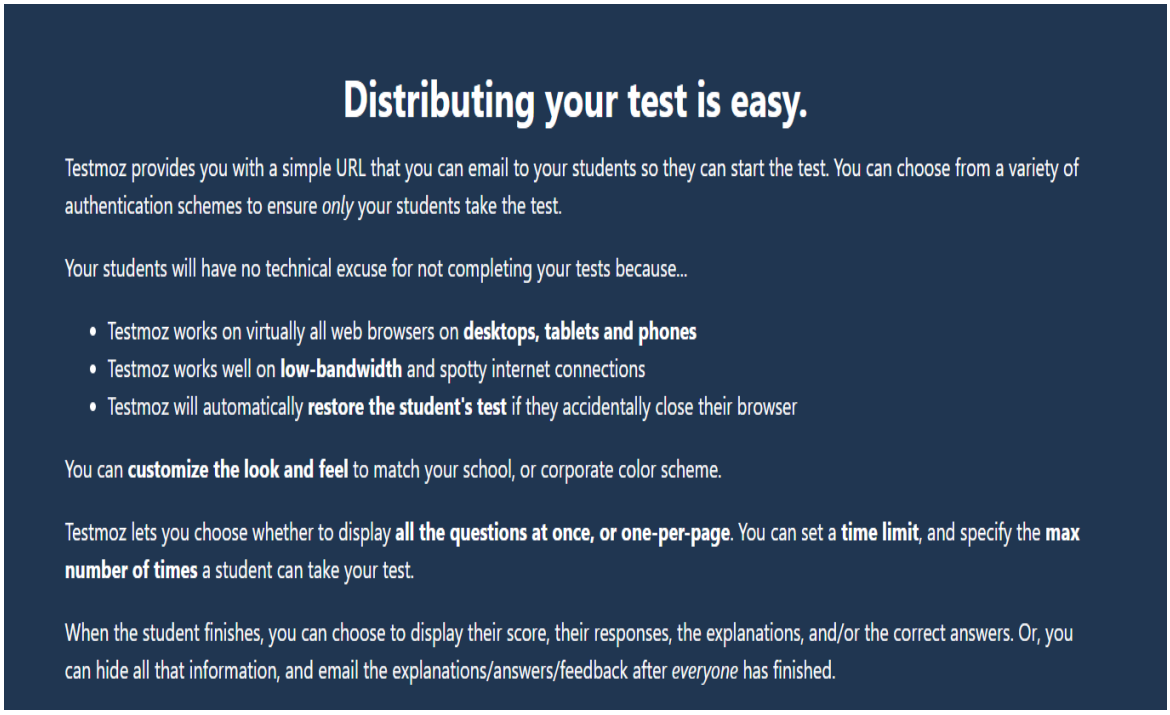


Figure 4.16: Testmoz Easiness in Distributing Tests

Adopted from Testmoz Home Page

The online testing advantages are summarized by Hamilton and Shoen (2005) in which they believed that "web-based testing has significant advantages in the areas of cost, ease of use, reliability, replicability, scoring, aggregating results and data management. They explain that digital assessment measures can score themselves with great reliability and no subjectivity while making data available with immediacy". (As cited in Buzzetto-More *et al*, 2006.p.257). Indeed, these points of strength appear highly on Testmoz tool.

4.3.4 Disadvantages

Testmoz has been famous by its various points of strength in the available literature including the current research. Conversely, it has also got points of weakness and disadvantages including first and for most, facing possible unethical problems, which are explained by Doğan *et al.* (2020, p.4) who said

> Another critical issue in an e-assessment is security. We need to verify the identities of examinees and be sure that students are the ones who completed the tasks at hand. Although plagiarism, cheating, taking the exam for somebody else etc. are common problems for online and in-person assessments, having an internet connection and gathering information online easily make cheating easier in an online environment.
>
> Doğan *et al.* (2020, p.4)

According to Whitelock (2006), a strong factor that pushes students and teachers toward the traditional way of testing rather than the e-testing is the problems related to ICT tools including internet instability, computers and tablets block. (As cited in Shraim**,** 2018). Besides, Ocak and Karakus (2021, p.24) described this problem as "Internet related problems can be considered as the worst

problem since it's out of control of students. For example, loading of exam questions can be delayed, students may not find exam questions on webpage and for students there is nothing to do at that moment." In other words, the inability of both teachers and students to fix technical problems the same time they occur, is a challenging situation that may affect negatively the students at first levels, their teachers and even the institution.

4.4 Lowering students' Affective Filter Online

According to Krashen, (1982 as cited in Roberton, 2011, p.8) there exist three factors that affect either positively the students' learning or negatively which are anxiety, motivation and self-confidence. He added "to reduce a student's affective filter, a teacher may need to lower student anxiety and raise motivation and self-confidence". Indeed, lowering the students' affective filter virtually was achievable via implementing six main strategies that targeted increasing the students' motivation ana self-confidence ana reducing their anxiety levels in the online classroom.

These strategies were divided into three main categories in accordance with the three affective filter variables studied. Firstly, to raise the students' motivation levels, both of creating a supportive and a motivational learning online environment and applying the expectancy value theory were applied. Besides, through including: group communication and respecting students' individual differences, students could maintain high levels of self-confidence in the virtual class. At last, following these strategies, which were providing the students with technical support and orienting them to follow their online learning was highly recommended for low levels of anxiety in the online classroom.

4.4.1 Increasing Motivation

According to Aisyah *et al.* (2021, p.90), "learning motivation is promoting psychological conditions for someone to know so that results in learning generally increases if learning motivation increases." Thus, these psychological factors can come either from the inside of students, intrinsic motivation (Ryan and Deci,2020 as cited in Mahmud *et al.* 2023), or from the

outside environment where students learn that is called extrinsic motivation (Harmer, 2001 as cited in Mahmud *et al.* 2023).

The latter is demanded to be generated by the teacher in the online classroom. Inspiring students to carry on their studies and to attend all their e-courses is easily done if these students are intrinsically motivated. However, in case students suffer from low intrinsic motivation, it is up to the teacher to create a motivating virtual classroom for students in order to push and boost them toward a committed learning and consequently better grades. In the current research, increasing third year fundamental chemistry students' motivation has been possible through two main implementations which are first, creating a supportive and a motivational e-learning environment, and applying the expectancy value theory in the online classroom.

4.4.1.1 Creating a Supportive and a Motivational E-Learning Environment

According to Darazi *et al.* (2023, p.343), "teachers play a crucial role in the lives of their pupils as a source of inspiration and direction." Thus, the teacher's selection of words should be careful as it may motivated or demotivate students. Indeed, the teacher targeted the factor of motivation while teaching virtually via four different techniques including the use of motivational quotes (See figure 4.17), inserting motivational study video links, the continuous use of verbal communication and the integration of motivational pictures and Gifs. The objective of these techniques is to create a virtual classroom full of enthusiasm.

Figure 4.17: The Use of Motivational Quotes

In addition to the use of motivational words, another technique was implemented, which is shaped in providing students with motivational YouTube videos within their lectures in order to affect their sub-conscious mind and generate intrinsic motivation within students. The below figure captures the inserted motivation link below the video lecture, provided as external resources for students. (See figure 4.18)

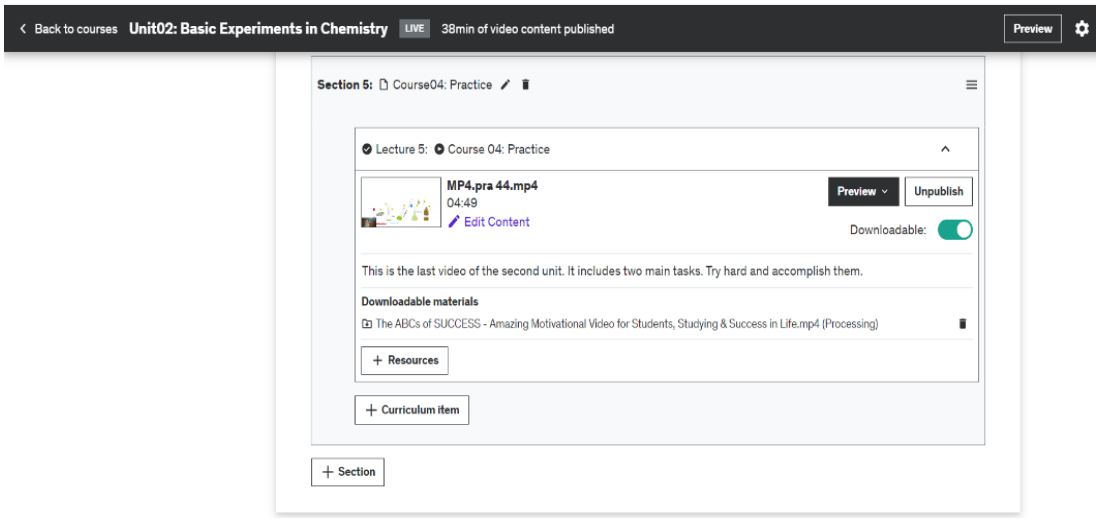


Figure 4.18: Inserting Motivational Study Videos as External Sources

The teacher has used the listed verbal motivational comments below as a third technique to boost the students' motivation, excitement and enthusiasm:

1. You can do it.
2. Who he says he can and who he says he cannot, both are right.
3. Be the best version of yourself.
4. Be sure that you are self-confident.
5. Be sure that you can do it.
6. We sure did.
7. You are smart and capable and be the best version of yourself and make it.
8. I would like to congratulate you for being able to finish the theoretical and particle part of the first lesson.
9. Let me say that I am sure you can do it.
10. What you have to do is that you trust yourself.
11. You work hard.
12. This video will guide you to fulfil this unit successfully.
13. I am sure you will succeed because you are capable.
14. I am sure you are going to succeed to accomplish these simple tasks.
15. You are smart and you have already studied the lesson with your teacher.
16. Now, let me congratulate you also for being able to finish the first course of the third unit and there is just one remaining, just once, so one more step and you will succeed.
17. Do your best
18. Do whatever it takes
19. Be the victor and not the victim.
20. Bravo
21. Try again if needed
22. Practice more!
23. Yes, you can accomplish it

24. Here are the objectives, check if you have succeeded to reach them

Figure 4.19: The Use of Motivational Pictures and Gifs

The above figure illustrates one of the used motivational pictures and Gifs, which targeted creating a motivation and a supportive classroom for ESP students. The courses design was based on a PPT slides, where each lecture included a supportive images and Gifs in order to attract the students' attention and influence their inner consciousness of the ability and the possibility to better and improve themselves and to invest more to get more.

4.4.1.2 Expectancy Value Theory Application

According to Eccles and Wigfield (2006 as cited in Svinicki and Vogler, 2012), there are five theories of motivation that describe and explain the motivation in the learning context including attribution theory, self-efficacy theory, achievement goal orientation and self-determination theory and the expectancy value theory. The last theory is defined as "a combination of two separate, but linked sources: an individual's belief that he will be able to succeed at the task (expectancy) and the degree to which the task is something that he values (value)" (Eccles and Wigfield 2006 as cited in Svinicki and Vogler,2012. p.2337).

In the views of Blanco *et al.* (2020, p.18), the expectancy value is described as

> The expectancy-value model, success-related decisions are motivated by a combination of factors such as an individual's expectations for progress and success, and how much they value the desired outcome of doing certain tasks. Expectancies and values interact to foresee significant results like commitment, continuing interest, and academic accomplishments.

Therefore, the implementation done here relies on applying this theory in classroom where the teacher may devote some time at the first meeting session in order to clarify for students both ideas. First, finding what learners are expecting from this module at the end of the semester and boosting these expectations so that it appears beneficial, interesting and advantageous, then detecting their personal and cognitive imagination of how they evaluate the studied module and trying to increase its value.

One practical example based on this theory has been applied on Fundamental chemistry students' class of 2021-2022 when they started learning ESP. The teacher assisted the students to invest efforts and time to reach the expected grades in English module at the end of the first semester. Thus, students had positive feelings and started to get motivated in order to reach the expected marks and work accordingly. Then, listing and drawing cognitively a high value and important pictures of that module helped students to devote time, efforts for it.

The below figure, figure 4.20, is a reminder which came at the end of the lecture in order to help the students checking whether they worked on the expected goals and to which extent. In the video lecture, the teacher reminded the students to evaluate their understanding and grasping of the course and if it is less than fifty percent, they need to review the course another time and again till they fully grasp the meaning and reach the expected aims.

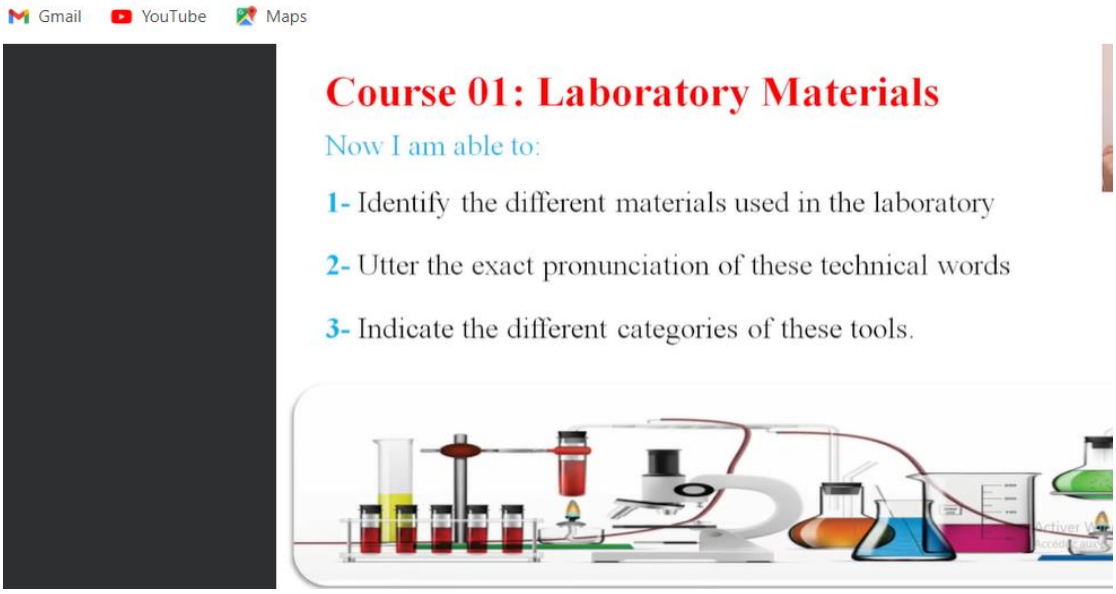


Figure 4.20: Identifying the Achieved Outcomes at the End of the Lecture

4.4.2 Raising Self-confidence

The second variable of the affective filter is students' self-confidence. In the views of Kiliç *et al.* (2021), "supporting and Encouraging Students – Ensuring Students' Confidence – Trust". Indeed, they are amongst the learning and teaching factors that work for a higher confidence. If the students feel self-confident, the course content is easily received and understood. Hence, working on different strategies to push students to believe in themselves and maintain high levels of self-confidence is possible via the integration of two strategies applied by the teacher in the current work.

First, creating a group communication is an effective solution to reduce the students' feeling of isolation as it is one of the most common problems of the

distance learning. Thus, they would benefit from both the social and cognitive presence through this strategy. Besides, allowing students to learn according to their individual styles and learning preferences is an available option limited to the online classroom as opposed to the on-site one. Consequently, the teacher's benefited from this option in order to allow students to study the same course according to their learning method whether they are visual, auditory or both.

4.4.2.1 Group Communication

In the views of Rizvi and Nabi (2021, p.15), "students should have access to support devices that can help them overcome technological challenges by calling, emailing or chatting live." Therefore, the researcher relied on creating a Facebook Group where all students were added. This group communication tool has been chosen based on three main reasons. First, all participants had a Facebook account, so the teacher could easily add them in an online group discussion that has been created in a very short time. Then, this application texts and messages do not require a high internet connection and it is very practical. Finally, these students were adults who belong to the digital era. Thus, they always check their social media account, which reminds and notifies them about their online ESP courses and they have been always updated. (See figure 4.21).

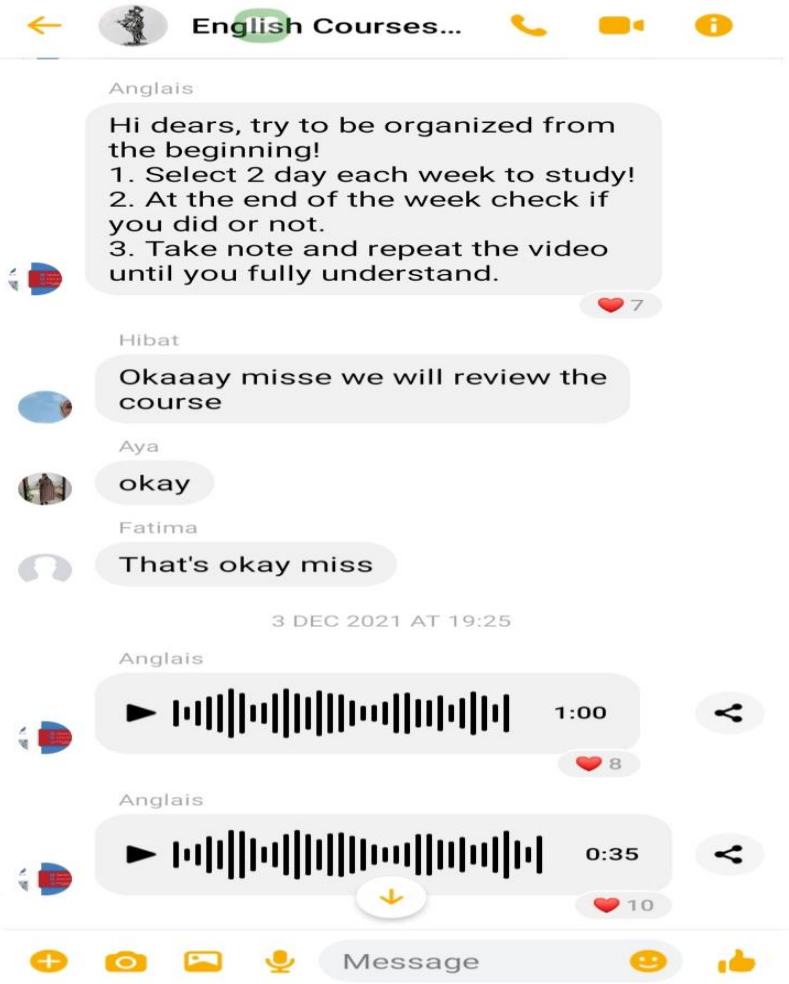


Figure 4.21: Messenger Group Communication

Indeed, students received, sent and exchanged questions and answers after each course. The teacher also contributed in this group communication by sending messages whenever, a course is published online in Udemy. The participants were very interactive with each other and with the teacher. The latter has created a harmony among the students and a feeling of concern has been shared. Consequently, the students' self-confidence has raised since they knew all the details and updates of their learning continuously. Similarly, Rizvi and Nabi (2021, p.5) add that "teachers should encourage interaction between students so that the feeling of isolation may be reduced and students may be motivated to learn and take more interest in virtual classes."

More importantly, Rizwana and Oveesa (2020, p.19) see that group communication is needed criteria in the virtual class. They added "outside the

virtual classroom, communication between teacher and student must be built using different tools like course message on Blackboard, email, WhatsApp, telegram, etc. Students must begiven enough room to communicate their queries freely". Besides, the same idea is reinforced by Romeu Fontanillas *et al*. (2016) who believed that once the students have the chance to send, receive and exchange feedback after courses, a positive feeling is generated. Thus, students would not feel lost, stressed, uncertain, late for their courses or distant from their ESP courses. Conversely, students felt guided, less provoked, self-confident, and always updated with both of the teacher and their peers. They said that

> The feedback process can also be undertaken by students and is not only an individual activity, in that peer feedback during the e-assessment process has some benefits for students as stated by Guasch et al. (2013) and Cheng et al. (2015), reinforcing a kind of feedback that provides a positive feeling or recognition of the work and suggestive feedback provided by peers are most useful for subsequent learning. In some cases, this type of feedback can be seen as equivalent to instructor feedback in terms of reliability and value. (pp.2/3)

4.4.2.2 Respecting Students Individual Differences

Respecting the students' individual differences means allowing each one to use his/her own learning method. This choice can be difficult and very demanding in the traditional classroom. conversely, it can easily done in the online classroom. Indeed, the used platform, Udemy, allowed the students to both read the course content in forms of paragraphs relying on the called option transcription (See figure 4.22) or downloading word and Pdf formats for visual students. For auditory students, recorded video courses were available.

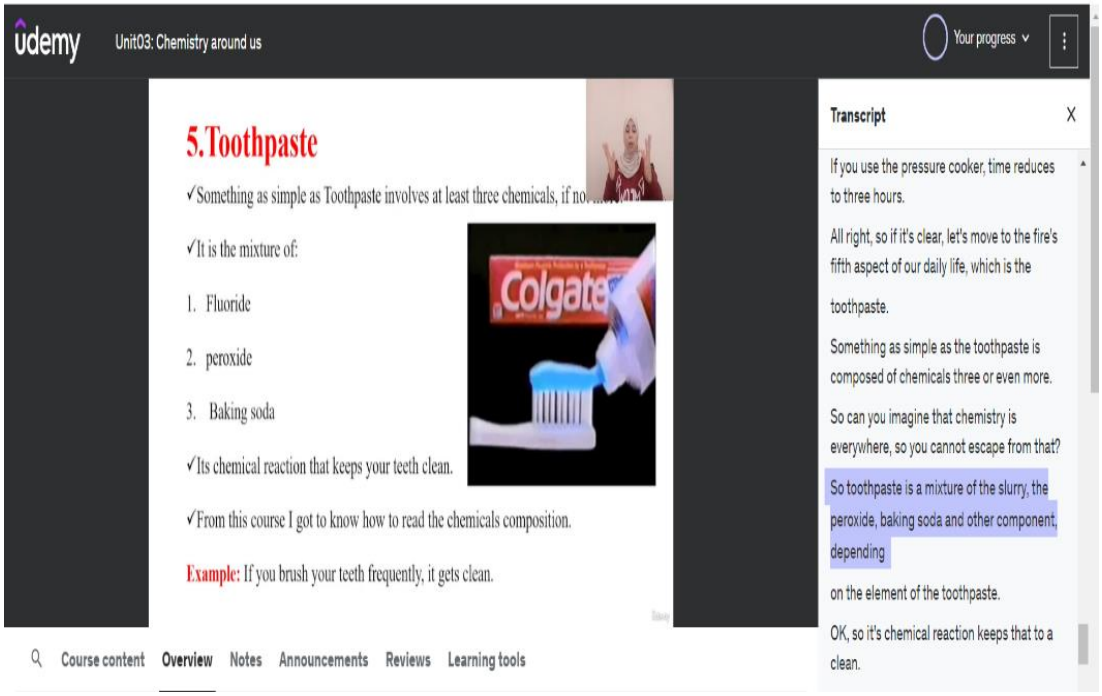


Figure 4.22: Transcription Option

The platform also supported downloading these videos to be able to watch them whenever possible. Among the students' individual difference there is the learning speed that differs from the fast speed for an excellent student to the medium speed for an average student to the slow speed of understanding a course content for a slow learner. Thus, the platform allows students to watch and rewatch the videos according to their capacity and understanding with the option of displaying sub-titles or not. Figure 4.23 displays the option of speed as named Playback rate it goes from the very slow 0.5x to the very fast 2x.

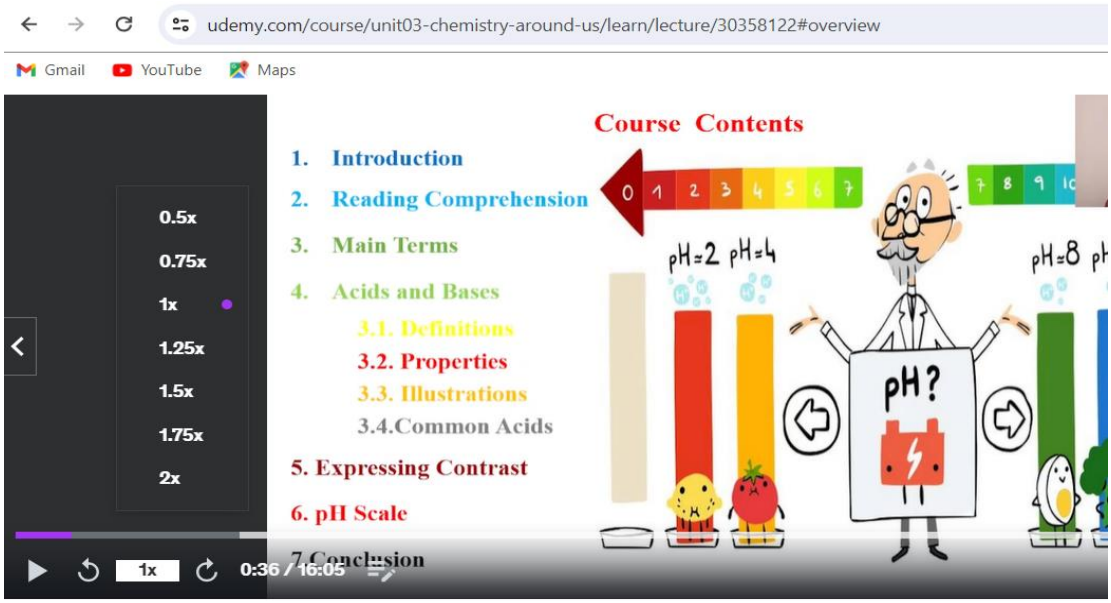


Figure 4.23: Playback Rate Option

Figure 4.24 displays the course content in Udemy where students are given the choice to either watch the video course or download the Pdf format available and even use external resources which are related to the same topic.

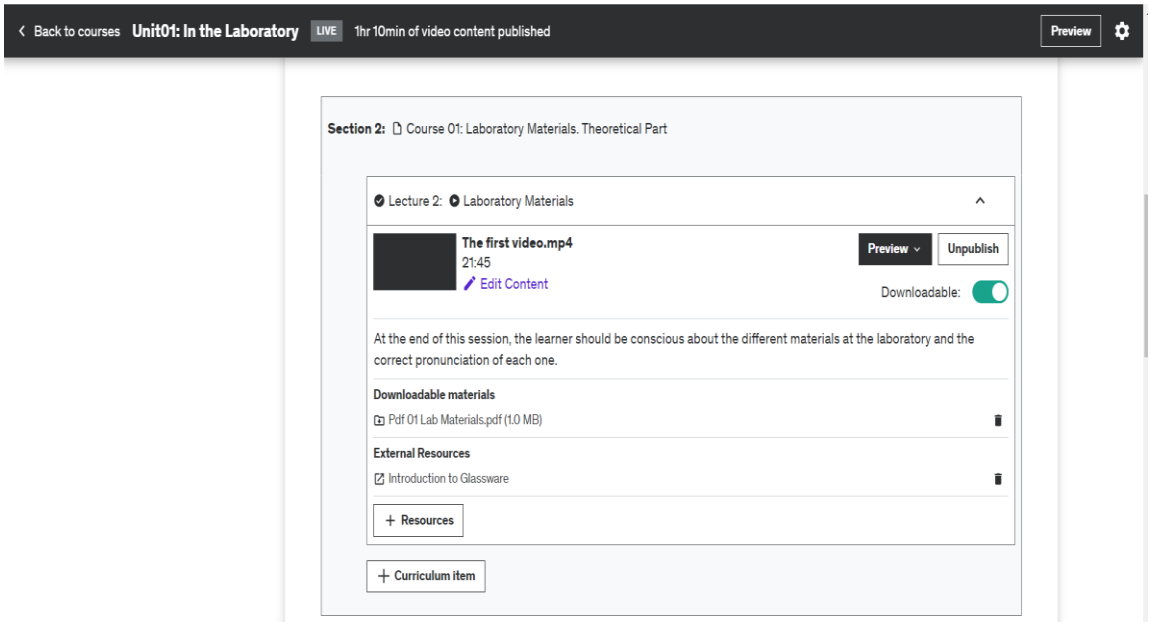


Figure 4.24: Udemy Course Content Variety

4.4.3 Reducing Anxiety

Anxiety is another variable of the Krashen's fifth hypothesis that is the affective filter. High levels of anxiety discourage the students to grasp all course parts. Indeed, the levels of anxiety should be lowered in class in order to transmit the course content appropriately to students. In the virtual class, the teacher has observed that if students are aware of the presence of technical support by the teacher concerning the ESP courses on Udemy platform in addition to her orientation and guidance on Udemy, they are less anxious and less stressed when learning virtually.

4.4.3.1 Technical Support

Providing students with the availability of technical support while learning is crucial. Feeling secured and at ease in case of finding a difficulty or a technical problem in the platform usage, made learners less stressed and worried about the technical problems. Students were informed at the beginning of the first semester to e-mail the teacher in case of any technical hindrances. Therefore, sources of anxiety of the unavailability of devices, internet connection and platform related problems were discussed and alternative solutions were shared. Accordingly, comfort and calmness regarding the virtual classroom is spread and e-learning becomes less stress provoking aspect.

Firstly, the problem of the unavailability of ICTs as computers, laptops and mobile phones were solved via suggesting both solution: either to use the application of Udemy on the students' smartphones, as all the participants confirmed that they have one, or using computers available at the Informatics lab of the university with permission or learning online in pairs.

Secondly, the research's findings of Rizvi and Nabi (2021, p.5) indicate that "Inadequate bandwidth and poor network connectivity were found to be major hindrances." Similarly, the students have also thought of the low or absence of the internet connection problems. As a result, the teacher suggested to download the video course in case of a very low internet connection. For the problem of the unavailability of WIFI lines and the phone data, the teacher

suggested that collaboration is the key where a student can download the course and send it via any phone application to the student who needs it once they meet. Thus, this suggested alternative can be effective to the problem of internet.

Finally, the teacher provided help when it comes to platform related problems such as the students' inability to log in the platform, forgotten passwords, changed e-mail addressed and problems of the course visibility by sending a descriptive e-mail to the teacher to be solves in due time. Consequently, students considered Udemy platform as very useful and with the presence of these solutions and recommendations, the virtual classroom will be available for everyone, anytime from anywhere with the lest difficulties.

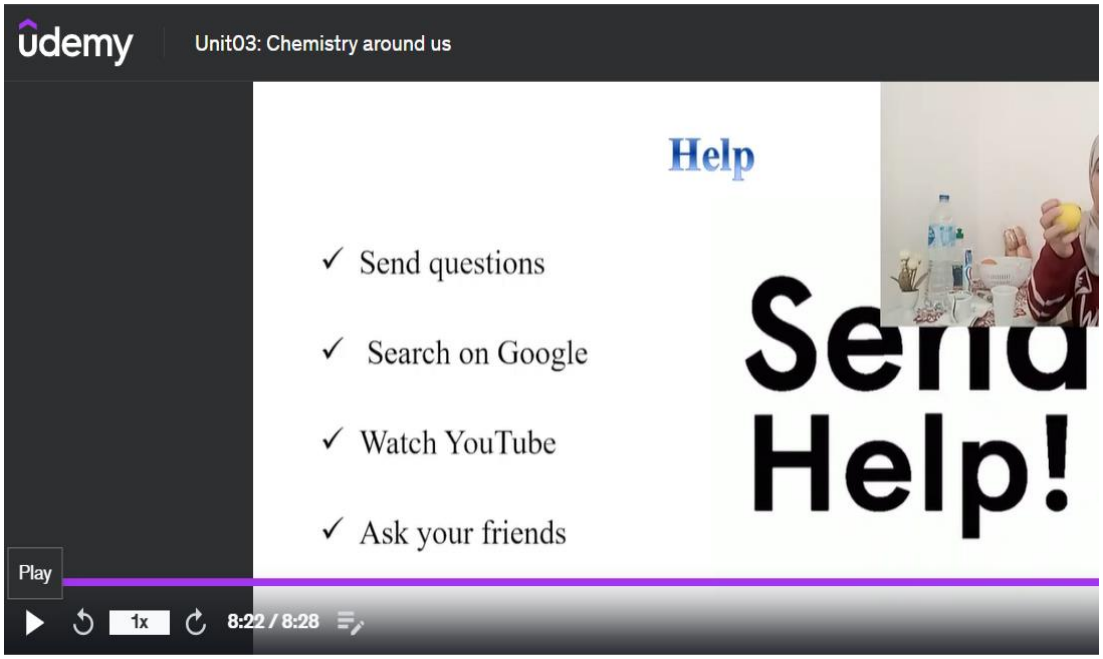


Figure 4.25: Technical Support Suggestions

The above figure expresses the teacher's suggestions concerning the possible technical supports in case of hindrances such as sending questions and inquiries via e-mail, searching on Google to find others' feedback and common solutions, watching related YouTube videos as the platform is frequently used by teachers or relying on group communication created where feedback can be easily gathered from other classmates.

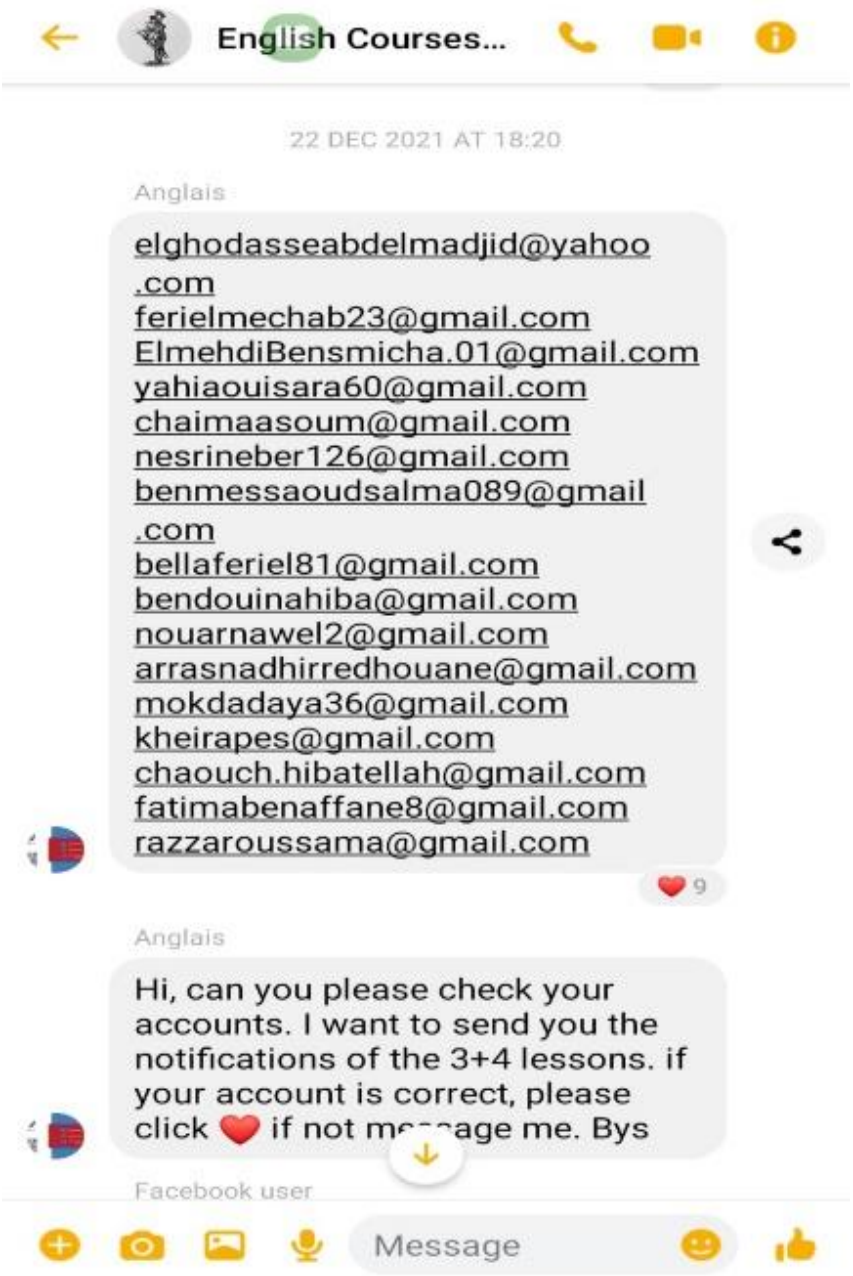


Figure 4.26: Technical Support via Messenger Application

The above figure:4.26, represents the technical support provided by the teacher using this social media application, Messenger, where all students were joined in a group and questions, inquiries and messages were sent and exchanged between both students and students or teacher and student. In addition to the e-mail contact support provided.

4.4.3.2 Online Learning Orientation

In the online learning orientation, the teacher has relied on three main orientation techniques, which are: displaying the syllabus of the first semester in a well-organized style joined with the timing and number of courses for the online semester, integrating an introductory video as a clarification of each unit with all its details and presenting the learning objectives at the beginning of each course.

Firstly, the teacher has also oriented the students via establishing a clear, simple and explicit organization of the courses within Udemy platform. The syllabus organization directs students and make it less complicated to locate themselves within their progression in the ESP module. Once learners are oriented toward their syllabus, courses and details related to each course, stress and anxiety are reduced as they have the map that would assist them to fulfil the whole syllabus without feeling fearful of missing a course or being unorganized. Thereby, their anxiety levels would be lowered and they would not feel stressed or nervous as they study remotely and alone, but in a clear and organized way. (See figure 4.27).

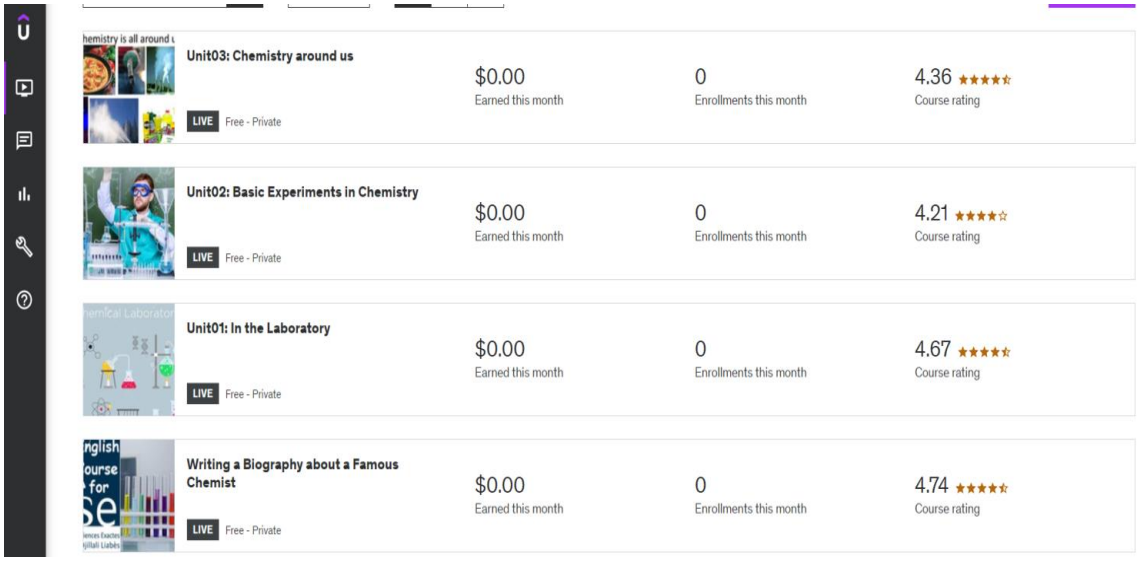


Figure 4.27: Displaying the Syllabus in Udemy's Home Page

Secondly, the teacher added a section at the beginning of each unit called: introduction, where all the details are explained such as: unit title, courses

included, number of videos used, theoretical, content, and practical courses, tasks and exercises, used and the order of the each one. (See figure 4.28)

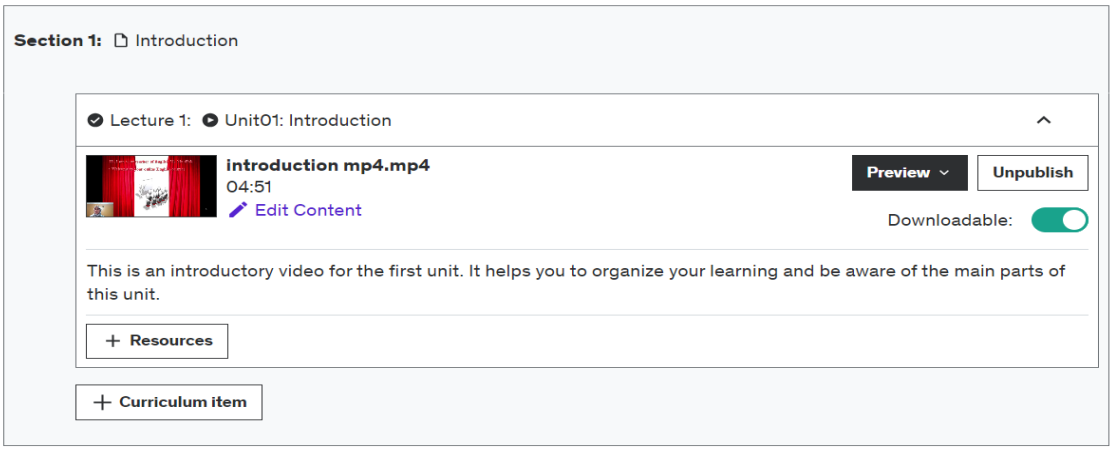


Figure 4.28: An Introductory Video of the Unit

Finally, as the third learning orientation strategy is targeted, the teacher has explicitly highlighted the course objectives for the students at the beginning of each course. Learners were informed to move on to the next video course if they have reached these objectives. Otherwise, they are going to rewatch the course until they grasp it and able to understand the mentioned elements. She added: “You have to fulfil its 100 percent, and I am sure you can do it!”.

Indeed**,** Kiliç *et al.* (2021, p.32/33) insisted on the importance of displaying the course objective for students, she added

> One of the important issues to be considered while organizing the lesson is student goals. Success and failure situations of students should be decided according to their level of achieving the goal. Giving information to the students about the objectives of the lesson, the teaching of the lesson and the materials is thought to be beneficial as it will enable them to be guided individually.
>
> Ilgar, 2004; Öncü, 2005; Özcan, 2007

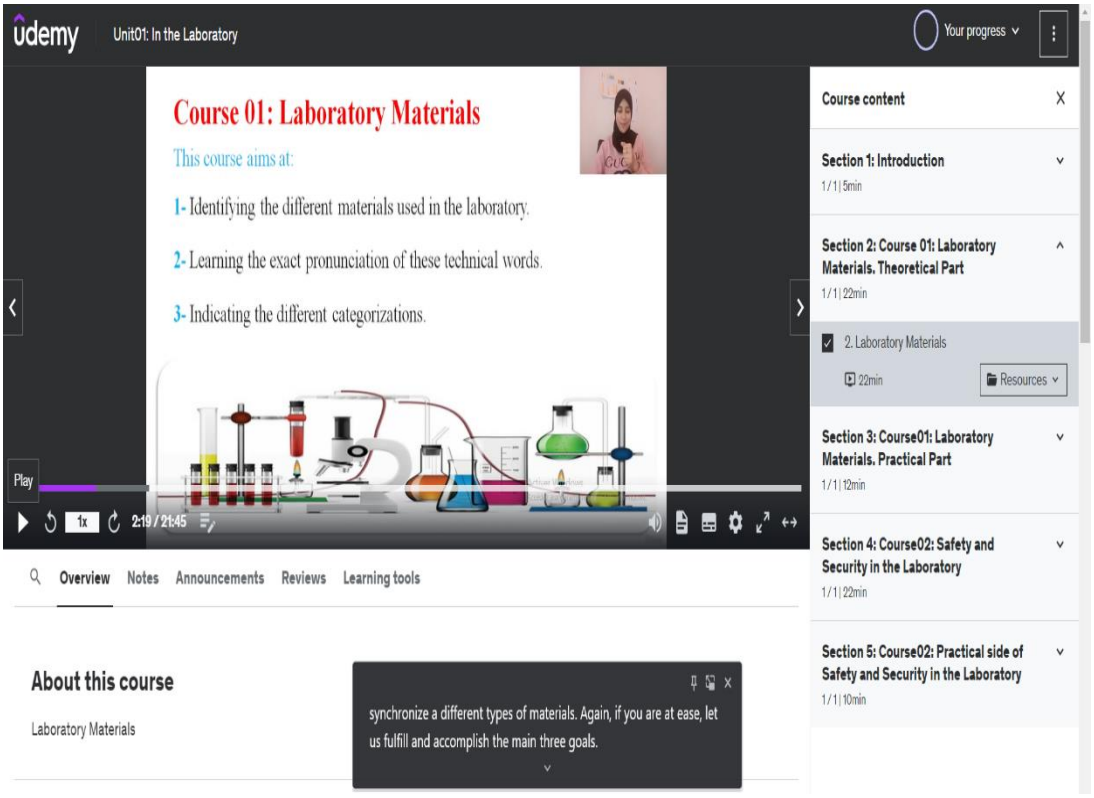


Figure 4.29: Displaying the Course Learning Objectives

The above figure displays the integration of the objectives of each lecture at the very beginning in order to implicitly share with the students precise, well defined and clear goals to be reached at the end of the course. Thus, the teacher targeted informing the students that they would attend this lecture and the teacher would expect from them to achieve these goals so that they would start thinking and working accordingly subconsciously with more focus and higher inspiration.

4.5 Conclusion

The fourth chapter is entitled implications and recommendations as it dealt with suggested solutions and techniques within the virtual learning environment. These implications aimed to create a learning environment where students' affective filter was low. Thus, targeting high motivation and self-confidence joined with lowering their anxiety was the chapter main objective.

In addition to suggesting various strategies regarding a low affective filter that enabled the students to grasp the course meaning, the chapter also

shaded light on the e-assessment that was implemented at the end of the online semester. Hence, its usefulness and efficiency in the current experiment were reasons of devoting a section for it as an interesting future online testing tool.

The chapter structure compromised three main implementations for each variable of the affective filter. Indeed, creating a supportive learning environment for ESP students and applying the expectancy value theory were considered as the most useful solutions that targeted a higher motivation. Besides, two applications were used in order to raise the participants' self-confidence while learning online, which were creating a group communication and respecting students' individual differences. In regard to the third variable that is anxiety, highlighting the teacher's technical support and focusing on the online learning orientation worked as a strong agent that had the ability to lower the students' anxiety levels in the online classroom.

GENERAL CONCLUSION

GENERAL CONCLUSION

In Algeria, non-English departments benefited from on-site ESP courses till the arrival of the COVID-19, In fact, different e-learning tools were utilized as immediate alternatives in order to maintain the learning and teaching processes. However, this sudden change from on-site to online classrooms in quarantines, affected the students' emotions, which are granted a paramount importance in the success or failure of the learning process. It is owing to a low affective filter that the ESP course content is received and grasped by the students. Hence, the students' high motivation and self-confidence joined with low levels of anxiety permit the reception of the comprehensible input and thereby meeting the ESP learning objectives.

Whether the learning takes place online or on-site, it is important to shed light on the students' affective filter focusing on the three variables cited by Krashen's (1982) hypothesis that are motivation, self-confidence and anxiety. Accordingly, it is due to this epidemic that researchers and educationalists were encouraged and pushed to examine the kind and the type of consequences left by web-based education on the students' affects, which is the case for the current research.

At Djillali Liabes University of Sidi Bel Abbes, this case study took place. In the academic year of 2021.2022, sixteen third year fundamental chemistry students and one ESP teacher contributed to this research as being its informants. It is based on a correlational research design and its data were gathered from two tests and a diary. This implication targeted testing what type of impact had web-based education left on the students' motivation, self-confidence and anxiety. Furthermore, it targeted revealing the different strategies that might help teachers maintain a low affective filter in the virtual classroom.

This thesis was divided into four chapters. The first chapter reviewed the related literature, which included web-based education background. Besides, it embodied information about Krashen's 1982 affective filter hypothesis via adding its definition, three variables, motivation, self-confidence and anxiety and features.

Most importantly, this theoretical part referred to the relationship between online learning and its effects on the students' affects from previous case studies and articles. Research design and methodology is the second chapter. It included information about the context where the research took place, the methodology used to accomplish the practical side starting from the conduction of Needs Identification and Analysis (NIA). In addition to that, different diagrams and figures explaining the chosen research type were designed. Furthermore, definitions and descriptions of both of data collection tools and sample population selected were added. The third chapter dealt with the analysis and the discussion of the obtained data from the two participants. It is through this chapter that the collected data, the two tests and the teacher's diary, were analysed quantitatively and qualitatively. In fact, the two tests were designed based on three sections where each section referred to a specific affective filter variable. Thus, the analyses were similarly divided into three main parts. These parts were analysed separately using the SPSS.V25 statistical software. Therefore, this software findings relied on two main sections, descriptive statistics and statistical test results, in order to test the first hypothesis correctness and its corresponding sub-hypotheses. The diary findings were used also to cross check the findings of the tests. Besides, the second hypothesis testing was based on the qualitative findings retained from the second research instrument, the teacher's diary. These findings were categorized into three sections in reference to the cited three affective filter variables. Recommendations and implications were drawn in the light of the findings. Different strategies were suggested as future implications to lower the students' affective filter, which helped raising the students' motivation and self-confidence and lowered their anxiety levels. These strategies were implicated in order to pinpoint the importance of creating an online environment where the students are motivated, confident and at ease to allow reaching the comprehensible input in the ESP e-classroom. Thus, meeting Krashen's affective filter hypothesis would lead to a successful foreign language learning. Consequently, in order to reach the fifth hypothesis goal, six main strategies were implemented including: generating an e-learning environment full of enthusiasm and motivation, the use of the expectancy value

theory principles, recommending a virtual group communication among students, respecting students' individual differences, providing both of technical support and the online learning orientation shaped the fourth chapter core interest.

In reference to the first research hypothesis, which had been divided into three main sub-hypotheses, the main focus was on the type of web-based learning on the students' affective filter precisely their motivation levels, self-confidence and anxiety when learning in the online classroom. Consequently, the results of the study in relation to this hypothesis confirmed that firstly, web-based education reflected a positive impact on the three studied variables as it served raising their motivation due to the online classrooms advantages including time flexibility for every student as the course was asynchronous, permitting the students to select their preferrable learning method, video, audio or text, and granting students the replay options where they could repeat their e-courses as many time as they wanted till they fully grasp them. Secondly, the second sub-hypothesis denoted that web-based education implementation increased the feeling of self-confidence among these students due to the implemented online facilities. In fact, the frequent use of group discussion on Messenger group had a strong positive impact on the students' self-confidence where e-courses, updates and notifications were sent to students via this daily used social media. Thus, the students kept updated and aware about the progression of their courses, which raised their feeling of confidence. Moreover, the virtual classroom granted the students, especially withdrawn ones, other facilities as commenting instead of speaking, asking question through e-mails and messages rather than participating in public, which caused less shyness and embarrassment among students. Thirdly, the findings from the last sub-hypothesis confirmed that the students' anxiety levels in the e-classroom were lower if compared to the on-site classroom. Though the selected type of for the first semester was the distance learning, the teacher strengthened the use of group communication between the teacher and students in order to lower the feeling of isolation and distraction among students. As a result, students did not suffer from high anxiety levels. Moreover, providing the students with online learning orientation and technical support were crucial in resulting positive findings on their

anxiety levels. Therefore, the first research hypothesis and its associated hypotheses are proved and correct.

As the second research hypothesis is concerned, it pointed out investigating the strategies and techniques applied in the virtual classroom so as to help and assist teachers maintaining a low affective filter, which would allow the students to easily receive the input and grasp the ESP course. In other words, these strategies targeted creating an online environment for ESP students where their motivation and self-confidence are high, but their anxiety is low. Indeed, each affective filter variable was treated via two main strategies. Firstly, the students' motivation levels were raised via the use of a group of supportive techniques and strategies including the use of motivational quotes, inserting motivational study videos, verbal and none-verbal motivating communication and adding motivational pictures and gifs within the videos. These implementations shaped the pillars of a virtual motivational e-learning environment model. The second used strategy was a sub-conscious integration of the expectancy value theory. This theory denotes that what students expect and value in their minds, they will sub-consciously prepare themselves for and as a result they will program their minds to achieve it. Thus, the teacher controlled their expectations indirectly via feeding their minds with enthusiasm, positive energy, willingness, generating high interest between students and pre-defined goals to be achieved at the beginning of each course and checking lists at the end of each course. Secondly, building an online classroom where every student had a better self-confidence relied on both of group communication and respecting the students' individual differences. Thus, strengthening communication between the group members and allowing them to exchange their thoughts about the courses virtually resulted being less shy, less timid or embarrassed raised their feeling of self-confidence. Moreover, it was thanks to the virtual class that the teacher could easily grant every student the possibility to study the way they preferred whether they were visual, auditory or flexible learners, which was viewed as valuing the students' individual differences. Thirdly, ESP students were granted technical support and learning orientation in order to maintain their calmness and easiness while processing the courses. In fact,

the students were informed about the presence of immediate technical support in case of difficulties. Thus, the students would not stop their e-courses due to computer related problems. Besides, they were continuously updated with the syllabus and the arrangement of e-courses via an introductory video at the beginning of each unit. Both strategies contributed to lower the students' anxiety and stress in their e-learning. Consequently, targeting each variable of the affective filter using two strategies, enabled the students to study their ESP courses via web-based education without suffering from high affective filter, demotivation, low self-confidence and high anxiety. Consequently, the second research hypothesis is correct as these strategies succeeded to ameliorate the students' comprehensible input and contributed to the success of foreign language learning.

If these findings are considered within the broader psycholinguistic context, it would prioritize enhancing the quality of online courses over their quantity in the realm of online learning and teaching. In other words, the students' affective filter is a crucial element that should be listed among the ESP teacher's priorities. Besides, a range of research in the review of literature revealed the psychological difficulties faced by students in the online classrooms. However, few teachers invest time and efforts to apply techniques to handle their students' psychological problems due to time limitation and the huge demands on the teacher. As a result, the current work supported and contributed to the available literature, which offered insightful data about maintaining a low affective filter in web-based education. In addition to that, the current work can be expended in further researches tackling a significant aspect of web-based teaching especially by teachers that is ethical considerations and concerns to protect themselves from plagiarism and pirates as the online mode challenges their privacy and security.

During this study, several challenges were encountered, firstly and notably, the lack of technical support personnel at the university. Actually, the researcher sought assistance to complete the online teaching process as there were no technicians to assist teachers in their online classrooms in case of technical problems. Thus, the teacher opted for private technician to solve different encountered problems. Secondly, the timeline devoted to conduct the required

procedures in ESP such as NIA, course design, piloting studies and publishing online courses shaped another challenging situation. Thirdly, transforming ESP on-site handouts into videos to be published online was considered as a demanding task especially with the used platform video requirements, which were numerous and characterized with high quality work. Finally, as third year fundamental chemistry students were only sixteen, the study sampling was small. Consequently, the current research findings lacked generalization.

To conclude, the epidemic of COVID-19 had challenged the world to fit its conditions as it introduced various changes in many disciplines. However, it granted the educational ground the opportunity to be open to the integration and the application of web-based education and to benefit from its advantageous uses. In the existing literature and in the current work, efforts and time were invested to improve the quality of teaching in the virtual classrooms via searching for solutions. These solutions target overcoming the students psychological and technical problems, which may stand as barriers to foreign language learning. As a result, the current work experienced a case study where the students accessed their courses via the web and the teacher tried to unveil students' hindrances to be treated and reduced. Hence, regardless of the type of courses being delivered, the teacher should assist learners in improving their emotional states to sustain a supportive learning atmosphere. While this approach may vary from one case to another, it ultimately contributes to a successful learning.

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APPENDICES

Appendix A: NIA Questionnaire

Dear third year chemistry students,

The present needs identification and analysis is a part of an action research, which aims at shedding light on your needs, lacks and wants in relation to chemistry to develop your ESP courses. I would be grateful if you respond to the suggested questions completely. Tick (✓) the right answer (s) or give a full answer (s) if needed.

Section One: Background Information

1. How often do you attend the English sessions?

   Never ☐ Rarely ☐ Sometimes ☐ Often ☐ Always ☐

2. How do you assess your proficiency level in English?

   Poor ☐ Average ☐ Good ☐ Very good ☐

3. What is the adequate English session time per week for you?

   1 Hour ☐ 2 Hours ☐ More than 2 hours ☐

4. Have you ever used an educational platform?

   Yes ☐ No ☐

   If your answer is "Yes", what is it? …….

5. Have you heard of Udemy platform?

   Yes ☐ No ☐

6. What is your style of learning?

- Visual (Learning by pictures) ☐
- Auditory (Learning by listening) ☐
- Kinaesthetic (Learning by physical activities) ☐
- Flexible (Learning by different skills) ☐

7. How much specialised knowledge about chemistry do you possess?

   Not much ☐ Basic knowledge ☐ Very much ☐

Section Two: Learners' Psychology/ Affective Filter

a. Motivation

1- Which way of learning English courses suits you more?

- Online ☐
- On-site ☐

If it is online, what do you prefer?

- Synchronous (Study at the same time with the teacher) ☐
- Asynchronous (Study at different times) ☐

2- What technique makes you more motivated in online learning?

- Videos ☐
- Pictures/Gifs ☐
- PowerPoints Presentation ☐
- Live Videos ☐
- Handouts (printed word format)? ☐
- Pdfs/ Word ☐

Another technique .....

b. Self-confidence

1-When do you feel self-confident most?

- Commenting on the platform ☐
- Speaking in class ☐
- Learning by yourself ☐
- Learning with the teacher ☐

2-Do you feel confident when choosing your learning technique?

Yes ☐ No ☐

c. Anxiety

1- What provokes your anxiety when learning English?

- Face teacher ☐
- Use computer ☐
- Study in class ☐
- Study at home ☐

2- What are the causes that stress you when learning English?

Online: …….

On-site: ……....

Section Three: Content Selection/Linguistic Aspect

a. Lacks

1- Do you face difficulties when:

- Writing simple and compound sentences ☐
- Pronouncing the terminology correctly ☐
- Memorizing the different Laboratory materials ☐
- Using grammar rules correctly ☐
- Reading articles ☐
- Listening to specialists ☐

2- What do you lack?

- Vocabulary ☐
- Pronunciation ☐
- Grammar ☐
- Terminology ☐

3- Have you tried to bridge your lacks by searching for solutions to improve your weaknesses?

Yes ☐ No ☐

If your answer is "Yes", how have you done it……

b. Needs

1- What skills do you need?

	Speaking	**Writing**	**Listening**	**Reading**
Never				
Rarely				
Sometimes				
Often				
Always				

2-To what extent do you need the following courses?

Courses	**Not Important**	**Important**	**Very Important**
Writing simple and compound sentences about the molecular structure			
Comparing acid and bases			
Using prepositions to locate different elements of the Periodic table			

Learning the conditional to describe the transformation of matter			
Identifying the purpose of the different materials used at the laboratory			
Expressing obligation and prohibition when giving Instructions at the laboratory			

3-Do you have other suggestions concerning:

1- The content: ……..

2-The language: …….

c. Wants

1- What do you expect from the English courses?

- Develop the language. ☐
- Develop the content. ☐
- Develop the language and the content. ☐

2- Do you want to benefit from the English courses in your:

- Academic life ☐
- Professional life ☐
- Both ☐

3-How does the English module help you in your studies?

- To develop knowledge related to chemistry. ☐
- To learn how to write an article in English. ☐
- To learn the language ☐
- To participate in international conferences ☐
- To register in international universities ☐
- To have access to multiple resources online ☐

Others.....

.....

Thank you for your collaboration.

Appendix B: AMTB1 (Attitude Motivation Test Battery One)

Dear third year chemistry students,

The present form is a part of a research that targets detecting the effects of web-based learning on your psychology. The researcher will focus on three aspects: your level of motivation, confidence and anxiety when learning English online. I would be thankful if you respond to the suggested questions. Please, tick the answer that you feel more relevant to you, or give a full answer when required.

Part One: Motivation

1. Complete the table using '✓' when appropriate.

	Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1. I have a strong desire to learn in an online class using digital tools: PC, tablets or mobile.						
2. I keep up to date with my English courses by checking my online class regularly.						
3. I love being responsible about my studies.						
4. I really enjoy selecting my preferable timing and location.						
5. I would really like to select my learning methods: Pdfs, Audios, Videos, PPT or YouTube.						
6. I have a great wish to control the speed of the lesson.						
7. It would bother me to control the technical problems: Internet, account...						
8. I have a little interest to do an online exam						

via Testmoz platform.						
9. My teacher of English has a dynamic and interesting online teaching style.						

2. The aspects that made me feel unmotivated during the online session were:

.....

3. The aspects that made me feel motivated during the online session were:

.....

Part Two: Self-confidence

1. Complete the table using '✓' when appropriate.

	Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1.The presence of digital tools made me confident.						
2.I feel sure of myself when I can repeat the lesson until I grasp it.						
3. I feel sure of myself when I use comments to answer questions.						
4.I feel confident when I work alone and virtually.						
5. I feel confident when following the teacher virtually.						
6. I feel less confident to send questions to my teacher via email.						
7.I feel unconfident when I have a problem in understanding something						
8.I am losing confidence due to my teacher's online teaching style.						
9.I am so confident when I learn in my daily environment, home.						
10.I feel less confident when I am in an online English examination.						

2. The aspects that made me feel unconfident during the online session were:

.....

3.The aspects that made me feel self-confident during the online session were:

.....

Part Three: Anxiety

1. Complete the table using '✓' when appropriate.

	Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1. I do not feel pressure if I have to speak in my online class.						
2. I do not feel pressure if I have to write in my online class.						
3. I do not get anxious if I have to listen in my online class.						
4. I do not get anxious if I have to read in my online class.						
5. I feel less worried when I use Udemy platform.						
6. In the online class, I do not focus with the course and I find myself thinking about things that have no relation with the course.						
7. Being unrestricted by the course timing in my online English class makes me stressed.						
8. I feel more tense and confused when responsible about my learning (online).						
9. I do not feel anxious when I have to comment using written comments and replies.						
10. I would not get nervous or confused when I am virtually present in a classroom.						
11. I feel nervous when I have to fix technical problems: mail, account or platform.						

12. I do not feel stressed when I am in my usual environment (home) and have my online class.						
13. I am at ease when doing an examination on Testmoz.						

2. The aspects that made me feel stressed during the online session were:

……

3. The aspects that made me feel calm during the online session were:

……

4. Would you like to be taught online in the future?

Yes ☐

No ☐

Justify……...

Participation noted with thanks

Appendix C: AMTB2 (Attitude Motivation Test Battery Two)

Dear third year Fundamental chemistry students,

The present form is a part of a research that targets detecting the effects of traditional classroom on your psychology. The researcher will focus on three aspects: your level of motivation, confidence and anxiety when learning English in an on-site class. I would be thankful if you respond to the suggested questions. Please, tick the answer that you feel more relevant to you, or give a full answer when required.

Part One: Motivation

1. Complete the table using '✓' when appropriate.

	Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1.I have a strong desire to study in an on-site class and face to face with the teacher.						
2.I look forward to attend my English class at the university.						
3.It bothers me to follow the teacher and the administration regulations.						
4. I am losing my desire of learning when I face an imposed time and place.						
5.I enjoy learning using hand-outs.						
6.I would spend more than 1 hour for each course.						
7.It would bother me to manage accessibility problems as preferred timing and unavailability of classes, laboratories and materials.						
8.I have little interest to do exams using the exam sheets.						
9.I do not think that my teacher of						

English is very good in class.						

2. The aspects that made me feel unmotivated during the on-site session were:

.....

3. The aspects that made me feel motivated during the on-site session were:

.....

4.If you compare **online to on-site classroom**, which one made you feel **more motivated**?

* Online Semester ☐ * On-site Semester ☐ * Both ☐ *None ☐

Justify……

Part Two: Self-confidence

1. Complete the table using '✓' when appropriate.

	Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1. The teacher's presence, my physical presence, the use of hand-outs and the blackboard made me confident.						
2. I feel sure of myself when I am engaged with all my senses in class: able to hear, observe, speak and make experiments in the laboratory.						
3.I lose confidence when asked to speak in class and in front of students.						
4.I feel confident when I work in pairs or in groups in the classroom.						
5. I am less confident when my teacher and classmates observe or evaluate me.						
6. I feel more confident when I get immediate answers to my questions.						
7. I feel confident when I receive feedback from my teacher/ classmates.						
8.I am losing confidence because of my teacher's style.						
9.I am so confident when learning English at the university.						
10.I feel less confident when I am in an examination in classroom.						

2**.** The aspects that made me feel unconfident during the on-site session were:

.....

3. The aspects that made me feel confident during the on-site session were:

.....

4. If you compare **online to on-site classroom**, which one made you feel **more self-confident**?

* Online Semester ☐ * On-site Semester ☐ * Both ☐ *None ☐

Justify……..

Part Three: Anxiety

1.Complete the table using '✓' when appropriate.

	Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1. I do not feel pressure if I have to speak in the traditional class.						
2. I do not feel pressure if I have to write in the traditional class.						
3. I do get anxious if I have to listen in the traditional class.						
4. I do not get anxious if I have to read in the traditional class.						
5. I do not worry about learning English in the classroom at the university.						
6. In class, I do not ignore classmates' distractions and I find myself thinking about things that have no relation with the course.						
7. Having a limited time in class and in the laboratory,1 hour, makes me stressed.						
8. I feel more tense and confused when being in front of the teacher.						
9. I am afraid that other students will laugh at me if I participate.						

10. I would not get nervous or confused when I am psychically present in class.						
11. I feel nervous when I face these difficulties: unavailability of classrooms, laboratories and lack of materials.						
12. It would bother me to move to the university and respect the imposed timetable and manage punctuality.						
13. I am at ease when having an exam in class.						

2.The aspects that made me feel stressed during the on-site session were:

……

3. The aspects that made me feel calm during the on-site session were:

……..……..

4. If you compare **online to on-site classroom**, which one made you feel **more anxious**?

* Online class ☐ * On-site class ☐ * Both ☐ *None ☐

Justify……....

Participation noted with thanks

Appendix D: Teacher's Diary

Diary Items	Provided Data
Problematic	1- What is the impact of web-based education on ESP students' affective filter? 2-How can teachers maintain a low affective filter in web-based education?
Hypothesis	1- Web-based education lowers students' affective filter. 2-Teachers can maintain a low affective filter in the online classroom via implementing different strategies that target higher motivation and self-confidence and low anxiety.
Major Objectives	1. Observing the students' attitudes and behaviours when learning online. 2. Implementing the six strategies while teaching online via Udemy: Steps to create comprehensible online courses where students' motivation and confidence are high and their anxiety slow.
Minor Objectives	1.Recounting the experience of the teacher's while teaching via web-based education using Udemy. 2. Highlighting the benefits of Udemy for students' affects.
Field	Education: Online teaching
Type	Visual Diary: paragraphs and pictures– non-participants diary
Method	Implementation of Udemy. Implementations of six psychological teaching strategies.
Place	Online platform: Udemy
Observer/User	The teacher
Informants	Sixteen third year Fundamental chemistry students.
Period of the Experiment	One semester from the academic year 2021.2022 From November to February
Organization	1. Justification of the selected tool. 2. Udemy Restrictions and Requirements. 3. Steps of creation audio-courses on Udemy (Piloting Studies).

	4. The implementation of the six strategies. 5. Students' first online course learning. 5. Students' Online Learning Problems and Difficulties. 6. Teacher's Training 7. Software Needed 8. Hardware Required 9. Needs Identification and Analysis and Syllabus Design. 10. Steps of creation Video courses on Udemy: 10.1 Characteristics of the new created videos. 10.2 Teacher's Difficulties while using Udemy. 10.3 Steps of Udemy course content creation. 10.4 Creation of Comprehensible Input using Udemy. 10.5 Students online learning engagement. 10.6 Students' Feedback on Udemy. 11. Benefits of Udemy for students' affects. 12. Advantages of Udemy for Teacher.

1.After reviewing the literature related to web-based education tools, the researcher found series of web-pages such as Coursera, Plugin, Udacity, Edx, Google Classroom for Education and Udemy. Methods of e-teaching are unlimited and various, but they are costly.

2.Coursera and Udemy has been selected as the most appropriate ones as being public web-pages, simple and used by wide range of students and teachers as well.

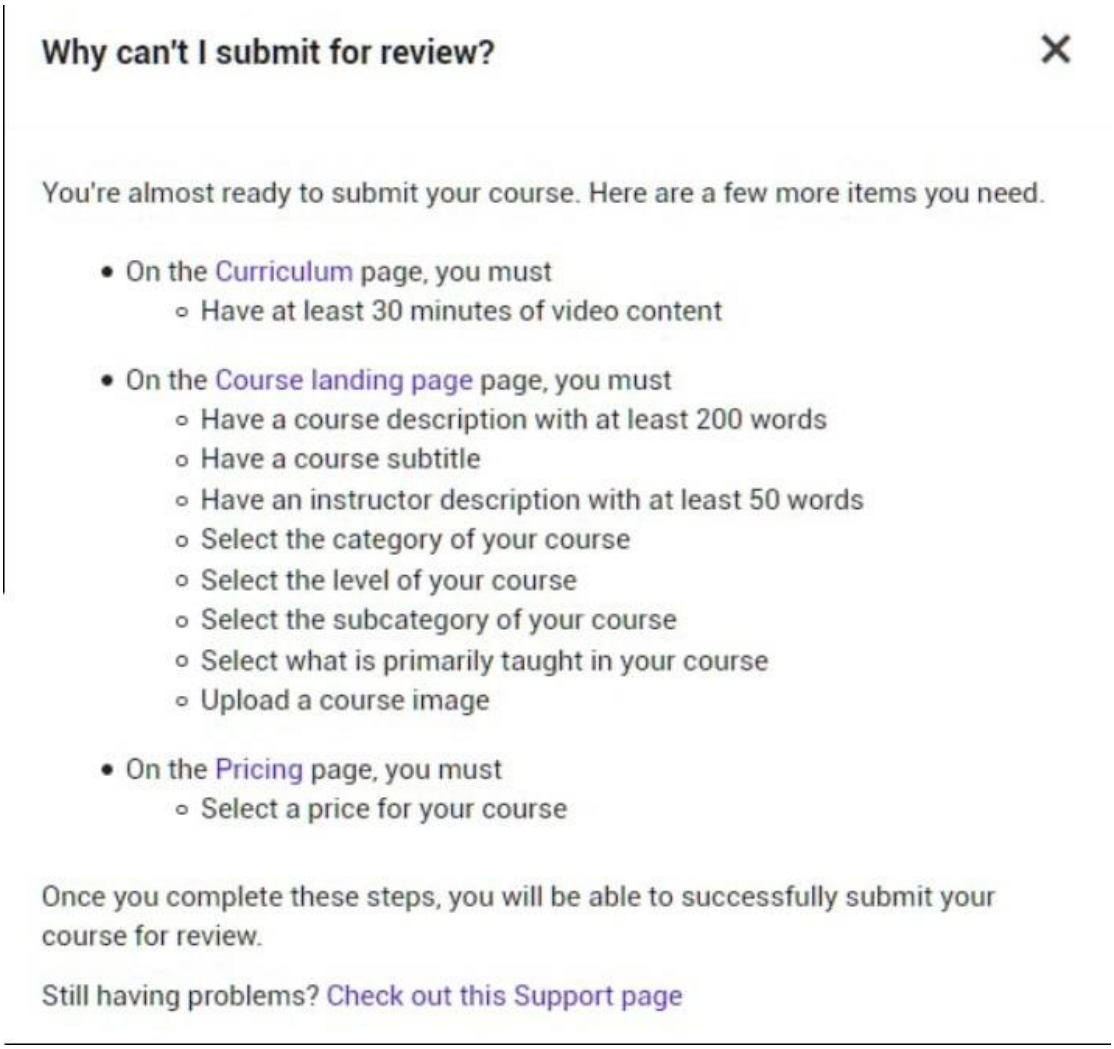
3. After registration in both of them via creating an account using the teacher's official mail and a password, notifications were sent to e-mail.

4. The teacher could log in in both of Coursera and Udemy to see other teachers' free courses in an easy way with the least difficulties.

5. When it came to use these accounts creating courses, Coursera required from the teacher, the instructor, an American certificate from, which was not available.

6. Thereby, the researcher switched to Udemy where the creation of a content using forty available languages, in any domain and without being restricted to specific countries, people or diplomas, was possible with a list of restrictions and requirements

that are mentioned in the above picture.

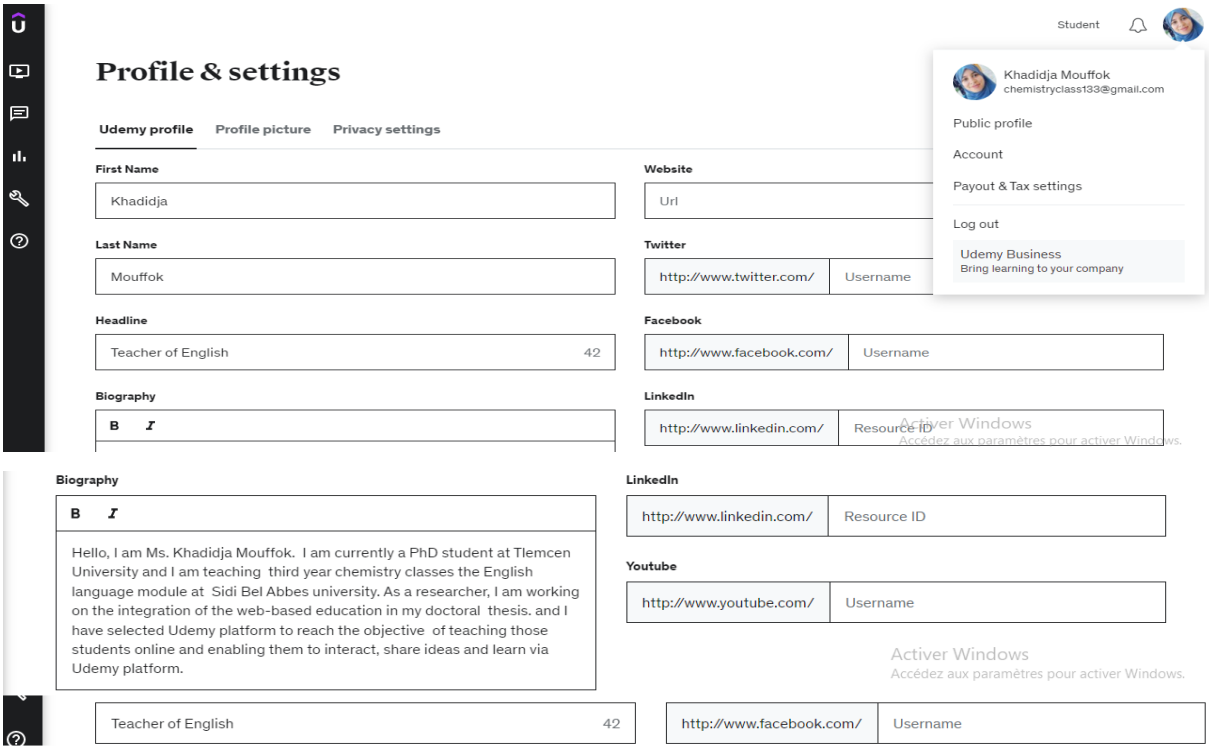


Udemy Restrictions and Requirements

7. First, the teacher piloted Udemy platform with the help of a technician and the teacher's account was created.

8. The teacher's account required filling data related to the teacher profile, picture and setting. Firstly, the profile user is supposed to add data related to her real name and heading that would be displayed in her account and a short biography about her in which it should have at least 50 characters where links and codes are not permitted. The instructor in Udemy is free to write by any language.

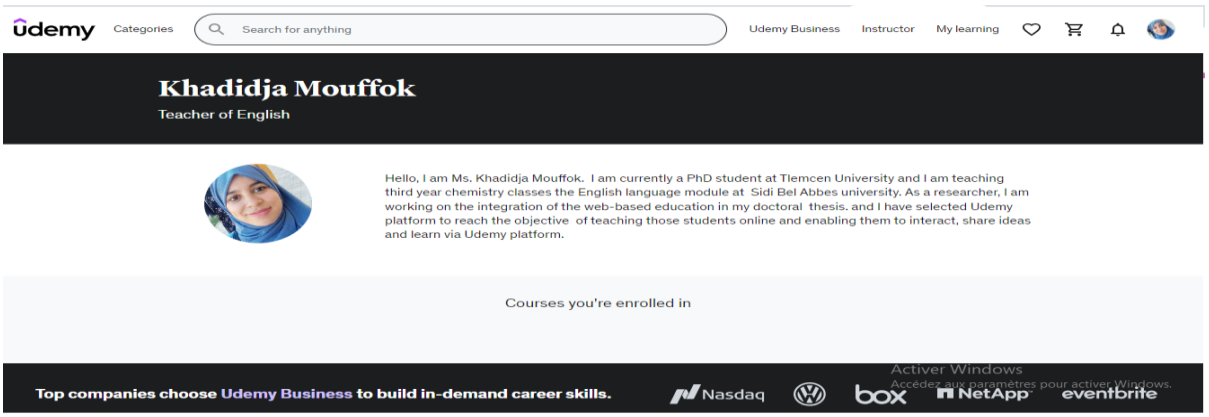
9. The created account can be easily linked to different web-pages such as: Twitter, Facebook, LinkedIn and YouTube and each course would have a particular URL that is a specific website.



Teacher's Udemy Account

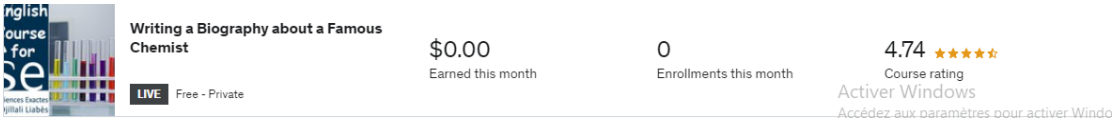
10. Secondly, the profile picture which required a clear identification of the teacher's face in which the image preview is Minimum 200x200 pixels, Maximum 6000x6000 pixels. Once the picture was downloaded, the platform asked for a verification proof that was either the ID Card Identity or the driving Licence fully scanned, clear and matches the one given in the Udemy profile picture selected. This process took two days to be accepted and checked by Udemy privacy teams' account.

11. Finally, the privacy settings gave the choice for the instructor to keep her picture seen by users and to display the courses followed on her page or not. Once all these details were well-treated. The displayed account was ready for use.



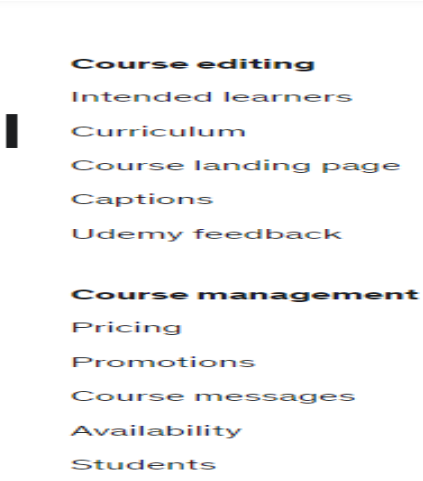
The Instructor Profile

12. In the piloting studies the researcher transformed one course of «How to Write a Biography about a Famous Chemist» which was in form of a handout into a series of eight videos in which each video included parts of the course.



The First Unit

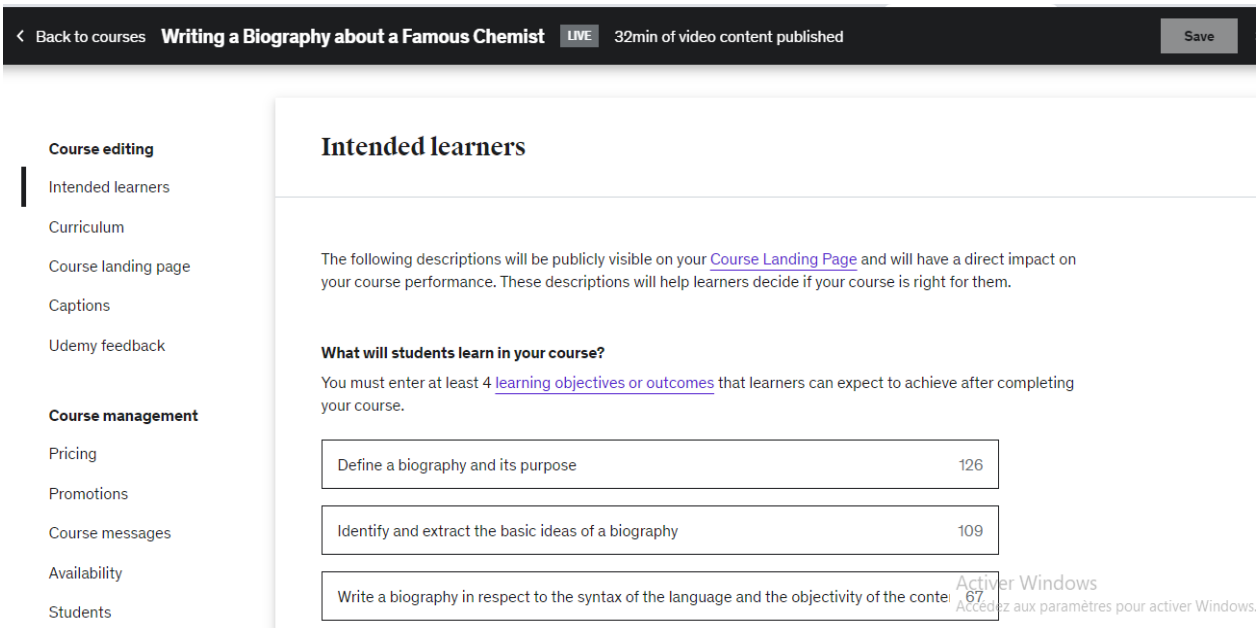
13. With the help of the theoretical data about Udemy, the researcher succeeded to prepare a series of videos by following the steps available on the platform about a course content creation which are as follows: On the one hand: course editing which included Firstly, intended learners, curriculum, course landing page, captions and Udemy feedback. On the other hand, course management dealt with selections related to the platform management as: pricing, promotions, course messages, availability and students. These steps are explained in details.



Udemy Course Content Creation

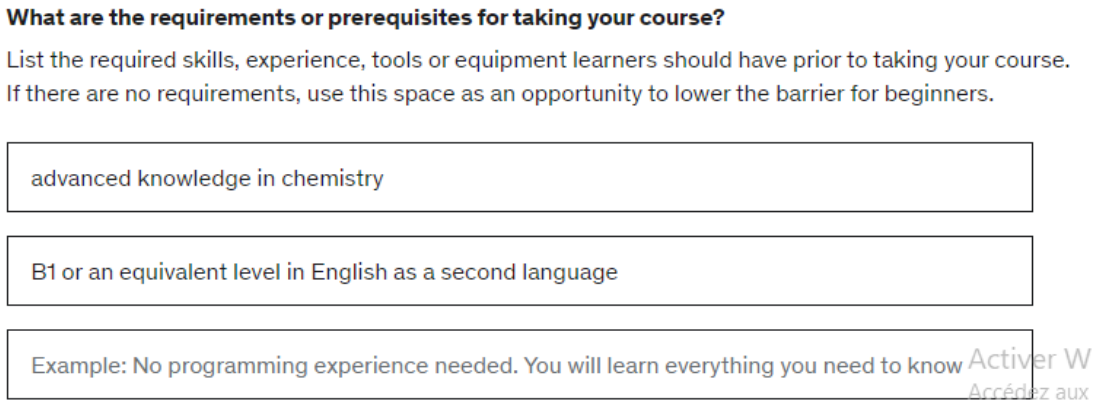
14. The first step was filling the necessary data related to the intended learners that would take the courses in which descriptions would affect the course performance and whether the course would be accepted and published online via the platform or not.

15. In this step the instructor was supposed to answer three main questions in which the first one is: «**What will students learn in your course?»** in which the least number of the learning objectives or outcomes that learners can expect to achieve after completing this course is four ones.



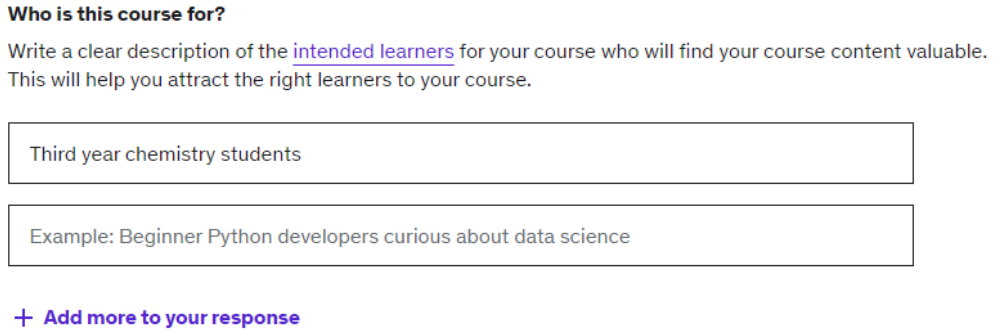
Learning Objectives

16. The second question was about the requirements or prerequisites for taking the course which could be as a list of the required skills, experience, tools or equipment. The teacher wrote two main bases in which learners were supposed to possess: An advance knowledge in chemistry to handle its content. For the language aspects these learners should have a B1 or an equivalent level in English as a second language. All these requirements were met by her students.



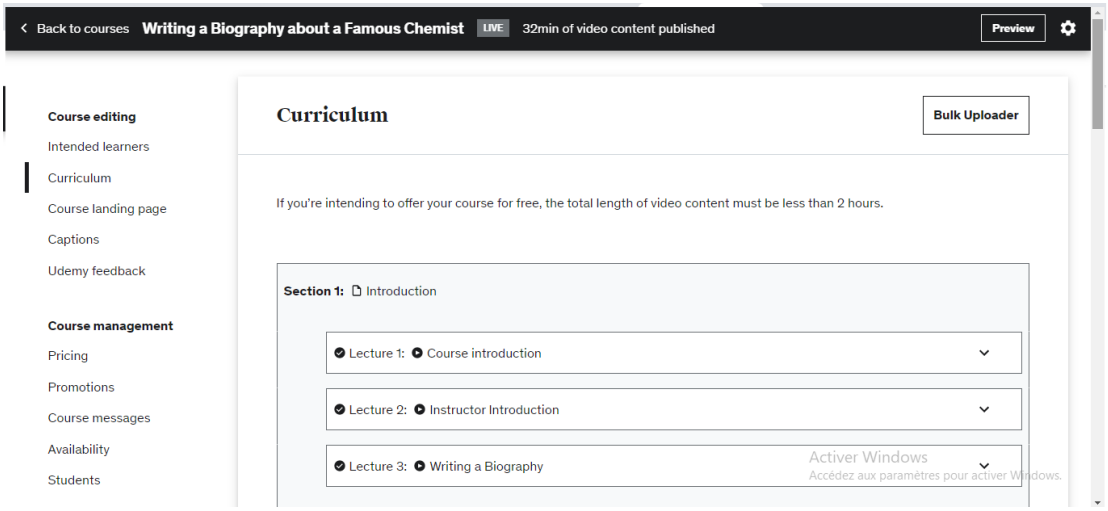
Course Requirements

17. The last question in this section was: «Who is this course for? ». The teacher is supposed to enter a clear description of the intended learners who would find it most valuable and suitable for the target population who were third year chemistry students.



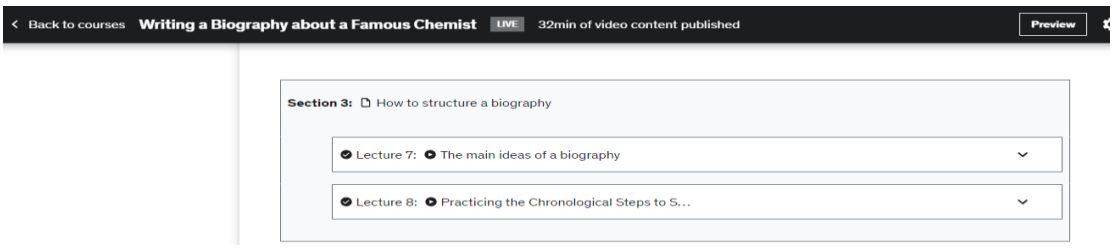
Target Population

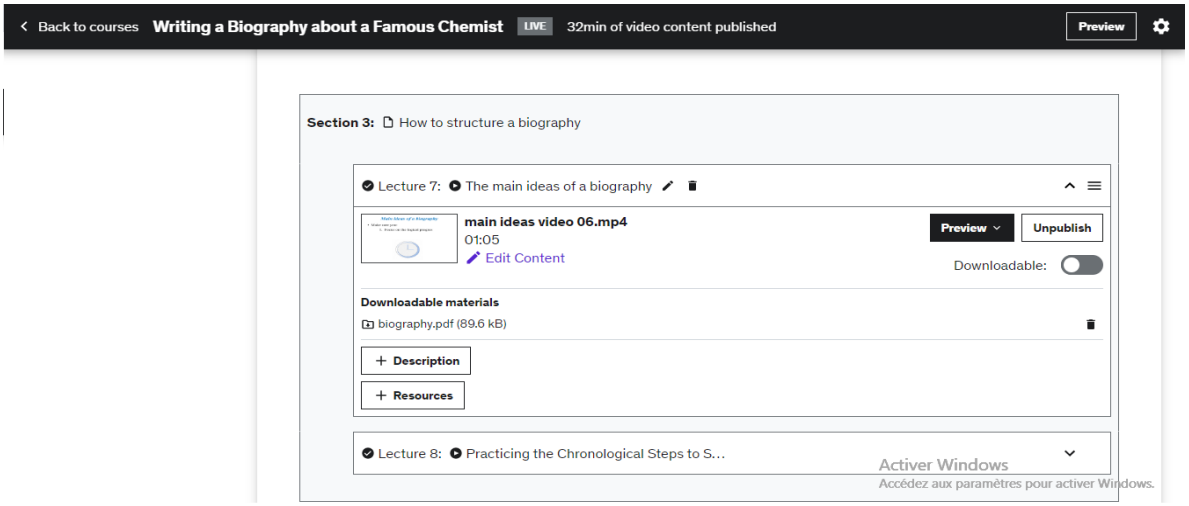
18. Once the instructor finished the intended learners' section, curriculum creation would be the next step in which the platform required minimum of six sections in each course. Moreover, the total length of the whole course must be less than 2 hours length in the free mode. Consequently, the teacher's first piloting course lasted for 32 minutes long that is mentioned in the above picture.



Curriculum Design

19. Each section included: title of the course, aspects of the course with its description and inserting video format was obligatory in each section. However, adding extra-resources for learners was optional.

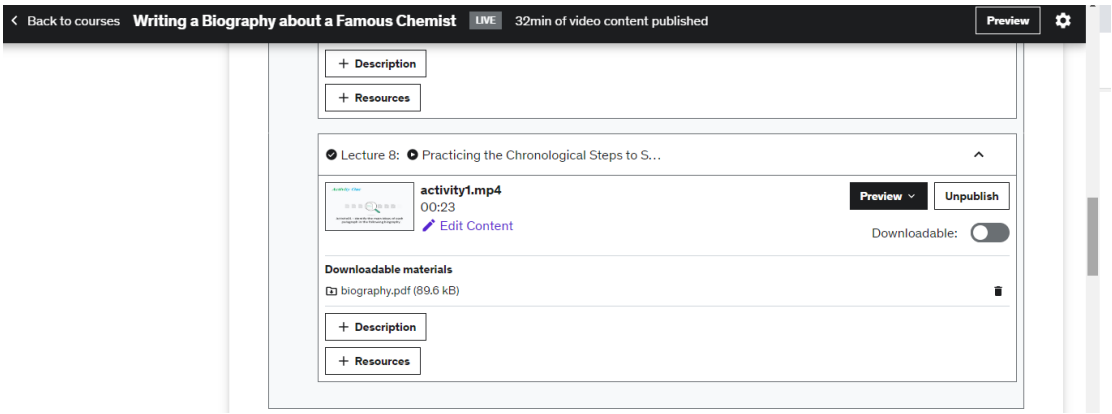




Curriculum Section Composition

20. For example, the instructor has added a video content that could be downloaded by learners and other materials as Pdf files, YouTube videos, Websites and Word format as an e-handouts. Thus, the strategy of respecting the students' individual differences is displayed. They were given the choice and the opportunity to use the learning style that suit them whether listening to videos or reading pdf files.

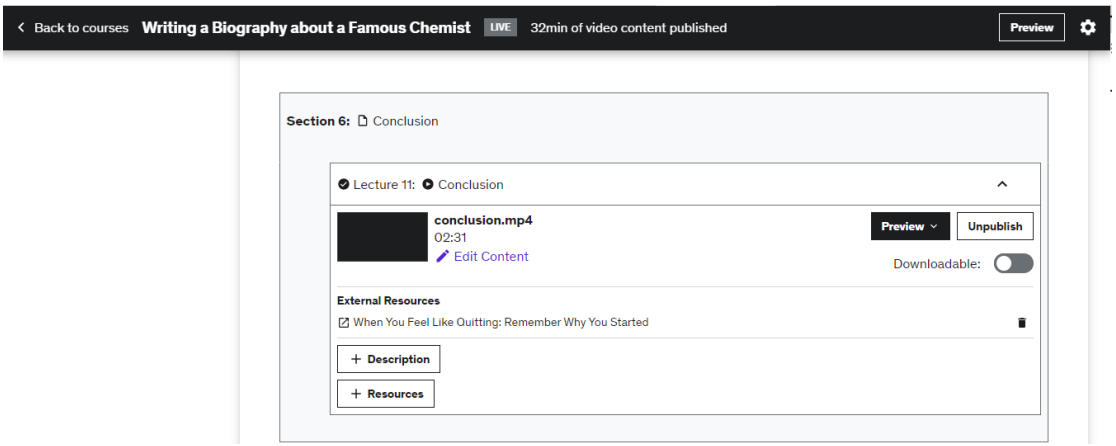
21. Within the course content creation, the teacher has also added a section called: Practice, for learners to accomplish some activities related the same course and, on the content, and the language as well.



Practice Section

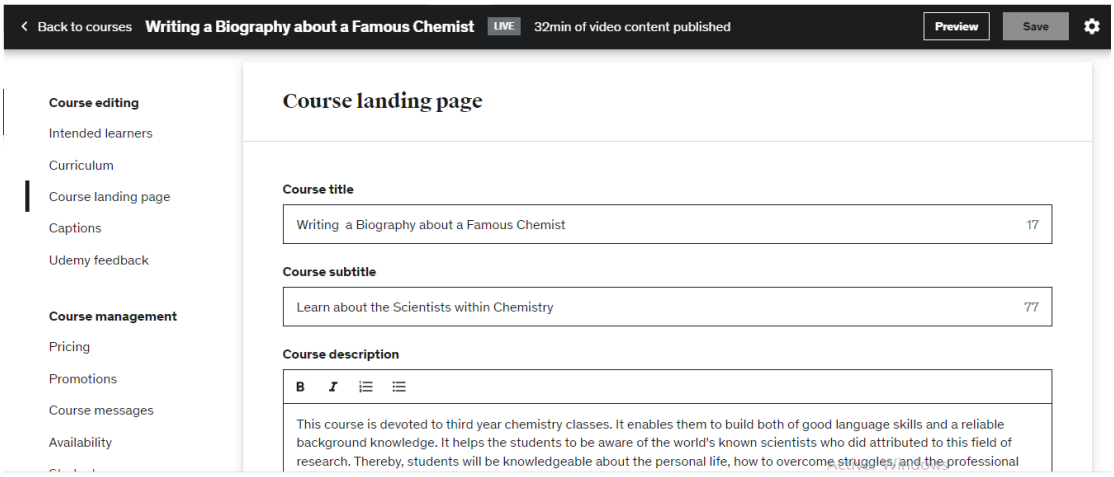
22. Each unit content had been composed of six main sections in which the first one was an introductory video, followed by four sections related to the course content. At last, for the sake of implementing a web-based education that provided a comprehensible input, the teacher thought about creating a conclusion section where a short video for resuming the course main aspects and checking whether the course objectives are met

or not and the extent of its progress. As a result, the last video of each course aimed at orienting the students' online learning, which would lower their levels of stress as they were aware of their learning details, organization and whole process details. Thus, the strategy of providing an online learning orientation had been doable. Besides, a motivational YouTube video in English was used as materials to raise their self-confidence and motivation. Thus, the strategy of creating a motivational environment has been realized. Moreover, a relaxation background music was displayed in the videos to build an adequate atmosphere for students. All these aspects were allowed in Udemy platform and served the creation of a relaxing atmosphere where the input can be easily received.



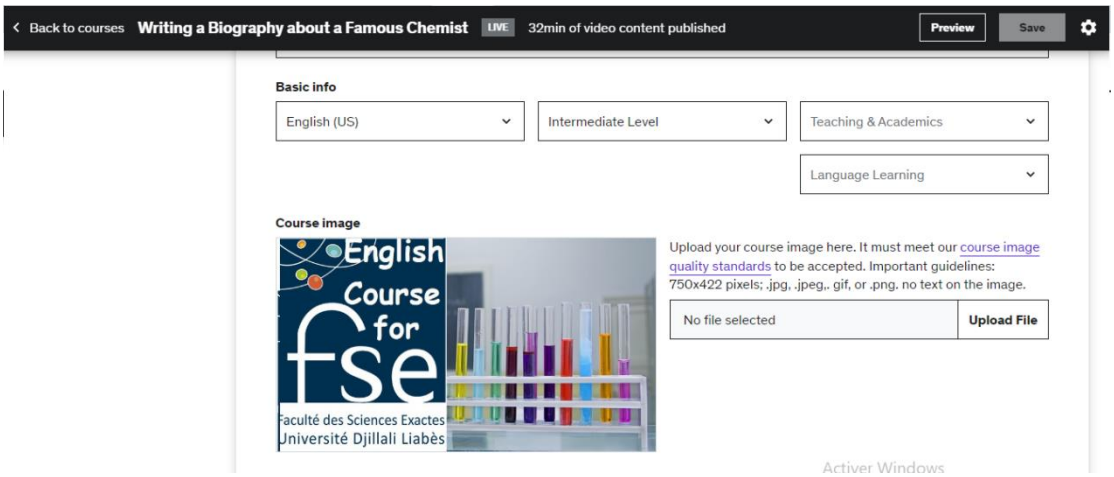
Concluding Section

23. Once the curriculum is created, the course landing page came as the next step. In this section the teacher was supposed to structure her final version of the course appearance using three main helpful requirements that were: The first step was fulfilling data related to the courses title, subtitle, providing description about the whole course which must be less than 208 words and adding basic aspects related to the course' language, students' level and the classification of the course according to its field and domain.



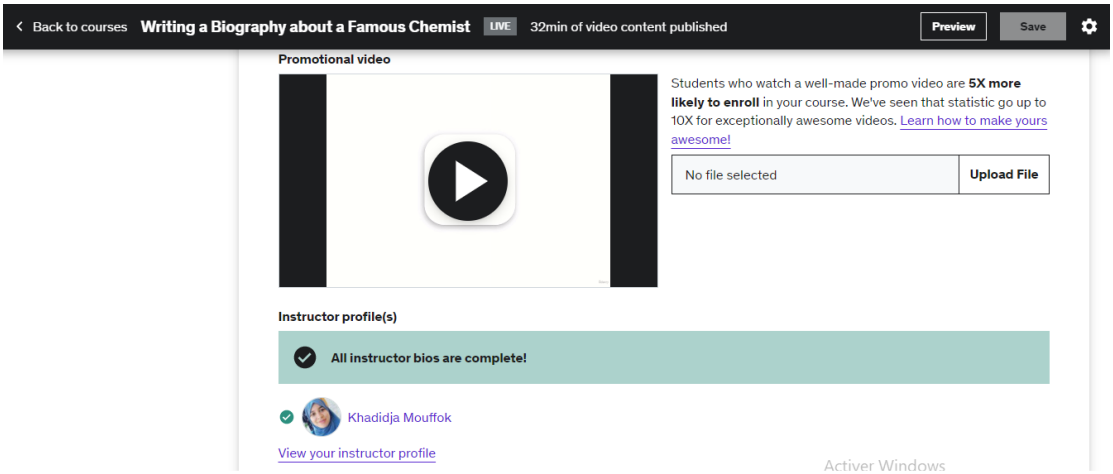
Course Landing Page Data

24. The second aspect that appeared in the course page is the course image. This picture corresponded to the main theme of the unit. It must match the same quality required by the platform to be accepted and published in these guidelines were provided: 750x422 pixels; .jpg, .jpeg,. gif, or .png. no text on the image.



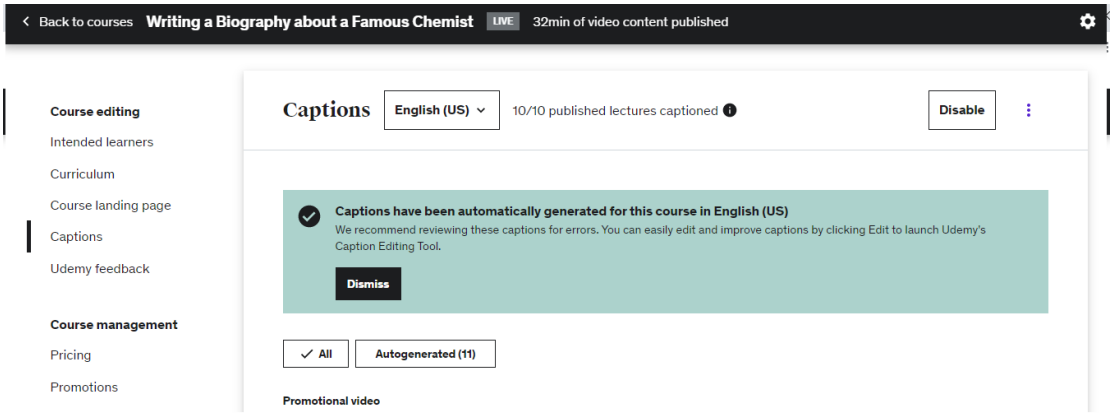
Landing Page Course Image

25. The last step and the most time-consuming one was to create a video content where main aspects of this course are provided and students could get an idea about the course content in which this video is obligatory for every course creation for the sake orienting the students' learning, which worked as a strategy to reduce their anxiety levels. This video should be also a high-quality video in terms of voice and length otherwise, it would be rejected.



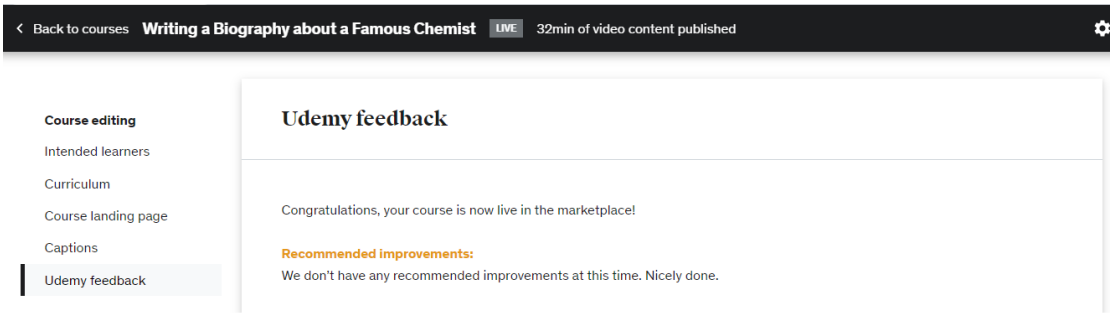
Video Landing Page

26. The fourth step in the course edition steps was possible if all the steps would not contain errors. Once all the course' videos do not include errors captions would be automatically generated by Udemy.



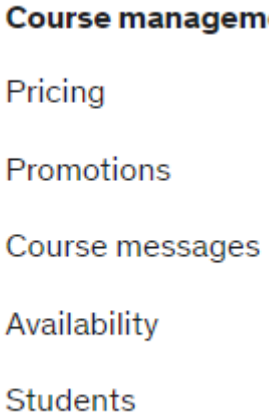
The Fourth Setting: Captions

27. The last step of the initial setting was named «Udemy Feedback». As its name suggested, it provided comments and recommendations for the instructor once the course was reviewed by the platform to be either accepted or rejected. If the course was published, the coming photo would display that the course was LIVE and successfully published.



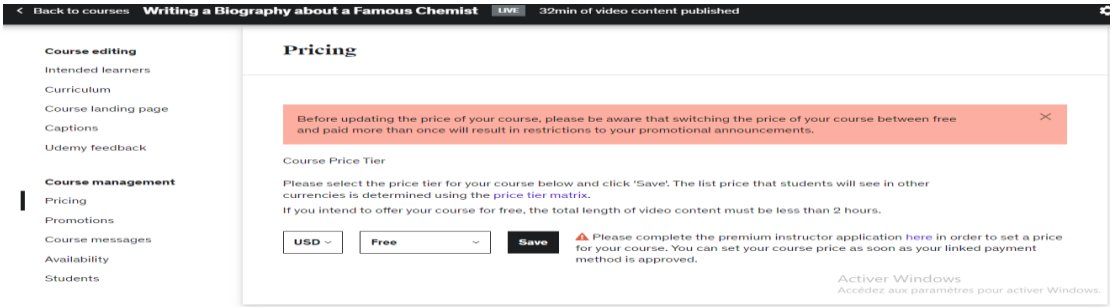
Last Step of Course Editing: Udemy Feedback

28. Once the course content was completed, the instructor was supposed to switch to the second step called « Course Management». It included five main aspects to be accomplished. Pricing, promotions, course messages, availability and students were the main points to be informed about before submitting the course online.



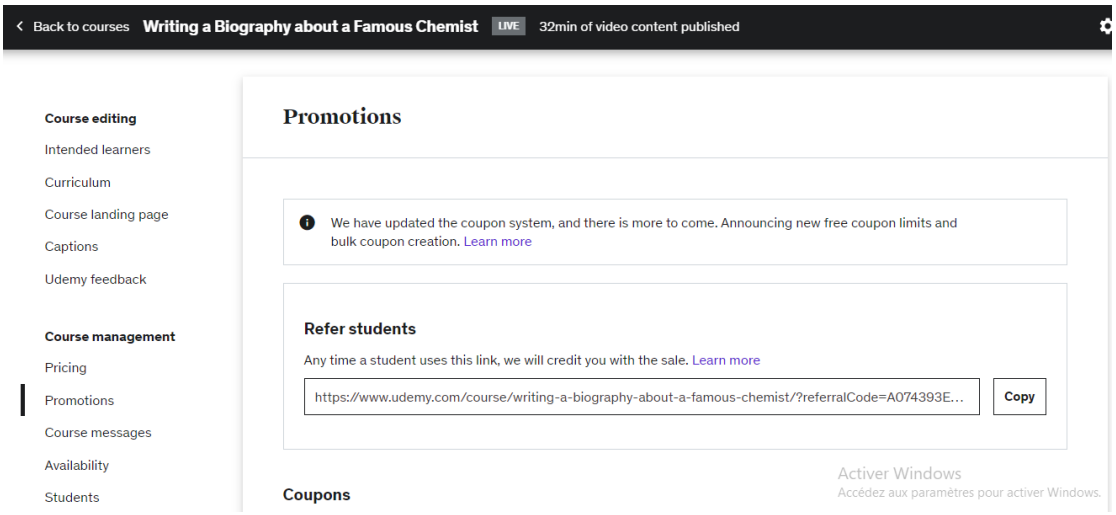
Course Management Steps

29. When it came to pricing, the instructor is supposed to determine the price of her courses on the platform via adding an approved payment method. However, the teacher had offered the course for free to her third year chemistry students which respected the total length of the video that is less than 2 hours long.



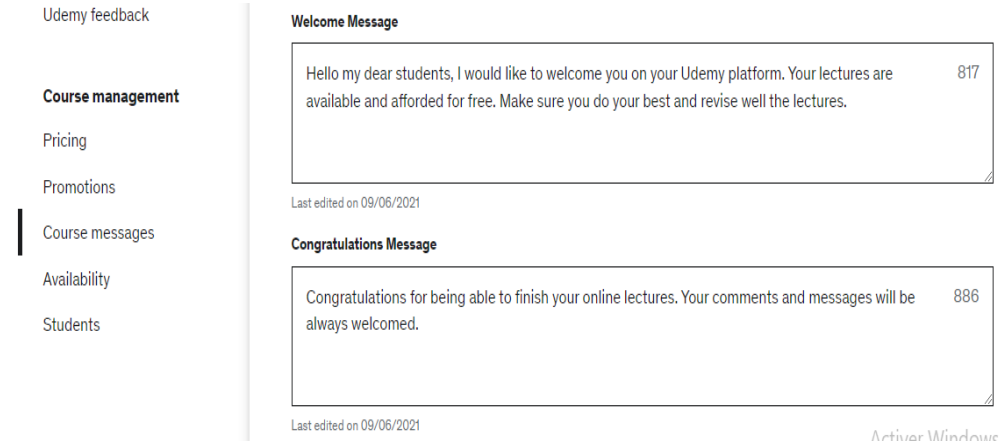
Udemy Free Courses

30. Once the price was set, the promotions took place as the second step. It was limited to instructors who were giving courses in return of sums from students. For the free courses, promotions granted the instructor the link of the course that could be given to students to easily get access to course using the web page.



Promotions

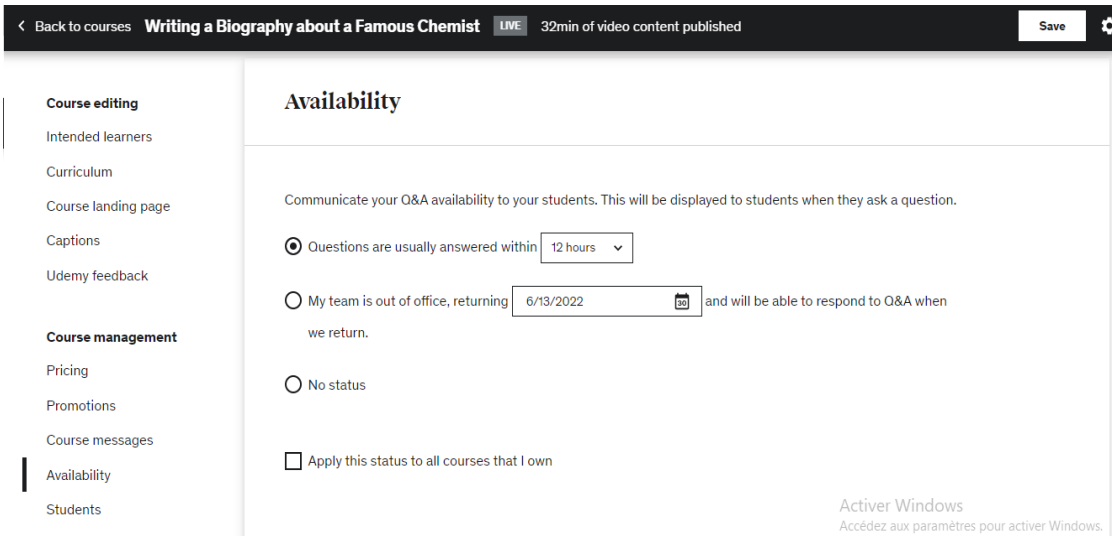
31. Course messages was an optional step where the instructor wrote messages to students that would be sent automatically when they join or complete the course to encourage them to engaging with the course content. The teacher's welcomed and wrote congratulations messages in the box. Thus, this technique aimed at applying the expectancy-value theory where the teacher expected from students to be successful and once they read the messages, they would give value and develop thoughts in relation to success and they would automatically expect success.



Course Messages

32. The step of course management had determined the availability of the instructor to

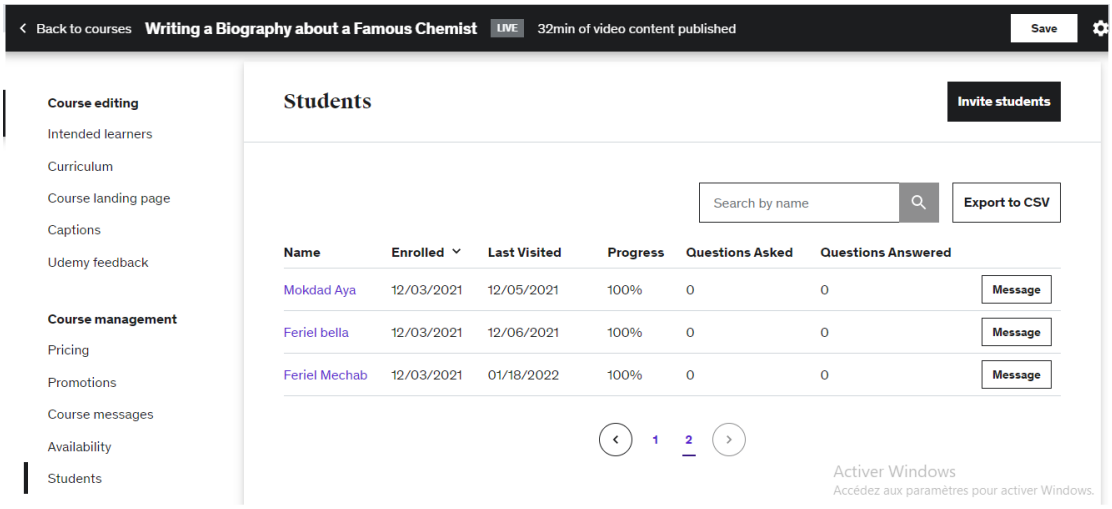
answer their questions. The teacher informed her students that their questions would be answered and explained within the 12 hours, so that students do not feel lost, bored or uncontrolled. In such fast manner, the teacher targeted the process of lowering their anxiety in case of facing difficulties or hardship in any aspect comprehension within the course or the practice sessions. Thus, technical and content support were available throughout the whole semester.



Instructor's Availability

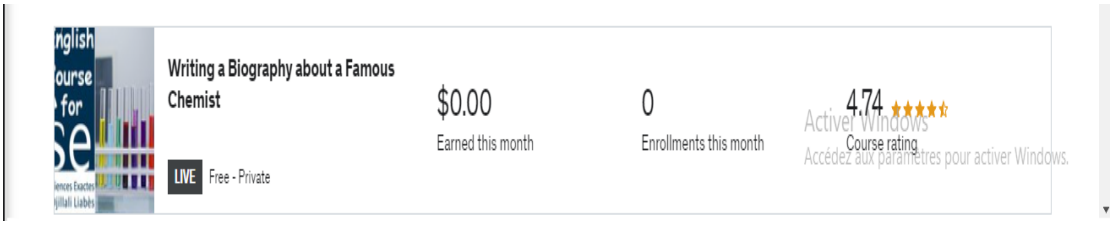
33. The last step of the whole course creation process in Udemy was providing data related to students. The teacher had limited the course only for this research case study. The process of sending her students invitations via mail to get access to the course once they receive it. Also, this step provided the instructor with details about the students' names, for those who have logged in, full date of having access to the course, last day of visiting the platform and their progress in this unit. Thus, the teacher could know who could easily use the platform and who might need orientation. For the questions, the teacher informed the students that they cannot send her questions via Udemy as it was not an open option in the free courses. However, it was requiring paying via e-ways. Consequently, the teacher suggested another free, available and practical ways that can be used by all students with no exception with the least difficulties that is either sending questions via mail or via Messenger. All students agreed and had selected Messenger application. As a result, a group communication on Messenger has been created in order to lower the students' feeling of isolation and raise their self-confidence. Indeed, all details, updates and inquiries of students had been sent via this daily used application

and the teacher succeeded to integrate the learning of English in the students' daily life. Besides, the teacher had informed her students via a message once the course would be published and replies were provided by all student in a maximum of 24 hours.



Students' Data

34. Consequently, the teacher submitted her first videos on the platform which took about 5 days to publish the course online and having an URL that directed the users to the course directly once typed on Google and it was for free because it was less than 2 hours long in each course.



Piloting Course Publication

35. When the teacher succeeded to create a course content on Udemy, the researcher moved to the second major step that was to introduce it to students and piloted its usage with them.

36. This process was explained by the teacher in three sessions using PowerPoint presentation in which each slide highlighted a step. The teacher also took a screen video of how to create an account on Udemy and used it as a sample. Thus, the students' anxiety had been lowered as they were both supported and oriented by the teacher.

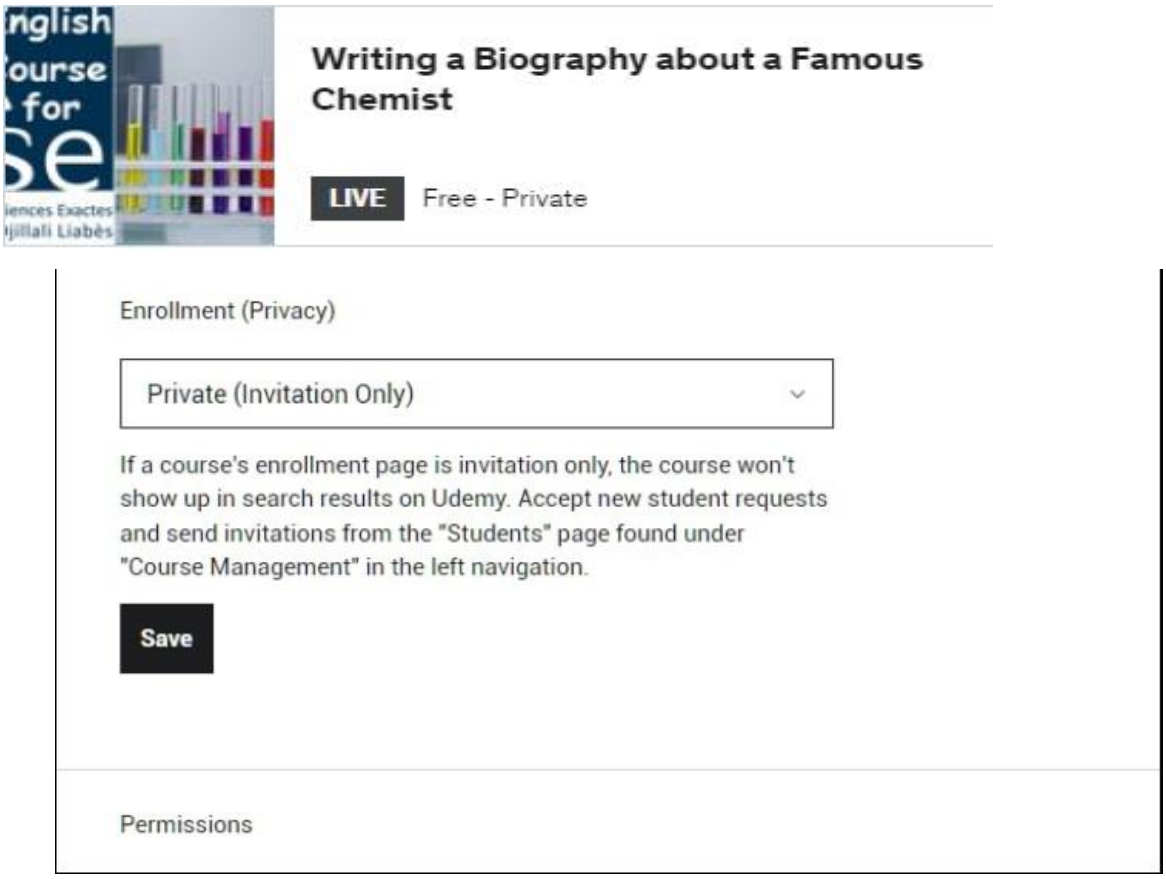
37. The teacher was motivated to accomplish this step because all the students would have access to her courses and even access to all the free courses of other teachers in

their field of interest, so they can learn about chemistry and in various domains via other teachers' courses available on the platform that required just a registration and an account on Udemy.

38. Two students out of 16 said that they had already an account on Udemy and they used to learn free courses on it. However, for 14 students it was their first experienced learning with Udemy.

39. Students were asked to create accounts on it using they mails and passwords as explained and they could of contact her for fixing technical problems which was possible via the help of a professional technician.

40. Then, using the teacher's account, she sent them an invitation to get access to the course because the courses were put on the private mood, so that only those who get an invitation by her would see the courses.



LIVE Private Courses

41. After receiving the invitations, they were asked to log in and learn the course of «How to Write a Biography about a Famous Chemist» online and by themselves.

42. Though the teacher showed all the steps in details, some students found difficulties

to create accounts on that platform because of these reasons: lack of technical knowledge, first experience with this platform, lack of materials since half of the students did not have computers and a good internet at home. So, they used their mobiles and phone data to learn via web, which was accessible and possible in Udemy.

43. They contacted the teacher whom fixed all their technical problems with the help of a professional technician who was available and serviceable. Thus, applying the strategy of providing technical support encouraged the students to invest efforts and reach the learning objectives.

44. The piloting study was accomplished when the teacher checked the students' progress and saw that they have viewed the videos and web-based learning took place.

45. With the suggestions of both of the technician and the students, the teacher decided to create better content and ameliorate its quality for the sake of improvement and raising their motivation and self-confidence.

46. Since the piloting videos was just audio recorded, the technician and the students suggested to the teacher to add a video and audio ones with Pdf and Word format files, so that they can download them if needed. Indeed, the strategy of integrating the students' learning styles and methods was taken in to account in order to increase their self-confidence levels.

47. For the sake of professional work, the teacher decided to have courses on how to create quality courses on Udemy with the technician. Thus, submitting online, high quality and video courses on Udemy were accomplished.

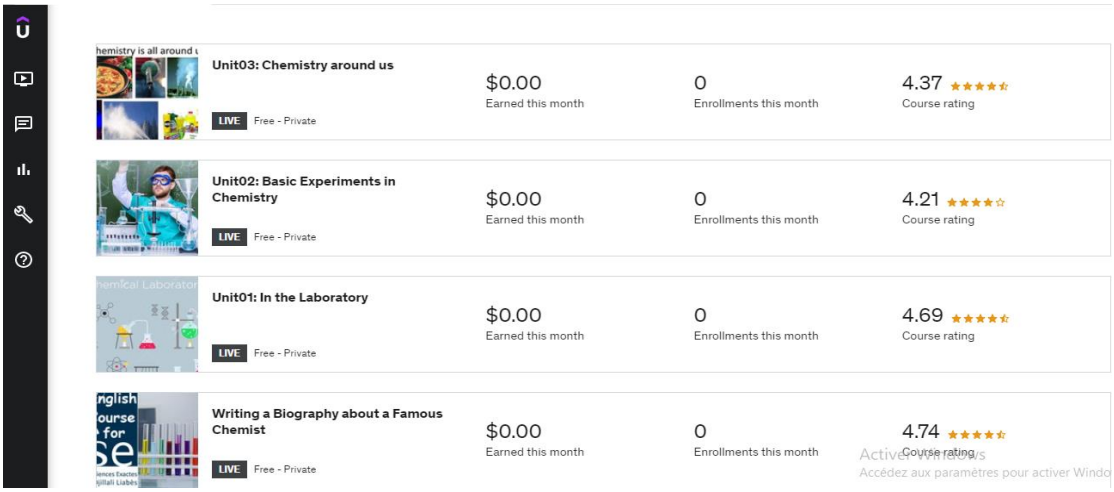
48. The teacher learnt the usage of different Software's such as: firstly, Format Factory that worked for reducing the length of the video, so that it can be downloaded in faster and with higher quality. Format Factory was responsible about changing the video type form from WMP file to MP4 file. Secondly, Screencast helped the teacher to easily record the computer screen for free, but it was not useful for a long time because of some technical problems that led to the shift from this application to the OBS, (Open Broadcaster Software). Thirdly, OBS Studio due to its usefulness. Fourthly, Droid Cam Webcam. It is a phone and a computer application that allowed the teacher to record the video as well as the audio when linked to OBS of the computer via the same WIFI of the computer and the phone. Droid Cam Web cam was useful and applied in the three

recordings of the units. Fifthly, a good internet quality that was not always accessible to it and the latter caused the interruption of the video course and led to its rejection. Finally, Text to Speech Bot application that is available in Telegram and it is similar to Text to Speech in which both helped the instructor to create an automatic audio voice for the piloting course videos only. However, the teacher did not use this applications voice in the online courses as she recorded herself.

49. For the hardware, the teacher worked with these materials. First, an i3 computer that resisted the mentioned Software. Then, a cell phone that enabled the used of Droid Cam application: SAMSUNG GALAXY A10s with a with quality camera that is characterized by a 13 MP. Next, a tripod mobile phone stand holder for camera phone selfie that helped the stability of the camera while recording the video course. Moreover, two computer screens had been used. One screen for the program OBS Studio and the second screen was for the appearance of the PPT presentation slides. The two screens required a number of cables to connect them. Finally, a microphone was essential for a good sound quality production. However, the teacher kept the use of the computer microphone rather than a separate devise.

50. After conducting Needs Identification and Analysis with the students and determining their needs, lacks and wants, the teacher designed a syllabus that helped students to reach the target situation objective that was learning ESP courses.

51. Each online unit included two main courses. Thereby, the syllabus was divided into three main units. Thus, there were six courses for the first online semester.



Online Units Appearance

52. Once the syllabus was designed in form of handouts, the teacher worked on its transformation to video content course that was compulsory in Udemy.

53. The teacher decided to work on a single unit and once finished, she would move to the coming one, so that she gained time and ensured the organization of the syllabus.

54. The duration between the submission of each course was between one to two weeks. Thereby, students could consult their account weekly to get access to their courses that took around three days to finish the establishment of the course details that were required by the platform to be fully followed and completed.

55. The same procedures of creating the piloting course: course editing and course management, had been repeated in all the three units.

56. The process was so slow and very difficult because of these reasons: first, the required video quality was too much demanding because the platform restricted the video timing, quality of sound and image. These restrictions made it harder since the teacher's environment was disturbing and noisy which resulted repeating the video more than10 times to produce a video which did not include noises. When it came to the problems of video quality, the internet connection quality made it low. Therefore, the platform rejected some courses and suggested their repetition to meet the platform courses quality. The teacher decided to repeat the rejected videos until they met the platform requirements and the three units that included the six courses were published.

57. In the course design the teacher worked with two videos in each course. For instance, the first course included two main videos, the first one addressed the course content itself and the second one was for the practice of the learnt aspects. It included three tasks and activities for each course with the corrections, so that students can learn from the activities as well.

58. The total number of videos in Udemy platform was 12 videos.

59. When it came to the process of creating a video course, the researcher followed these steps: first, designing a course following the details mentioned in the syllabus and in form of PowerPoint Presentation. Then, with the support of a camera and some Software's that were responsible about recording the voice and the camera aspects, the teacher explained the course and the slides of the PPT are proceeding so that students could follow from the slides and her explanation as well. Next, when the whole course

recording was finished, the teacher checked the video: camera, sound and other details like speed of the lesson and clarity of the video. If there were any interruptions caused by the connection or external voices, the teacher would have to repeat all the course again and from the very beginning to its end. Each course had included from 7 to 12 minutes. Thereby, the repetition of one course three time had required half an hour in the average time.

60. The researcher worked on creating motivational courses where the following six strategies in her e-courses had been used to raise the students' motivation and self-confidence and lower their anxiety. First, in the design of the PPT presentation the researcher added these aspects: clear title, descriptive paragraph at the beginning of each course and video, emojis, Gifs, colours, pictures, ID cards, motivational quotes, introduction and conclusion with the main objectives of each course, sum ups, resuming questions and answers and concluding slides that highlighted the course objectives that target reinforcing and sibling the main aims of the course in order to create a class environment full of motivation, inspiration and encouragements. Then, YouTube videos were used as external sites that the students can find under each course to get extra-information about the same course content in a way that they were most used to which watching YouTube videos, but for the purpose of learning with less anxiety and higher motivation and self-confidence since they are familiar to this application. Moreover, the variety of tools used targeted respecting the students' individual differences and it enabled them to choose their preferable learning method which would raise their self-confidence and motivation as well. Next, the course was not available just in a video format, the researcher thought about students who did not have a Wi-Fi line at home and this disable them to download the course as a video format, so the researcher had typed it into a word format as handouts for anyone who preferred reading rather than watching and listening. The latter is a part of considering the students' learning preferences and styles which played a key role in raising their motivation and confidence as well when giving them choices of selecting the type of learning at distance and using the most appropriate strategy for each student. Finally, the researcher agreed with the students about the communication tool since Udemy did not offer comments under each video for free, but that was costly and it was not the case for her to pay for that. Therefore,

they agreed to keep in contact in case of questions, problems or further inquiries via two main ways. The first one was communicating by exchanging e-mails. The second way of communicating was to create a group on messenger as the majority had this application and knew how to use it and they were using it frequently, so comments and discussions took place at Messenger application where students were less anxious and more confident and motivated because this way was a reminder whenever they saw their classmates' sending messages and exchanging thoughts about the courses.

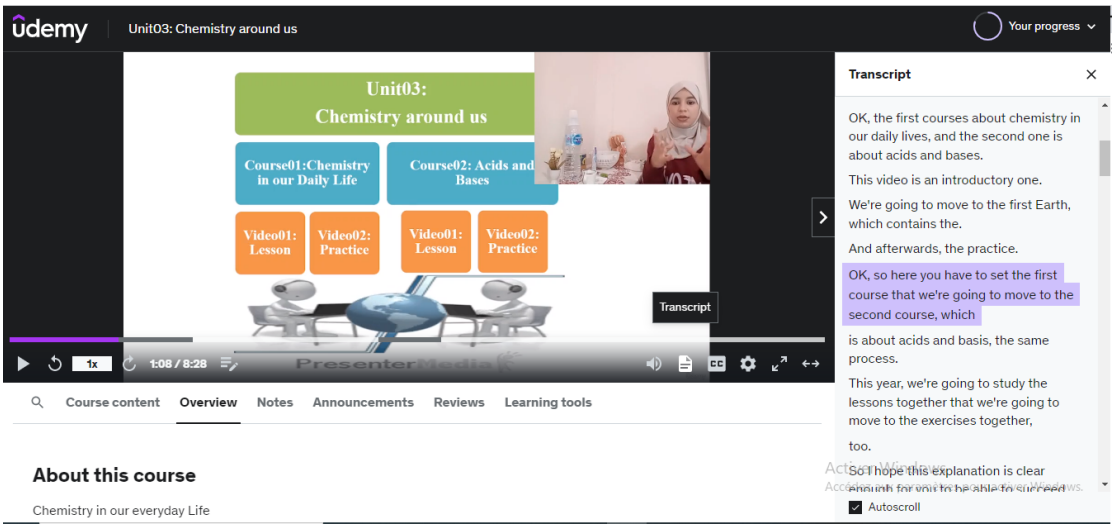
61. The researcher kept updated about her students because Udemy account setting allowed her to see every single data about who logged in and how many courses and videos were watched in a very detailed statistics available and seen just by the owner of the account.

62. Udemy had been considered as an opportunity for most of students especially for two of them who got a long-term scholarship and left to France to finish their *Licence* degree there. So, they could of have access to their English courses easily with the least difficulties and at any time which was not the case for the other modules because teachers had been sending them courses in form of long Pdfs via e-mail.

63. The students informed the teacher about their reaction toward Udemy which raised their motivation and self-confidence and lowered their anxiety since they were watching the teacher explaining the courses with the help of a written format that were the slides in front of them. Moreover, each course was joined with tasks and activities also simplified by the teacher and at the end of each video the solutions and the answers were provided to help students check their understanding and progress. All these aspects affected positively their psychology when learning scientific English at distance.

64. Other strength points of Udemy that helped the students to learn in an easy way was allowing them to control the speed of the video in which the choices corresponded with the different learning capacities of students: low, medium and fast. Besides, they could also repeat the video course until their fully grasp it, or repeat just particular aspects of the course. Furthermore, Udemy provided students with a written version of the video called 'transcript' which is considered as giving value to students' learning preferences and allowing various learning options to be available for them once clicking the option next the sound setting. Finally, students were given a space under each video for notes,

remarks or even questions to be saved later on their accounts.



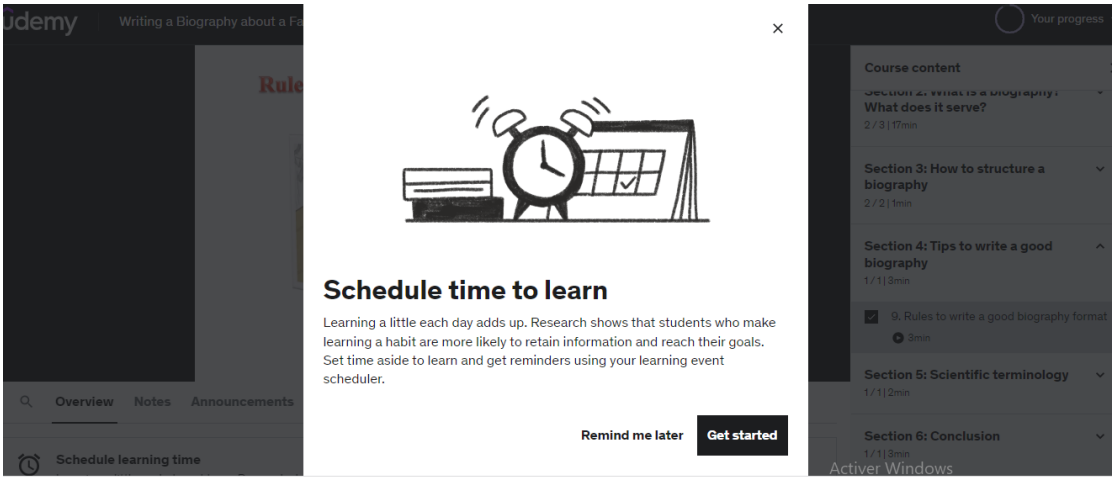
Video Transcription

65. For the most of students, learning via Udemy was an interesting experience. Students were not obliged to attend courses that the teacher and administration had restricted its timing. Via Udemy anyone could learn at his/her preferable timing with the most suitable way of learning for him/her: videos, word format or Pdfs.

66. As one of the most beneficial option in Udemy was its ability to keep truck on all students including how much minutes these students watched the course. Some of them were watching the course video without doing the practice for the coming days or next times. Others were organizing themselves, so whenever they receive a notification of a new course they log in and finish the whole course at once. The teacher observed another type of students who left many courses till the week before the examination took place and watched all the videos few days before the exam.

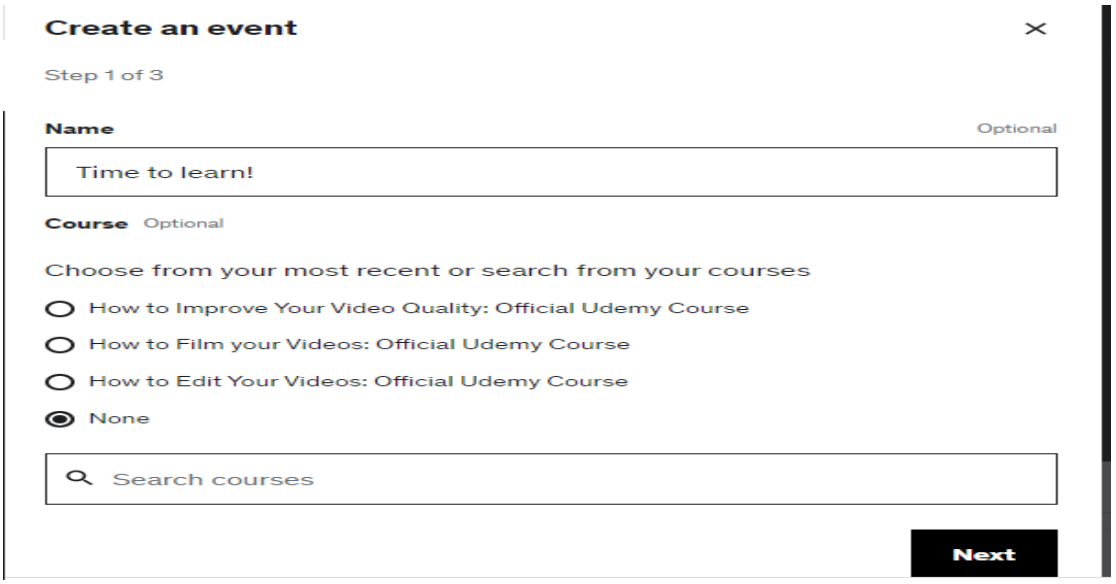
67. Students were aware of the setting that enabled the teacher to check their progress, some of students added that they watched the courses with their friends when they organized pair or group work revision sessions. Thereby, they used their classmates' account. Hence, by the end of the semester, all students viewed their videos.

68. Among the platform advantages, the ability of students to schedule their learning via the help of Udemy in which students are supposed to click on «Get started» to plan themselves.



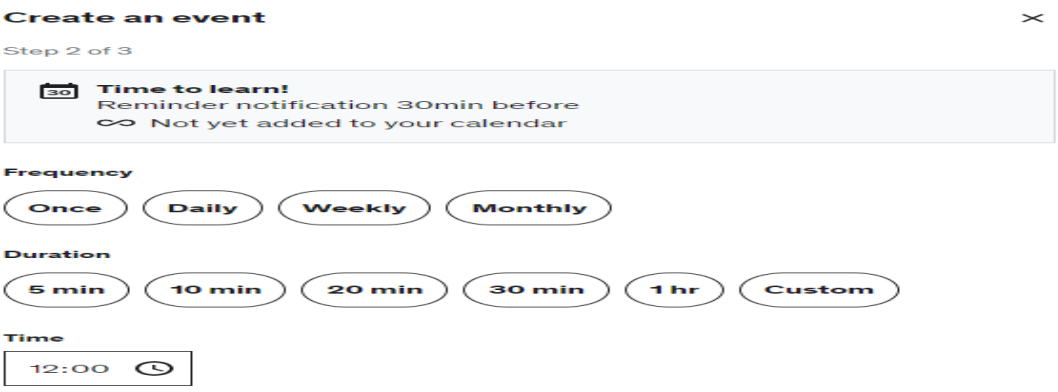
Students' Schedule

69. This planning consisted of three main steps in which the first one was creating an event via answering the questions given the above picture.



Step One: Students' Schedule

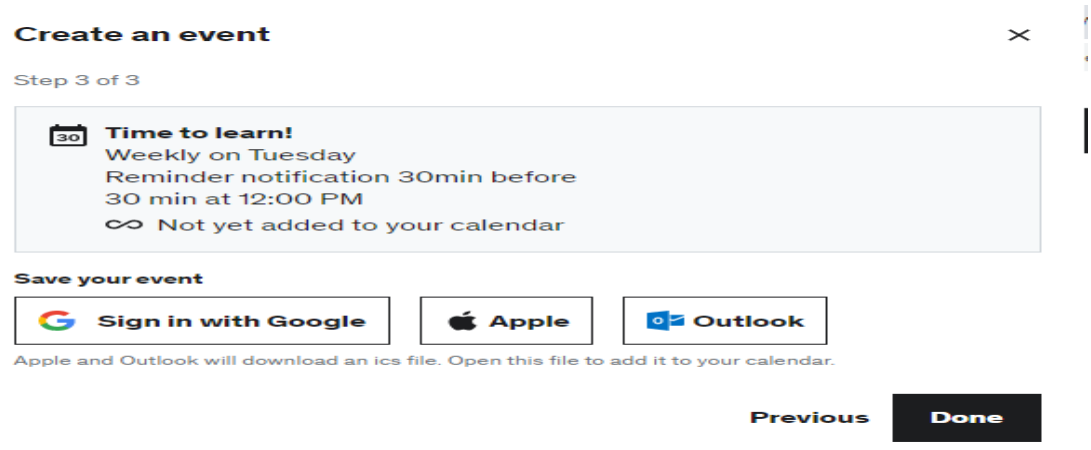
70. The next step was allowing students to choose his/her appropriate time, frequency and duration, so that reminders and notifications will be sent in this respect.



71.

Step Two: Students' Schedule

72. The last step of the students' schedule displays the whole data given and based on the students' preferences, notifications will be sent accordingly via: Google, Appel or Outlook. The most important option was that these data could be edited at any time by the students and the updates would be followed by the platform. Thereby, students were not restricted even by their schedule, but they can edit, modify and update it in regards to their free time, learning motivation and desire to fulfil their online duties and responsibilities.



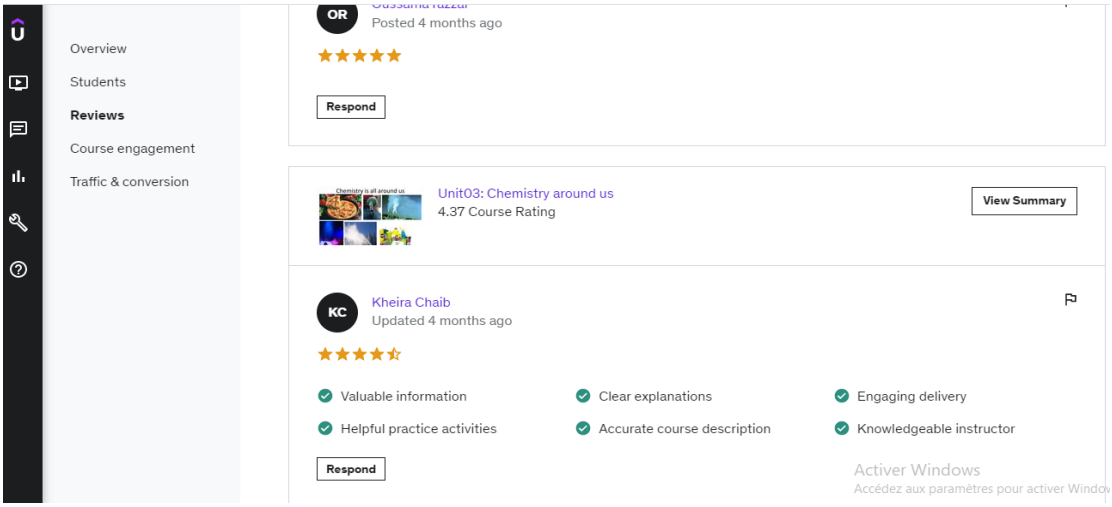
73.

Step Three: Students' Schedule

74. Udemy platform did not allow the students to leave questions in form of comments under each video because this option was limited to the paid accounts. However, at the end of each unit, students were allowed to evaluation the whole unit. They were set as reviewers who can rate it out of five starts. Besides, they could of write comments at the end of the unit and the comments and here are the most frequent ones:

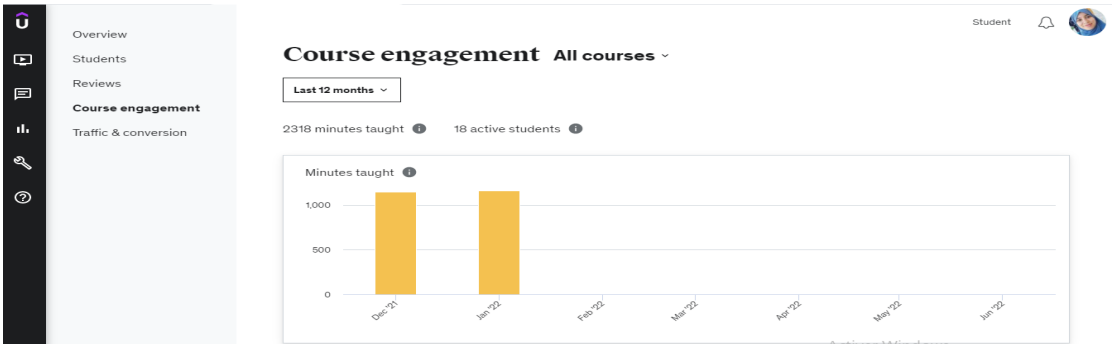
✓ Valuable information

- ✓ Clear explanations
- ✓ Engaging delivery
- ✓ Helpful practice activities
- ✓ Accurate course description
- ✓ Knowledgeable instructor
- ✓ Thank you
- ✓ Everything is clear

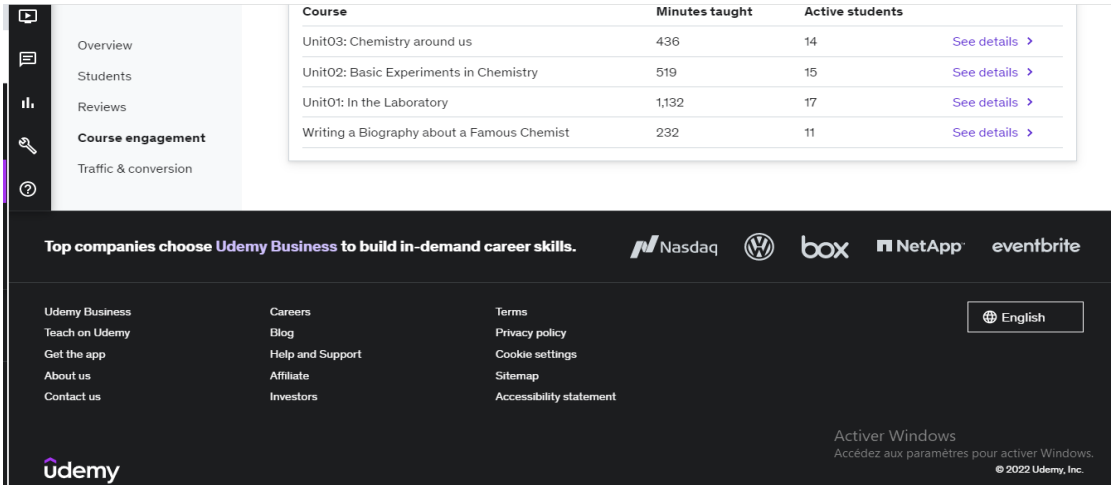


Students' Reviews on Udemy

75. In the teacher's account, there was a section called course engagement were a diagram presented the total minutes of lectures students had viewed over the last 12 months in which the teacher taught 2318 minutes during the first semester via Udemy. Moreover, the number of students who started a lecture over the selected time period were 18 students, one of the students had created two accounts using different names. Therefore, the statistics showed that students were logged in their account either using their mobiles by the application available in Play store or via Google web-page that was possible in both of computers and phones.

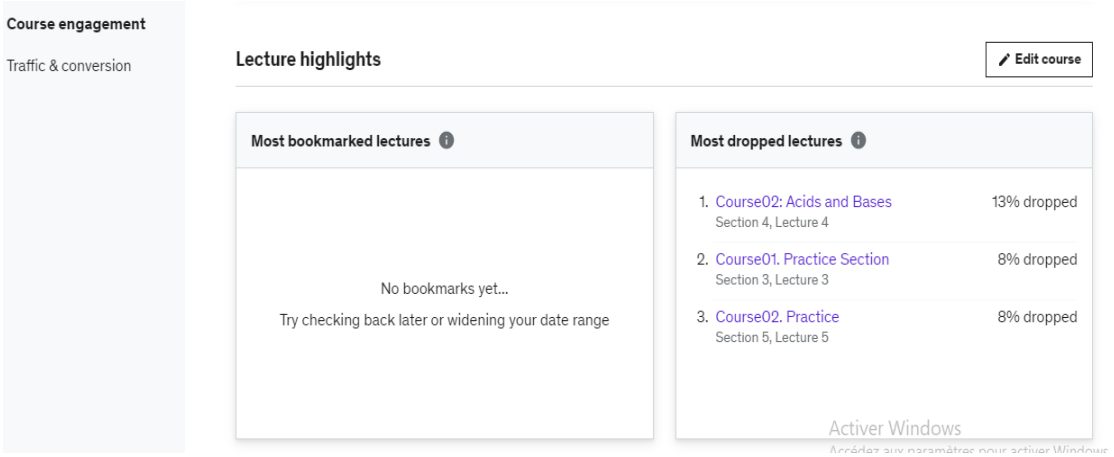


76. The second table indicates the organization of each course with the minutes taught and the number of active students with extra-details for each course a part. The above table is screened from the teacher's account.



77. The extra-details reveal data about the skipped and what videos they were most interested in in which the coming table illustrate it.

78. We hypothesize that some students were focusing mainly on the course and have finished it, but the practical side is neglected and skipped.



Dropped Lectures

79. To conclude, Udemy allowed the teacher to teach online in an environment where the students' affective filter is given a high concern. With its various advantages, the online semester was accomplished. Third year chemistry students had access to this web-based tool and experienced learning ESP online and in a suitable atmosphere.

Summary

The rapid expansion of online teaching and learning in the globe due to the Covid-19 drove this research to investigate the impact of web-based education on third year chemistry students' affective filter at Djillali Liabes University of Sidi Bel Abbes. The work targeted revealing which classroom supported the students' low affective filter. Thus, qualitative and quantitative data were gathered and analysed to determine the environment that promoted the students' higher motivation and self-confidence joined with low levels of anxiety. Hence, both findings denoted that the e-classroom boosted the students' comprehensible input due to the six strategies used as virtual implications for the ESP students' low affective filter.
Key words: Affective filter, third year chemistry students, web-based education.

Résumé

L'expansion rapide de l'enseignement et l'apprentissage en ligne à travers le monde en raison du Covid-19 a conduit cette recherche à étudier l'impact de l'éducation basée sur le Web sur le filtre émotionnel des étudiants en troisième année de chimie à l'Université Djillali Liabès de Sidi Bel Abbès. Le but de cette étude est de déterminer la classe qui soutenait le filtre émotionnel le plus bas des étudiants. Ainsi, des données qualitatives et quantitatives ont été recueillies et analysées pour déterminer l'environnement qui favorisait une motivation plus grande des étudiants ainsi que la confiance en soi avec des niveaux plus bas de stress. Par conséquent, les deux résultats indiquent que la classe en ligne a stimulé la contribution compréhensible des étudiants en raison des six stratégies utilisées comme implications virtuelles pour le filtre émotionnel bas des étudiants.
Mots-clés : Filtre affectif, étudiants en troisième année de chimie, éducation basée sur le Web.

ملخص

أدى التوسع السريع في التدريس والتعلم عبر الإنترنت في جميع أنحاء العالم بسبب كوفيد 19إلى دراسة تأثير التعليم عبر شبكة الإنترنت على المرشح العاطفي لطلاب السنة الثالثة كيمياء بجامعة جيلالي ليابس بسيدي بلعباس. كان الغرض من الدراسة تحديد الفصل الذي يدعم مرشح عاطفي منخفض للطلاب. وبالتالي، تم جمع البيانات النوعية والكمية وتحليلها لتحديد البيئة التي تعزز تحفيز الطلاب والثقة بالنفس ومستويات منخفضة من القلق. لذلك، تشير كلتا النتائج إلى أن الفصل الدراسي الافتراضي حفز مستويات عالية الفهم للطلاب بسبب الاستراتيجيات الافتراضية الست المستخدمة من اجل مرشح عاطفي منخفض للطلاب.
الكلمات المفتاحية: مرشح عاطفي، طلاب كيمياء السنة الثالثة، تعليم عبر شبكة الإنترنت