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*University of Tlemcen
Faculty of Arts and Languages
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**Use of Mobile Assisted Language Learning in an ESP
Context to Improve Learning: The Case of Third-Year
Finance Students at the University of Tlemcen**

Thesis Submitted to the Department of English in Candidacy for the
Degree of Doctorate in Didactics and Assessment in Language Teaching

PRESENTED BY:

Mrs. Asma BELKHIR-ZAIGOUCHE

SUPERVISED BY:

Prof. Radia BENYELLES-BENMANSSOUR

Board of Examiners

Prof. Assia BENTTAYEB
Prof. Radia BENYELLES
Dr. Hadia HAKEM
Dr. Anissa MBATA
Dr. Nouria MESSAOUDI

President (Tlemcen University)
Supervisor (Tlemcen University)
Internal Examiner (Tlemcen University)
External Examiner (Naama University)
External Examiner (Ain-Temouchent University)

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Dedication

This work is dedicated first to my father who passed away on 9th March, 2022. Although his death was sudden and not expected, he always had faith on me and supported me to never give up.

To my beloved husband who assisted and encouraged me to finish this work. To my mother, sisters and brother who supported me to go further though some health issues were faced.

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Abstract

This study aims to investigate the use of using Mobile-assisted Language Learning (MALL) in developing grammar rules, vocabulary knowledge and sentence pattern among third-year business students of English at Abou Bakr Belkaid University, department of Finance and Accountancy. A mixed- methods approach was adopted, which is a mixture of quantitative and qualitative research methods. This research was conducted throughout three phases: the pre-experimental phase, the experimental phase, and post- experimental phase. In the pre-experimental phase, a pretest is designed and administered to students in order to scrutinize the students' readiness and attitudes for using their own mobile devices. During the experimental phase, we adopted a quasi-experimental approach with two groups (experimental and control, wherein the experimental group consisted of 13 students and the control one covered 28 students. Post-experimental phase is a test administered to both groups after the intervention. The researcher used a structured interview with 10 ESP teachers and students' questionnaire with 41 participants to learn about their outlooks as to the use of mobile devices in the hope to improve grammar, vocabulary and sentence pattern learning. Findings revealed that students are ready to utilize and improve their skills through the use of their mobile devices. The results also uncovered that there is a statistically significant difference between both groups in favour of the experimental group, in the three stated language competences owing to the implementation of MALL. Teachers also showed acceptance and readiness to use students' portable devices to improve those competences. The results are satisfactory not only in enhancing them, but also in proving that these devices are important to serve educational needs. Accordingly, a series of recommendations for both students and teachers were

proposed.

KeyWords: ESP; Grammar rules; Vocabulary knowledge and sentence pattern; MALL; Mobile devices; Students and teachers outlooks.

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AI: Artificial Intelligence.....	10
Apps: Applications	6
AR: Augmented Reality.....	228
AWE: Automated Writing Evaluation.....	11
AWCF: Automatic Written Corrective Feedback.....	12
BYOD: Bring Your Own Device.....	57
CALL: Computer-Assisted Language Learning.....	40
CBT: Computer Based Test	32
CEFR: Common European Framework of Reference.....	45
ChatGPT: Chat Generative Pre-Trained Transformer.....	12
CLT: Communicative Language Teaching	76
CV: Computer Vision.....	29
DeepL: Deep Learning.....	11
D-Learning: Distance Learning.....	40
DT: Determiner.....	60
EFL: English as a Foreign Language	11
E-Learning: Electronic Learning.....	40
ESP: English for Specific Purposes	10
FL: Foreign Language.....	14
FRAME: Framework for the Rational Analysis of Mobile Education.....	55
GA: Genetic Algorithm.....	39
HOTS: Higher Order Thinking Skill.....	60
ICT: Information and Communication Technology.....	51
IN: Preposition.....	60
IoT: Internet of Things.....	11
IHN: Intelligent Hardware Networ.....	14
ITSs: Intelligent Tutoring Systems.....	12
JJ: Adjective	60
IMMS: Instructional Material Motivation Survey.....	34
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LMS: Learner Management System.....	35

LOTS: Lower Order Thinking Skill.....	60
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MBT: Mobile Based Test.....	32
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MIDSS: Mobile Intelligent Decision Making Support System.....	13
MIILS: Mobile Intelligent Induct Learning System.....	13
MITES: Mobile Intelligent Teaching Expert System.....	13
MIRE: Mobile Intelligent Retrieval Engine.....	13
Moodle: Modular object-oriented dynamic learning environment.....	27
MP3: Media Player	47
MS: Morphological Segmentation.....	19
NER: Named Entity Recognition.....	22
NLP: Natural Language Processing.....	18
NN: Noun	54
PCs: Personal Computers	40
PLL: Personalized Language Learning.....	12
PDA: Personal Digital Assistance.....	40
PDF: Portable Document Format	28
POS : Parts Of Speech.....	19
RR: Reference Resolution.....	22
SD: Standard Deviation	88
Sig: Significance	61
SMS: Short Message Service.....	52
SPSS: Statistical Package of Social Sciences	89
SSD: Single Shot Multi-Box Detector.....	31
TC: Tablet Computer.....	47
TEFL: Teaching English as a Foreign Language.....	55
VBZ: Verb	63
VA: Virtual Assistants.....	25
VIP: Very Important Person.....	193
WiFi: Wireless Fidelity.....	43

WWW: World Wide Web.....	44
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General
Introduction

General Introduction

This research endeavour presents the initial steps in any research work. It begins with the background section where necessary information is revealed, followed by the statement of the problem. The study objectives, research questions and suggested hypotheses are also set. The next step is detailing the methodology used and the chapters it covers.

Actually, the implementation or the imposition of the English language in every aspect of humans' life is no more a matter of choice; rather it is imposing itself to be the language of the globe. Whatever race, tradition, religion, belief a particular group belongs to, English is there. Such a swell emphasized its importance and pronounced it to be the language of science, information, technology, engineering, farming, politics, economics and education. As far as the latter aspect is concerned, different topics arose to investigate, discuss, expose, and recommend how the language is taught, learned, assessed, and promoted in the teaching learning process. In traditional classrooms where the notion of teacher centered is stressed, learners are the recipients of knowledge. That is to say, teachers are incharge of the what, when, where, and how to deliver lesson contents to their learners, with the sense of marginalizing students' interests and needs.

A lot has been said on the matter and the shift in perception was the product of the former approach and hence learner centered classrooms emerged. In this respect, the birth of this approach allowed learners to voice out their needs and invite them to be active agents in the teaching learning process. Moreover, learners are giving the priority not only to decide on what to learn, but also the way they want to learn. With the advent of the internet and the various aspects it brings, learners are exposed to countless of information flow to feed their interests and decide on which resources to use. The introduction of the internet in parallel with the birth of technological devices like Personal Computers (PCs), mobile phones, smartphones and the like suggest another perspective to language teaching and learning. In other terms, spicing up the teaching learning process with these tools makes the classroom atmosphere vivid, challenging, and entertaining.

General Introduction

Adapting and or adopting these devices willingly or unwillingly is a requirement to cope with 21st century skills. Such a believe drives educators, researchers and scholars to find interesting ways to incorporate these mobile devices in language instruction not merely in the English as a Foreign Language (EFL) context, but also in the English for Specific Purposes (ESP) environment. The use of these mobile tools in the ESP context remains the topic of the day, as ESP instructors are always aiming to incorporate peaceful and smooth changes in their practices. What is more is the fact that these learners show low motivation to learn English, and their proficiency level is always poor in terms of grammar, vocabulary, sentence structure, to mention just a few. The need for ESP learners to be linguistically knowledgeable about some aspects in English should always be emphasized, simply because these learners are expected to do well in the language to satisfy their academic and or professional needs. Put differently, to shed light on the linguistic competence should not be perceived redundant mainly for ESP learners because it guides them to produce safe meanings and correct utterances.

With regard to the aforesaid, learning the main structures of the English language, namely grammar, vocabulary and syntax harness language production and help ESP learners to construct meaningful sentences. When ESP learners hold massive knowledge on these skills, they are for one reason or another able to survive in today's ever changing world. In this sense, ESP practitioners, teachers, and educators are gathering efforts in finding interesting ways and methods to teach these structures. Their attempts are said to be negligent. It is commonly known that ESP learners tend to believe that the above skills are not that important and tend to ignore them as being secondary to their interests. In hope to bring back learners' interest and turn them to regard these skills significant, incorporating technological devices in their practices reshuffle their mindset and enable them to learn in an innovative way. Therefore, in this research work, the investigator stresses grammar, vocabulary, and sentence pattern instruction for third-year finance of banking and insurance students as they need them to fulfill short-term and long-term needs and are subject to enjoy some roles in varied financial institutions.

General Introduction

Though language instructors call attention to its importance, they fail to certain extent in its instruction due to their traditional mindset they have and employ. That is to say, relying only traditional materials and standardizing teaching practices based on traditional approaches does not always bring satisfactory results. More than that, grammar, vocabulary and sentence pattern instruction are to certain extent taught with conventional materials and with less attention. Taking into account the abovementioned, the studied issue is worthy especially to reveal the gap in the literature and fulfill the need of the current research main objectives.

Indeed, there is a huge demand in the literature that teaching grammar, vocabulary, and sentence pattern in the ESP context should be emphasized and continuously investigated as they are important tools for successful communication (verbal and non-verbal). More than that, the Algerian context where ESP is instructed, learners are not interested to develop those skills because of unknown or ill-structured materials and other challenges and limitations. This is extremely noticed in the literature that even though countless endeavours have been made in this area of research, the issue is still raising and taking roots. In addition, the advent of mobile devices and the tremendous innovations these devices are witnessing, the issue is still occurring. This is felt when students are given the first assignment (needs analysis) that is used to purposefully uncover their actual language mastery.

Though these learners have studied English in their middle and secondary schools for some moderate years, they still have issue in dealing with grammar, vocabulary and sentence pattern. This fact needs urgent interventions and reconsiderations to remedy and assist these learners to do well in the language. Taking into account the exploitation of the new technologies, especially smartphones to survive in language classrooms is also important. Therefore, joining these two realities appear to be logical and significant combination to present a new horizon/ perspective to spice up the teaching learning practice at the same time satisfying learners' requirements. In this frame, mobile devices are enough to persuade learners to work on their weaknesses and improve their practices as to grammar, vocabulary, and sentence pattern. The overall concern of this investigation is to study the relationship that exists between the use of mobile devices and the development of the three already stated competences.

General Introduction

Hence, the present research work aims to study the role of mobile devices, smartphones in particular, to improve grammar rules, vocabulary knowledge and sentence pattern amongst third-year banking and insurance students. The objectives of the study are first, to investigate on the attitudes these students use of smartphones to enhance their skills merely in grammar rules, vocabulary knowledge and sentence pattern learning. Second, to learn about the outlooks of ESP teachers have on the use of their students' smartphones when learning these skills. Third, it aims to see the extent to which MALL improves finance students what attitudes third year Finance students have regarding the use of their smartphones in learning the English language as to grammar, vocabulary, and sentence spattern, and finally to find out the reliabily of offline applications (apps) on the improvement of vocabulary, grammar and sentence pattern among third-year finance students.

Based on the set research objectives, the following research questions are put forward:

RQ 1: What concerns or reservations do business students have regarding the usability of smartphones in enhancing their learning of grammar rules, vocabulary knowledge, and sentence pattern?

RQ 2: How do ESP teachers perceive the use of smartphones by their students when in the classroom?

RQ 3: How effective is MALL in enhancing third-year finance students' grammar rules, vocabulary knowledge and sentence pattern?

RQ 3: What sort of software can work well for third-year finance students' the learning of grammar rules, vocabulary knowledge, and sentence pattern?

General Introduction

In hope to answer the above research questions, the following research hypotheses are suggested:

RH 1: students attach great importance to the use of their smartphones in the classroom.

RH 2: ESP teachers have positive attitudes towards the use of their students' smartphone in the classroom.

RH 3: MALL is significant in improving finance learners' competences in grammar rules, vocabulary knowledge, and sentence pattern to a considerable extent.

RH 4: students are much more reliable on online applications in improving their grammar rules, vocabulary knowledge, and sentence pattern learning.

To answer the above research questions, this study opted for a mix-method research along with quasi-experimental design to investigate the relationship between mobile devices, smartphones in particular, as assistant tools to improve these learners' grammar rules, vocabulary knowledge, and sentence pattern. As stated, the quasi-experimental research design required the use of two groups (the experimental group and the control group) to study the effect of the independent variable over the dependent ones. The assigned experimental group is the one who took the intervention, whereas the control group received the conventional method. To respect the approach used, a pretest was used for both groups, and during the experimental phase, the intervention was introduced to the experimental group which lasted for 8 months, meanwhile, those in the control group took regular classes.

General Introduction

The rationale behind conducting this research is based on some important motivations. First and even though grammar, vocabulary and sentence pattern are heavily studied among researchers in Algeria, they are still encountered as limitations among university students, specifically in the ESP context. A large number of students in this context are found ill in incompetent to even structure correct and meaningful sentences. They are indeed less confident in using appropriate lexis and correct grammar to serve their needs in the language. Moreover, the advent of mobile industry and the continuous updates mobile devices are witnessing, and more significantly the countless of mobile applications (apps, hereafter) that are produced to educate learners of different needs and expectations is another reason that motivate the researcher to come up with this connection.

These devices are now taking wide spread and are accessible, and what is interesting is that they are found to be owned by university students, at large. These prompt forces emphasize such a combination to be implemented and or studied. The contribution presented behind this endeavour is of paramount importance to improve such competences by exploiting such an innovation. Last but not least, this endeavour is subject to be considered because most studied have been made in the EFL context where EFL learners are seen to be the ones who deserve such an intention and intervention, but since this attempt took place in the ESP context, it is also subject to attract wide audience.

Both theoretical and practical phases this research paper went through are crucial to be considered. This is because the theoretical part deals with reviewing important and relevant literature that enable the readers to be informed and motivated to carrying out reading this paper. Whereas, the practical section of this endeavour is more important and motivates in one way or another to stimulate similar attentions, especially in the Algerian ESP context. The findings of this research are expected and are subject to switch attention and behaviours among teachers and students alike to start and or adopt innovative moves with the intention of improving teaching and learning practices, especially in the ESP context. Even the limitations and the constraints that hinder this research to cover all the specificities, other researchers can see them as starting points to continue and come up with interesting data.

General Introduction

It is significant to highlight the structure of the present thesis beginning with a general introduction that moderately summarises important information to give an idea on the what, when, how, and where. Chapter one covers the related literature as to mobile learning as assistant tools and their role in grammar, vocabulary and sentence pattern learning. The researcher scheduled its sections (main and sub-sections) in respect to their order of importance. The next chapter outlines the methodology that governs the present research. It deals with the research design which discussed the research type, sample, data gathering tools, and data analysis types. Chapter three brings together the findings of needs analysis that concerns students' and teachers' questionnaire and interview, respectively along with results that concern both pretest and posttest.

Later, it discussed the findings by relating them with what literature and previous research has found. As for chapter four, it gives an in-depth view on the course the researcher has used, along with relevant details regarding the researcher's self-made app, its characteristics and its content. Finally, chapter five presents important and relevant implications and recommendations based on the obtained results. It ends with a general conclusion that briefly summarises the whole work and reveals some limitations, endings with a sample of questionnaire and interview form along with other attachments.

Chapter One

Mobile Assisted Language Learning

Chapter One: Mobile Assisted Language Learning Overview

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1.1. Introduction

The realm of education is changing progressively to intertwine with advanced technological innovations. Central to this transformation is the intricate endeavours of Artificial Intelligence (AI) to tailor stimulated educational content with more challenge and competitiveness. On the other hand, the mobile industry is witnessing sophisticated advancements in terms of affordability, availability, accessibility and portability. These features with AI are the changing points to recognize teaching learning practice from a different corner. In this concern, mobile learning starts to drastically reshape the teaching learning landscape to become the fashion in today's digital world.

Based on the above lines, this chapter starts first with the core stone of AI and its contribution in mobile learning in particular. Then, it discusses its approaches and its leading features to mobile learning. After such a timeline, it goes deeper to identify its related concepts. It further examines how mobile devices turned to be pedagogical tools in mobile learning. In addition, it overviews its application in the English for Specific Purposes (ESP) by tackling its essence, its practice in language learning development precisely in improving linguistic competence and how they are assessed along with the models used to mobile integration. It ends with the identification of key principles in mobile application design.

1.2. Artificial Intelligence and its Applications in Language Learning

The idea of creating human-like intelligence was considered impossible to reach since intelligence is seen merely a property that humans are gifted with. Such a notion challenged the field of science and engineering to combine efforts and create a human-like intelligence to revolutionize the present age. At the beginning of the journey, Turing (1950) was the first to publish a scientific paper to suggest a machine that can think, but the concept of AI was first coined by McCarthy in 1956. Nevertheless, a decline of interest was noticed due to the existing downsides at that time. Poor infrastructure and lack of computer power to embrace complex calculations are among the constraints why it wasn't successful. After a number of endeavours, AI emerged as a consequence of the advent of internet and mass media.

By definition, AI is a cover term used to refer to the different technologies designed to accomplish tasks exclusive of human-guidance (Healey, 2020). AI comes to interplay with various industries and marketing is the best example to refer to in this respect. Indeed, conversational chatbots are speech-based assistants that transform speech into scripts to create instant responses, also known as Internet of Things (IoT). These applications can provide immediate answers compared to humans potential. In customer service, clients are more likely to receive responses that meet their intentions without any effort and time loss. They have also the advantage of privatizing their data. Put differently, AI machines are able to detect irregular patterns as soon as a threat took place. Consequently, confidentiality is to a large extent trusted by AI potentials to put data users at safe by fingerprint or face recognition options, among others. In addition to these affordances, businessmen could store big data that took them days or weeks to record them. Interestingly, prediction is even possible with AI in the sense that for instance when typing in Google, the latter could predict what the user wants to search by displaying some alternatives that users may select from.

It is interesting to read that AI and education are taking high capital with 40% by the year 2023. Machine translation is mainly the first instinct Foreign Language Learners (FLLs, henceforth) would try to employ so as to solve in-place situations. AI- powered machines use countless linguistic corpora to translate written texts automatically. The best illustration to highlight in this concern is the use of “Deep Learning” (DeepL, hereafter) which provides correct syntax and relevant discursive contextual and intercultural situations like slangs, idioms, to quote just a few. However, learners’ expertise in the language is needed to edit and or revise the target text especially when the source text is in the field of engineering and medicine. Moreover, Automated Writing Evaluation (AWE) provides learners with the opportunity to receive feedback on their written tasks (Lee, 2020; Link et al., 2022; Ranalli, 2018; Zhai & Ma, 2022). It was found that Turkish English as a Foreign Language (EFL) students took advantage in using AWE and teachers’ feedback compared to their counterpart who received solely teachers’ feedback (Han & Sari, 2022). In the same line of thought, Dizon and Gayed (2021) demonstrated that 31 Japanese EFL learners enhanced their grammar use through

Grammarly.

This finding is also supported by Barrot (2023) who stressed that Automatic Written Corrective Feedback (AWCF) offered by *Grammarly* also boosts EFL students' autonomous learning. The notion of autonomous learning in this sense is merely oriented towards students' self-correction without teachers' assistance. AI allowed learners at any age work on their language weaknesses to improve some skills like pronunciation, vocabulary and grammar (Choi, 2016). As an illustration, reading comprehension of k-12 students gets enhanced through the use of Intelligent Tutoring Systems (ITSs) (Xu et al., 2019). Speaking skill is another example to justify the ample benefit of AI in language teaching and learning. In a study conducted by Dizon (2020), it was uncovered that the use of Alexa improves L2 students' speaking proficiency. Chatbot is also another AI interesting way to use texts in hope to answer the requests of users' immediate needs. Chatbots are rising in education and it proves its gain in supporting critical thinking skills (Goda et al., 2014) and performing speaking tasks, as well (Kim et al., 2021).

A vivid example to highlight is the use of *ChatGPT* in academic paper writing. A pilot study carefully investigated the quality of texts it provides (Zhai, 2022). Findings show that *ChatGPT* gives coherent and informative scripts that are subject to improve students' creativity and critical thinking. Therefore, AI-powered tools furnish an environment that is more personalized, engaging, inclusive and on the go. These features transform language learning experiences into tailored learning paths based on students' preferences, strengths and weaknesses to increase their confidence in using the language.

1.3. The Contribution of Artificial Intelligence in Mobile Assisted Language Learning

The invasion of AI in today's educational entity with the feature of personalized learning inspired many educators to approach the teaching learning process as student-driven classroom instead of fully teacher-driven. In this sense and as claimed by Chen et al. (2021), Personalized Language Learning (PLL) aims to meet differences amongst EFL students' needs. Personal learning is possible when the learner possesses relevant tools including: smartphones, tables and computers. These tools ease content access and offer private learning spaces for students to feed their interests and targets. The

researcher finds that personalizing the learning process is a pivotal characteristic of AI as foreign language learners with the handheld devices they can own their learning and be responsible individuals. Technically speaking, this feature is called Mobile Intelligent Teaching Expert System (MITES). This AI-powered system tailored specific content and resources to align with individual learner's leaning goals. Machine learning algorithms, which are going to be explained later, enable data processing to analyse, recommend and guide data with the hope to optimize student's learning experience. The function of the algorithm is hence processed "naturally" to interpret queries to provide real-time resolutions based on learner's preferences and progress.

In MITES, the AI system can provide direct assessment such as automated grading and plagiarism detection to remedy student's mistakes for positive learning outcomes. MITES combine the power of AI to offer expert-like expertise to stimulate long-term learning experiences. AI also allows for a system to enjoy decision-making to take place in a platform. This AI characteristic is named as Mobile Intelligent Decision Making Support System (MIDSS). This system gathered relevant data prior to learner's demand to suggest recommendations in making decisions. Put differently, the system works to support collecting advice, gaining feedback and collaborating with others for a quick informed pre-determined decision. In addition, AI is not merely restricted to MITES and MIDSS, but it calls for a system that eases data retrieval process. This feature is named Mobile Intelligent Retrieval Engine (MIRE). The engine, in fact, is found to run devices like smartphones and similar ones for data access. The latter is retrieved when semantic analysis or interpretations are safely understood and communicated. The engine is powerful in presenting prioritized and relevant results through various data integration sources like Web page, database and the like. The engine continuously stores and updates data for user need over time. It also permits natural language queries to take place at the user convenience such as using user's own words instead of particularly sticking to specific concepts.

Data retrieval process could also be happened in offline search functionality. That is, the engine is flexible to access already retrieved data without internet connectivity. AI capabilities enable data user to find responses to queries based on user's behavior. In this way, the system adapts its responses to data user behavior to generally provide quick and efficient experience. This system is called Mobile Intelligent Induct Learning System (MIILS). An Intelligent Hardware Network (IHN) is a system designed to run AI computations easier and faster as well. In other words, it is a floor where multiple hardware devices and software frameworks work together to perform AI computations. The interaction between them necessitates large data storage to perform AI models. Indeed, the chain of these five highlighted features plays a significant role in mobile learning introduction. In other words, AI powered system allowed mobile devices to personalize learning through machine learning algorithms to understand learning patterns.

Also, data provided is processed in MIDSS to permit learners to make informed decision based on data user's performance (MIDSS). The intelligent search engine provides a system for data retrieval in mobile devices (MIRIRS). The remaining two features MIILS and IHN deliver interactive learning experiences and AI tasks, respectively. In this analogy, mobile learning is possible to be an effective alternative teaching learning approach to take advantage of AI to align with today's ever-changing world. Nonetheless, it is important to discuss the approaches to AI to give more insight on how AI better contributes to mobile learning.

1.4. Approaches to Artificial Intelligence in Mobile Learning

Following the emergence of AI, a number of approaches to AI appeared and more importantly serve mobile learning. These approaches are presented below.

1.4.1. Machine Learning

By definition, Machine Learning (ML) is the capability of a computer to program tasks without explicitly programming it to perform certain tasks. That is to say, ML performs tasks without being programmed. It focuses on evaluating data patterns to take predictive actions based on prior learning. For example, ML is employed to harness companies in understanding customers' preferences. Companies like Amazon use ML for an in-depth capture of their customers' behavior and likes. Unlike the conventional programming system which is processed by defining the data and the program for a specific output using the computer, machine learning however based its programming system on data and the predicted output for a defined program being solved by a computer.

Traditional programming



Machine learning

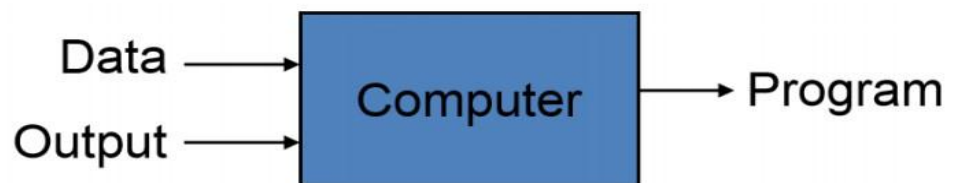


Figure 1.1. Conventional programming vs. machine learning (Vallego,2023)

Machine learning revolution reshaped the ordinary life pathway, merely in teaching and learning methodologies (Korkmaz, & Correia, 2019). The application of machine learning in the educational sphere serves outstanding purposes. In this respect, machine learning helps in enhancing students' learning practices by assessing their learning patterns, preferences, among others. Put differently, machine learning algorithms permit learners to create a personalized learning environment that matches their route. Automation of administrative tasks like assessing learners' learning and grading are among the functions of machine learning. These tasks are important in the teaching learning process and are possible to get performed and easily submitted through machine learning. Because ML is based on prediction, then it assists in predicting students accomplishments. Prediction in this sense refers to the ability of ML to foresee what could be performed or not by particular students for immediate interference.

Thanks to ML, adequate support and assistance are possible to happen to remedy potential risks (Da Costa, Warnke , Cagnin, et.al, 2008). ML algorithms allow students to have hands- on activities to stimulate learner engagement and knowledge retention (Gresse von Wangenheim , Hauck , Pacheco,et.al, 2021).For instance, gamified and interactive simulations are amongst the interactive experiences the algorithms offer to students to practice real-world adventures.In addition, adaptive testing mechanism is another promise ML provides. That is to say, evaluative tests are adjusted according to students' responses. Knowledge and skills are assessed based on learner's mastery for more effective educational strategies. The following representation summarized the above mentioned contributions of machine learning in mobile learning.

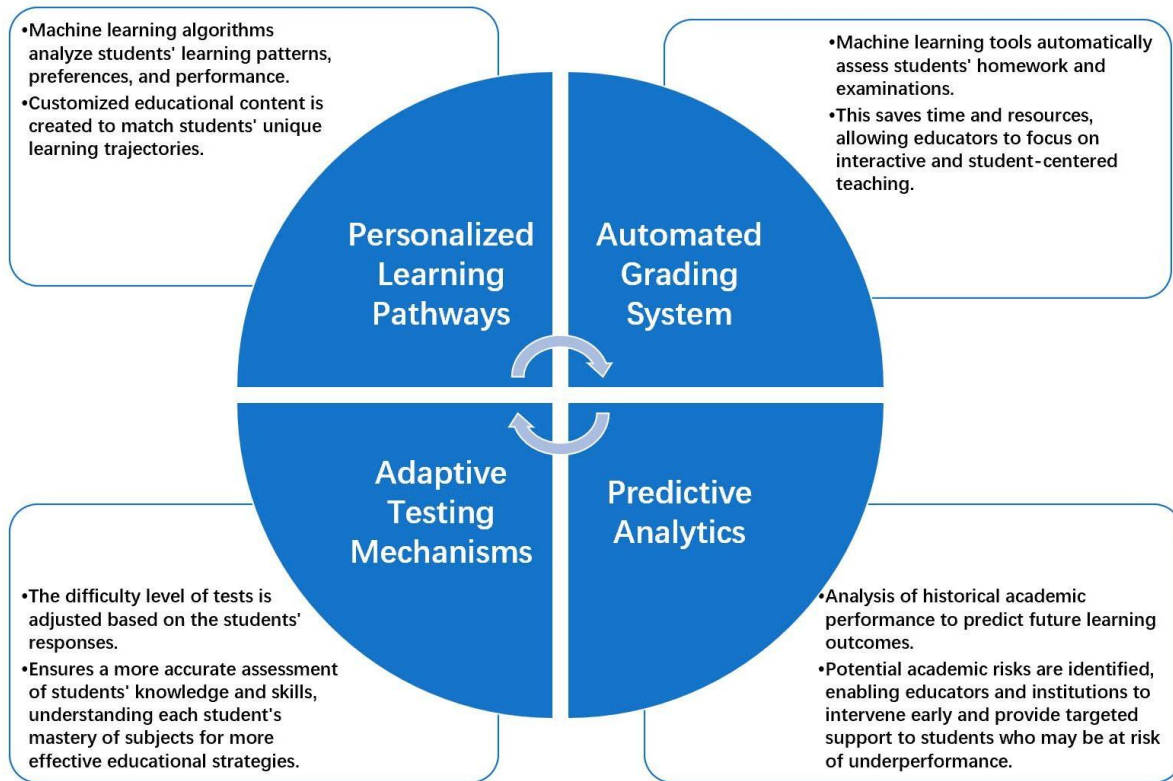


Figure 1.2. The contribution of machine learning in mobile learning (Chuanxiang et al., 2024)

A variety of machine learning types are identified in the literature: supervised learning, unsupervised learning, and reinforcement learning. Supervised learning is the process of naming data to generate trained computational models, whereas unsupervised learning processed without available supervision pre-defined examples. In reinforcement learning, the machine works based on rewarding and punishment. Simply put, reinforcement learning trains the machine learning system to take actions from the surrounding environment and the feedback received (in a form of rewards or punishment) enables the agent to learn and optimize solutions. All in all, machine learning and its specificities and procedures are stimulated from how humans' brain works and functions. Such a revolution proclaims a sound evolution in the domain of science in general and in mobile learning in particular. Its contribution demonstrates in mobile learning pronounced new horizons in the present digital age to make learning digitalized and happened in an unprecedented mode. Another important feature that AI brought into light is the concept of natural language processing that is explained as follows.

1.4.2. Natural Language Processing

AI continues to flourish and among its important concept is Natural Language Processing (commonly abbreviated as NLP). This latter emphasized on the ability of computers to understand, process and produce languages similar to humans' potential. The ultimate objective of natural language processing is to read and understand human languages in a manner that is valuable. 'Google Translate' and 'Grammar checking' are some examples that NLP uses to make sense to perform tasks as humans can do. It is then the intersection of computer science, machine learning and linguistics. More technically, supervised learning and unsupervised learning that are found in machine learning are both used in NLP to understand and produce natural language along with computer science which contributes in facilitating the task through computer hardware, software, among others. The discipline of linguistics is also an important intersection NLP is based on. That is to say, NLP is based on linguistic levels that are displayed in the following table.

Table 1.1. Levels of natural language processing (Jurafsky & Martin, 2008)

Levels of LNP	Definition
Phonetics and Phonology	Knowledge about linguistic sounds.
Morphology	Knowledge of the meaningful components of words.
Syntactic	Knowledge of the structural relationships between words.
Semantics	Knowledge of meaning.
Pragmatics	Knowledge of the relationship of meaning to the intentions of the speaker.
Discourse	Knowledge about linguistic units larger than a single utterance.

The application of the above-mentioned language levels is nothing but a pipeline that works together to understand humans' language. They are indeed classified harmonically since, for instance, semantics analysis is not possible without understanding how words are put together first (syntax). In NLP, the initial component in understanding humans' language is the recognition/representation of speech sounds (phonetics) and how they are pronounced in a particular language (phonology). Current AI technologies attempt to create such a combination but it is quite not- human-like as humans' speech is full of pauses and contracting words and even sentences without segmentation between them. In this respect, segmentation is a significant concept in NLP that enables a computer system to mark segments. In other terms, segmentation is the process of dividing texts into units of information using commas and periods so as not to lose the essence of the information it contains.

Tokenization can also be referred to in this sense as it denotes the ability of a computer system to split the sentence into appropriate tokens. For instance, identifying the number of words the sentence covers. Morphological segmentation (MS) is the decomposition of a single word to identify the morphological elements in terms of grammatical and semantic features it covers. Prefixes and suffixes are good examples to refer to in this context. Another element to highlight is lemmatization. It refers to the capability of the computer to distinguish the different word forms associated with a particular word. Distinguishing "went" and "gone" that are rooted in "go" necessitates a trained algorithm that can give relevant root for a given form. Other peculiarities like compound nouns and words that are separated with a hyphen should be detected and understood in order to achieve human-like intelligence.

The complexity of humans' language goes beyond word characteristics to include words connected to other words to reach out sentences and texts. However, there are certain contexts where a word can have two distinct features. As an illustration, the verb "act" can function as a noun. Hence, the syntactical ambiguity should be considered in NLP technologies to provide safe connections and meanings. In NLP, it is important to tag each grammatical category in a sentence so that appropriate and successful interpretations can be made. Parts Of Speech (POS) tagging system is therefore among the tasks of NLP to use for a computer to comprehend human language. This feature is

encountered in different NLP applications including machine translation. As an illustration:

- “The” is tagged as determiner (DT)
- “quick” is tagged as adjective (JJ)
- “brown” is tagged as adjective (JJ)
- “fox” is tagged as noun (NN)
- “jumps” is tagged as verb (VBZ)
- “over” is tagged as preposition (IN)
- “the” is tagged as determiner (DT)
- “lazy” is tagged as adjective (JJ)
- “dog” is tagged as noun (NN)

Adapted from: <https://www.geeksforgeeks.org/nlp-part-of-speech-default-tagging/>

It is important to note that in some sentences, the breaking down process could generate two diverse interpretations depending on the grammatical structure of the statement. For example: the sentence “I saw the man with a telescope” could cover two distinct meanings depending on the parsing tree being used. The following diagram is used to better explain those two meanings of the same sentence.

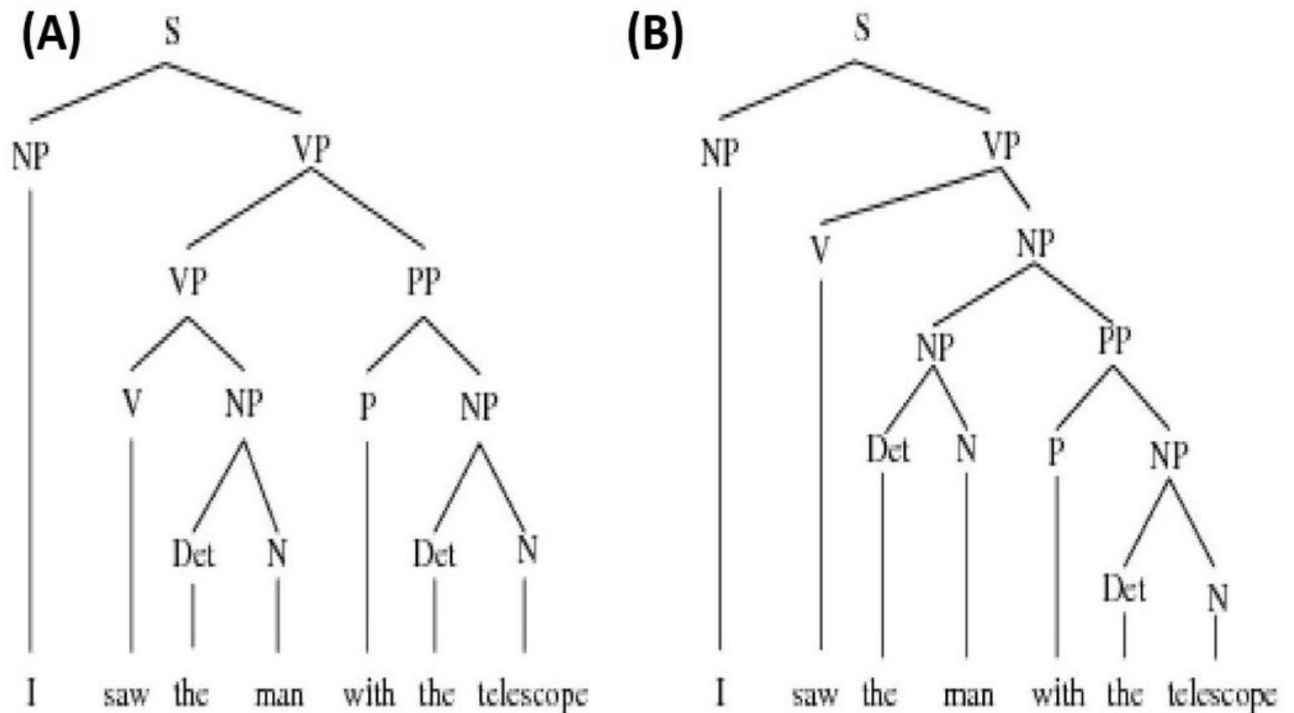


Figure 1.3. Parsing tree (PRENGA, 2020)

The parsing tree presented in the above figure shows that the noun phrase in sentence B “the man with a telescope” functions as a direct object of the verb “saw”. This means that “I” saw the man carrying out a telescope. However, in the first parsing tree (sentence A), the noun phrase “the man” functions as a direct object of the verb “saw” and “with the telescope” as a prepositional phrase describing the action in the sentence. In NLP, understanding human language is not an easy task to accomplish because of the complexity and the vast subjectivity of humans’ speech. Enabling machines to understand human language requires multiple peculiarities to play together. The first task in NLP is to capture the entire meaning of a word by sketching out the morphological aspect of a word in terms of inflectional and derivational morphemes (prefixes and suffixes). Nonetheless, certain words can carry two meanings depending on the context they appear in. This is hence called “Word Sense Disambiguation”. It refers to the ability of the computer to provide a relevant interpretation of a word in a specific context. For example, the word “rock” could denote a stone or a type of music.

Named Entity Recognition (NER) is also important in NLP which looks at the identification and classification of entities like classifying proper names, countries and organizations, to name just a few. Understanding these peculiarities would guarantee proper relationships. In this sense, capitalization is a decisive indicator of the already-stated entities but in some languages like Chinese language, capitalization does not exist. Another aspect to refer to in NLP is coherence. Machines find it difficult to decode some entities. For instance, “John fought with George, last night. He was drunk”. Humans can directly understand that “he” refers to “John” instead of “George”. Yet, it is hard for a computer to comprehend it in such a way. Put differently, humans can easily and naturally process a number of linguistic phenomena, however computers require explicit framework to understand them. Accordingly, Reference Resolution (RR) uproots information by making use of some linguistic discourse phenomena as outlined by Kehler (2000):

- a- Referring expressions: entire sentences or passages in a text that are recalled reused and being referred to with pronouns, demonstratives, indefinite noun phrases, etc.
- b- Referents: entities being referred to.
- c- Corefers: the same entity being referred to in other ways, e.g. “John and “he”.
- d- Anaphora: the referent of the anaphoric term is mentioned before its use, e.g. “He” is an anaphor to “John”.
- e- Cataphora: the referent of the cataphoric term is mentioned by a later expression in discourse, e.g. “When she opened the window, Jane saw everything”.

In this case “she” is the cataphor of “Jane”, that appears later on the sentence. However, when it comes to pragmatics analysis, the task is unyielding as it deals with meaning beyond its literal meaning to grasp intentions, nuances and social cues. It gives machines the intention to understand spoken and written utterances based on a specific context. Pragmatics in NLP-powered tools is possible when linguists, corpus linguistics, experimental design and user studies, computational modeling, psycholinguistics experiment, and ethnographic research and field studies are combined.

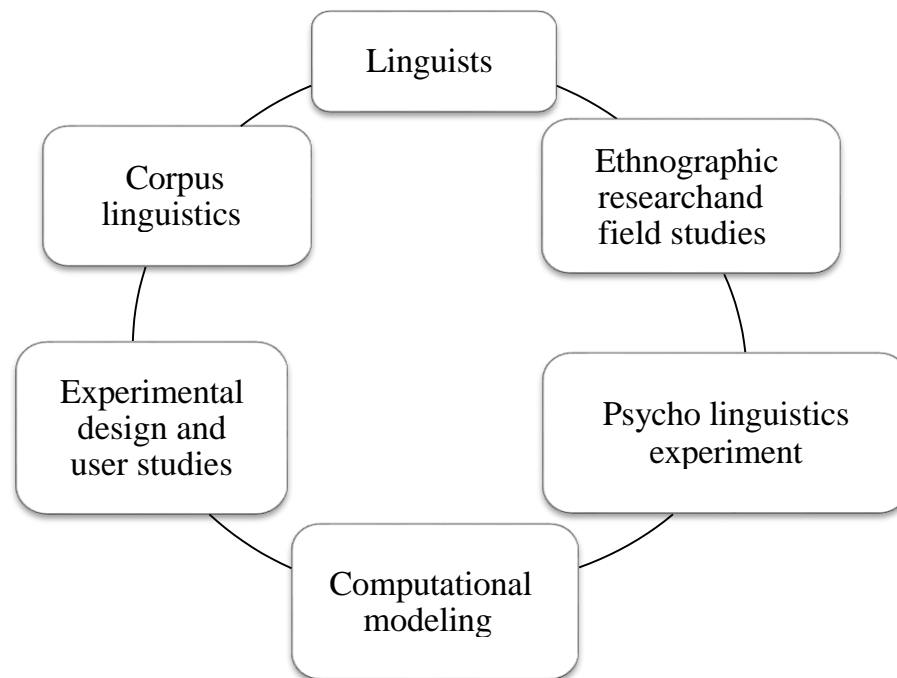


Figure 1.4. Pragmatics analysis in NLP

The dedicated efforts made by linguists have greatly contributed in pragmatics analysis in NLP powered tools. Dorothy Edith Smith's (1990) ground breaking work in sociolinguistics and pragmatics has been fundamental in understanding the influence of social factors on language use. Her focus on language as a social action gives a critical perspective for AI and pragmalinguistics researchers. Her efforts in studying the relationship between language, power, and social context, generate guidance for the ethical development and deployment of AI systems, promoting inclusivity, fairness, and transparency. The sociolinguist Deborah Tannen focuses her work on sociolinguistics and discourse analysis. She explores how language is used to convey meaning, power dynamics, and social relationships.

For AI and pragmalinguistics, Tannen and Wallat's research (1993) provides insights into conversational norms, turn-taking, and the importance of context in understanding and generating natural and contextually relevant responses. The contribution of Capone (2013) is fundamental in generating pertinent responses in machine-human communication for dialogue system, chatbots and conversational agents. Similarly, Covington (1984) devotes his efforts in shedding lights on the pragmatic aspects in AI system. His attempts developed a conception for algorithms capable of interpreting a defined context to generate appropriate natural responses. Covington's research provides key insights into how AI systems can go beyond literal interpretations and consider pragmatic cues to enhance communication. Another aspect Hirschberg (2004) has focused on is how tone, intonation, and other non-verbal cues in human communication can be transferred into AI systems.

Corpus linguistics is considered amongst the important aspect in pragmatics and NLP. It involves gathering and analyzing large collections of text or speech data in order to recognize patterns, linguistic features, and discourse structures. Various techniques such as text mining, part-of-speech tagging, and sentiment analysis have been used to explore how AI systems process language and deduce meaning from context. Experimental design and user studies refer to the controlled experiments performed by researchers to stimulate scenarios that aim at collecting numerous responses and interpretations. These studies can involve measuring objective metrics such as comprehension accuracy or subjective measures like user satisfaction and perceived naturalness of AI-generated responses. In this way, investigators can gain insights into the pragmatics of AI systems and identify areas for improvement.

Furthermore, in order for AI system to first understand and generate contextually proper responses, computational models that cover both linguistic theories and pragmatics principles appear to be vital. This is because these computational models permit investigators and scientists to closely examine assumptions, uncover diverse scenarios and scrutinize pragmatic factors for successful AI systems. Indeed, psycholinguistic experiments are crucial in pragmatic analysis for NLP. The cognitive aspect of language understanding and the mental processes assist in shaping humans interpretation that functions as a cue in enhancing AI system's pragmatic abilities. Ethnographic research, where the researcher immerses himself/herself in real-world

environment with the hope to monitor how users react with AI system, allowed in recognizing users' needs and consequently enhanced the power of AI in NLP.

1.4.3. Chatbots and Virtual Assistants

In the previous sub-sections, the researcher started with ML and NLP to intentionally expose the birth of AI. Chatbots and virtual assistants are the outcomes of ML and NLP because both of them (chatbots and virtual assistants) are software applications powered by ML and NLP algorithms to respond to users' requirements and needs. As the term implies, chatbot is a text-based/oral-based method software application where conversation may happen (Dharani et al., 2020). Virtual Assistants (VA, henceforth) is a software go-between that communicates with users in voice to provide services and perform tasks according to interlocutors' demands. Based on user's queries, the assistant make recommendations and perform actions (Guzman, 2017). The best example of VA is Siri in iOS operating system that helps its users to find answers of their questions by delegating request to a set of web services. It helps users search for information, send messages, manage calendars, view weather reports and perform other tasks. Other similar VAs are Alexa which is a chatbot for Amazon Echo smart speakers that can interpret and respond to voice commands. Alexa helps with home automation, music playback, information search and more. Google Assistant is developed by Google that can respond to users' questions and instructions.

Google Assistant helps with search, calendar management, navigation, translation and other activities. Xiaoice, which is a popular Chinese chatbot developed by Microsoft. Xiaoice, is an emotionally intelligent chatbot that can interpret and respond to human emotions and is able to engage in longer conversations with users. The following figure better explains how VA works.

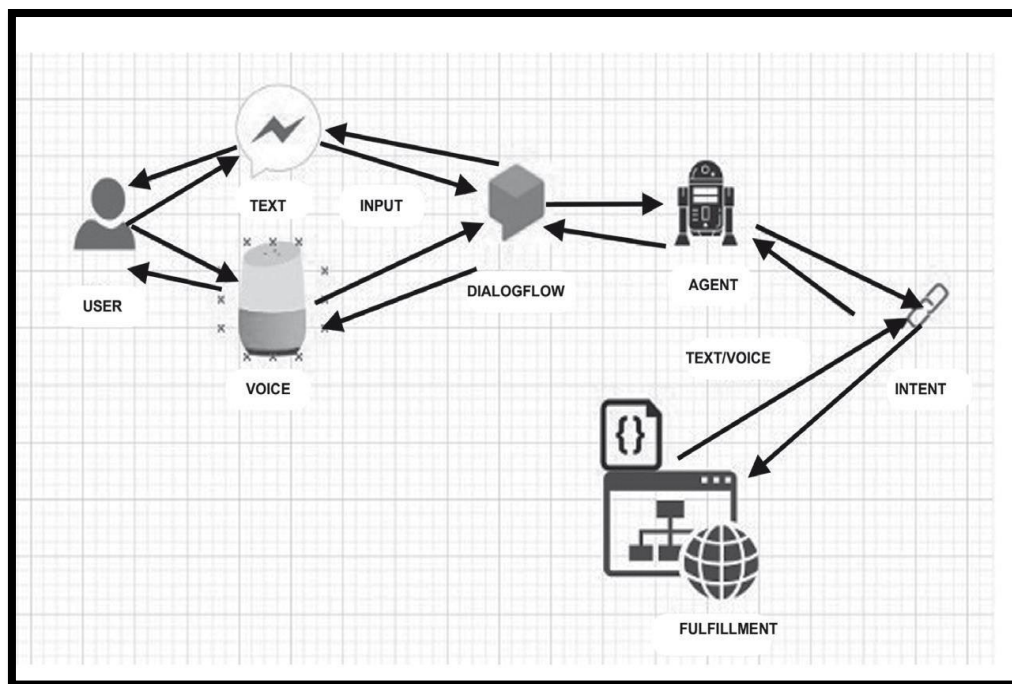


Figure 1.5. The Work flow of VA (Paul, 2018)

According to Tabarés (2020) and as displayed in the above figure, VA executes tasks through various IA techniques. The user interacts with the agent either in text or in voice and the request is processed in dialogflow to receive answer. In comparison to chatbots, the conversational flow is designed based on linear block-structure dialogue. These diagrams always begin with a welcome message and a default answer. However, the answers they provide are limited to answering frequently asked question. The figure below represents how chatbots are designed.

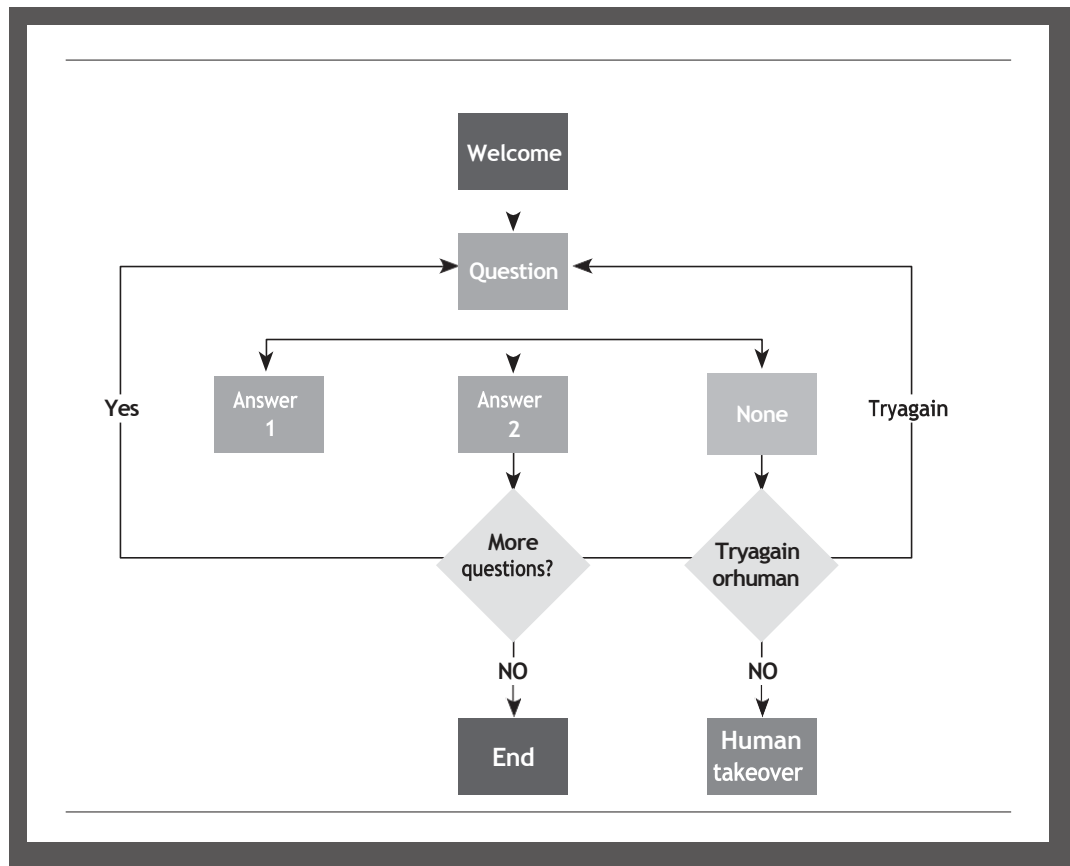


Figure 1.6. Conversation flow in Chatbots (Villar, 2017)

Actually, in this research work the researcher regards them equal in terms of importance and functionality since both of them serve the same purpose. Best practices of chatbots and VAs in mobile learning are found to be significant and convenient. Mekni (2020) demonstrated the importance of Chabot or virtual assistance in the college atmosphere. According to his research, they help students uncover some realities concerning their college courses, graduation plans and others. Gubareva (2020) looked at the uses virtual assistants can serve in higher education for students. Virtual assistance can be used as a tool to support higher education in the management and productivity of tasks. Virtual assistants can be a motivator to help overcome anxiety, classify their priorities, and motivate students through college life. VAs can help as digital tutors and secretaries who can assist in the learning process throughout the course as well as solve administration issues or deadline reminders. The Virtual Assistant as a mentor help

student gets individual evaluation which is difficult in an offline setting with human teachers.

Although the tools of AI are still in the infancy of the education system, they can help in time management and facilitate communication. Cost-effective and scalable, chatbots handle routine queries, freeing up human agents for complex tasks. The application of Chatbots in the education system could help the student deliver pedagogical content and assess a wide range of subjects beyond the classroom. Additionally, they facilitate personalized experiences by tailoring responses based on user preferences. As AI technology advances, the potential for more natural and human-like interactions is promising, revolutionizing customer engagement and optimizing operations for businesses worldwide. The use of chatbots in the 96 education system as conversation patterns is cheap to implement and close to children in this digital age. It can be used in the training, development, and evaluation of teachers and students in the learning sector (Georgescu, 2018). Gamification in the education system helps students get motivated in the learning process through positive reinforcement. The idea of collaborating game environment with education helps retain student attention and evaluation of the study.

The rewards are in the form of levelling up, leaderboards, and points. This technology is successfully implemented in the application of Duolingo. Duolingo is a language learning model that helps the user to learn language through a gamified engagement platform. The platform Duolingo encourages user through its picture-based assessment, translation-based assessment, etc., the assessment is then rewarded with points and each wrong answer lead to the dismissal of one heart. When 3 hearts are gone they need to be renewed to continue. The user in case of the wrong answer is also given feedback with is short. Altogether, these factors promoted Duolingo as a game- based app rather than a simple learning app. Gamification of the app is done through its aesthetics, mechanism, and game-thinking model which motivates people to actively learn, and solve problems, (Fadhli, 2022). Recent studies have shown how chatbots can significantly help learners to organize themselves to study more efficiently and excel their capabilities as shown to help health learning professionals (Corral, 2021). Smutny and Schreiberova (2020) have studied educational chatbots in the Facebook Messenger platform and has shown how much the chatbots can vary in how much personalization it

might have, and how much this field can still grow. Chatbots were also to be a promising asset psychoeducation, making these processes more enjoyable and effective (Vaidyam, Wisniewski, Halamka, Kashavan, & Torous, 2019). Still on the health and education domains, chatbots are promising aids in helping users to learn how to change their behaviour with its features of interactive education and self-monitoring of behaviour change progress (Kennedy et al., 2012). In the same vein, Mendoza and others (2020) highlighted positive impressions from a sample of students when they were engaged with a Chatbot.

In addition, other researchers indicated that some students are afraid to ask questions because they are always scared of the negative feedback from their teachers, as indicated by Verleger and Pembridge (2018) and Oktaria and Soemantri (2021). A Chatbot becomes the answer to provide personalized assistance to the students with such case because it has enough time to respond to questions and provide timely and individualized response. A Chatbots is relevant in situations where course instructors cannot provide timeous responses for students' learning at any time of the day Yin et.al, (2021). A Chatbot can simulate human-like dialogue-based interactive communications to assist students in revisiting learning resources (Göschlberger, & Brandstetter, 2019; Smith & Evans, 2018), promoting learning achievement and self- efficacy (Chang, & Hwang, 2021), and enhancing adaptive learning (Fadhil, & Villafiorita, 2017). Now, it is safe to claim that chatbots and VAs convert students' educational life into an advanced experience.

1.4.4. Computer Vision

Advances in AI technology have enabled our machines to no longer rely solely on human intelligence, but to have more perceptive capabilities, more accurate speech recognition, faster decision-making, and more powerful language processing (Jabbar et.al, 2022). Machine learning, machine vision, natural language processing, and data mining are some of the key methods on which artificial intelligence technologies are based. Computer vision is in fact the ability of a computer system to detect, understand and interpret images and videos. Computer Vision (CV) was originally founded as a sub-discipline of the field of Artificial Intelligence in the 1970s. The founding goal was to create a system that has the same perceptual capabilities as the human visual system has -

your eyes and most of your brain.

The human visual system can easily interpret any scene with little effort: it perfectly discriminates between thousands of categories, and it can find objects in scenes within a time span of several hundred milliseconds only; it easily switches between several types of recognition processes with a flexibility and swiftness, whose complexity and dynamics have not been well understood yet. Its application in education, merely in the teaching classroom allows teachers to have real-time access to student performance and also helps teachers to adjust their teaching strategies at any time to ensure that they can reach all students, so that they can adjust their teaching content and methods in a timely manner to alert students who have wandered off, and students can also see their respective learning performance for the whole class after the lesson in a timely manner. AI-based classroom assessments have the potential to accelerate the evaluation process and improve feedback between teachers and students as compared to more conventional feedback techniques like tests, questionnaires, or interviews. This strategy has successfully aided in the development of classroom assessment, increasing its effectiveness and precision. Table 2 reveals some typical classroom behaviors and representational actions of students.

Table 1.2. Student classroom behaviours and representational actions (Hui &Wentao, 2024)

Student Classroom Behaviour	Characterizing Behavioural Actions
Listen to the lecture	Sitting up right with eyes level in front of you
Read the book	Small head bow, flipping through text books
Writing	Small head bowing, hand holding pen to Write
Whisper to each other's ear	Face deflected, lips moving lightly to talk to people around
Play mobile	Head down sharply, hands on the table or under the table
Sleeping	Head down, supported by one hand or hands on the table
Bestunned	Dulleyes, staring at something for along time
Raise your hand	Body sitting up right, one hand rising straight up

The application of computer vision in language classroom received attention amongst teachers to deeply understand how learning is taking place. It makes part of teacher professional development and may function as a reflective instrument for teachers to better their practices. The SSD (Single Shot Multi-Box Detector) detection algorithm is an object detection algorithm proposed by Wei Liu in 2016. It is based on neuron networks by dividing the input image into a grid of fixed-sized boxes and predicting the presence of objects of different proportions and aspect ratios in each box. Autonomous driving, security surveillance, and robotics are some examples where computer vision is used. Zhang and Xu (2022) optimized the SSD target detection algorithm to improve the teaching efficiency of English teachers in the teaching classroom, and findings demonstrate its validity up to 82, 13%. Therefore, it appears that its accuracy in supporting teachers to understanding students' classroom learning status is ratified. Figure 7 shows the SSD network structure.

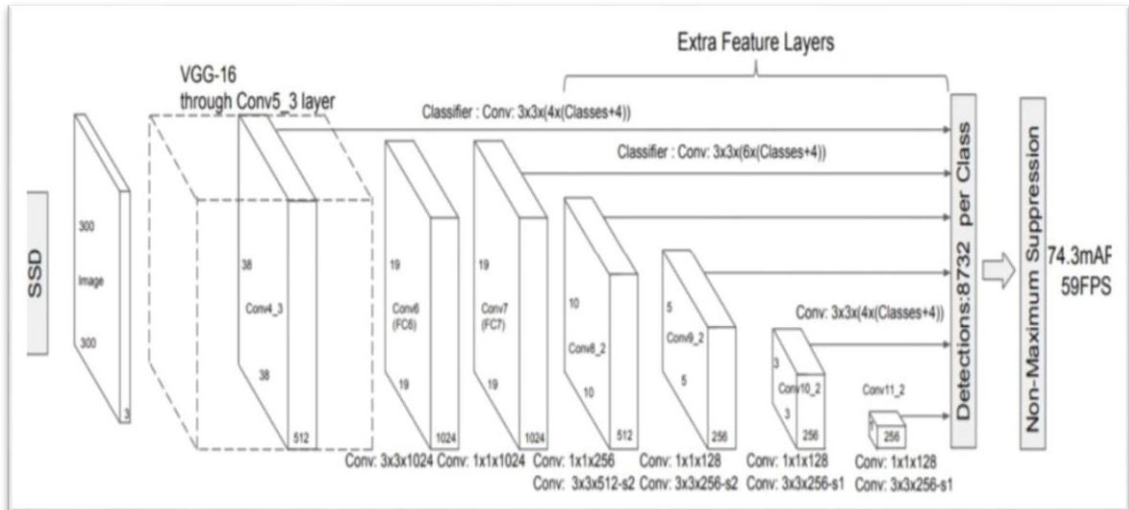


Figure 1.7. SSD network structure (Jiang & Wentao, 2024)

After the explanations provided regarding computer vision, it is important to expose some of its features that contribute in mobile learning. In other terms, mobile devices are now equipped with ongoing sophisticated characteristics that promote learners' learning practices. Text recognition in images is the ability of smartphones to interpret text captures (text screenshots) for easy storage and retrieval. The image is segmented to identify where the text appears. The output text is then possible to be readable and in advanced smartphones or some advent smartphone applications, text translation can be performed based on users' language preference. Filter and masks is another feature in which mobile device users can employ to improve the quality of some images that maybe unreadable and/or contain some sorts of ambiguity.

Another issue to refer to in computer vision is face recognition. Advanced mobile devices possess the ability to identify the mobile device user using his/her face details. This feature (face recognition) is recently studied and employed in online examination tests using mobile devices. Previously, Computer Based Test (CBT) was applicable but it turns to be costly as it necessitates large computer sources. Because of the advent of mobile devices with state-of-the-art functionalities, Mobile Based Test (MBT) came into an existence. Face recognition which is based on CV, is highly used in fraud protection, but it serves a great deal for cheating detection in online tests. Some researchers including Sukmandhani and Sutedja (2019) produced a prototype system for face

recognition as validation of the examinee's absence before carrying out the exam using the eigen face method. The empirical study by AjiPutra, Zainuddin and Niswar (2022) was aimed designing an online exam in a mobile device using FaceNet to remedy fraud occurrence and cheating. The initial stage is to identify the data of the participants, this process will be carried out in the admin system section, the face identification process will be carried out using the FaceNet method, and then the results of the facial signature will be stored in the system database.

The second stage concerns with data validation of the examinee. This validation will be performed when starting the exam and when the exam is running. If the face validation is successful, the participant will be directed to the test question section. During the exam every minute the system will again validate the face to identify whether the examinee is still the same person, but if the validation is not appropriate then the system will dismiss the exam. Findings revealed that FaceNet is accurate in face recognition.

1.5. Other Contributing Features of Artificial Intelligence in Mobile Learning

The issue of AI in teaching/learning practice has long been an interesting area of research amongst educators and stakeholders. Moreover, the advancements in AI-powered chatbots, virtual assistants and computer vision have further stimulated learners to take advantage and decide on what to learn, how to learn and when to learn. More than that, the underlying principle of AI is to produce a world to run fast and to exploit its affordances to fulfill covered inner needs. Hence, AI capabilities go beyond its surface interpretation to open doors for a new trend in teaching/learning practice, which is mobile learning. In this section from this chapter, the researcher presents the AI leading features to mobile learning practice.

1.5.1. Personalized Learning

Artificial Intelligence (AI) and education has emerged as a transformative force, reshaping conventional pedagogical paradigms and redefining the possibilities of personalized learning (Bahroun et. al., 2023). From this standpoint, personalized learning refers to tailoring educational experiences to accommodate individual learners' unique needs, learning styles, and pace (Pane et al., 2017). With the influx of massive online courses, digital classrooms, and e-learning platforms, educators and technologists have realized the challenges of a "one-size-fits-all" approach, leading to the exploration of AI's potential in enhancing personalization. AI systems' inherent capability to analyze large datasets and generate insights offers an unprecedented avenue to understand learners at a granular level. For instance, by analyzing a student's interaction with an e-learning module, AI can identify patterns that might indicate the student's preferred learning style or areas they struggle in (Chen et al., 2018). This data-driven approach can subsequently allow the development of tailor-made instructional content, ensuring that each learner receives support aligned with their individual needs. In the same perspective, Alarabi and Wardat (2021) clarified that AI can analyze students' past performance to identify areas of difficulty and provide targeted support in those areas.

Moreover, the advancements in AI-powered chatbots and virtual assistants have further facilitated personalized learning. These tools can act as personal tutors, offering instant feedback, answering queries, and even suggesting supplementary resources based on the student's learning trajectory (Winkler & Söllner, 2018). In the same line of thought, Graf et al. (2009) elaborated on the importance of adaptive learning systems. These systems, powered by AI algorithms, were designed to adjust content delivery based on individual learner profiles, emphasizing the adaptability of e-learning environments. Johnson's et al. (2013) study also showed similar results in which these AI powered tools are effective in enhancing student comprehension and performance. By using complex algorithms, these virtual entities could mimic human tutor responses, offering feedback and guidance tailored to the student's current level of understanding and pace of learning.

A considerable rush in the blending of AI with Learning Management Systems (LMS) has been noticed. In this respect, Chen et al. (2017) investigated the integration of AI into LMS and findings showed that the role they offer is not merely restricted to tailoring content, but also in predicting student performance. In this way, educators can have some insights into potential student dropouts and/or those needing further assistance. Gamified environment also appeared to be vital. In their study, Yang et al. (2018) explored AI-powered gamified platforms, emphasizing the role of AI in personalizing game scenarios to enhance learning outcomes. Such platforms, they argue, can make learning not just individualized but also engaging.

1.5.2. Ubiquitous Access

Artificial intelligence could make contribution to recognize and sort out the effective information. On the internet, there is enormous information which is a big burden for learner to avoid and/or identify unnecessary/redundant information. Consequently, it is the task for artificial intelligence to improve the efficiency and effectiveness of ubiquitous learning through its automated system that could think critically. As the ubiquitous learning is an interactive learning process, artificial intelligence help to know what learners need and want and predict their future development. Artificial intelligence could push information to learners according to their own learning styles, cognitive styles, interests, personality and levels. The differentiated instruction could satisfy learners' individual differences and offer them customized services. During the learning process, artificial intelligence help people recognize learners' individual learning pattern, together with the techniques of ubiquitous learning. This gives the learners real chances to gain personalized learning experiences. Accordingly, learners learn at his or her pace, get targeted tutor, highly qualified problem-solving methods, and appropriated learning exercises. Findings from previous research uncover the following considerations:

- AI ensures that learners can access educational resources and support at any time and from any location. AI-driven content delivery is available whenever learners need knowledge, whether through mobile devices, wearables, or even voice assistants.

- AI adapts content as needed. That is, if a learner is having difficulty understanding a concept, AI can provide further explanations or supplementary activities. If, on the other hand, a learner exhibits mastery, AI can present more sophisticated content, creating a flow that corresponds to individual advancement.
- Tailored Learning Resources: AI finds gaps in comprehension and recommends further resources, allowing students to explore deeper into subjects that interest them or address areas where they need to improve. (Delgado et al, 2020; Gao, Pi and Liu, 2021; Mekni, 2021; Srivastava et al. 2021; Furini et al., 2022; Chiu et al. 2022; Idroes et al. 2023).

1.5.3. Multimedia Content

The conventional teaching approach has been limited by time, space as a blackboard, and textbook dissemination of knowledge (Kbar et.al, 2019; Waheed, 2020). The relentless development of computers has permitted multimedia to enter campus classrooms, which have encouraged modern technologies to be continuously improved (Kayapinar et.al, 2018; Gafurov et.al, 2020). The progress helps to computational and high-tech storage of text, pictures, and videos in the media to inspire the students (de Boer et.al, 2017), deepening the students' experiences (Castro, 2019; Chen, et.al, 2018). Binbin (2017) used multimedia technology to teach in the English class and combines the characteristics of the subject to optimize the teaching, create a situation with multimedia, give students the freshest learning experience of each sense, and then achieve the enhancement of teaching effect. In the context of the data age, Chen(2017) followed the pace of educational reform and introduced multimedia technology into high school physics teaching, which improved the dilemma of physics classroom knowledge that was not vivid enough and was recognized and praised by schools, teachers, and students. The teaching methods of various schools are constantly changing, and the same is true in the teaching of chemistry.

Wang (2017) relied on the visual advantages of multimedia in graphic images, applied multimedia on high school chemistry lessons (Lv et.al, 2021; Han et.al, 202), and evolved abstract teaching into image teaching, which was used as an opportunity to improve the better enhancement of high school chemistry. Yue (2015) combined multimedia technology with the naughty students and used multimedia technology in primary school music teaching. Through the use of strengths and weaknesses, the scientific and rational use of multimedia technology has effectively improved the quality of music classroom teaching. The intention from displaying these studies is to indicate that multimedia content in mobile learning is possible and can secure positive learning outcomes.

1.5.4. Social Learning

Along with the above stated leading features of AI to mobile learning, social learning is an essential feature to tackle. While some studies have explored the effectiveness of AI in education, more research is still needed to provide compelling evidence on the role of generative AI in how students learn (Celik et al., 2022; O'Dea and O'Dea, 2023; Perera and Lankathilaka, 2023; Rasul et al., 2023). Constructivism suggests that learning is an active process in which learners construct their understanding of the world based on their experiences and interactions with the environment (Mascolo et al., 1998; Adams, 2006; Rasul et al., 2023). Social constructivism emphasizes the role of social and cultural factors in shaping how individuals actively construct knowledge within an educational setting (Adams, 2006; Walker and Shore, 2015; Saleem et al., 2021; Rasul et al., 2023). This theory suggests that learners are not mere receivers of knowledge from their instructors but rather actively construct their understanding through interactions and experiences, interpreting it based on their prior beliefs and knowledge (Adams, 2006; Walker and Shore, 2015; Saleem et al., 2021).

However, social constructivism has its own limitations. For example, its inclination towards autonomous knowledge construction may not adequately accommodate diverse learners or cater for the level of autonomy required for effective learning (Adams, 2006; Saleemet al., 2021). The absence of expert support within this social constructivist framework could potentially lead to group think and knowledge gaps due to learners being limited by their own perspectives and experiences. Further, it is worth noting the ‘social’ aspect in social constructivism, which influences the process of actively constructing knowledge (Walker & Shore, 2015), may in advertently lead to the exclusion of some learners who may struggle with difference in language, culture, and learning style. In such cases, generative AI, such as ChatGPT, can help students to overcome language barriers through its ability to help with writing, paraphrasing and idea development and its language editing and translation feature (Kasneci et al., 2023; Perera & Lankathilaka, 2023). This enables students to focus on their ideas and communicate effectively, regardless of linguistic or cultural differences.

The sense of belonging refers to students’ feelings of being accepted, included by, and connected to their institutions (Ahn and Davis 2020). Belonging encompasses social and psychological functioning, including academic engagement through curricula and activities such as interactions between students and academic staff and learning and teaching experiences (Ahn & Davis, 2020). From a learning development perspective, generative AI can enhance engagement through activities that encourage active participation and inclusion. Whilst exclusion can hinder a sense of belonging and engagement, embracing the potential of AI and how students use AI, and collaborating with peers, staff and institutions, can allow them to embrace the potential of generative AI in learning. After these explanations, it comes rational to mention that social learning in AI contributes to mobile learning.

1.5.5. Performance Tracking

AI greatly contributes in mobile learning in tracking students' performance. Its ability to regularly record each learner's performance in learning serves a great deal in improving some learning skills, identifying areas for improvement and making informed decision. Machine learning classification models are used in pedagogical environment to develop students' performance prediction models. These prediction models forecast the final outcome of the student based on several academic features. The main output of the model identifies the students with high probability of ending with unsatisfactory outcome. Once identified, these students can be forwarded for more auxiliary counseling mechanisms. A wide range of machine learning, particularly supervised algorithms, are indeed used to put into operation the concept of student performance pre-diction modeling.

Numerous models have been proposed under different educational context to address the student performance prediction. Kausar et al. (2020) made use of ensemble techniques to examine the relationship between students' semester course and final results. The experimental evaluation concludes random forest and stacking classifiers with achieving the highest accuracy. Orong et al. (2020) used modified Genetic Algorithm (GA) to eliminate excessive features and applied decision tree algorithm to discover the weak students and thus facilitates the institution to design interference measure to raise the student attrition. Chen et al. (2018) built models with decision tree and linear regression with a set of features extorted from the institution's auto-grading system. The research assists the institution to recognize the struggling students and assign teaching hours automatically in a smart way. Saa (2016) proposed a decision tree model to discover the essential features which influence students' academic performance. The data related to students' demographic, academic and social behaviour was collected through a survey. Iatrellis et al. (2020) proposed a machine learning approach wherein K-Means algorithm generates a set of coherent clusters and afterward supervised machine learning algorithms are used to train prediction models for predicting students' performance. Maesya and Hendi-yanti (2019) developed model to forecast if the student will graduate on time or late than the standard graduation duration. These endeavours explicitly demonstrate the advantages brought by AI in serving mobile learning.

1.6. Mobile Assisted Language Learning and its Interrelated Concepts

There is a hot debate as to the proper definition of MALL, CALL, M-learning, E-learning and D-learning. These concepts are more detailed in this section. To start with, CALL is conceptualized as “any process in which a learner uses computer and, as a result, improves his/her language” (Beatty, 2003, p.7). From this, it is obvious to refer to CALL as any learning that is shaped by the use of a computer. Yet and after continuous reflection, this conception took another vision to include even PDAs and mobile phones. In this line of thought, Beatty (2010) considers mobile devices such as PDA and mobile phones as CALL technologies. PDA and mobile phones are indeed new ways of approaching CALL. This view is also supported by Hubbard (2009) who claimed that CALL does not make use of computer (desktop and computer) only, but also “ the networks connecting them, peripheral devices associated with them and a number of other technological innovations such as PDAs (personal digital assistants), mp3 players, mobile phones, electronic whiteboards and even DVD players” (p.2). In this respect, it is concluded that MALL in the extension of CALL wherein mobile devices like PDA and the like are other versions of computers.

By definition, MALL is described as an approach to language learning using mobile technologies. It is important to claim that MALL does not have a definite conception due to the meaning of “mobility”, first and its connotations to other related terms that are defined and conceptualized in the following sections, second. Indeed, in MALL, the concept of mobile is ambiguous as it does not clearly specify if the mobile device is mobile or the learner is mobile (Kukulka- Hulme, 2009). She argues that this vague term may have two different explanations. On one hand, it may refer to “mobile technologies” that bring both portable and accessible anytime and anywhere. On the other side, mobility may also refer to “mobility of learners” in this case the focus is not on technology used, but on the learner who accesses the information in different places, at different time. In this respect, MALL can be defined as an approach to language learning that enhances language learning “anytime and anywhere” through the use of “mobile devices” such as mobile phones (also cellular phones or hand phones), PDAs, tablet, PCs, smartphones, laptop computers and personal media players (Traxler, 2007).

Research suggests that in order to have a broad idea on what MALL actually means, it is significant to refer to its related concepts that are called into action, and the common related concepts are d-learning, e-learning, and m-learning. In respect to the presented figure, m-learning is a subset of E- learning, and E- learning is a sub set of distance, as put forward by Georgieva et al. (2005). Accordingly, M- learning is part of E- learning which is the extension of D-learning. The following figure summarises this claim.

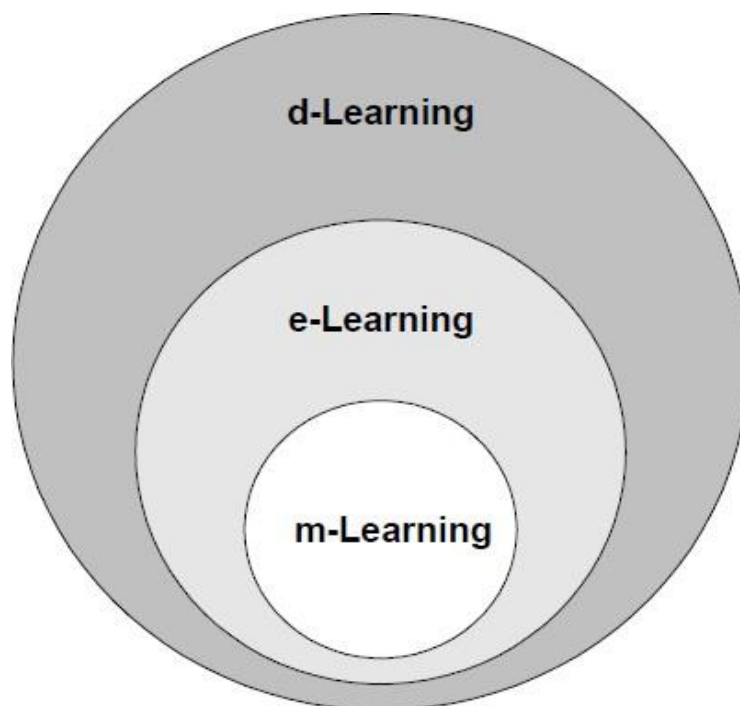


Figure 1.8. M-learning, e-learning and d-learning (Georgieva et al., 2005)

However, it is crucial to highlight the following diagram to better notice the expansion researchers further add.

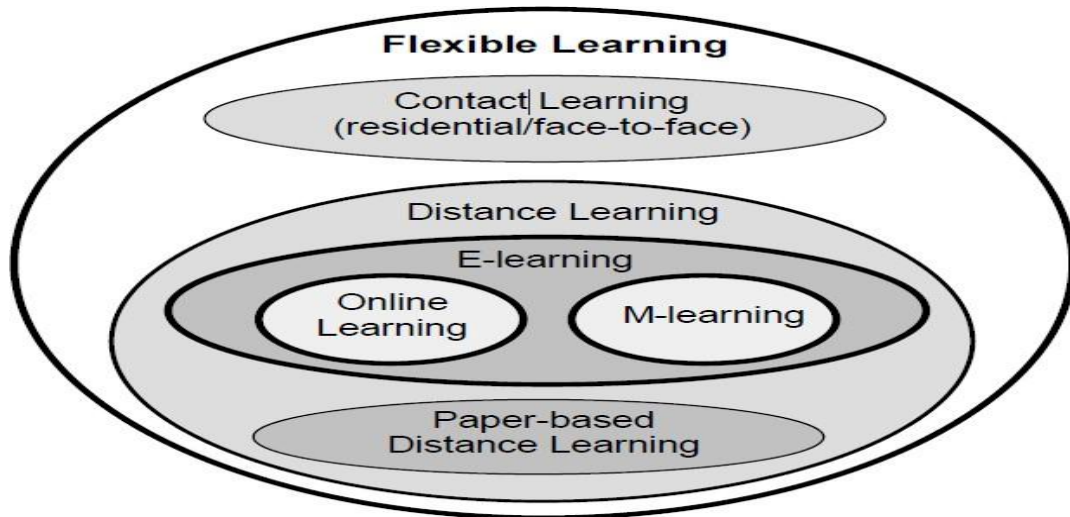


Figure 1.9. Flexible learning sub-sets (Brow, 2003)

Low and O’Connell (2006), explain the relationship between e-learning and m-learning in terms of flexibility and the learning space. They emphasize that e-learning and mobile learning are flexible regardless of space as long as learning is taking place. However, Traxler (2007) further added that e-learning and m-learning are different since each one covers its specificities. The following table displays these varieties.

Table 1.3. E-learning vs. m-learning (Traxler, 2007)

E-Learning	M-Learning
Structured	Personal
Media-Rich	Spontaneous/Private
Broadband	Disruptive/Context-Aware
Interactive	Opportunistic/Bite-Sized
Intelligent	Informal/Portable
Usable	Pervasive
Flexible	Situated

It is then understood that technological tools used for e-learning and m-learning are different and should not overlap due to each one’s characteristics.

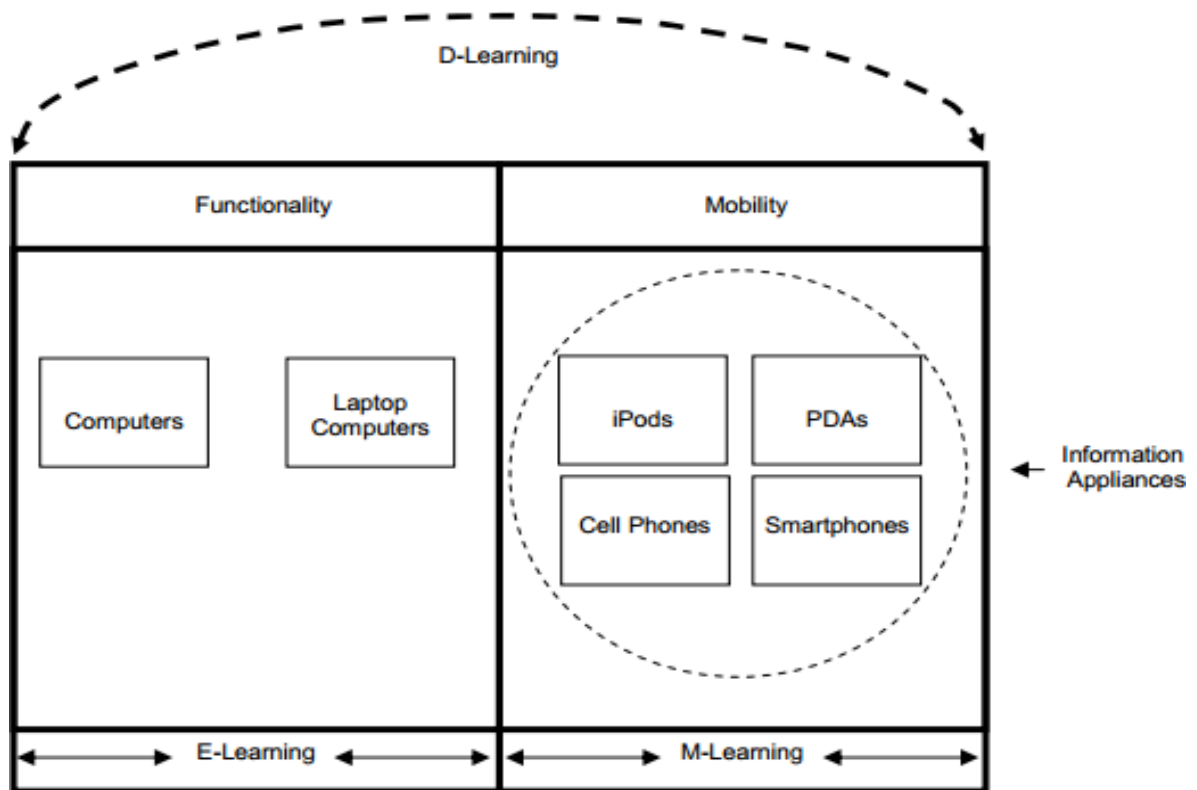


Figure 1.10. D-learning (Traxler, 2007)

D-learning, on the other hand, combines both functionality and mobility of the device without taking into account the learner. The diagram illustrates this assumption as it focuses mainly on the device and the tools that are used for both modes of learning. Hence, d-learning joins both e-learning and m-learning in a continuum. The explanations provided throughout this section do not one hundred percent show the clear cut among those interrelated concepts, it rather covers the responsibility learners and teachers alike are required to enjoy improving teaching and learning outcomes. In this respect, it is high time to discuss the possible tools for these modes of learning to take place.

1.7. Shift from Device Affordance-Based to Pedagogy-Based Practice

To start with, mobile devices are approached as any tool that is small, wireless and could be taken anywhere anytime (Kukulka-Hulme & Shield, 2007). Naismith Lonsdale, Vavoula, and Sharples (2004) use two orthogonal for classifying a range of mobile technologies with dimensions of personal versus shared and portable versus static. The following figure is presented.

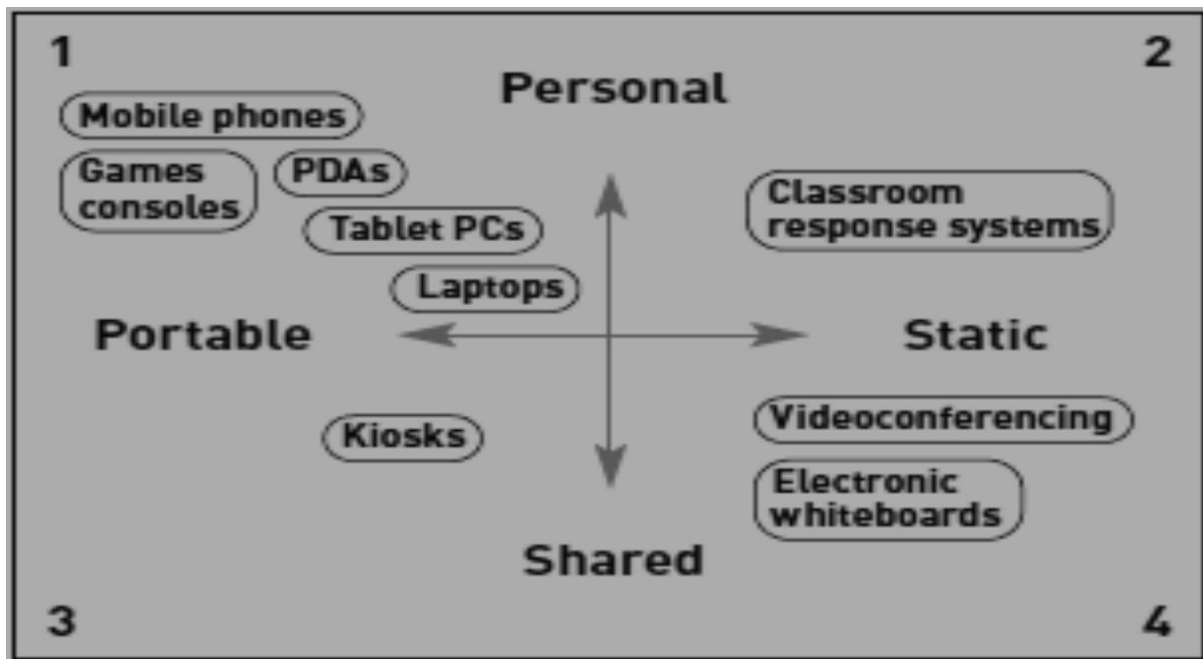


Figure 1.11. Mobile technology dimensions (Sharples et al., 2004)

In simple terms, the dimension of personal means that the device is used by one user but the network is shared. Portable, on the other hand denotes the possibility of the device to be hold, found and or used with no restriction to time and place (as mentioned in the diagram “Kiosks”). Static refers to a pre-defined IP address that is more or less not subject to get changed. The intention is hence addressed to mobile devices, and the bellow sub-sections are meant to give some interesting facts on how these mobile devices serve learning purposes.

1.7.1. Mobile Phone

The general reason behind using mobile phones is for people to receive calls and get messages. Basically, it has been said that a mobile phone is “a telephone which is connected to the telephone system by radio instead of by a wire, and can therefore be used anywhere where its signals can be received” (The Cambridge Advanced Learner’s Dictionary, 2008). Likewise, Rysavy (2010) described smartphone by adding other characteristics including: portable, user-friendly, interactive, and most importantly it is highly customizable. Recently, the refined smartphones have added a number of other qualities to the basic functions of the phone as internet connection, a touch screen, Bluetooth connectivity, operating system to ease downloading apps, calendar, camera, and 3G/4G, to mention just some. Therefore and with these graphic functions, they become powerful m- learning devices (Irina, 2012).

Kenning (2007) asserted that with these significant features, mobile phones are possibly giving opportunities in the educational setting and disregarding other potentials. Besides, Irina, (2012) illustrated some of the major uses of mobile phone for supporting language learning, like in writing short assignments, quizzes, surveys, podcasts to blogs, e-books, electronic dictionary, vocabulary games, and the like. Because the present thesis focuses mainly on the use of smartphones, then the restrictions, if found, are tolerated to remain specific and narrowed. The below table displays its main features and use.

Table 1.4. Smartphone features (Sharples, 2004)

Smartphone Features	Mobile Learning Use
Cameras	For capturing videos and images, augmented reality
Quick Response Document Viewers	(QR) code reading eBooks, PDFs
Geolocation	GPS, geo-fencing, map
Internal Sensors	accelerometer, barometer, compass, gyroscope, Proximity sensors
Media viewers	image, video, audio, podcast
Microphones	Voice recording, podcast
Notifications	Alert, sound, vibrate
Search engines	discovery, quick-reference, search engine
Short-range communication	Bluetooth, Near Field Communication (NFC)
Radio Frequency Identification	RFID
Text Messages	Short Message Service (SMS)
Multimedia Message Service	(MMS)
Touch screen	Interaction and voice/phone communications

1.7.2. Tablets/ Tablet Computer

As highlighted within the heading, a tablet is also known as a tablet computer. Starting with what is revealed in Cambridge Advanced Learner's Dictionary (2008), a tablet PC is "A small computer with a screen that you can write on using a special pen or that you can connect a keyboard to". In other words, TC is regarded as a small computer that enables users to use fingers to type on the keyboard or use a special pen to perform any task. The term tablet was first used by Microsoft when it was possible to put windows XP Tablet PC operating system in this device (Van Mantgem, 2008). It combines the computing power with the portability and ease of use. In this vein, Van Mantgem (2008) described a tablet as a device that is easy to carry out and large enough to alternate desk computer along with the ability to trip the learning context anywhere and anytime. As said, the physical properties of a tablet in general include approximately the same features as the mobile phone. It is now safe to say tablet PCs have increased the opportunities for m- learning due to the abovementioned properties. This is indeed felt in their popularity and use among both teachers and students. Such a fact urged some researchers to study their affordances and hence the followings have been emerged:

- Engaging, inclusive, and/or collaborative learning.
- Flexibility in place.
- Use of multimedia/ interactive content and apps in teaching.
- Student satisfaction.
- Personalization and student-centered learning.
- Use of e-books.
- Resource saving.
- Mobility in time and pace.
- Eco-friendly.
- Competitive resource (Godsk, 2013).

1.7. 3. Personal Digital Assistant (PDA)

Another handheld device is a PDA. This typical device incorporates a memo, calendar, and a clock reminder; it can also be used to write notes, play games, listen to sound files, and view videos and pictures. Besides, it has the ability to connect, and exchange data with a computer, and other devices. PDAs form a good combination of digital storage along with computing power that includes internet access, wireless network access through Wi-Fi or Bluetooth, and pen or stylus input interface, along with other word processing tools (Jacob & Isaac, 2008). This allows people to access email and web content, and play audio and video files. Moreover, it supports interactive and group learning. For Pinkwart, Hoppe, Milrad, and Perez, (2003) “There is great interest in introducing Personal Digital Assistants (PDA) into educational scenarios to orchestrate classrooms by using ubiquitous computing in an unobtrusive way” (p.383). Along the same lines, for Papadimitriou, Komis, Tselios, and Avouris (2006), PDA can extensively enrich the learning experience, as it offers a plethora of computing functions that can be used in different contexts and serving a variety of tasks. They also state some major benefits of PDA as an educational tool as follows:

- It activates students’ motivation.
- It augments their attention and encourages them to engage in more meaningful learning activities.
- It supports both independent and collaborative learning.
- It facilitates the learning outcome evaluation process.

Pinkwart et al. (2003) categorize the educational applications of PDAs into two main types of use:

- The PDA serving as an interface to a ‘main’ desktop program to extend the use of the desktop application for specific scenarios; here, the mobile device may, in the extreme case, just serve as a front end, e.g. for outdoor data input;
- A standalone application running on the PDA, with or without connection to a central desktop application; this approach includes several mobile applications allowing collaboration via direct communication between the devices (p. 384).

1.7. 4. Digital Media Players

Like mobile phones and PDAs, media players have a number of capacities that can be exploited for language learning purposes. Jacob et al. (2008) define MP3 player as a digital audio player that plays music and audio files, and it can be used by students for recording and listening to lectures and podcasts. Although they have a good quality output, they do not offer any of the interactivity options. Accordingly, this kind of devices can be used for listening purposes inside and outside the classroom. It can be also utilized for recording purposes such as recording voice for practicing oral activities or recording a lecture.

Basing on what is said in the above, it seems that smartphones and tablets are more attracted to m-learning than the other devices. The processing power and advanced features of these two devices (smartphone and tablet) offer many opportunities for language learning in any space. As well as, many ready available free apps in the android store and apple store can be customized and used for doing learning tasks in tablets or in smartphones. Thus, these appliances can be effectively utilized in teaching and learning English language in higher education.

1.8. Mobile Assisted Language Learning in the ESP Context

The use of mobile devices in language learning is not restricted to EFL context; rather it extends to be found in English for Specific Purposes (ESP) learning environment. Before revealing its practice in the ESP context, it is important first to understand what exactly ESP means.

1.8.1. Understanding English for Specific Purposes

To start with, Mackay and Mountford (1978, p. 2) described ESP as “generally used to refer to the teaching of English for a clearly utilitarian purpose. This means that ESP denotes the use of the English Language to serve specific purposes. Robinson (1991) claimed that learners need it in their academic or professional purposes regardless of its culture. This conception entails that learners have specific pre-determined purposes in learning the language. In this context, Hutchinson and Waters (1987) pointed out that ESP does not refer to any particular product, but it is rather an approach in which the language content and the teaching methodology are based on the objectives of learners.

Dudley-Evans and St. Johns (1998) outlined a set of characteristics, namely: absolute and variable characteristics:

Absolute Characteristics:

- a- ESP meets the needs of learners;
- b- ESP underlies a specific methodology and tasks; and
- c- ESP is centred to language functions, skills, genre/discourse.

Variable Characteristics:

- a- ESP is designed to specific disciplines;
- b- ESP uses a different methodology as opposed to GE;
- c- ESP could be for learners at tertiary level; and
- d- ESP courses assign some basic knowledge of the language.

The above characteristics cover the idea that ESP learners have intended needs to fulfill which require relevant methodology and activities centred to some language functions (request, permission, and so forth). These standard features depend on the learning stream students are enrolled in using totally different approaches that correspond with tertiary educational level along with some basic knowledge (the grammar of the language, for instance) of the English language.

The content to be presented to learners differs from one student to another depending on the field of study they are enrolled in. Such a notion gives attention to refer to target situation analysis. The latter denotes that in order for specific learners, to function effectively in their workplace, they have to be exposed to specific content based on the specificities of these real-world situations. To undertake such process, the following steps should be considered:

a- Target situation identification:

This stage involved the identification of situations where learners will be using the language. That is, it is important to ascertain where the language will be used (medical delegate, writing reports in engineering, etc).

b- Linguistic Analysis:

As the term implies, this phase concerns the language features required to enable students produce relevant language. It covers for example related vocabulary in medicine, law, ecology and so forth.

c- Syllabus Design:

The last stage is to design specific but relevant syllabus to specific type of learners. Its design covers merely the learning materials, activities, evaluation tools or procedures to meet with target situation necessities and the language needs.

In addition to the abovementioned, needs analysis is necessary to collect the needed data in designing appropriate courses for specific type of learners. According to Richards and Platt (1992, p. 242), needs analysis is “the process of determining the needs for which a learner or a group of learners acquires a language and arranges the needs according to priorities.” Hutchinson and Waters (1987) outlined needs analysis under two broad concepts: target needs and learning needs.

- Target Needs

Learners’ target needs are the specific language abilities learners require to function effectively in their academic or professional contexts. They are divided into three sub-categories:

- Necessities

These are the essential language skills learners must possess to perform tasks in the different target situations. For example, a biology student needs to be able to understand and explain watering system in a clear and concise manner.

- Lacks

These represent the gaps between a learner’s actual language proficiency and the necessities for the target situation. Identifying these gaps helps matching the ESP course to address what learners need to improve. For example, an engineer may struggle with

writing technical reports in specialized English.

- **Wants**

These are desirable but not essential language skills that could enhance a learner's performance in their target situation. For example, a lawyer might want to improve his/her negotiation skills in English for international business affairs.

Another characteristic to highlight in this respect is the learning needs. The latter denotes the “Factors that affect the learning like attitude, motivation, awareness, personality, learning styles and strategies, together with the social background” (Xiao 2007, p. 2). It focuses on the desired learning materials and the best engaging practices that they prefer the most. Therefore, a compatible syllabus desing for this type of learners encompasses other tools that are deemed important to be used. These tools are needs analysis questionnaire, needs analysis interview, and tests. In simple terms, these tools are designed to gether data on students learning needs and target needs that enable teachers have a closer look at what should be implemented in the course and how and when knowledge is presented and assessed.

1.9. Successful Implementations of MALL in Language Learning

Focusing on MALL in teaching and learning, Lin et al. (2015) attempted to promote learning interest and practical skills among the learners by using mobile learning applications. The results showed that the use of mobile learning applications had significant positive effects on academic performance and the majority of the learners had positive attitudes towards using the mobile learning system. Barhoumi (2015) also explored the effectiveness of mobile learning, particularly use of WhatsApp. The results indicated that using mobile learning technologies, online lectures, were more effective compared to face-to-face ones. Zou and Li’s (2015) study also reported that majority of the learners had positive attitude towards mobile learning and the applications. They also had high motivation while carrying out closely connected activities. In addition, mobile learning and applications can be used in English language classes and learners’ self-study in which the learners can practice the English language both inside and outside the classroom. Some previous studies have investigated the role of SMS through mobile in

learning the language. Kennedy and Levy (2008) and Levy and Kennedy (2005) report a technique towards the incorporation of SMS to language classes.

In these studies, learners were given Italian vocabularies, expressions, and sample sentences as SMS messages through their cell phones. Both studies reported that the incorporation of SMS as an instructional tool was successful. Moreover, participants held a positive perception about the incorporation of SMS as a learning tool. Lu (2008) found out that the use of SMS in language classes enhances language learners' intercultural awareness as well as critical thinking skills. Two other studies (Thornton & Houser, 2005; Zhang et al., 2011) studied the role of SMS in enhancing language learners' vocabulary acquisition. The results were in line with previous studies (i.e. effectiveness of SMS). Lu (2008) recruited 30 senior high school students and through adopting a quasi-experimental design, divided them into two groups. The experimental group acquired English vocabulary through SMS, while the control group took the usual paper-based materials. The findings revealed that experimental group participants achieved higher scores than control group participants in their vocabulary test. Zhang et al. (2011) in a similar study confirmed Lu's (2008) findings. In another study, Motallebzadeh and Ganjali (2011) studied the role of SMS in enhancing vocabulary knowledge and reading comprehension of forty English learners.

The findings uncovered that SMS utilization results in the development of vocabulary knowledge as well as reading comprehension skills. In recent study, Taghizadeh and Porkar (2018) offered a rational view that despite many benefits of MALL a language class must not be entirely mobile centered because this may reduce the role of the teacher who should be the real provider of the input and the inspiration in the classroom. A systematic study conducted by Azhariah et.al (2023), which aimed at reviewing previous research related to vocabulary learning using MALL applications, revealed that the positive impact of MALL applications on English vocabulary development. Learners using MALL applications demonstrated improved vocabulary acquisition compared to traditional methods. The interactive and multimodal features of MALL applications engage learners actively, facilitating deeper understanding and retention of vocabulary. The flexibility and accessibility of mobile devices allow learners to engage in vocabulary learning at their own pace and convenience (Kim & Kwon, 2012; Zain & Bowles, 2021). Moreover, it was demonstrated that MALL applications

offer several advantages for English vocabulary learning. Portability enables learners to access vocabulary exercises and resources anytime, anywhere. The interactive nature of MALL applications promotes engagement and motivation. The integration of multimedia elements, such as images, audio, and video, enhances comprehension and context understanding. Personalization features in MALL applications allow learners to customize their learning experience based on their individual needs and preferences. Gamification elements, such as Rewards and challenges, foster a sense of achievement and enjoyment in vocabulary learning (Hashim et.al, 2017; Abu Sa'aleek, 2014).

In Saudi Arabia, Khan et al. (2019) investigated the efficacy of MALL instruction in the ESP Context. The study took place in the college of business administration with 21 learners using smartphones as a tool for learning. After a five-week trial, a questionnaire was administered to describe their experience in using their smartphones. The analysis showed strong agreement on the fact that with smartphones they can use different apps for learning English with 87%, and they have developed significant proficiency in the language with 87%, as well. Students displayed awareness and eagerness to harness their learning with 52%, especially via the use their personal smartphones. MALL has also opened opportunities for students to learn and enhance their skills in grammar, beyond conventional settings (Patria, 2022). In this vein, Metom et.al (2024), maintained that mobile apps have positively impacted Malaysian university students' grammar skills. The most studied app for grammar learning is Duolingo. The latter showed wide audience and acceptance with 90% of EFL senior high school Malay students. Similar intentions are also reflected in study by Pal et.al (2021) that used TAMIL Grammar App in order to study if it is effective for their students. After careful instruction, results displayed remarkable improvement in grammar skills. They concluded that the app benefits their learners' present needs and students enjoy learning grammar through the app.

In the same line thought, Passa and Fatehi (2021) based their research in finding out the efficacy of Sky room and Telegram in sustaining grammar learning. They found that the efforts devoted and the time spent in using this educational app amongst their learners assist learners' grammar proficiency. Beyond a shadow of doubt, it is now safe to claim that MALL implementation in bettering the teaching-learning process carry absolute results in any context of study and with various learners. Such a deal demonstrates the inevitable regard of the promises met in MALL integration, and from this vintage point, the following section explores the models in MALL integration.

1.10. Models to MALL Integration in English Language Classrooms

The present section entails the different models that are outlined to guide and frame the use of MALL in language classrooms, mainly for English classrooms.

1.10.1. FRAME Model

First of all, the acronym stands for Framework for the Rational Analysis of Mobile Education (FRAME). It is characterized by the use of mobile devices in terms of the main aspects; device, the learner, and social aspects of learning. In different terms, the FRAME model highly considers the technical characteristics of mobile devices along with the personal and the social aspects of learning. Considered thisway, this model has some pertinent roots of constructivism where interaction coexists among learners under a definite social context. The following diagram better represents these three aspects in an informative representation.

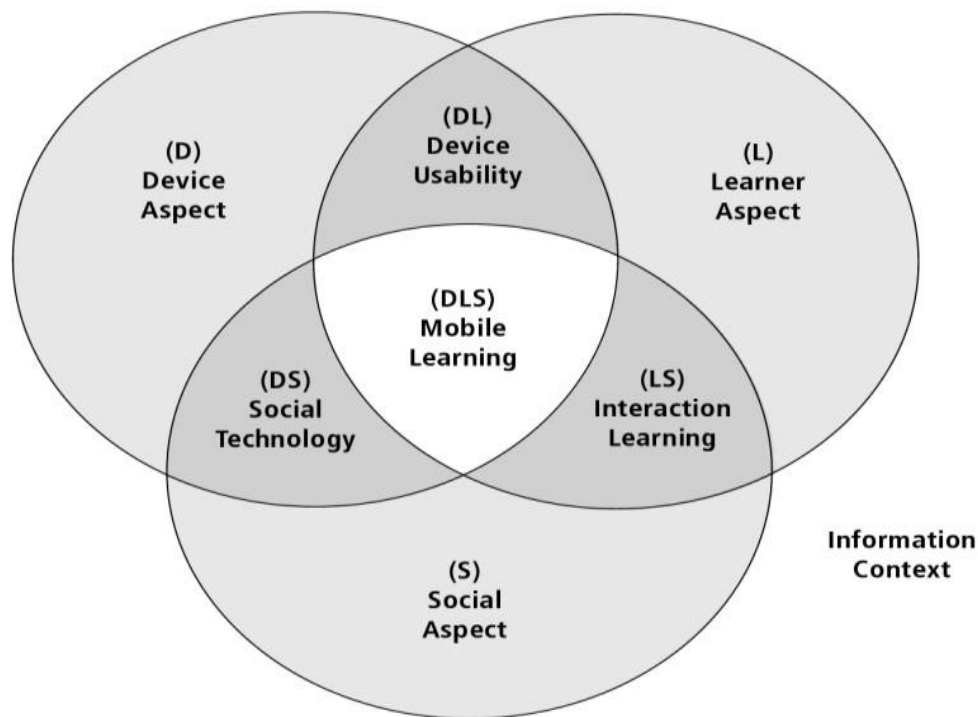


Figure 1.12. Mobile characteristics in FRAME model (Koole, 2009)

To better study and explain the above diagram, it is important to give significant credits to each aspect. First, the device aspect covers the physical characteristics, input and output capabilities. In this vein, the mobile device can be manipulated taking into account its size, weight, buttons and keys placements, and is able to be used anytime anywhere. As for the input, data can be organized appropriately into the device, and for the output characteristic, it enables the user to feel the change in the device. In fact, other characteristics are called in this respect including file storage and retrieval. This means that the device eases data storage and retrieval anytime anywhere. In this context, the battery life and RAM of the device ought to be speed to be considered reliable and useful

It is significant to mention that relying on the device is not sufficient because it is important to consider individuals' mental abilities. This fact covers learners' prior knowledge, memory, and others. Indeed, learners' past experience is important to process the new input. This is evident when learners' memory is activated. The role of memory is important to memorize knowledge that is either stored in long-term memory of short-term memory. Such a process enables the learned knowledge to be transferred to any context the learner is in to be applied in a new learning environment. This also calls for

their emotional and motivational aspects as their willingness to use knowledge depends on their state of mind and motivation. The social aspect should also be considered as cooperation among the involved parties and should be well channeled to avoid any issue that may be raised.

1.10.2. BYOD (Bring Your Own Device)

In traditional learning atmosphere, learners are not allowed to bring their mobile devices, or even put them on their tables. However, with the educational shift, teachers find themselves in front of a new tendency; where learners are bringing their own devices to class. For that reason, teachers adapt themselves and exploit the advantages of mobile devices. BYOD refers to the fact that learners are permitted to bring their own mobile devices to class in order to be used to support their learning process. Learners are required to bring devices that fit certain criteria. Indeed, the types of mobile technology should be appropriate to the individual student, task type, and context (Sweeney, 2013). Indeed, the initial endeavour in implmentating or allowing users to bring and use their personal devices is in the world of business. Research indicates that around 81 minutes are saved when employees' mobile devices are used. Starting from this outcome, educational institutions started to think about the notion of BYOD in the teaching-learning practice.

One of the advabtages of BYOD is the familiarity of the device. Put differently, when the user uses his/her mobile device, no difficulty can occur compared to the institution's device. The rise of this model is also related to the inability of institution to finance such devices to all students. On the other side, we find students coming with these devices "they view as their primary and preferred means of consuming services, accessing content and communicating" (Probert, 2012, p. 73). Silva (2020) applied the notion of BYOD in Portuguese schools and findings reported that students like to continue learning with their own devices and their learning get enhanced by such an intervention. Ine same vein, Livson et.al (2021) asserted that with good pedagogy, BYOD positively impacted students' course engagement in both secondary and tertery educational settings. Welsh et.al (2018) claimed that when students are given the opportunity to study with their own devices, they are more likely to perform tasks faster according to their personal needs. One can then conclude with the fact that BYOD covers

a number of benefits not merely to students, but also for institutions. It gives learners the chance to select the best device suitable to their learning needs and ability to work with it with no complexities, at the same time they are well engaged in their learning practice.

Such a fact drives us to think about how well they will develop digital literacy that is among the keys to satisfy today's market. In other words, students with their own devices in the classroom encourage positive and effective development of their digital literacy in one way or another.

1.10.3. Bloom's Digital Taxonomy

Bloom's taxonomy of educational objectives is a classification system by an educational psychologist, Benjamin Bloom who created it in 1956. The aim was to make students aware of what they were learning, hence striving to attain more sophisticated levels of learning with six cognitive-learning categories. It focuses on developing thinking ability which involves simple information acquisition to more complex processes (Bloom, 1956). Adams (2015) summarises the six levels of Bloom's taxonomy of cognitive learning objectives as (1) Knowledge, which entails foundational cognitive skill that require students to retain of specific, discrete pieces of information, (2) Comprehension, which requires students to paraphrase the content of knowledge in their own words, classify items in groups, compare and contrast items with other similar entities, or explain a principle to others, (3) Application, entailing students to use knowledge, skills, or techniques in new situations, (4) Analysis, which requires students to distinguish between fact and opinion and identify the claims upon which an argument is built, (5) Synthesis, which entails the need to create a novel product in a specific situation, and (6) Evaluation, which requires students to critically appraise the validity of a study and judge the relevance of its results for application. The Bloom's taxonomy of educational objectives has been regarded for a long time as an important tool for cognitive development. It has influenced many teaching philosophies around the globe especially in promoting rational thinking, often focusing on higher-order thinking skills. The taxonomy was later revised in 2001 by Anderson.

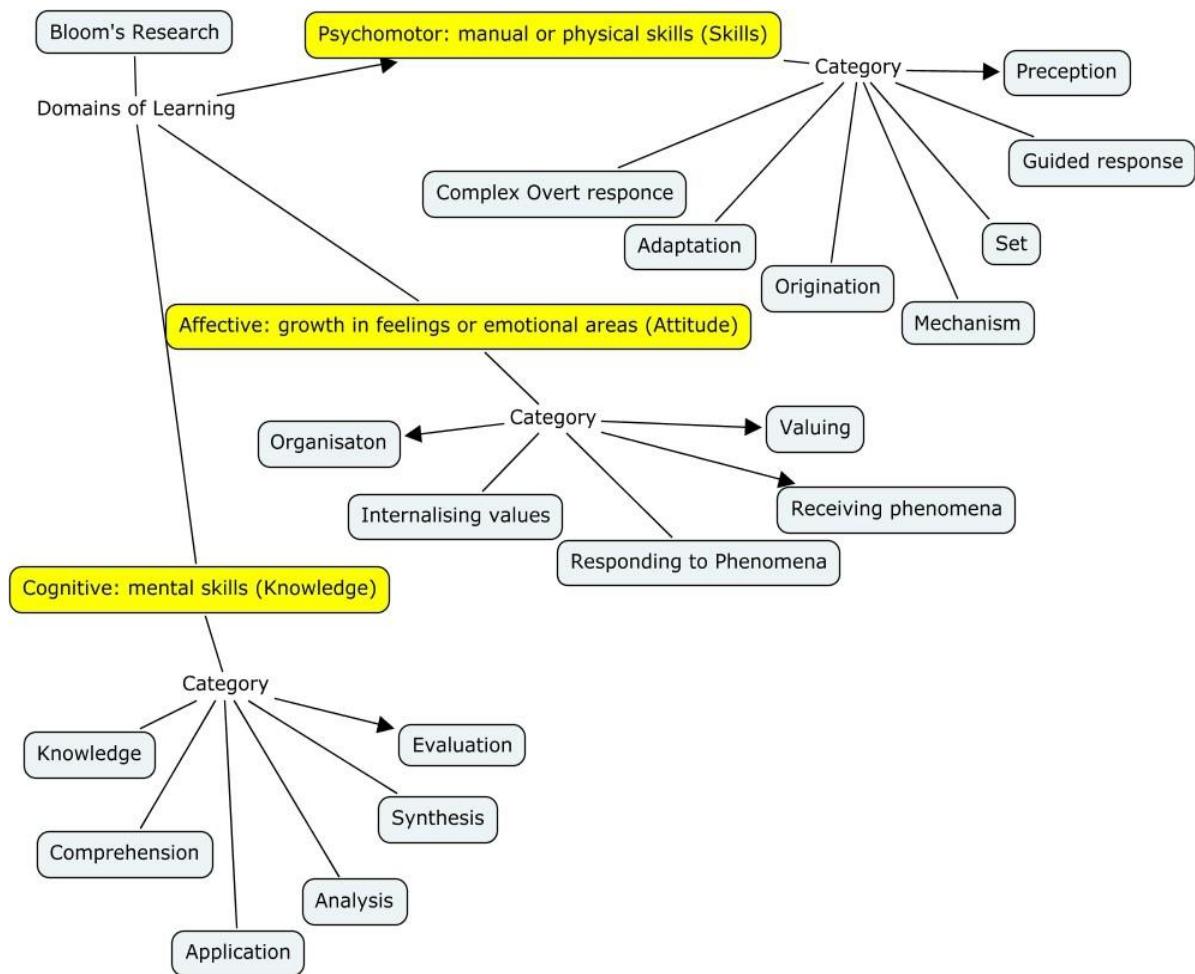


Figure 1.13. Bloom's taxonomy (Adapted from: <https://it.pinterest.com/pin/281193570454887601/>)

Benjamin Bloom is best known for, Bloom's taxonomy which examines the cognitive domain in language learning. This domain categorizes and orders thinking skills and objectives. His taxonomy follows the thinking process. Simply; one cannot understand a concept if you do not first remember it, similarly you cannot apply knowledge and concepts if you do not understand them. It is a continuum from Lower Order Thinking Skills (LOTS) to Higher Order Thinking Skills (HOTS). Bloom described each category as a noun. They are arranged below in increasing order, from lower order to higher order.

Lower Order Thinking Skills (LOTS)

- Knowledge
- Comprehension
- Application
- Analysis
- Synthesis
- Evaluation

Higher Order Thinking Skills (HOTS)

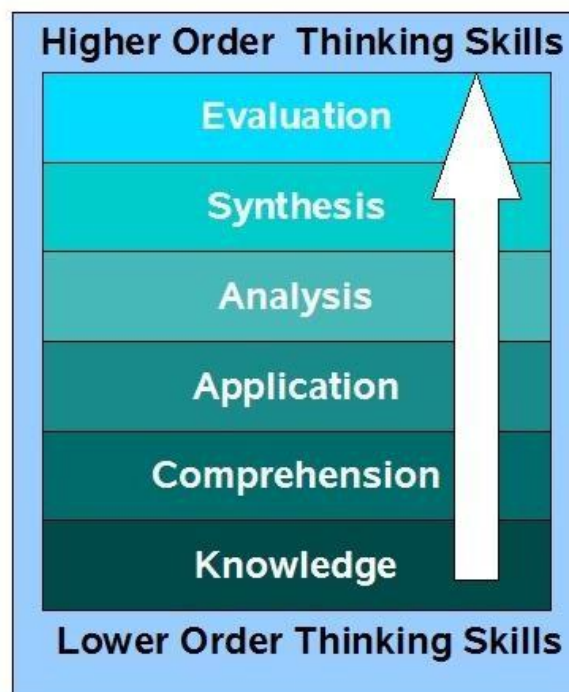


Figure 1.14. Bloom's taxonomy (Adapted from: <https://suzanne-sallee-iachieve.blogspot.com/2011/08/mobile-learning-and-blooms-taxonomy.html>)

In the 1990's, a former student of Bloom, Lorin Anderson with David Krathwohl, revised Bloom's taxonomy and published Bloom's revised taxonomy in 2001. This revision is rather addressed to the use of verbs rather than nouns for each of the categories and a re-arrangement of the sequence within the taxonomy. They are arranged as follows:

Lower Order Thinking Skills (LOTS)

- Remembering
- Understanding
- Applying
- Analysing
- Evaluating (Revised position)
- Creating (Revised position)

Higher Order Thinking Skills (HOTS)

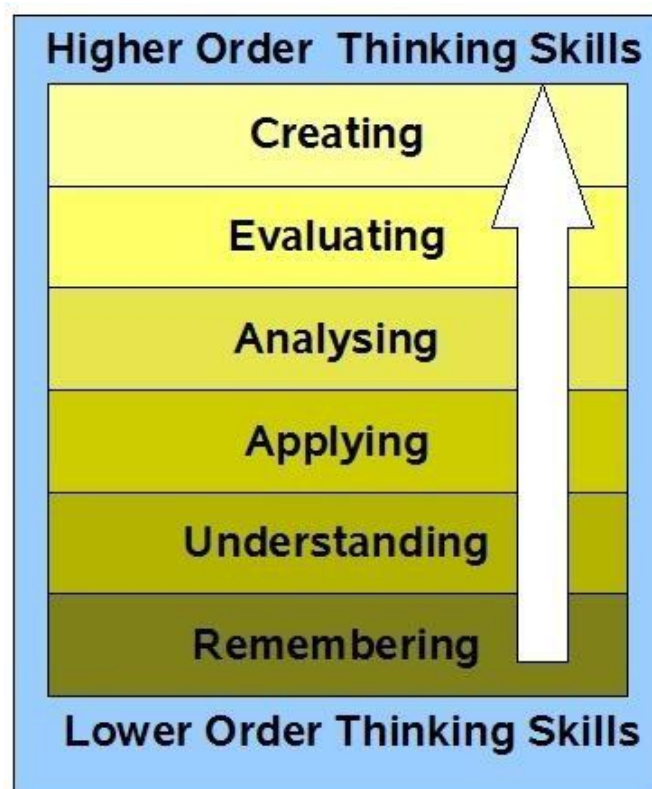


Figure 1.15. Bloom's revised taxonomy (Adapted from: <https://suzanne-sallee-iachieve.blogspot.com/2011/08/mobile-learning-and-blooms-taxonomy.html>)

Bloom's Revised Taxonomy Sub- Categories

One of the key revisions in the Revised Bloom's Taxonomy was the change to Verbs for the actions describing each taxonomic level.

Lower Order Thinking Skills (LOTS)

- **Remembering**-*Recognising, listing, describing, identifying ,retrieving, naming, locating, finding*
- **Understanding**-*Interpreting, Summarising, inferring, paraphrasing, classifying, comparing, explaining, exemplifying*
- **Applying**-*Implementing, carryingout, using, executing*
- **Analysing** - *Comparing, organising, deconstructing, Attributing, outlining, finding, structuring, integrating*
- **Evaluating** - *Checking, hypothesising, critiquing, Experimenting, judging, testing, Detecting, Monitoring*
- **Creating**-*designing,constructing,planning,producing,inventing,devising, making*

Higher Order Thinking Skills (HOTS)

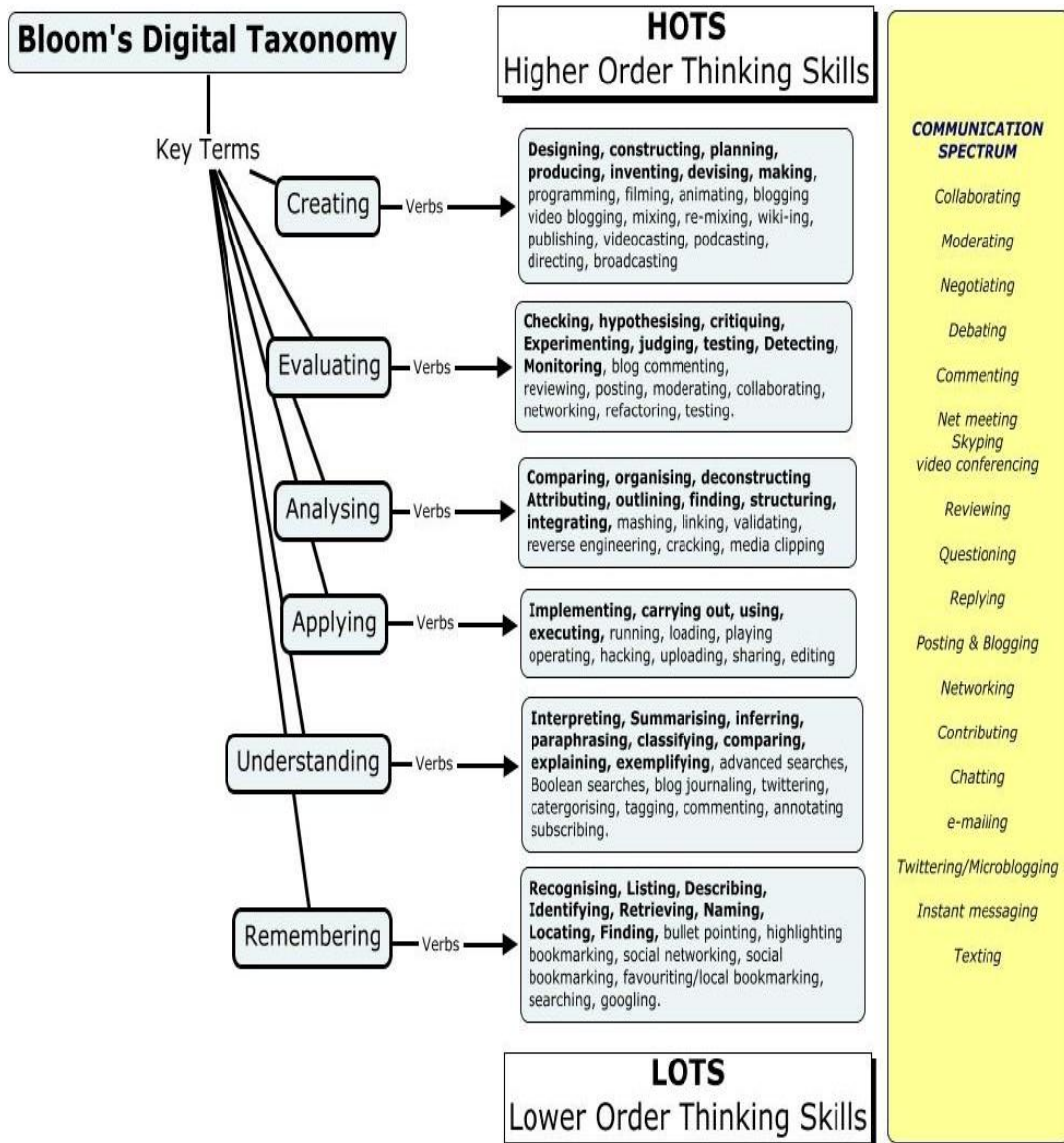


Figure 1.16. Revised Bloom’s digital taxonomy (Adapted from: <https://suzanne-sallee-iachieve.blogspot.com/2011/08/mobile-learning-and-blooms-taxonomy.html>)

Remembering

Since the recall of knowledge is the lowest of the taxonomic levels, it is crucial to learning. Remembering does not necessarily have to occur as a distinct activity, it is reinforced by application in higher level activities.

The following are some of the key terms for this aspect of the Taxonomy.

- Recognising
- Listing
- Describing
- Identifying
- Retrieving
- Naming
- Locating
- Finding

The digital additions and their justifications are as follows:

- **Bulleted pointing**- This is listing but performed in a digital format.
- **Highlighting**-The highlighter is a key tool in productivity suites like Microsoft Office or open Office.org. It pushes students to pick out and highlight keywords and phrases.
- **Bookmarking or favouriting** – It is the process where students mark/favourise specific input for later use. Students can then organize the bookmarked files/documents to be used in the future.
- **Social networking** – this is where people develop networks of friends and associates that links them together.
- **Social bookmarking** – this is an online version of local bookmarking or favouring. It is more advanced because you can draw on others bookmarks and tags. While higher order thinking skills like, collaborating and sharing can and do make use of these skills, this is its simplest form - a simple list of sites saved to an online format rather than locally to the machine.
- **Searching or “googling”** - Search engines are now key elements of students Research. It allows students to simply type keywords to receive the intended results.

Understanding

Understanding builds relationships and links knowledge. Students understand the processes and concepts and are able to explain or describe them. They can summarise and rephrase them into their own proper words. There is a clear difference between remembering, the recall of facts and knowledge in its various forms like listing, bullet points, highlighting etc., and understanding, constructing meaning. Let us take a small example: the young child who can count from 1 to 10 but cannot tell you how many fingers you are holding up. Or the student who can recite for you the first 20 elements of the periodic table in sequence but cannot tell you about each or relate their position in the table to the number of electrons in the outershell and from there explain their behaviour. Therefore, understanding is the notion of building relationships and constructing meaning. The following are some of the key terms for this aspect of the Taxonomy.

- Interpreting
- Summarising
- Inferring
- Paraphrasing
- Classifying
- Comparing
- Explaining
- Exemplifying

The digital additions and their justifications are as follows:

- **Blog Journalling** – This is the simplest of the uses for a blog where a student writes or types a task in a specific journal. This shows a basic understanding of the activity report upon. The blog can be used to develop higher level thinking when used for discussion and collaboration.
- **Categorising and Tagging** – It signifies the digital classification, organisation and classification of files, websites and materials using folders, using Delicious and other similar tools beyond simple bookmarking. Learners need to be able to understand the content of the pages to be able to tag it. As stated, if students failed to remember, then this phase is unbelievably achieved.

- **Commenting and annotating** – It permits learners to comment and annotate on web pages, PDF files and other documents. In other words, student's understanding is developed and made possible through commenting and annotating.

Applying

This aspect of the Taxonomy covers the following verbs, namely:

- Carrying out
- Using
- Executing
- Implementing
- Showing
- Exhibiting

The digital additions and their justifications are as follows:

- **Running and operating**- It is hardware app that leads to operating and manipulating hardware. It is useful in attaining a certain goal or objective.
- **Playing** – It denotes the fact of putting hands on a particular task for its safe operation. Such a fact is possible when safe understanding of the learnt knowledge is established.
- **Uploading and Sharing** – It refers to the act of uploading and e sharing of materials via sites like flickr and similar ones.
- **Hacking** – hacking in its simpler forms is applying a simple set of rules to achieve a goal or objective.
- **Editing** – It refers to the process of editing a certain language reality to produce other materials feasible for future use.

Analysing

The followings are some of the key terms for this aspect of the Taxonomy:

- Comparing
- Organising
- Deconstructing
- Attributing
- Outlining
- Finding
- Structuring
- Integrating

The digital additions and their justifications are as follows:

- **Mashing**—It is the process of integrating several data sources into a single one.
- **Linking** – this is establishing and building links within and outside of documents and web pages.
- **Reverse-engineering** - this is analogous with deconstruction. It is also related to cracking often without the negative implications associated with this.
- **Cracking** – It is the practice of cutting/ cracking knowledge into smaller units for the sake of analyzing it to be used in future practices. It requires careful understanding and operating mechanism to ascertain particular tasks.

Evaluating

Evaluating as a level in the taxonomy encompasses the bellow actions:

- Checking
- Hypothesising
- Critiquing
- Experimenting
- Judging
- Testing
- Detecting
- Monitoring

The digital additions and their justifications are as follows:

- **Blog/vlog commenting and reflecting** – As the term implied, student are subject to comment and reflect on b/vlogs for the purpose of evaluating a particular language reality.
- **Posting** – It is indeed the fact of posting comments to blogs meant to evaluate shared knowledge among bloggers.
- **Moderating** – As a moderator, s/he is in the forefront to evaluate a number of comments and outlooks. Such a task requires careful thoughts to perform the task appropriately.
- **Collaborating and networking** – Collaboration is the consequence of evaluation; meaning that in an evaluation task, the student contributes to collaborate in a certain reality using a network.
- **Testing (Alpha and Beta)** – It means that the student tests any tool in terms of its present and future functions. Put simply, the learner is ready to distinguish poor and appropriate functions.
- **Validating** – Authenticity in various data sources is what today and future learners should be able to perform.

Creating

The last level in the taxonomy is creating and it covers these verbs:

- Designing
- Constructing
- Planning
- Producing
- Inventing
- Devising
- Making
- **Programming** – It implies the process of programming certain body of knowledge. Students are now able to build their proper program that responds to their needs and goals.

- **Filming, animating, videocasting, podcasting, mixing and remixing** – Students should increase their potential to design reflective content to meld their personal product.
- **Directing and producing** – Learners need to put their perspectives into genuine frames to produce coherent products.
- **Video blogging** – Video blogging is generating video blogs to get published to the general public.

1.11. Mobile Application Design Principles for English Language Learning

It is now understandable that mobile learning relies primarily on mobile applications, and in hope to successfully fall into what truly mobile learning and mobile applications in language learning is, some important aspects should be considered. The first aspect to call in this respect is mobile application design. That is, mobile application design is regarded an important facet one should consider as it could be interpreted differently. In this research work, the researcher focused attention on how the application is designed in terms of functionality and how it should meet pedagogical standards to secure positive outcomes. Functionality denotes the fact that the app user employs it without constraints in the login process, password recovery, data storage, among others. In respect to pedagogical standards, it should assist both learners and the learning process, it functions as a “partner” to learners in their learning journey, provide feedback (from peers or instructors), save data for a long term, to quote a few. App design should also suit the target audience. For instance, a mobile app designed for children should take a childish logo, cover pictures with attractive colours and the like. But an app designed for adult users, it should be simple and more informative.

With reference to the above presented sections, the go-no-go theory on the efficacy and the functionality of mobile device usage, and based on the empirical attempts discussed earlier and the existing bulk of literature found, mobile devices mainly smartphones are important handheld devices to be used in the teaching-learning environment with the countless opportunities students and teachers alike can benefit from. The wide range of mobile apps to serve diverse needs is also crucial in maintaining sustainable learning experience and feeding up learners’ interests. Because the concern of this research work sheds some light on the theory of mobile-self-design app, it is

significant to refer to some factors and/or principles for successful mobile app design. Put differently, elucidating key principles in mobile self-design app is an important leap to look at before any endeavour. In this sense, Nitin (2015) asserted that in order for mobile apps to be handy, significant features need to exist and co-exist for learners to benefit from. Therefore, in this salient thought, Stockwell and Hubbard (2013) specified ten (10) design principles in self-made mobile app. These principles are then summarized in the following figure:

- Mobile activities, tasks and apps should distinguish both 1) the affordances and limitations of the mobile devices, and 2) the affordances and limitations of the environment in which the device will be used in light of the learning target.
- Limit multi-tasking and environmental distractions.
- Push , but respect boundaries
- Strive to maintain equity.
- Acknowledge and plan for accommodating language learner differences.
- Be aware of language learners' existing uses of and cultures of use for their devices.
- Keep mobile language learning activities and tasks short and succinct when possible.
- Let the language learning task fits the technology and environment , and let the technology and environment fit the task.
- Some, possible , most learners will need guidance and training to effectively use mobile devices for language learning.
- Recognise and accommodate multiple stakeholders.

Figure 1.17. Ten design principles for mobile learning (Stockwell & Hubbard, 2013)

Indeed, mobile self-design app calls for some other factors that contribute to successful and well-crafted design. These parameters are outlined by Bidin and Ziden (2013) to include broad aspects and sub-aspects and are interestingly presented in the following table.

Table 1. 5. Main factors for mobile application design (Bidin & Ziden, 2013)

Main Factors	Sub-Factors
Features of the Device	Usability
	Functional
Users' Expectations	Ownership
	Privacy
	Self-regulated Learning (Control of the Learning)
	Flexible Learning
	Life Long Learning Fun
Pedagogical Advantage	Collaborative Learning
	Blended Learning
	Interactive Learning
	Experiential Learning (Learning in Context)
	Problem-based Learning

However, Alrashededi and Capretz (2018) come up with a comprehensive classification to look at when in mobile application design. These features are presented and reflected in the below table:

Table 1. 6. Factors for successful mobile app design (Alrasheedi & Capretz, 2018)

Factors	Variables
Technologies	Availability
	Accessibility
	Affordability
	Internet Access
	Connectivity
	Choices of Mobile Devices
	Web 2.0 Software
	Cross-platform Capability
Management Support	Ownership
	Institutional Support
	Administrative Support
	Assimilation with Curriculum User Feedback
Teaching Pedagogy	Educator Perceptions
	Technical Competence of Instructors
	Faculty Commitment
	Develop Assessment Techniques
	User Feedback
	Assimilation with Curriculum
Learning Approach	Learning Community Development
	User Feedback
	Learners Perceptions
	Technical Competence of Students
	User Friendly design content
	Assimilation with Curriculum

Taking an in-depth examination and reflection on what is observed by these scholars as to the key principles for mobile app design, each one pinpointed core attributes according to pre-defined goals and intentions at a specific point in time. What is interesting is that they all funnel on the concept of *functionality, affordability, ease of use, content and context specific, collaboration, and feedback*. They go to claim mobile app design should be *functional* in terms of the quick respond to app users' commands and is easy to be used. More than that, the app's storing, retrieving and manipulation data is managed and processed in a comprehensive way. In terms of *affordability*, it denotes the idea that the app user can effortlessly interact with it by zooming, swiping, and others. App design should be *intuitive and self-explanatory*. This means that the app is user-friendly and necessitates no effort or though regarding its use. The app needs to be both specific and straightforward in terms of the *information presented and the setting* where the app is used or can be used.

In other terms, the content of the app can cover vast data representations like videos, scripts, and images tailored to specific audience along with relevant value of the setting it appears into. As far as *collaboration* is concerned and as the term implied, app allows its users to work together to solve an issue, share specific bulk of knowledge, and track progress together. Such a feature leads to consider the characteristic of *feedback*. The latter embraces the intention of how the app interacts with users by instant feedback according to the task assigned and performed as well as eliciting errors or mistakes. Interestingly, these features can also be used even for mobile app adaptation and mobile device integration. This likeness is better exposed in the following representation.

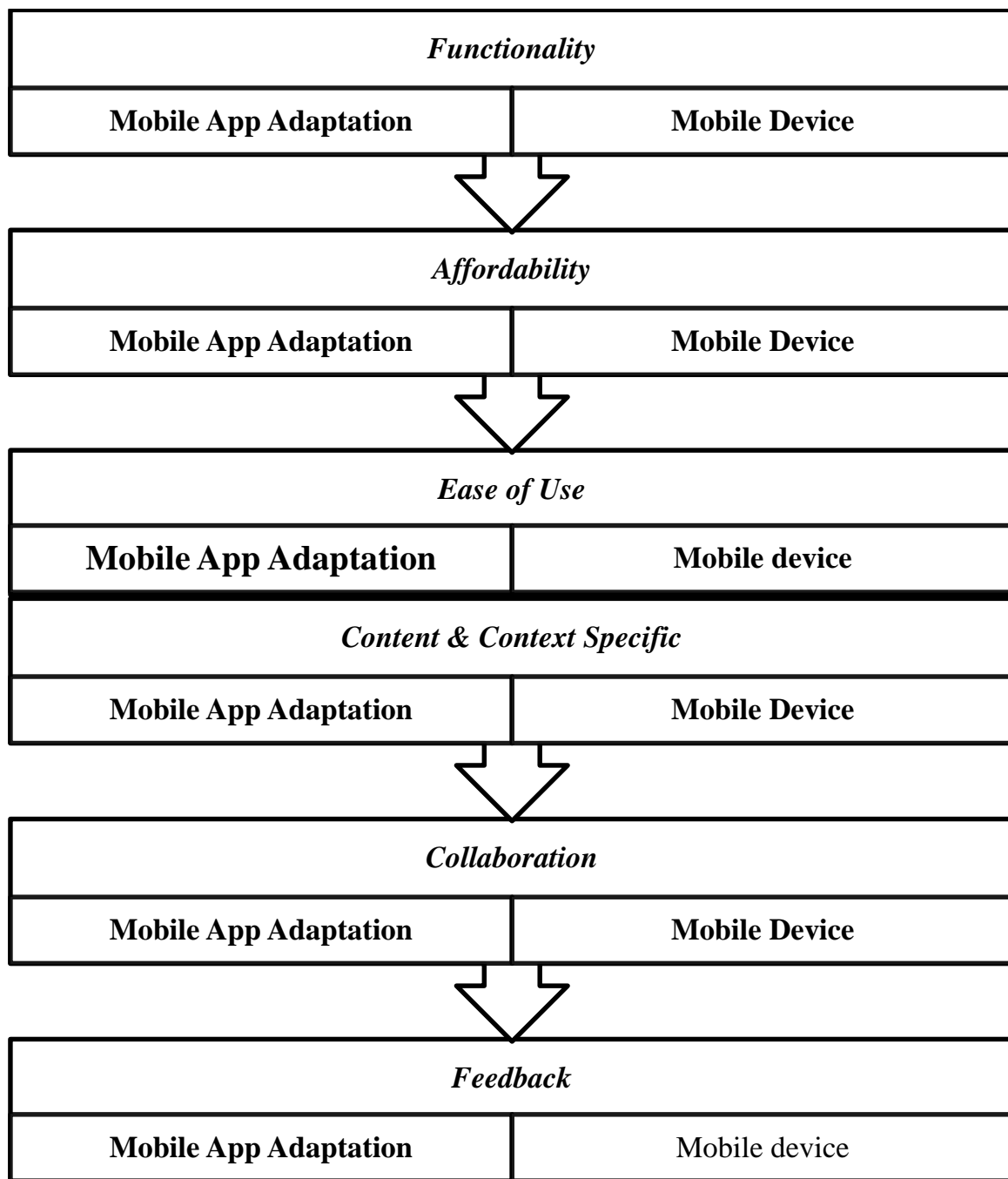


Figure 1.18. Mobile app design principles for mobile app adaptation & mobile device selection (Author design)

Actually, these features are to a larger extent considered and carefully used in researchers' mobile app design.

1.12. Conclusion

This chapter overviewed the necessary conceptions and knowledge related to MALL. It begins as a funnel moving from general facts to delve into specificities. In particular, it starts with the notion of artificial intelligence and how it contributes in the world of language learning then in mobile learning along with its approaches towards mobile learning. It also recaps its evolving characteristics to mobile learning. Afterwards, this chapter reveals the overall conception of MALL and its related concepts. It gives insightful knowledge on the shift of interest of handheld devices from regular use to pedagogical use. It later highlighted the notion of MALL in the ESP context as well as its successful implementation in improving language learning tacking into consideration some empirical studies. Modals to MALL integration were covered with much emphasis on Blooms taxonomy as it is the model used in this research work. Finally, it ends by shedding some light on the principles to be considered for successful educational mobile app design. The chapter that follows thoroughly identified the methodology applied to meet the aims and objectives of the current research work.

Chapter Two

Research Design and Procedure

Chapter Two: Research Design and Procedure

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2.1. Introduction

The present chapter entails research design and procedure in which it describes primarily how the different departments are distributed and how the English language is taught in the department of Finance and Accountancy. Also, it highlights the samples used in this research work by providing teachers' and students' characteristics as research informants to fulfill the requirement of the overall research work. Besides, it exhibits the type research employed that is said to be an experimental research in which reasonable credits are put forward behind such a selection. Moreover, it states the different research instruments used as data gathering namely students' questionnaire, teachers' semi-structured interview, pretest and posttest, along with the researcher's mobile application design. Sound information about each research instrument is expended on its own. Finally, it brings into light the different approaches used for data analysis, that is qualitative and quantitative data analyses.

2.2. Situational Analysis

The current research work takes place in the faculty of Economic Sciences, Commerce and Management Sciences where the English Language subject is shared in its entire departments. It is wiser to record that this faculty has four (04) departments namely, department of Economics, department of Commerce, department of Management, and department of Finance and Accounting. In order for students to join one of these departments as full time students, they have to study in what is called common core. More explicitly, first year students are grouped in these four departments temporarily where they have the same subjects as well as the same contents, nevertheless students are not exposed to sit for the same exam contents. Such a fact has been changed by the academic year of 2018-2019 in which first years students sit for the same exam and more than that they are gathered into a new department called department of common core, hence this adjustment affixes the fifth department to the faculty. With regard to the subjects they have in their first year, they deal with an introduction to economy, law, sociology, micro-economy, mathematics, methodology, general accounting, history of economic facts, statistics, and English.

As far as the English subject is concerned, the content for both semesters covers an introduction to economics. Students are exposed to receive some knowledge about the world of economy in which they are likely to learn about its conception, the different economical systems, and its theories among others with reference to some grammatical knowledge. In the latter, they are more likely to learn about direct/ indirect speech, if clause, comparative versus superlative form, part of speech including noun, verb, adjective with regard to their derivations. In the end of the second semester they are oriented, of course by their overall grade, to take one branch to carry on their studies starting from second year to master two.

These branches are: Management, Commerce, Economy, and Finance to fall into the department of Management Sciences, department of Commercial Sciences, department of Economical Science, and department of Finance and Accounting respectively. In the latter, second year LMD (Lisence, Master Doctorat) students take the English class for one semester period of time only in which they are exposed to deal with an introduction to finance and accounting principles. Grammar teaching is also introduced in which it covers countable and uncountable nouns, quantifiers, simple present and simple past tenses with their different functions. In order for them to move up to third year, they are called to mind their selection to take one field among the following: Enterprise Finance, Accounting and Taxation, Accounting and Audit, and Finance of Banking and Insurance. This is also common to the other three departments to which the figure bellow displays these fields with reference to what the three departments have as such.

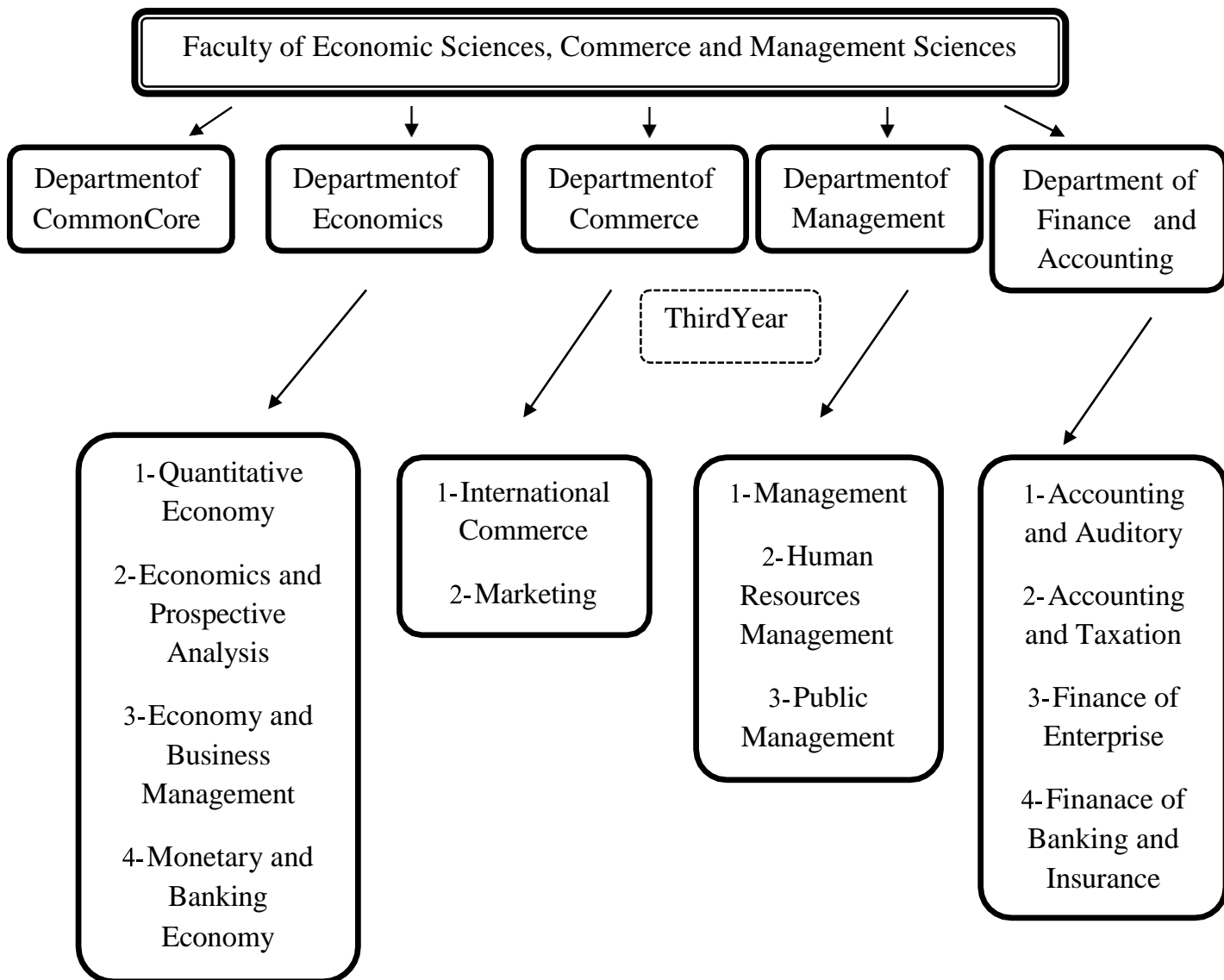


Figure 2.1. The different departments and their different fields of study

As reflected, the faculty has thirteen (13) fields for third year students to select with regard to the department they belong to. In the department of Economics, third year students have four (04) fields including quantitative economy, economics and prospective analysis, economy and business management, and monetary and banking economy. Whereas, in the department of commerce only two fields are available that are international commerce and marketing. Management, human resources management, and public management are the fields that belong to the department of management. Similar to the department of economics, four (04) fields exist namely accounting and auditory, accounting and taxation, finance of enterprise, and finance of banking and insurance.

With regard to all these four fields, students are required to learn and develop particular repertoire that matches with the field's related issues. In case of point, third-year LMD (Licence, Master, Doctorat) finance of banking and insurance students are supplied with knowledge and conceptions related to both banking and insurance. Their teaching programme consists of seven modules for one semester, and they got changed in the second semester, i.e., the modules devoted for the first semester are not shared in the second, and this is applied for the rest fields. Surprisingly, the English module is taught along the academic year, i.e., two (02) semesters. The first semester covers insurance accounting, banking accounting, evaluation of projects, law of insurance, insurance and Takafol insurance, Banking marketing, and English. Nonetheless, the second semester consists of seven subjects which are financial risk management, financial management, financial engineering, insurance products, banking audit, money and loan laws, and English. After being qualified with licence degree, students are willingly invited to take master one and master two levels to have master degree. Bearing in mind that just like third year, students are required to have two semesters of studies in which English is learnt in both semesters, but it appears to be taught in one semester in master two while the second is assigned to their master extended essay.

It remains non-compulsory for students to go up to Master one level of education as some of them may not be interested to the master degree due to their permanent job, yet some are rather intended to carry on till master two to have better chances for future employment. Unlike master one and master two students' teaching programme for finance of banking and insurance, the researcher has noticed with evidence that the English subject for third-year level is not introduced in learners' teaching programme (See appendix E). In this regard, the encountered gap proves the ignorance of the English teaching syllabus from both parties; administration and ESP teachers. In other words, ESP teachers, as for third year finance of banking and insurance students, do not eagerly consider learners' needs and the necessities of the target situation where appropriate language use and usage should be met by adequate syllabus construction.

As such, students are contingent to come across some difficulties to survive in the target situation requirements, but fed with some basic input effective output can be achieved to some extent. In this respect, the researcher finds it challenging and competitive to undertake such a research work based on the breakdown between what students and teachers ought to know to function effectively in target situation and how to reach the target, respectively. The investigator has selected the department of Finance and Accounting significantly to study the aforesaid gap. Besides, the researcher finds no difficulties to access both teaching staff and administrative staff due to the investigator's teaching experience that comes under 2 years (since 2016) in this department. Such a facility paves the way to narrowly scrutinize the issue in question by inviting participants to take part in this study. In this sense, the following section is devoted to initially speak a little about the type and the method of sampling employed in this research work as well as giving some insights regarding the intention behind any decision.

2.3. Sample Population

Any research work, regardless of its scope and its objective, is based on external parties that help the researcher to unveil what the target situation covers. These external agents are named in research as sampling. According to David (2005) and Mercado (2006), sampling denotes the fact of deciding which individuals are convenient to research objectives and to whom time and efforts are minimized for data gathering. In a similar vein, Fraenkel, Wallen and Hyum (2012) pointed out that sampling is the procedure upon which selective participants are involved in research. Therefore, it is safe to say that sampling means those individuals who are minded to take part in research. It is wiser to record that sampling falls under two types namely probability and non-probability sampling. Briefly speaking, the former refers to the idea that no bias is occurred since each entity is subject to selection for the purpose of the study. In this respect, Fraenkel, Wallen and Hyum (2012, p 93) claim that in probability sampling "every member of the population presumably had an equal chance of being selected".

However, non-probability sampling is said to be judgmental sampling as it does not invite all the members of the population to be part of research as claimed by Fraenkel, Wallen and Hyum (2012). Therefore, in non-probability sampling, the choice of sampling is subject to bias because not all the population has identical probability to contribute in research. Unlike probability sampling where the data obtained has the possibility to generalisation, it would appear irrational for generalisation to take place in non-probability sampling. With this in mind, the researcher is required to cautiously go for the type that best fit the research objective. In this claim, the investigator has opted for non-probability sampling for two main reasons. First, such a type of sampling enables researchers to select the sample “as they wish” as proclaimed by Cooper and Schindler (2005). Second, because the choice is based on subjectivity, the researcher should grant important credits. In this light, Grill and Johnson (2002) stated that though it is subjectively based, lucid decisions ought to be convincing and worth to selection.

More declaredly, the researcher uses critical case sampling, which is among the different types of purposive sampling, significantly to provide logical generalisation from the hopefully collected evidence. In a similar line of thought and as mentioned by Patton (2002, p. 236), critical case sampling implies the idea that “if it can happen there, it can happen anywhere” or put on the other way round, “if it doesn’t happen there, it won’t happen anywhere”. Perceived this way, it seems vital in this research to provide logical generalisation in respect to the third research question that entails the use of mobile devices to improve students’ competences as to grammar, vocabulary, and sentence pattern. That is, if the findings demonstrate that these devices can assist students to improve their competences in to the aforementioned, it can assist other third-year students of finance of banking and insurance to improve systematically their grammar, vocabulary, and sentence pattern. In contrast, if the attempt award poor assistance to these learners in terms of the stated variable, it cannot be assigned to others. It is safe to say that the above discussed make it possible for the researcher by far to establish an overt ground to identify the rationale for each selection made as for sampling. The following sub-section highlights the profile of the research informants selected in this research. It starts with learners’ profile that covers their characteristics and considerably explains the reason behind selecting them. Then, it draws some attention on teachers’ profile to sketch the important features they actually encompass.

2.3.1. Learners' Profile

Actually, the selected learners in this research work are third year finance of banking and insurance students from the department of finance and accounting. These learners are enrolled in the academic year of 2018-2019. They are grouped under one group of 41 students; 12 males and 29 females in which they are aged from nineteen (19) to thirty-four (34). Regarding students numbers in this field, the researcher finds that students' number in the field of finance of banking and insurance is smaller compared to the other fields. Such a fact is observed not only in this year but also in the preceding years. This reality indicates that these students are selective and aware enough about the work place they are willing to trace. Their purpose is to some extent not oriented to join a field that appears trendy and has a large number of students; rather their intention is to join a field that satisfies their desire as to their future career. In fact, the researcher has selected students of finance of banking and insurance for some reasons.

To begin with, these students have no ordinary teaching programme. Put differently, the researcher comes to know that those teachers who used to teach students in this field have made little or no attempt to design a syllabus to explicitly describe the contents that third-year finance of banking and insurance students need to be acquainted with (See Appendix E). In this glow, there is a little faith for these learners to be equipped with the necessary knowledge to function adequately in the target situation. In addition to that, because these learners are going to have their licence degree and therefore an opportunity maybe given to have a job either in the bank or in insurance institutions, enough attention needs to be addressed to help learners get familiarized with the basic register used in these environments. Moreover, the number of students in this field is not numerous for which the researcher finds it critical to accomplish the experimental study as well as to come up with the expected upshot in respect to the time allotted for LMD doctorate thesis, i.e., three (03) year period of time.

With regard to the experimental study, thirteen (13) students are involved; four (N=4) males and nine (N=9) females. These students constitute the experimental group, while the remaining twenty-eight (28) students compose the control group. However, the questionnaire is administered to all students (N=41). Further details about the experimental and the controlled groups are highlighted in the sections below. As mentioned above, the researcher has given some motives that explain such a selection. In this light, the following section outlines the characteristics of teachers invited in this study.

2.3.2. Teachers' Profile

The researcher incorporates some teachers in this research. These teachers belong to the department of finance and accountancy and are teaching there for a reasonable period of time. It is wiser to record that in this department, there is no full-time teacher of English; instead there are only part-time ones. Actually, the investigator has selected those teachers who instruct third-year and master students because they have better practices in respect to the field they are teaching. In different words, teachers with various teaching practices enable the researcher to spice up the research with fruitful information. On account of this, the researcher has selected 10 teachers, and their age ranges from 27 to 50 years. Their degrees vary from master two degree to that of doctorate degree. 5 of them have the doctorate degree in translation and are full-time teachers in the department of English. 2 others have master degree in literature and civilisation, and the remaining 3 teachers are in the way to have their doctorate degree; one is about to have the doctorate degree in literature and civilisation and the two others in ESP. Besides, their period of teaching in this department diverges from one teacher to another.

2.4. Research Design

This section highlights the type of research used in this study. The researcher has opted for experimental research more precisely quasi-experimental research to meet specific targets that are discussed below.

2.4.1. Experimental Research

It is wiser the record that research objectives determine the type of research. In this sense, Cohen et.al (2005, p73) stated that “the purposes of the research determine the methodology and design of the research”. Because the researcher’s main objective is to investigate the extent to which mobile devices assist ESP students’ grammar rules, vocabulary knowledge, and sentence pattern learning, such a target is met by way of experimental research. The latter is said to be convenient when employed to solving issues in the teaching/ learning process (Brown & Rodgers, 2002). In a similar vein and according to Verhoeven (1997), “when the research aims at explaining how well the treatment encourages certain outcomes on students themselves, experiment research is vital” (p79).

More significantly, such a type of research allows the investigator to establish a sound ground for cause-effect relationships from one side, and to evaluate educational innovations on the other side (Dornyei, 2007). In relation to the current research, experimental research is a platform for investigating cause-effect relationships between dependent and independent variables, i.e., grammar rules, vocabulary knowledge, and sentence pattern learning through mobile devices, respectively, and how well mobile devices assist the aforesaid. Therefore, all what have been mentioned illustrate the rationale from deciding on such a type of research. Indeed, experimental research takes various types including, pre-experimental, true experimental, and quasi- experimental research design. In this study, the researcher has selected quasi- experimental research design for a number of reasons that are discussed below.

2.4.2. Quasi-experimental Research Design

Quasi experimental research design takes place when the researcher has little or no control over the selection of the studied participants. In other words, the participants involved in the study are not randomly assigned as one or more variable may not be manipulated. Such a fact does not prohibit generalisability to take place when conducting a quasi experiment, rather it is the investigator's reasoning that allow generalisability to suggest itself. With this in mind, quasi-experiments continue to take part in educational research and prove to bring insightful findings to research (Leedy& Ormrod, 2010). In hope to carry out a quasi experiment, the identification of different variables is necessary.

Variables in quasi experiment refer to the correlation that explains the effect of the independent variable over the dependent variable. In this research work, the independent variable is MALL since the essence of the independent variable is to scrutinize its effect on the dependent variable. The latter is, by definition, the variable to which the independent variable is acting. In this sense, learning grammar rules, vocabulary knowledge, and sentence pattern are the dependent variables that their effect is said to be felt when learnt in a MALL context. As stated above, the researcher has opted for a quasi-experiment research type for the reason that group assignment is not possible due to:

- 1- Students' attitudes on learning through mobile devices;
- 2- the mobile operating system (Android, for instance);
- 3- the mobile storage pack; and
- 4- the possible numbers of students for 4G internet modem use in case life 3G or 4G on students' mobile device is weak or gone.

On the account of these four features, the researcher has minded who to select in order to wisely attain the target. Indeed, a non-equivalent pretest posttest group design is used in which its formula is represented by Cohen (2007, p 283) as follows:

O1	X	O2 (Experimental Group)
O3	O4	(Control Group)

O1 and O= PreTest

O2 and O4= Post Test

X=Treatment by using inference strategy

As reflected, the researcher takes two groups; an experimental group and a control group. Participants in the experimental group receive the treatment, whereas those in the control group do not. However, both groups take a pretest and a posttest in which further details are presented in the following section.

2.5. Research Instruments

This section entails the different research tools used throughout this study. The researcher has administered a questionnaire to students, a structured interview to teachers, a pretest and posttest, and mobile application self-design to students in which they are supplementary elaborated in the sections below.

2.5.1. Students' Questionnaire

To start with, the prominent research tool that almost all researchers think about when undertaking any piece of research is the questionnaire. By and large, a questionnaire covers various question forms with rational arrangement in which it is handed out to research informants who are required to provide personal answers (Kothri, 1990). As pointed out, the questionnaire should be designed wisely and carefully to fulfill its purpose. For this reason, the questionnaire needs to enclose a logical question order in hope to permit a safe shift from one question to the next (Sarantakos, 2005). As far as the different question forms are concerned, close-ended and open-ended questions are the constituent elements the questionnaire should include.

Indeed, in close-ended questions respondents are steered to answer based on some suggested alternatives, meanwhile in open-ended question they do not. Put in another way, close ended questions are biased to the extent that answers are likely to be shared, however such a belief does not occur when in open-ended questions. With this in mind, both of them enable the researcher to have a close eye on the phenomenon in question, and allow better understanding of the issue under investigation. It is wiser to record that highlighting the rationale of the questionnaire, the intended gathered data, and manner it is delivered are important considerations that elicit the steps the investigator appreciate in the study. Perceived this way, students' questionnaire is administered to meet the following:

a- Students' background information

This section is meant to gather information about who are the respondents in terms of their gender, age, whether or not they have lived a working experience. These introductory questions have nothing to do with what the questionnaire is aimed at, yet they should be mentioned so that knowledge about the research informants can be obtained.

b- Students' attitudes on the use of mobile devices for learning purposes in the English classroom setting

This section is devoted to collect data about the attitudes students have as to mobile device use in the English classroom. The aim from this rubric is therefore to cross check whether students hold positive or negative attitudes towards the use of mobile devices in the classroom; that is, to test the researcher's hypothesis about this apprehension. For this purpose, this rubric attaches ten questions with their relative purposes. Actually, this rubric in the questionnaire strives to gather quantitative data since all the questions belong to close-ended questions. The first three questions are meant to collect data about which mobile device they use and which one is used the most with reference to its operating system.

The following question is asked to consider the purpose behind using this device, that is to say, if the device is meant for personal, entertainment, and/or educational purpose. In this question, they are required to rank their selection using numerical

illustrations from the most desired purpose (01) to the least one (03). The question that follows covers the aspect of whether or not the device being selected in the preceding question suits learning purposes. In here, the respondents are given some possible situations from which they select and/ or add others if any. However, the next question is designed mainly to see their accordance about its usage in the English class.

The question that follows is intended to see if the device has been already used in their English classes. In case used, the research informants are invited to specify its language use/usage (to check word meaning, its spelling...) and its ownership. Indeed, looking for these two aspects dictate the prevailing issues that calls such a move, as well as the belonging property, respectively. Based on this assumption, the question that follows requests from the respondents to spell out from the suggested alternatives the preferred mobile ownership in which they are asked to unveil the reason behind. The rationale is to account for which possession they are in favour of to build upon it significant considerations. The next question endeavors to regard the desired frequency for mobile device practice. The intention is therefore to spot how often the device is motivated by them. The last question in this rubric seeks information on how they perceive its use in the English class. They are given possible alternatives for them to match their perspective. Hence, the rubric entails possible questions to collect their viewpoints as to mobile device use in the English class for learning purposes. The quantitative gathered data from the above queries enable the researcher to significantly ensure their attitudes they have to test the stated hypothesis.

c- Students' grammar, vocabulary, and sentence pattern improvement through MALL

This parameter deals with the improvement of grammar, vocabulary, and sentence pattern by way of mobile devices. The main objective is to collect data on whether they have faith on learning grammar rules, vocabulary knowledge, and sentence pattern using mobile devices. For such a principle, the researcher constructs fourteen (14) questions to meet the target. The first two questions are set to see if the respondents find attending the English class both enjoyable and important. A sub-question is assimilated to invite them consider some possible situations that English may be seen important to them by crossing the corresponding one and/or adding others from their own. The following question attempts to collect data on their expectations from learning English in which they are required to rank them from the most expected aspect (01) to the least (08). The objective from this question is to disclose what prospects they have to construct appropriate syllabus to meet their needs.

A multiple choice question was asked on what skill needs to get improved by ranking them from the most needed skill (01) to the least (04). A complex grid was designed to rank language aspects according to respondents' points of strength, weakness, and aspects need to be improved. The rationale is to examine what language aspects need to be taken into account initially and derivatively. The researcher finds it important to see how students perceive their level as to English, i.e., weak, very weak, average, good, very good, or excellent. The next question entails the aspect on whether their teachers take into account grammar, vocabulary, and sentence pattern teaching by specifying the knowledge learnt under these three language aspects. The three questions that follow look upon the teaching materials used when teaching the aforesaid, which teaching material they appreciate when learning them, and what the best one is by mentioning their reason. The intention is to see what teaching material motivates them as to grammar, vocabulary, and sentence pattern learning.

The next question requires their agreement or disagreement on learning the three by mobile devices. The purpose from this question is to ensure the attitude on whether the link drawn between learning those via mobile devices exist or not. Put differently, to cross check the integration of mobile devices to learning grammar rules, vocabulary knowledge, and sentence pattern is rewarding or not. The following question is meant to look at the extent to which mobile devices assist grammar rules, vocabulary knowledge, and sentence pattern learning. For this concern, a grid is designed to suggest feasible assumptions in which the respondents are called out to agree, strongly agree, disagree, strongly disagree, or I do not know. Indeed, the last two questions try to answer if the already mentioned linguistic aspects are important in their work place or not with allusion to some contextual situations are put forward.

d- Mobile applications for grammar, vocabulary and sentence pattern learning

The last rubric comprises of ten questions that are aimed at finding out whether or not mobile applications serve grammar, vocabulary, and syntax learning. In this respect, ten questions are constructed. The first one asked about if any mobile application was used to either one or a combination of them. The purpose is to examine if mobile applications were used for the stated linguistic aspects. The next question deals with motivation towards using mobile applications to learning those mentioned. The objective from this question is to see how higher or lower motivation the respondents have. As far as the third question is concerned, the researcher tries to detect if they approach mobile devices helpful by justifying their selection. The objective from asking this question is to cross check if they find grammar, vocabulary, and syntax learning useful when learnt by mobile applications.

The fourth one implies the research informants to say if they are in favour of online or offline mobile applications by providing reasonable reasons. The intention is to check up which operating system they prefer so that careful implementation could be done. The following question endeavours to identify the extent to which mobile applications help in improving grammar rules, vocabulary knowledge, and sentence pattern learning. Some alternatives are recommended for them to select and/or add others if any. The rationale is to spell out their outlooks on how mobile applications act when in learning grammar rules, vocabulary, and sentence pattern learning. The question that follows tries to gather

information on the respondents' attitudes on learning grammar, vocabulary, and syntax in relation to their field of study by proving out their stand point. The objective is to regard their belief on learning them in relation to their field of study in which they are requested to give some motives. The following one attempts to look at the conviction they have when using ready-made mobile application to grammar, vocabulary, and syntax learning with reference to their field of study. The point is to scrutinize if ready-made mobile applications are preferred or not by explaining their selection.

The next one tries to answer the question on whether the research informants think that teacher's mobile application design suit their grammar, vocabulary, and sentence pattern learning with reference to their field of study the best. The rationale is to cross check the extent to which they have faith on their teacher to designing a mobile application to meet their needs. As for the last question, it calls the respondents to say a word to instructors about any consideration that should be accomplished. The purpose is to consider their recommended thought and voice out their suggestions for instruction betterment. Actually, the researcher finds it suitable to provide the relevant resources which help for the design of the questionnaire. These resources are shown up in the following:

- Review of literature.
- Researcher's personal observation.
- Researcher's casual conversation with colleagues and students.
- Teacher's teaching experiences.
- Teachers, sponsors, and experts in the field.

The figure below represents a detailed schedule of students' questionnaire with its rubrics and distributed items.

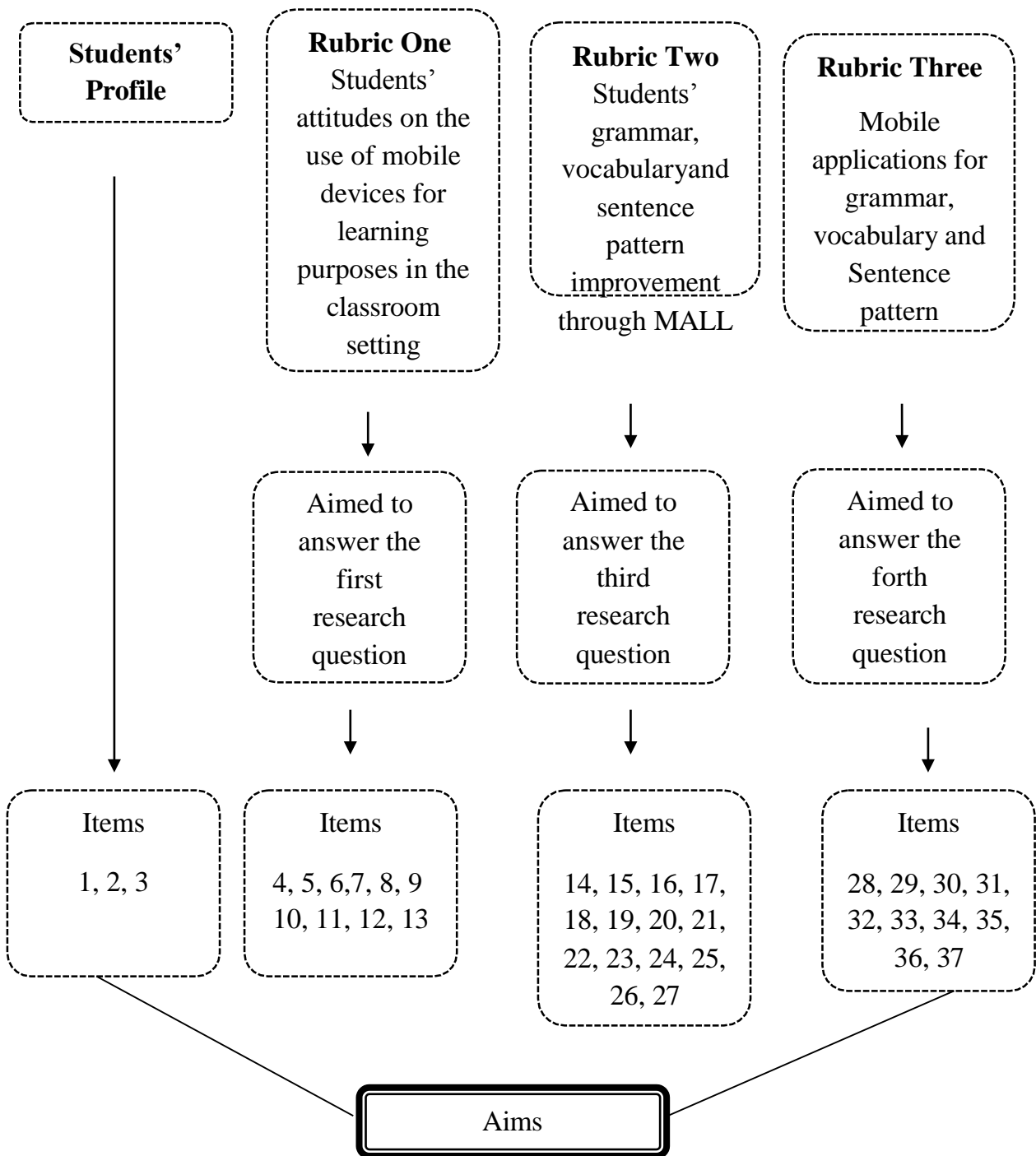


Figure 2.2. Format of students' questionnaire

It is wiser to point out that deciding on the questionnaire final draft has went through consistent stages which enable the investigator to certify its validity and reliability that are considered to be taken into account when in research instrument selection. As an attempt, the researcher considers the following checklist in drafting the questionnaire:

- Keep the wording formal, conversational, and simple.
- Avoid jargon and sophisticated language.
- Keep questions appropriate to educational, social, and cultural background of the respondents.
- Avoid long questions (but vary question length).
- Avoid leading questions (“You surely agree with me, that...”).
- Avoid negative questions.
- Avoid questions beginning with "Why".
- Avoid hypothetical questions (“Imagine that...”).
- Limit each question to a single subject.
- Pay attention to sensitive issues.
- Check the adequacy of the list of responses to closed-end questions.
- Avoid a large proportion of responses beigin with "other (specify)....."category” (Smith, 1991).

Therefore, these points guide the researcher to meet effectiveness in building the questionnaire. The investigator finds it insufficient to rely solely on the above; rather it is wiser to call for questionnaire reliability and validity that are measured following the phases put forward below.

2.5.1.1. Questionnaire Validity and Reliability

To start with, research instrument validity refers to the idea that how well the instrument is designed to meet specific targets. In other words, whatever research tool is adopted it must possess the so called validity. Indeed, a questionnaire is valid when it measures what it should measure. Hence, questions in the questionnaire need to purposefully correlate with the research objective. Accordingly, the questionnaire is employed to study students' attitudes towards mobile device usage to learning grammar, vocabulary, and syntax. As mentioned earlier, within the same questionnaire the researcher includes questions to detect students' needs and wants. This is done intentionally to collect the required data at one glance (1) and not to gripe the respondents to answer two questionnaires (2). In order for validity to take its optimal role, the researcher has drafted tentative questions with particular layout and order in which they are proofread by external parties for revision.

Due to the respondents' background and socio-cultural milieu, the investigator finds it significant to look at the validity of the questions in terms of wordiness, relevance, and appropriateness. Based on this belief, the researcher combines efforts and has handed the first draft to two university teachers from the English department, and has exposed to the reviewers the rationale of the research work and which research hypothesis is strived to get tested. After their review, the researcher collected their feedback on question's validity and content suitability and constructed the second draft to get handed to the researcher's supervisor. The latter has provided the necessary changes to be taken into account and recommended some insightful critics to both form and content. The collected comments from the abovementioned parties make it feasible for the researcher to guarantee questionnaire's validity to gather valid data on the issue in question.

With regard to questionnaire validity, its reliability is required to reach its highest degree of representativeness. Reliability denotes the fact that similar results are attained at different time intervals. In other terms, reliability takes place when the obtained results are to some extent shared in reference to the second intervention. Therefore, it is a significant touch acting as a frame for the stand of the research instrument. In this research work, the researcher measures reliability initially by printing several copies to respondents who are not the present research informants for the sake of finding out the extent to which questionnaire reliability is sorted out from those individuals. Another method the researcher has used is to calculate it using Cronbach's Alpha. Its formula is presented as follows:

$$\alpha = \frac{n * c}{v + (n - 1) * c}$$

n= Number of items.

c= Mean variance between items.

v= Mean item variance.

After a careful consideration to the above formula, each rubric gives the following readings: rubric 1 ($\alpha= 0.7862$), rubric 2 ($\alpha= 0.8110$), and rubric 3 ($\alpha=0.7953$). According to Nunnally (1978), a Cronbach's alpha coefficient of 0.70 or higher is generally acceptable for basic research, indicating sufficient internal consistency. For more advanced research or when high precision is necessary, a higher alpha value, such as 0.80 or above, is preferred to ensure greater reliability. Nunnally also emphasized that while a high alpha is desirable, it should not be the sole criterion for assessing an instrument's quality. For more details, the following table displays an explicit interpretation of Cronbach's Alpha according to different ranges to decide how the current calculation, in this research work, is interpreted.

Table 2.1. Cronbach's alpha ranges and their interpretations (Nunnally, 1994)

Reliability Level	Crombach's Alpha Range	Interpretation
Excellent	0.90 and above	Indicates very high internal consistency.
Good	0.80 - 0.89	Reflects strong internal consistency
Acceptable	0.70 - 0.79	Indicates acceptable internal consistency
Questionable	0.60 - 0.69	Reflects questionable internal consistency.
Poor	Below 0.60	Indicates poor internal consistency

In this respect and according to the above interpretation, it is then safe to indicate good reliability is reflected in each rubric in the questionnaire of students. In addition to the above reading, piloting the questionnaire of the students is a supplementary move to maintain that the questionnaire collects what is intended to collect. The following section details such an aspect.

2.5.1.2. Piloting the Questionnaire

By definition, piloting is the fact of trying out a research instrument for the purpose of fixing out some slip ups and deciding on what items to keep, add and/or remove (Reid, 1998, p 325). In the same line of thought, Borgand (1979) approached it as:

A small scale model of the research project, usually involving only a few subjects, which is carried out in order to improve the plan before the researcher makes the major investment in time and effort required to carry out the planned research. (p.22)

He emphasized the idea that piloting is a purposeful revision that is undertaken a while before the instrument is taken seriously by the actual research informants. Therefore, it is a pre-requisite phase the researcher minds it to building firm evidence on the questionnaire frame of comprehensibility, lucidity, and relevancy. Furthermore, its applicability allows the researcher to arrive at points of shortening either in terms of poor validity or reliability which calls revision and adjustment to take place. In the present study, the investigator pilots students' questionnaire to:

- a- Insure its validity and reliability.
- b- Seek feedback from those individuals.
- c- Account for its estimate clarity and relevancy to the aim behind.
- d- Allocate the required item for its completion,
- e- Regard the extent to which it gives the hoped data the researcher aims to collect.
- f- Decide which data to shadow and which data to elaborate and extend with regard to the research aim.

In this respect, the researcher tries it out with 10 students who are not the research informants of the study. These individuals are students of master one who used to be the researcher's former learners. The investigator selects those students, who belong to the department of Finance and Accountancy, since familiarity and trustworthiness are mutual. In fact, they were settled in the classroom and were handed a copy for each. The investigator explains the aim of the questionnaire in English and provides a translation in Arabic to ensure understanding. The researcher reads each question and explains it in Arabic and gives them enough time to respond. Though the investigator supplies on spot explanation to each question, they were asked to underline or highlight any ambiguous term or a whole question, if any, to reconsider. Besides, they were informed that they are welcomed to overtly elicit comments or remarks as to the questionnaire format and/or content.

After the process is ended, the investigator collects the questionnaire and reads their answers and sheds light on their written feedback. The researcher makes a bird-eye analysis and finds that the collected data fits the aim of the research objectives. As far as the subjects' notes are concerned, some items were changed, reworded, and reformulated for questionnaire straightforwardness. On the account of the aforesaid, the researcher has made great efforts for the questionnaire to take accurate and valid touch, and therefore the studied instrument takes its final form (See appendix A) which further helps the researcher to attain the desired data. Since the questionnaire has reached its readiness, its administration is addressed to its intended respondents.

1.5.1.3. Questionnaire Administration

After the questionnaire has gone through revision and piloting stages, its administration is set out. This phase is critical since it requires the researcher to fully act flexible, comprehensible, and skillful so that its functionality would be effective. Because the research informants are not competent enough in the English language, the researcher accompanied the form with a verbal explanation. Though it is traditional, it ensures on-spot data collection, and its fulfillment is done via a pen compared to the other innovative modes of delivery. In this respect, the researcher printed 41 copies which reflect entirely the number of the research informants; that is 41 respondents.

At the beginning, the researcher explained its purpose and emphasized how important their contribution is. The respondents are informed that their responses are for research purpose to bring transparency into action. They are kindly notified to be clear and straightforward in their responses either in English, French, or Arabic. In this way, they won't feel embarrassed or incompetent to voice out their mind from one side, and for the researcher to collect valuable/reliable data from the other side. The investigator has explained every question and asks the respondents to answer according to their desire and reasoning with respect to instruction requirement. Actually, an hour and fifteen minutes is allotted to its completion in which all the items are successfully completed and the investigator expresses gratitude to the respondents.

2.5.2. Structured Interview for Teachers

In fact, the researcher has used another research tool which is a structured interview to significantly collect qualitative data on their perspectives towards mobile devices in the teaching/ learning of grammar, vocabulary, and sentence pattern among ESP students in general and third-year students of Finance of Banking and Insurance in particular. By and large, a structured interview is regarded as a type among the others since its essence lies on the fact that "it allows depth to be achieved by providing the opportunity on the part of the interviewer to probe and expend the interviewee's responses" (Rubin & Rubin, 2005, p 88). Put differently, a structured interview enables the interviewer and the interviewee to have thorough understanding since enough time could be spent for responses to get elaborated, respectively.

Such an assumption calls the interviewer to provide appropriate atmosphere for the interviewee to make proper moves. The interviewer is invited to frame a checklist which enables him/her to refer to in order not to go beyond the research objectives. In this line of thought, Berg (2007) claims that such a trick 'allows for in-depth probing while permitting the interviewer to keep the interview within the parameters traced out by the aim of the study' (Ibid, p.39). More than that, this type of interview is characterized to be standardized where in the interviewer spells out the question(s) and the respondent(s) respond(s) verbally. In this vein, the interviewer is required to record down the interviewee's responses by adapting different tools namely; writing notes, audio, audiovisual recorders, and video camera. The former is to write down the

interviewee's answer or summarise responses. It seems beneficial when factual information are collected in which the respondents appreciate that their answers are written down and may react negatively when they are not (Gall et al., 1996).

Some respondents are not pleased when using this method since they regard it as disturbing (Cohen et al., 2007) and provide low accuracy (Gavora, 2006). Put the other way round, noting down the interviewee's responses may annoy the respondent to wait for a while in the meantime the interviewer finishes, and the latter is subject to miss a point or disregard unintentionally what the interlocutor mentions. In this regard, adapting other alternatives is needed to overcome any gap could happen hereafter. Therefore, using an audio tape, an audiovisual recording, or video camera is recommended. However, they appear to some extent unfortunate since the interviewee may feel reluctant when s/he knows s/he is being recorded (Gall et al., 1996). In the same line of thought, Cohen (2007) stated that though they play a significant role for data accuracy, they might shrink the interlocutor's responses. Hence, one may say that shortcomings are found on whatever selection is made, yet it is up to the researcher to make appropriate decisions when it comes to selection.

In this research work the researcher correlates two methods namely; writing notes and an audio tape to which the decision is mainly done based on the interlocutor's will and further details are shown in the sections below. It is significant to mention that structured interview of teachers is meant to meet their attitudes as to teaching/ learning of grammar, vocabulary, and sentence pattern among finance of banking and insurance students using mobile devices. To address this, the following parameters are put forward:

2.5.2.1. Teaching Profile of Teachers

Actually, the researcher has constructed the structured interview into two sections; the first section covers teachers' profile along with their teaching profile, however the second section entails three main rubrics with a range of questions. This heading is addressed primarily to collect data about their teaching period in the university in general and in other departments where English is not the main teaching subject in particular. It tries also to gather what teaching materials they frequently use to teach in those departments, as well as the method they appreciate to designing their

teaching syllabus. The rationale is to invite the interviewees in a way to the aim of the interview and get prepared if not expect what the coming questions are about.

a- Teacher's attitudes on the use of mobile devices in the classroom

This aspect attempts to obtain information regarding what attitudes ESP teachers have towards the use of mobile devices in the classroom by students. It should be mentioned that selective questions were used from students' questionnaire to crosscheck some aspects that help the researcher in the analysis/ discussion phase. Indeed, a funnel frame is adapted to call the interviewer answer from general perspective to specific. In this phase, the researcher used a variety of close ended and open ended questions in which other questions are added and rejected. Multiple choice questions and ranking alternatives are also enclosed to meet the objective from the section.

b- Mobile devices for grammar, vocabulary, and sentence pattern learning

This parameter tries to elicit data about the use of mobile devices for grammar, vocabulary, and sentence pattern instruction. Similar to the above section, close ended, open ended, multiple choice questions, and ranking alternatives are employed to investigate whether mobile devices fit when used to grammar, vocabulary, and sentence pattern instruction. In fact, fourteen questions are designed apparently and are subject to rejection or addition based on what the interviewees' knowledge and inspiration.

c- Mobile applications for grammar ,vocabulary and sentence pattern learning

As far as the last parameter is concerned, the intention is to collect ESP teachers' attitudes on using mobile applications to learning grammar, vocabulary, and sentence pattern. That is to say, the rubric is meant to see how much belief teachers have on mobile applications to grammar, vocabulary and sentence pattern learning. To meet the target, ten questions are designed by adapting different question forms for variety to take place. Indeed, the following representation reflects the structure of teachers' semi-structured interview with its possible items from each section.

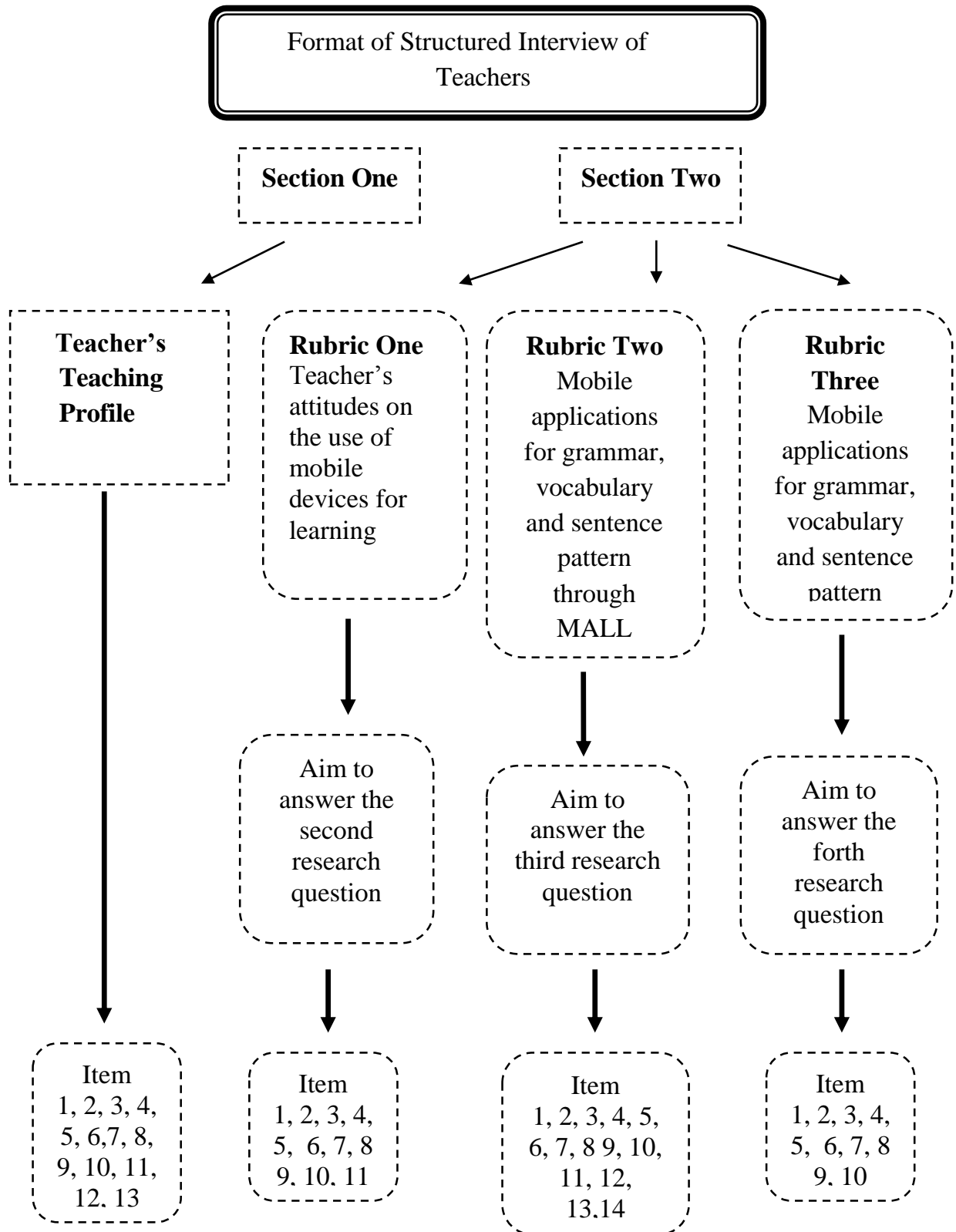


Figure 2.3. Format of the structured interview of teachers

As shown in the above, the researcher designed basic questions to meet the research objectives. It is wiser to record that the above items are not decided at random; rather they are constructed based on some similar stages students' questionnaire has gone through. In other terms, the design and development of the interview had gone through several steps and various stages for modification and adjustment before it appeared in its final form presented to the respondents and employed in the empirical study. The purpose of this hard work and time-consuming effort was to ensure reasonable validity and reliability for the questionnaire which had been used as a basic and major instrument for data collection of the present study.

2.5.2.2. Structured Interview Validity and Reliability

Validation is the process of creation, piloting and testing of items to determine whether the items measure up to the claimed standard. As said, "validation should be built into the foundation of the instrument and not added on as an after thought" (Agnoff, 1988, p.23). The structured interview must be valid i.e., it has to be designed in such a way that it measures what it is intended to measure. It has to be validated in terms of its relevance to the research aims. Several copies of the draft form of the structured interview were given to the research supervisor and to other teachers for evaluating and validating the incorporated questions to obtain their valuable opinions, suggestions, comments, remarks and recommendations regarding the content validity and reliability of the instrument. On the basis of the validators' invaluable evaluations, the version of the structured interview was revised, modified, reconstructed and re-written. Moreover, the researcher also used Cronbach's Alpha to measure the reliability of the instrument. As done for the questionnaire, the same number of rubrics is used to align with the requirement of the research questions (See appendix B). The following calculations are given as to each rubric: rubric 1 ($\alpha=0.8117$), rubric 2 ($\alpha=0.7702$), and rubric 3 ($\alpha=0.8666$). These findings read that the reliability of the structured interview is good, according to Nunnally's (1994) indicative table. The researcher piloted the interview questions with a number of teachers in order to find out its appropriateness when applied in real-world context.

2.5.2.3. Piloting the Structured Interview of Teachers

Indeed, structured interview of teachers should have a trial run with some colleagues in order to decide which items are to be kept and which one to be revised or eliminated. Four teachers of the department of English participated in the pilot study (i.e., 20% of the population). The aim of the trial process was to measure the piloting of the instrument in use. Of course, this procedure provided a valuable revision as some items were re-arranged and re-phrased, before putting the schedule in its last phase. Some items were also dropped, because they were considered as irrelevant to the aim of the instrument. Piloting is not an optional step; it is necessary in order to get results, to analyse and to help the researcher to a great extent decide which items are to be kept and which items to be disregarded. Besides, the piloting aims at building a solid confirmation of those needs being perceived by both the teachers and the students and aims to arrive at a more comprehensive questionnaire for analyzing both the felt needs of the students as well as the perception of those needs by the teachers. Thus, the instrument took its final form after the pilot study.

2.5.2.4. Administration of Structured Interview of Teachers

As it is well known, the administration process of the instrument is the most difficult procedure amongst the different data collection methods, because it required the researcher to be more skilful, knowledgeable and flexible in operating all the schedule items in a systematic sequence and gentle way in order to make the procedure more effective. The administration in the present study was conducted in an individual way and in a face to face. At the beginning of every process, the researcher gave the interviewees full idea about the aim of the study and the importance of their contribution, so that they could be more subjective and avoid bias in their responses.

The informants of the administration process were six members of the teaching staff who participated in answering the final form of the semi-structured interview. They were assured that the information obtained from their answers would be confidential and would be used for research purpose only. In fact, all the responses provided invaluable information, which are related to the aim of the instrument. Actually, the researcher asks in advance whether a tape record is allowed to use or not to inform the interviewer in advance about their choices to avoid misunderstandings or embarrassment either from the part of the interviewer or the interviewee. Question clarification takes place when the

respondent does not understand or misinterpret the question. Question or alternative repetition are done by the researcher to help the respondent well comprehend and make appropriate selection. Actually, time allowance for the structured interview is not definite since outer circumstances are subject to take place. At the end of every administration, the researcher thanked the participants and emphasized that the participation would provide valuable insights to the results of the present work.

It is very important to appreciate the co-operation extended by the interviewees and they should be acknowledged for their help (Evans, 1984). Later on, and as part of the data analysis, those questions in the structured interview were analysed and discussed. It is wiser to mention that the researcher has used another research tool to collect students' lacks and necessities which is test. More explicitly, the researcher is required to collect what students already know and lack about the language in general and what aspects they know and ignore as to their field of study. In this respect, the following section provides further details.

2.5.3. Test

As the name implies, a language test is among research tools teachers adapt according to their research objective. That is to say, if the researcher's aim is to find out what aspects students are weak at, test is a good alternative to use and it takes different types with specific aims namely; diagnostic test, placement test, norm-referenced test, criterion-referenced test, among others. Because the researcher is conducting an experimental research, pretest and posttest are used. As a pretest, the researcher implements a combination of a diagnostic test and placement test to investigate what students lack in terms of their knowledge of grammar, vocabulary, and syntax in parallel to their target situation necessities, and to place them according to their actual level and perspective to mobile device usage. As to the posttest, the researcher used norm-referenced test to see the effect of using mobile devices to grammar, vocabulary, and sentence pattern improvement among ESP students by comparing students' scores.

2.5.3.1. Pretest

As the above mentioned, the researcher gathered the principles and the different criteria diagnostic and placement tests look like. The pretest is first and foremost meant to gather what students lack in the language; more specifically in grammar, vocabulary, and sentence pattern before any intervention is practiced, also to categorise them in terms of their prior knowledge as to the aforesaid and to their attitudes, mobile device availability, and acceptance to mobile device usage. The researcher has thought about what to enclose in the pretest as activities, what format suit students, contents rate difficulty, its validity and reliability. Such a wonder is lowered down by means of piloting which guarantee to a great extent test's appropriateness to test takers and test designer (the researcher).

The researcher has outlined five activities with different structures and instructions. The first activity is meant for grammar in which students are asked to select to right alternative to fill in the blank to each sentence. The second one is meant for vocabulary in which students are required to select the appropriate concept that corresponds with what the phrase or the sentence indicates. The third activity is about reordering words for each set to get coherent sentences. The fourth activity invites students to read and guess which sentence best suit a given context in banks and insurance companies. The last activity calls students to select possible banking and insurance products beingreflected in pictures. Grade distribution is equal to all correct answers in order not to give priority to some activities and shadow others.

Actually, the researcher has piloted the test with other students of the same field to cross checkits validity and reliability. It was piloted with 20 informants whom are told to take the test as an initiative so that they will not get stressed or try to ask for peer's help. The respondents take the test in no more than an hour since it was printed and well organized. The researcher asked them to write what ambiguity they have faced in terms of the test structure, language, written instruction, and others. The respondents were told from the beginning that their collaboration is for research purposes and their papers are not possible to get them back since their responses are calculated to sort out its validity and reliability. At the end of the procedure, the respondents were warmly thanked for their contribution.

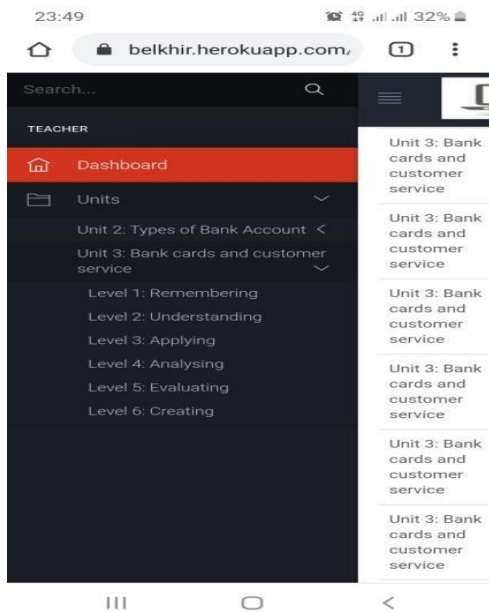
After the pretest being designed and piloted, its administration to the research informants is required. In this sense, they were gathered to take the test and were informed that their answers are preferably individually retrieved to collect original data and consider their overall knowledge and meet the test objective. They were told that whenever instruction difficulty is met, the researcher is available to clarify. The researcher collects the test from 41 students and gratitude was expressed before them. Based on the conclusions drawn from the pretest, students were grouped into two groups; experimental group and controlled group and intervention is administered to the experimental group in which the section below explains how the intervention was designed, piloted, administered, and delivered.

2.5.3.2. Researcher's Mobile Application Design

The research intervention that takes place in the present research work is the researcher's own mobile application design. Before the researcher designed the application, the investigator makes research on grammar, vocabulary, and sentence pattern mobile applications to adopt them as teaching materials in the classroom. After an extensive research, the researcher identified educational applications and asked students to download them. The followings are screenshots of mobile applications students were required to download them from their Playstore or Appstore. These applications help learners to benefit from their mobile devices to learn those skills. Indeed, the researcher has designed a mobile application based on Blooms' Digital Taxonomy. As taxonomy consists of six levels; remembering, understanding, applying (Lower Order Thinking Skills), and analyzing, evaluating, creating (Higher Order Thinking Skills). As detailed in chapter one, the taxonomy is said to be digital in the sense that the essence of each level is done with digital tools and meets today's digital natives, the research adapted its objective to the actual Algerian situation. That is to say, the researcher finds it time consuming and a lifelong process to get trained to use those technologies and to teach and train students at once on how the different tools are used in parallel to instructing the lesson contents. These constrains drive the investigator to adapt Bloom's digital taxonomy to what both the instructor and students know as basics in terms of technology knowledge to take the following structure.

2.5.3.3. Mobile Application Structure

At the beginning, the researcher spent time to negotiate its structure with technology engineer to keep close to the taxonomy principles and to make it possible for the engineer to meet those guidelines with respect to the platform creation free of charge. Put other way round, the researcher has adapted the taxonomy to ease the job for the engineer and to meet the criteria outlined by the platform base to build my application for free because it costs much money to design it according to the desire and it takes time for its completion. Hence, the application required the users to register with a username and a password to get into the application. When the password and/or the username is confirmed, a dashboard is found in front of in which in its left side the course content is set out as different units with different headings, and from the right hand the taxonomical six levels. The researcher activates the lesson, its activities and their answer keys so that the students see how they have answered.



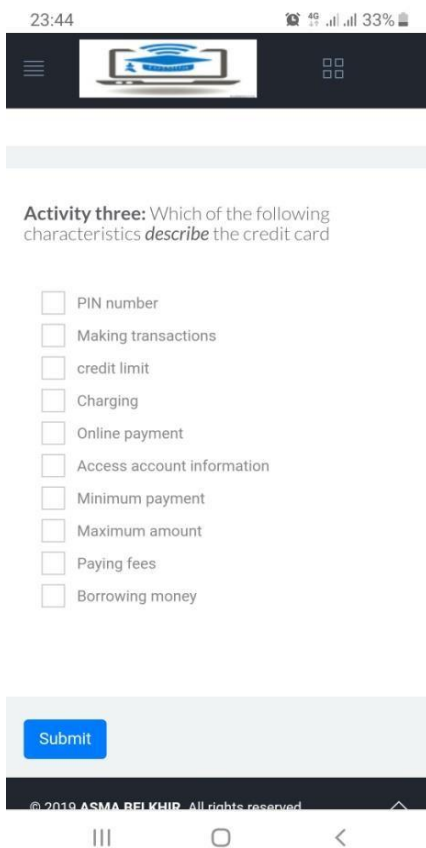
Screenshot of the dash board (Left side)



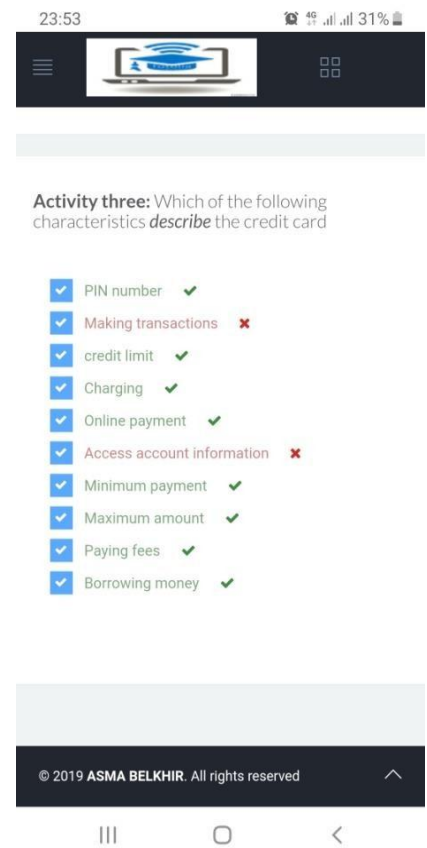
Screenshot of the dashboard (Right side)

Level One: Remembering

In the first level in the taxonomy, students are asked to perform different activities that help them remember. The researcher used the remembering phase for them to recall related vocabulary in relation to the unit heading. As an example, the researcher provides a list of concepts and students themselves are invited to select. When students finish, they submit their response to receive immediately the correction. Correct answers are marked with the green colour, whereas incorrect ones are signed as red and if an alternative is not selected by the student it is marked as green but is not selected.



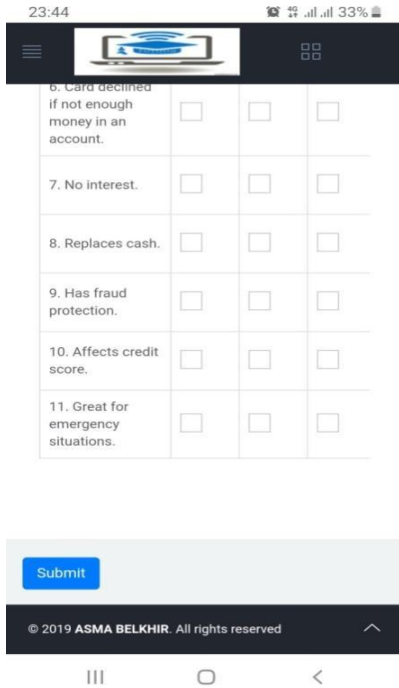
Screenshot of level one remembering



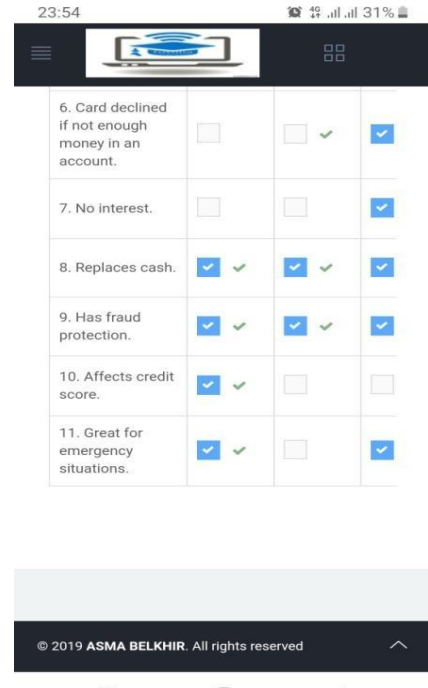
Screenshot (student's answer)

Level Two: Understanding

This level calls out students to classify any learnt language reality into categories to check their understanding.



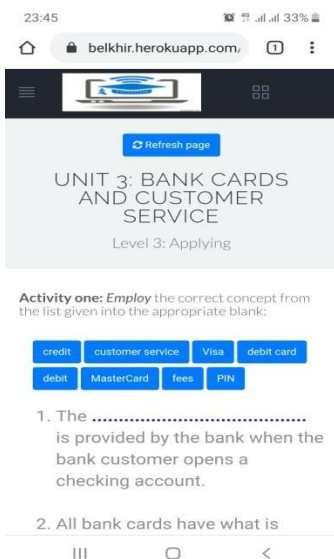
Screenshot of level two” Understanding”



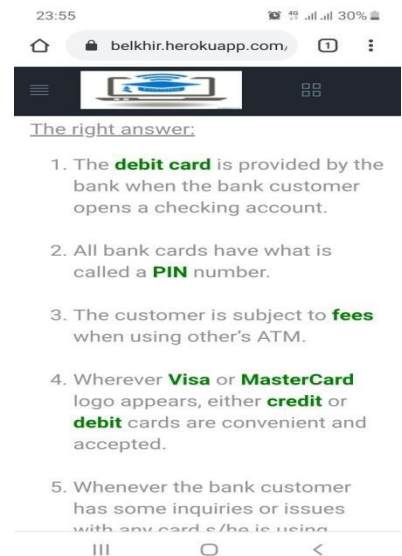
Screenshot (student’s answer)

Level Three: Applying

It is the last level in the lower order thinking skills in which students are invited to put concepts into different contexts



Screenshot of level three “Applying”



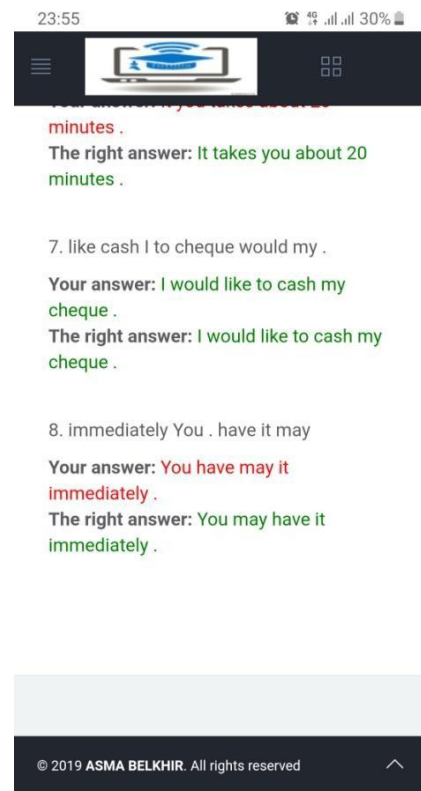
Screenshot (student’s answer)

Level Four: Analyzing

This is the first level in higher order thinking skills where students are invited to analyse the learn grammar lesson. The researcher has used the fourth level for the learning of grammar and syntax in which students are put into a context where they should analyse the context and provide appropriate answers. Students in the example bellow are called to arrange words into correct meaningful sentences and in case they make mistakes, they press delete to have another chance to fulfill it again. As usual, when the activity is done, they submit it by pressing submit and they will have the key answer.



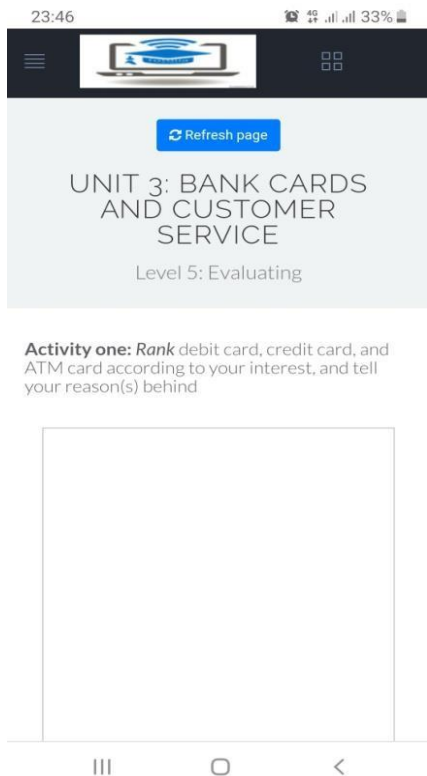
Screenshot of level four “Analyzing”



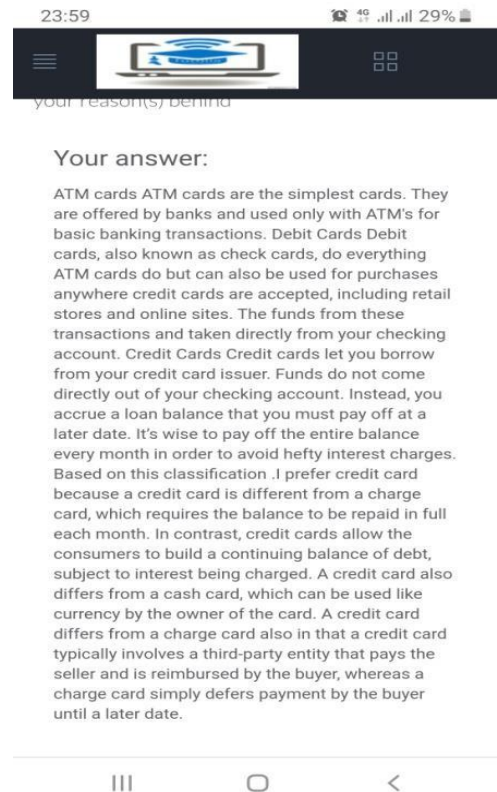
Screenshot (student’s answer)

Level Five: Evaluating

In the fifth level in the taxonomy, students are invited to evaluate the learning content they were exposed to. At this phase, the researcher gives students the hand to evaluate by writing down their own responses in sentences or points so that the researcher may correct both content and form. Students submit their answer and the teacher correct it by making an e-feedback.



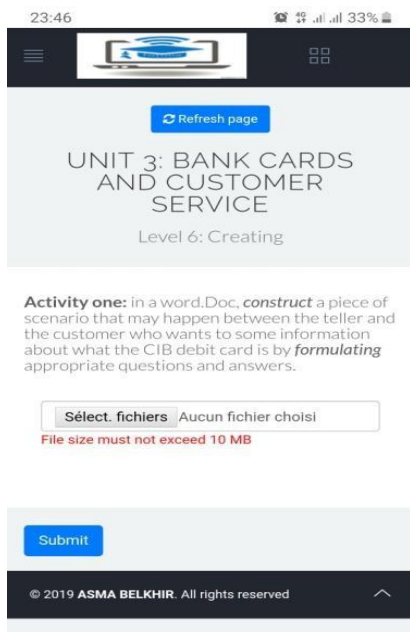
Screenshot of level five



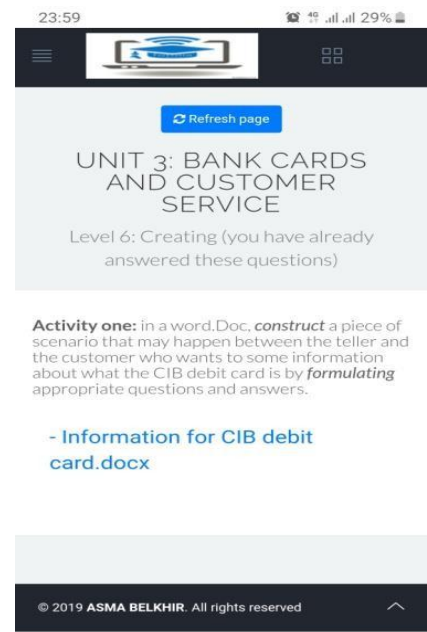
Screenshot (student's answer)

Level Six: Creating

The last level is creating which entails students to create a piece of knowledge. The researcher design activities that call students to create their own understanding of what they have learned throughout the unit and to make use of creativity for the teacher to correct their grammar, word selection, and sentence pattern in relation to considering their rate of creativity. They attach their document and it should not exceed 10MB.



Screenshot of level six “creating”



Screenshot (student’s attachment)

1.5.3.4. Mobile Application Piloting, Administrating, and Delivering

In fact, mobile application design has been piloted to ensure its applicability to be used by students. At the beginning, the researcher spent time to fix some technical issues since its program is sensitive and any misfortune affect its use. The researcher created an account for its piloting in which all the activities were done at random solely to check its working. The engineer has created another account to cross check its effectiveness. When the piloting is done, the researcher created account for the students to use it thereafter and their accounts were checked before they were handed to students. The following representation shows students' personal account:

First name	Last name	User name	Password
belkhir	Asma	a_belkhir	25021993
test	Test	Test	25021993
belkacem	ahmedsalim	as_belkacem	21061997
bellahouem	mustapha	m_bellahouem	23071995
boumediene	abdeldjalil	a_boumediene	03061997
chabane	sari saliha	ss_chabane	24021997
hadeF	Anfel	a_hadeF	17041997
hadeF	Nesrine	n_hadeF	29031998
masdoua	Wafaa	w_masdoua	08101995
mohammedi	anes	a_mohammedi	19031998
ouahiani	rayane yasmine	ry_ouahiani	04061998
sari	djawed	d_sari	06041985
youbi	nour elhouda	ne_youbi	28061998
bahi	norelhouda	ne_bahi	13061898622
oggadi	hadjer	h_oggadi	13061798079

Actually, the mobile application first administration takes place by the first semester of the academic year 2018-2019 in the department of finance and accounting. Students were arranged in a U shape and are given a piece of paper wherein their username and password is written. The researcher shared the application via Shareit and asked them to get into their personal space. Students were informed in details the application structure, its purpose and how it works. They find the application challenging and competitive that is felt with careful attention to the lesson flow and fulfillment of the activities by all students. The researcher told them that they can access to their account at anytime the wish as it does not deactivate. Each week, the researcher added new units to allow students to read what they are intended to have as an input. It is wiser to record that such an intervention last for six months approximately and students were given a summative test as a posttest to test out its effectiveness to grammar rules ,vocabulary knowledge, and sentence pattern learning and to see students' progress compared to their performance in their pretest.

2.5.3.2. Posttest

At the end of the instruction, the researcher opted for another test known as the posttest through which it was mainly administered to check the efficacy of the intervention, and to identify the differences among students' performance in relation to the pretest, and therefore score comparison is set out. The posttest was administered in May 2019; it was the test of the second semester. Accordingly, students were given a test similar to the pretest with some modifications to check similar points as the pretest. The posttest composed of five activities with different grammar, vocabulary, and sentence pattern contents. The first activity invites students to select the correct alternative to assess their understanding of the vocabulary studied (5 sentences). The following activity calls them to find out and distinguish correct sentences from false ones. The third activity, however, is related to grammar rules, mainly in defining the adjectives found in each sentence with the identification of its proper type. The task that follows is also related to grammar, wherein students should decide which form best suits the context (comparative vs. superlative form). Finally, the last activity requires them to put the words into the right order (sentence pattern) to complete a talk taking place in a bank (see appendix E). Actually, the posttest uses simple language so that students would not find

any difficulty answering it, as claimed before, it took the form of summative assessment and was administered at the end of the university year.

2.6. Data Analysis

When the data are gathered, the following step is to analyze them in order to explain the nature of the points being studied and to arrive at a set of principles that can be used elsewhere (Denscombe, 2007: 247). In the field of research, there are different types namely the qualitative and the quantitative approaches through which data can be reported and analyzed.

2.6.1. Qualitative Data Analysis

This type of analysis concerns the qualitative data which can be collected through the use of research instruments such as interviews, questionnaires, among others. Cohen et al. (2007) explain that this type of data analysis calls the researcher to categorize, describe, explain, and interpret the data in relation to the participants' point of views. Such an approach to data analysis helps the researcher to understand, describe, summarize, portray, and determine the frequency of a particular phenomenon through the analysis of records of particular informants. During the process of analyzing the qualitative results, the researcher can categorize or summarize the different responses of respondents rather than analyzing the whole records with their exact words. The rationale from calling for qualitative data analysis is to analyse students and teachers perspectives to mobile device use in the classroom and mobile applications as teaching tools to help learners improve their grammar, vocabulary, and sentence pattern learning. Such a type of data analysis seems insufficient for data generalizability; quantitative data analysis is required at this level.

2.6.2. Quantitative Data Analysis

The researcher uses this type of analysis in order to quantify the numerical data gathered through questionnaires, tests, and semi-structured interview. Quantitative analysis allows the researcher to explain and interpret the numerical data collected by comparing and observing certain statistical measurements such as the mode, the mean, and high and low scores. However, despite these numerical measurements which are found in this quantitative analysis, Cohen et al. (2007, p 501) emphasize that “Quantitative data analysis has no greater or lesser importance than qualitative analysis”, that is, both quantitative and qualitative analyses have the same significance. Moreover, they explain that the numerical data collected through different research instruments can be presented and calculated through the use of software like the Statistical Package for Social Sciences (e.g., SPSS, Minitab, and Excel). Hence, the current research uses the software of Excel since the researcher is not well trained to use SPSS or other similar new softwares. The following representation summarises the different research tools employed in this research work and what approach it is addressed to get analysed with.

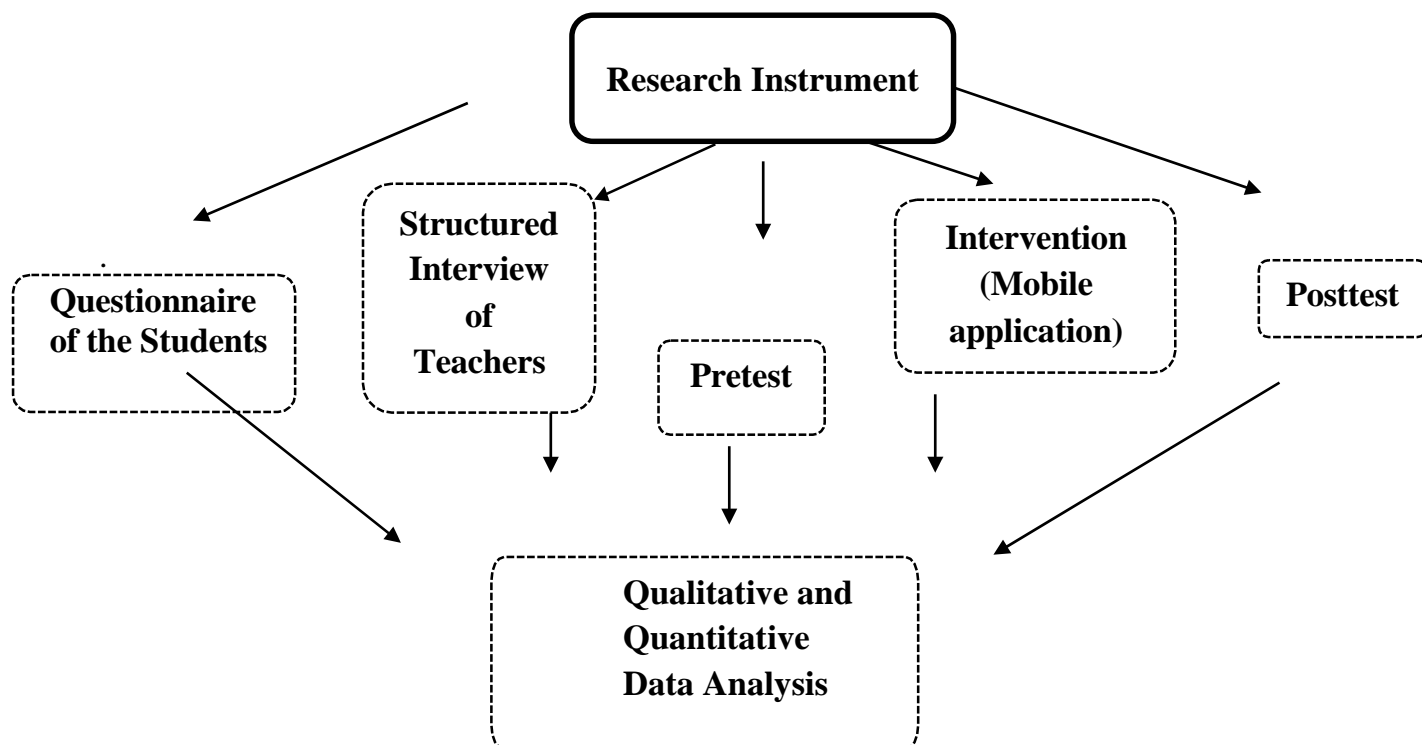


Figure 2.4. Research instruments and qualitative/ quantitative data analysis

2.7. Conclusion

This chapter gives an in-depth view about the teaching of English in other departments mainly the department of Finance and Accounting wherein English is not the main teaching subject. The researcher portrays the research design employed in the present research work. For the sake of examining the research questions and hypotheses, the researcher opted for a quasi experimental research design to meet the objectives of the research. In hope to do a systematic investigation, the researcher has employed a questionnaire for students that is administered to 41 research informants, a structured interview with 10 ESP teachers, pretest and posttest to students. The researcher indeed designed a mobile application based on Blooms' Digital Taxonomy as an intervention to enable learners to get improved in the learning of grammar rules, vocabulary knowledge, and sentence pattern. Such an attempt assigned the researcher to contribute empirically in the field of ESP. Accordingly, the employed research instruments provided the researcher with qualitative and quantitative data that are carefully analysed in the following chapter.

Chapter Three

Needs Analysis

Chapter Three: Needs Analysis

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3.1. Introduction

This chapter is meant to address the analysis of the gathered data from the research instruments being used in this research work to underline students' needs, wants and expectations. First of all, the analysis started with the questionnaire of the students as it is the first data gathering tool that was used and first administered to the study participants. After collecting data from the students, a structured interview was conducted to learn about teachers' attitudes towards the use of mobile devices to improve students' grammar, vocabulary and sentence pattern learning. These two research instruments were conducted in the initial phase (pre-experimental phase) because it is important to start looking at their attitudes and outlooks as they are the active agents in this process.

After that and before the intervention to take place, a pretest was designed and administered to all of the participants to be informed about their actual level in grammar, vocabulary and sentence pattern. In this phase, they were informed that the test is a tool used to learn about their points of strength and weakness and their answers are not as important as their trustfulness in answering the pretest. This indeed enables the participants to answer at ease especially when they were informed that it is not scored as a formal/continuous evaluation.

The following phase is the phase of the intervention where the respective students were grouped into two groups (experimental and control group). The intervention was initially explained after guaranteeing that they all have a smartphone with good battery life. These two requirements were met because the investigation lies on the use of a smartphones and not any similar device, as well as to respect the duration the class generally takes (120 minutes). In this section, the investigator detailed this phase in data collection simply to show whether the intervention changes participants' behaviour or not. In contrast, those in the control group took regular classes where the learning was channeled face to face without any new behaviour. After the intervention phase, posttest was constructed and handed to the participants of both groups to see whether there is a significant difference in the obtained scores of both groups, and merely to notice whether or not the impact of the intervention after the dedicated sessions has shown any progress.

3.2. The Pre-experimental Phase

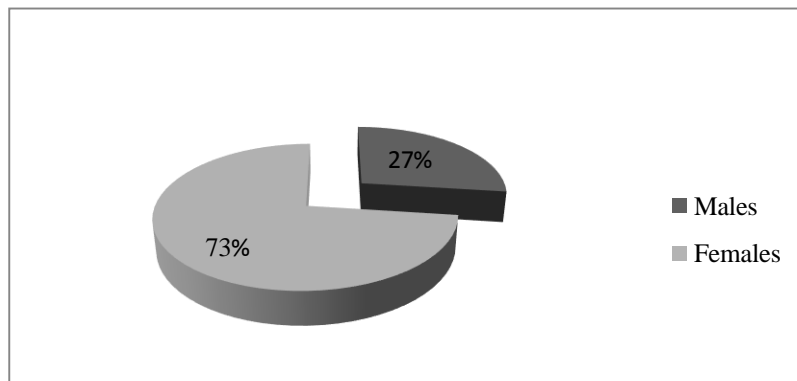
As highlighted earlier, this section involves the analyses of both students and teachers questionnaire and semi-structured interview, respectively as a background bases.

3.2.1. Analysis and Interpretation of the Questionnaire of the Students

Indeed, the researcher has designed and administered a questionnaire to third-year Finance of Banking and Insurance students in order to find out what attitudes they have towards the use of mobile devices, smartphones in particular to serve grammar, vocabulary and sentence pattern learning among them. Besides, it is also meant to learn about their lacks, needs, and necessities to help them cope with them all during and after the course. In this concern, the questionnaire covers 38 questions (see appendix A) grouped into four distinct rubrics with different aims. Similar to any questionnaire, it starts with participants' background information to identify their gender, age and if any part-time or full-time occupation they have. The first rubric seeks information about their attitudes on the use of mobile devices as tools for learning purposes in the classroom, while the next rubric collects their outlooks in using mobile devices mainly for grammar, vocabulary and sentence pattern learning, and mobile apps for grammar, vocabulary and sentence pattern learning as the last rubric in the questionnaire. The gathered data is presented in different formats including tables, graphs, pie-charts and diagrams that are preceded by a short text to explain the reflected information.

Section one: Students' Background Information

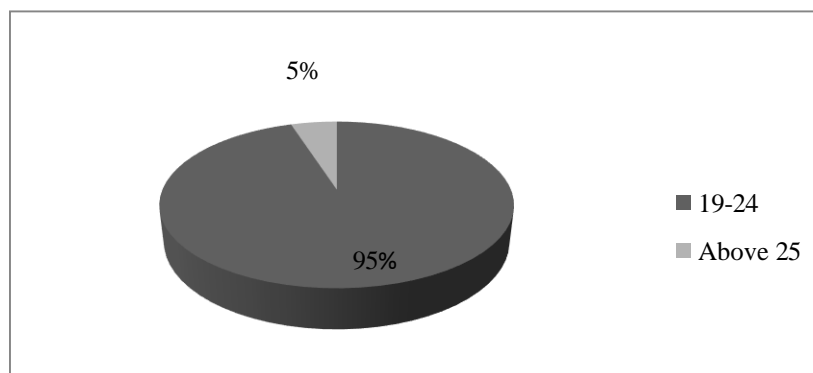
Participants' gender



Pie Chart 3.1. Participants' gender

The results reflect that (73%) represents female category, while (27%) are males.

Participants' Age



Pie Chart 3.2. Participants' age

As far as the research informants' age is concerned, almost all of them (95%) are aged between 19 and 24, while only (5%) are above 24.

Participants' Work

The researcher has designed this question in order to know if the informants have worked or are working either in a bank or an insurance institution. The gathered data uncover that most informants do not have any position in one of these financial institutions, but only three of them (7%) have a part-time job and work as assistant shoppers (4%), and one works as an employee at a travel agency (3%).

SectionTwo:**Rubric One: Students' Attitudes on the Use of Mobile Devices for Learning Purposes in the Classroom***Question One: Type of Mobile Device Students Own*

The intention from this question is to collect data on the sort of mobile device the research informants have. As reflected, none of them has owned blackberry, but all students use smartphones and most of them (92%) possess PCs. As far as the other mobile devices are concerned, half of the students (53%) own mobile phones, whereas tablet PCs, Iphone Apple and PDA are only owned by fifteen, thirteen and seven students with a relative frequency of (36%), (31%) and (7%), respectively.

Table 3.1. Students' mobile device

Mobile Device	AF	RF
Mobile Phone	22	53%
Smartphone	41	100%
Blackberry	00	00%
Tablet PC	15	36%
IphoneApple	13	31%
PDA (Personal Digital Assistant)	03	7%
PC (Personal Computer)	38	92%

Question Two: The Most Used Mobile Device

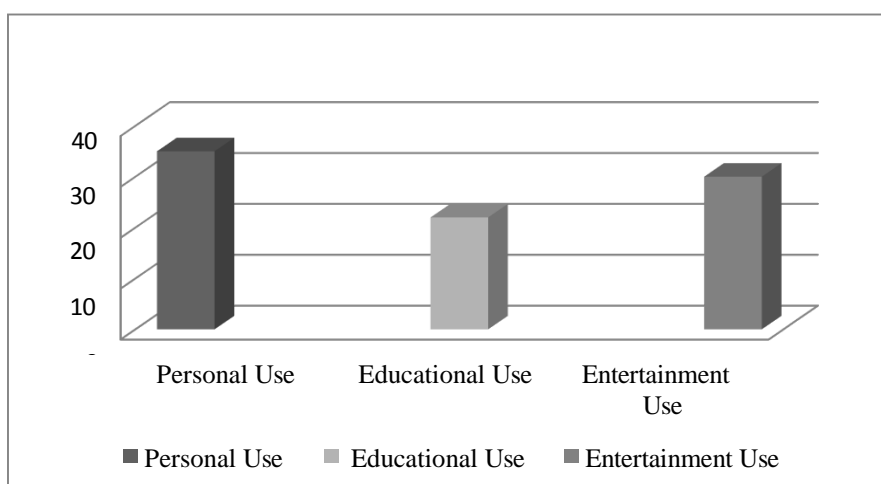
The purpose from asking this question is to collect data on what kind of mobile device students use the most. The revealed data exposed that all the participants (100%) have selected smartphones as the most used mobile device. Such a selection determines that students, though they use/ have other mobile devices, appreciate to use smartphones to perform whatever they like and wish. This finding satisfied the researcher since it aligns with the researcher's expectation.

Question Three: Smartphone Operating System

The intended information the investigator wants to absorb is what operating system the used mobile device is qualified. Indeed, all of the informants (100%) opted for Android option.

Question Four: The Purpose from Using Smartphones

When this question is designed, the desire is to note the different purposes learners utilise their smartphones. In this question, the researcher required from the participants to rank their purposes from the most to the least using numbers (1) and (3), respectively. In order for them to understand what is meant by personal purpose as an example, it was explained by providing some illustrations and examples like making/ receiving calls to make appropriate ranking. The following graph summarises the obtained data. As shown, almost all students (35) use their smartphones to serve personal purposes; meanwhile entertainment purpose is ranked the second with (30) students. Using smartphones for educational purposes is the least objective learners aimed at in which (29) informants opted for it. Using smartphones for personal and entertainment purposes is the normal logic every student thinks about because these devices are first designed to serve these purposes.



Graph 3.1. Students' purpose from using their smartphones

Question Five: Smartphones for Learning Purposes

A close ended question is used to see if students find smartphones useful devices for learning purposes. Data tell that all the students (100%) said that smartphones are valuable mobile devices for learning purposes. Within the same question, the investigator has listed possible alternatives why they are useful. The following table represents the collected data. As shown, students express great intention in using their smartphones for learning. This means that they use their smartphones to ease some tasks like checking, reading, sharing information. Also, they find them interesting in making screenshots, holding it and downloading different apps.

Table 3.2. Reasons for using smartphones in learning in general

Statements	AF	RF
Because I can use the browser to check any Information I need anytime	40	97%
Because I can share information using SHAREIT, Bluetooth with Others	37	90%
Because I can screenshot any information I read from written or read documents	37	90%
Because it has enough space to download some educational applications	24	58%
Because it is light; it can be hold easily to read, write, watch anything Anywhere	41	100%
Others...	/	/

Question Six: Smartphones as Learning Tools in the English Class

The purpose from asking this question is to collect data on students' perspectives to utilizing smartphones in their English classroom by selecting "yes" or "no" to express their outlook. It was concluded that nearly all learners (95%) find their use appropriate in the English class, while two students (5%) do not. Those who claim that they are not useful devices in English classes, the investigator suggested other devices for them to select. Both of them opted for PC being the best device for English classes. This result is expected, as students are interested to welcome any intervention to satisfy their learning of English. Yet, the other two participants are still concerned to use the way of learning English using PC. They still regard smartphones not trustful devices to rely on in learning English.

Question Seven: Smartphones in the English Class

This question is purposefully designed to perceive if the participants have used smartphones in English classes. In this concern, a yes/no question is used and most of them did not use it (90%), while (10%) used it for different needs. Some said that they use it to check word meaning (7%); others mentioned that they use it to check the spelling (4%), while some others use it to both check meaning and the spelling (7%). They were also required to define its ownership wherein three alternatives were put forward. All the participants opted for personal ownership, meaning that they prefer using their personal device. One could say that students have no experience in using them in their English classes, and hence their desire is not answered or considered amongst their teachers. The only matter that is used for is only to perform simple tasks like word meaning and spelling.

Question Eight: Smartphone Ownership Preference

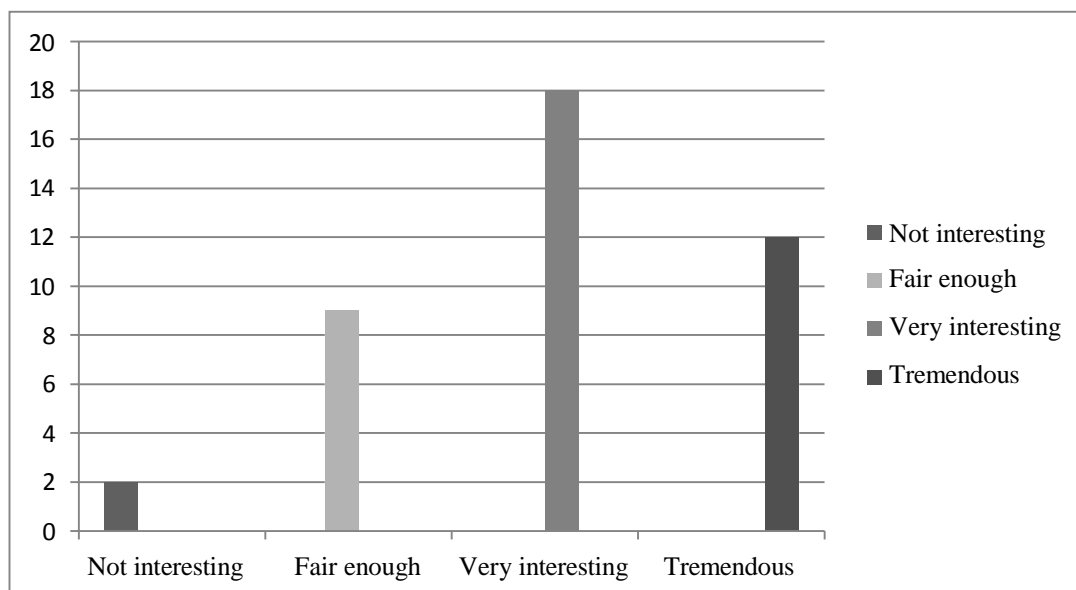
The purpose from this question is to elicit students' preference to smartphone use. That is to say, the researcher's intention is to see whether students' prefer to use their personal smartphones or university / others smartphones. Findings reveal that all participants prefer personal ownership by admitting some realities. Some of them claim that the reason from preferring personal ownership is that they can use it anytime anywhere. Others go to mention that when using their personal smartphones, they feel comfortable and it is always available for the sake of revision, and because of its familiarity, they do not find difficulties when using it. This notion denotes that students feel easiness when using their personal device(s), and more than that they display confidence that their personal devices are safer and can be used wherever and whenever needed. Such a claim gives hope that they can dedicate their personal devices for their learning needs.

Question Nine: Smartphones Frequency in the English Class

This question seeks to gather data on the frequency Finance of Banking and Insurance appreciate in using smartphones in their English classes. As displayed in the above pie chart, 32% of them prefer to use smartphones very often in their English classes. Similarly, some others (31%) tend to prefer using their smartphones always. However, others show low percentage in using their smartphones in which (22%), (10%), and (5%) prefer to use their smartphones sometimes, rarely, and never, respectively. These findings suggest that these research informants have the passion and the excitement to use their smartphones very frequently in their English classrooms.

Question Ten: Students' perception to using Smartphones in the English Class

The below graph represents the perception students have on the use of their smartphones in the English class. As seen, 18 students regard their smartphones very interesting in their English class, while 12 of the whole participants approach it to be of tremendous importance to use their smartphones in their English classroom. Meantime, 9 and 2 students opted for “fair enough” and “not interesting” options to reflect their perceptions, respectively. That is, they consider their smartphones in their English classroom acceptable in certain extent and not interesting in another extent.



Graph 3.2. Students' perception to using smartphones in the English class

RubricTwo: Students' Grammar, Vocabulary and Syentence Pattern Improvement through MALL

Question One: Attending the English class among Students

When the respondents were asked whether or not they like attending their English class, all of the participants (100%) prefer to be present.

Question Two: Importance of English among Students

Interesting results are displayed in the above table. Students show significant facts on their needs for attending their English class, in which all of them (100%) argue that they need it for their future roles, also to satisfy their overall grade and to learn and understand the register of banking and insurance. Some others find it compulsory to learn it since it is the global language (92%) and further opportunities could be at hands (48%). These findings dictate that students are aware of the importance of English for them. English is not simply a supplementary subject to attend, but rather a subject that assist them in doing well in their career.

Table 3.3. Importance of the English language

Statement	AF	RF
a- Because I need it in my future career	41	100%
b- because I wish to carry on my studies overseas	20	48%
c- Because it is a global language, I need to learn it	36	92%
d- Because I need it to have enough grade to satisfy my overall grade	41	100%
e- Because I need to learn and understand the register of banking and insurance	41	100%

Question Three: Students' Expectations from Taking the English Class

From the results presented in the table, it is clear that learners show different expectations from learning English. To develop some knowledge about the language in term of grammar, vocabulary and similar skills is the first expectation these students are aiming to meet. The second ranking denotes the fact that they aim to learn and improve banking and insurance lexis and register as it is their actual field of expertise. Besides, they tend to have the purpose to use the language verbally in their future job which is ranked the third. Also, they went for to be able to use the language verbally and non-verbally for personal and professional purposes” to be their fourth ranking which overtly means that they have both personal and occupational/ professional needs from learning English verbally and non-verbally.

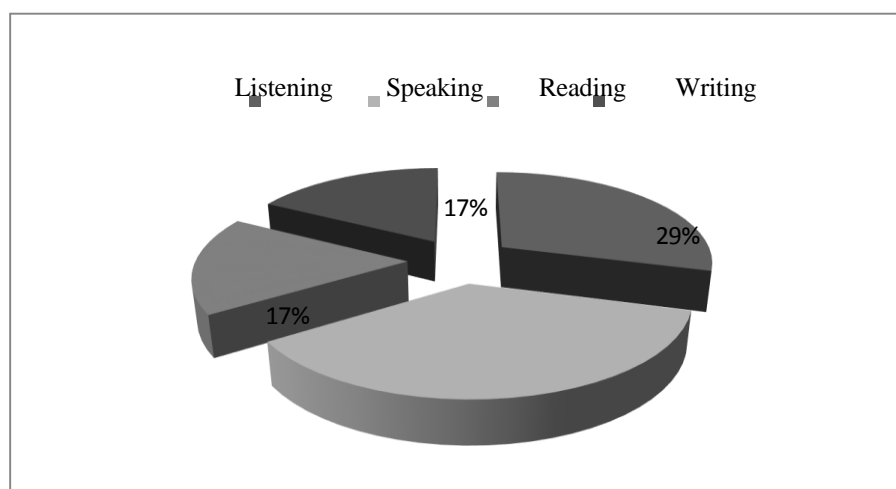
In the same line, they are interested to use the language verbally and non-verbally in their future job, to use the language verbally for personal and occupational purposes, to use the language verbally and non-verbally for personal purposes, and to use the language verbally for personal purposes which all rank as the fifth, sixth, seventh, and the eighth, respectively. Students appear to have a significant interest from learning the language. They are conscious enough that they need it to satisfy both personal work place necessities. With regard to the ranking being reflected in the above table, these learners tend to have an open eye towards what they are expected to accomplish and what they should be equipped with to perform those tasks.

Table 3.4. Students' expectations from taking the English class

Statement	Rank
a- To improve my repertoire as to banking and insurance	2
b- To develop some knowledge about the language (grammar, vocabulary...)	1
c- To be able to use the language verbally in my future job	3
d- To be able to use the language verbally and non-verbally in my future job	5
e- To be able to use the language verbally for personal purposes	8
f- To be able to use the language verbally and non-verbally for personal purposes	7
g- To be able to use the language verbally for personal and occupational purposes	6
h- To be able to use the language verbally and non-verbally for personal and occupational purposes	4
i- I have no expectation	9
j- Others...	/

Question Four: The Needed Language Skill(s) to be Developed among Students

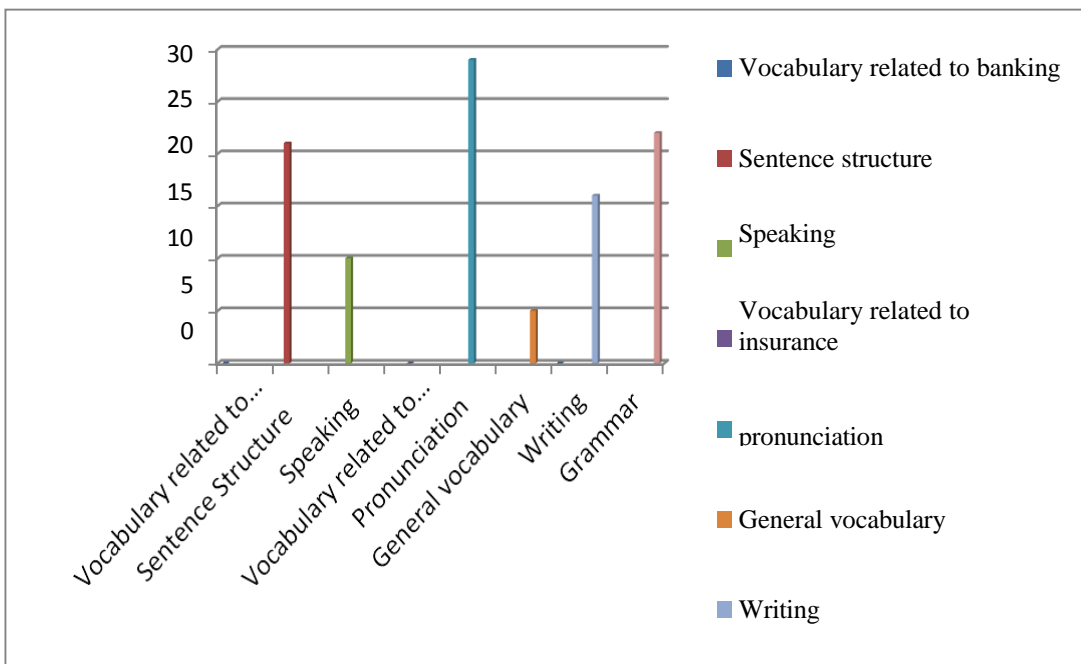
In reading what is shown in the representation below, the speaking skill takes the highest percentage (37%) which explains that the needed skill for them is the speaking skill. When it comes to the other skills namely: listening, writing, and reading participants reflect their need to listening (29%) with equal importance as to writing (17%) and reading (17%). It shows that participants are more interested to improve their speaking skill as they keep regarding it an important skill for them first, and to make them feel they have the capacity to express themselves in the language.



Pie Chart 3.4. Language skills among students

Question Five: Students' Language Areas they are Knowledgeable at

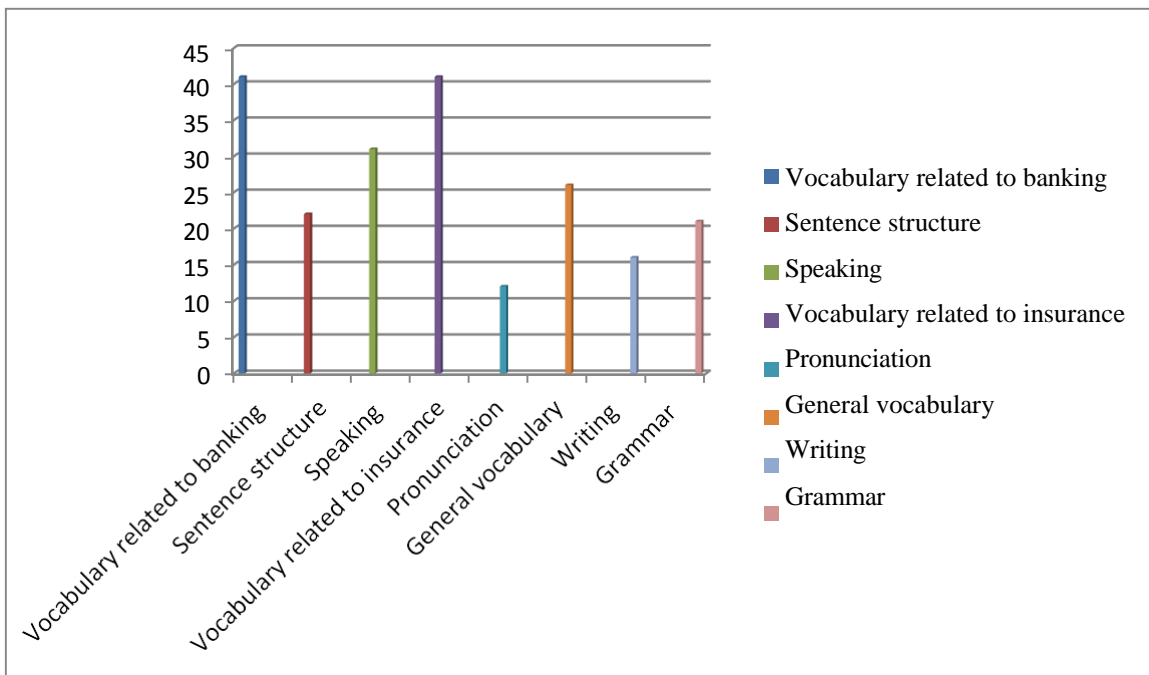
After analyzing the participants' answers on their knowledge at the language, various choices were made. The vast majority of the participants (28) show a significant knowledge on pronunciation, while more than half of them have enough knowledge on grammar (23) and sentence structure (21). As far as their knowledge on writing, speaking, and general vocabulary are concerned, (16), (10), (5) are the number of students who possess knowledge on the previously mentioned skills, respectively. However, none of them have knowledge regarding the register of banking and insurance.



Graph 3.3. Students' knowledge at the English language

Question Six: Students' Weaknesses in the English Language Areas

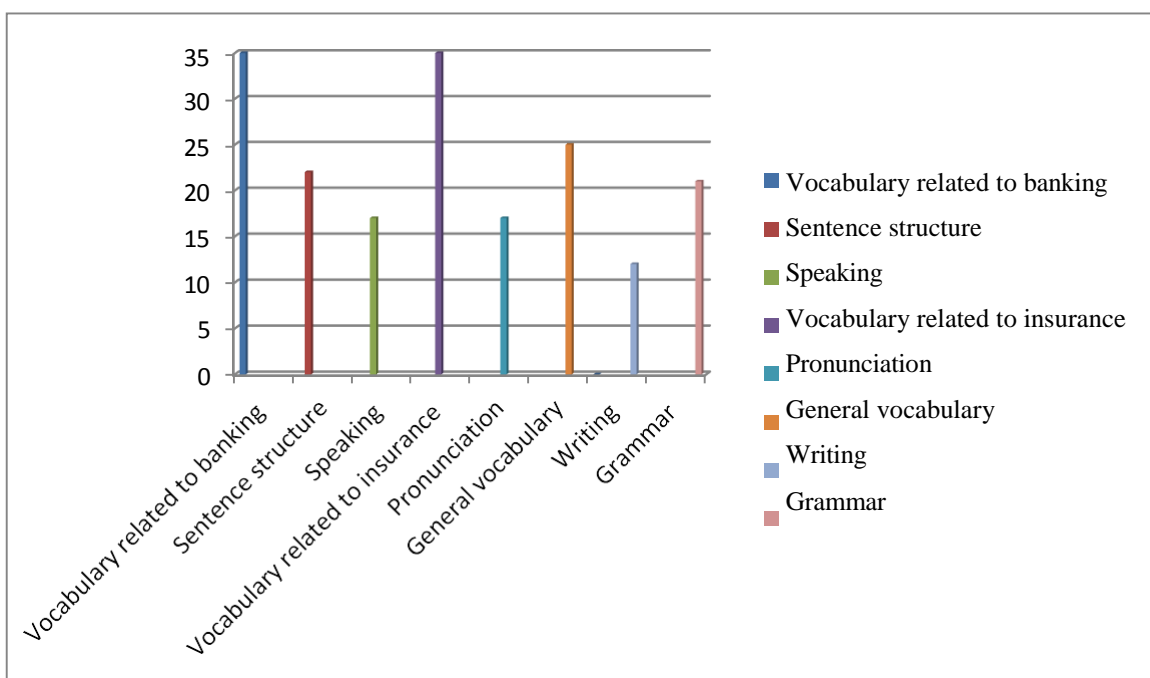
As reflected, all students (100%) are short of knowledge about vocabulary related to banking and insurance. Apart from that, they showed a significant weakness as to speaking (31), general vocabulary (26), sentence structure (22), grammar (21), Writing (16), and pronunciation (12).



Graph 3.4. Students' weaknesses in the English language

Question Seven: Students' Language Areas they Want to Develop

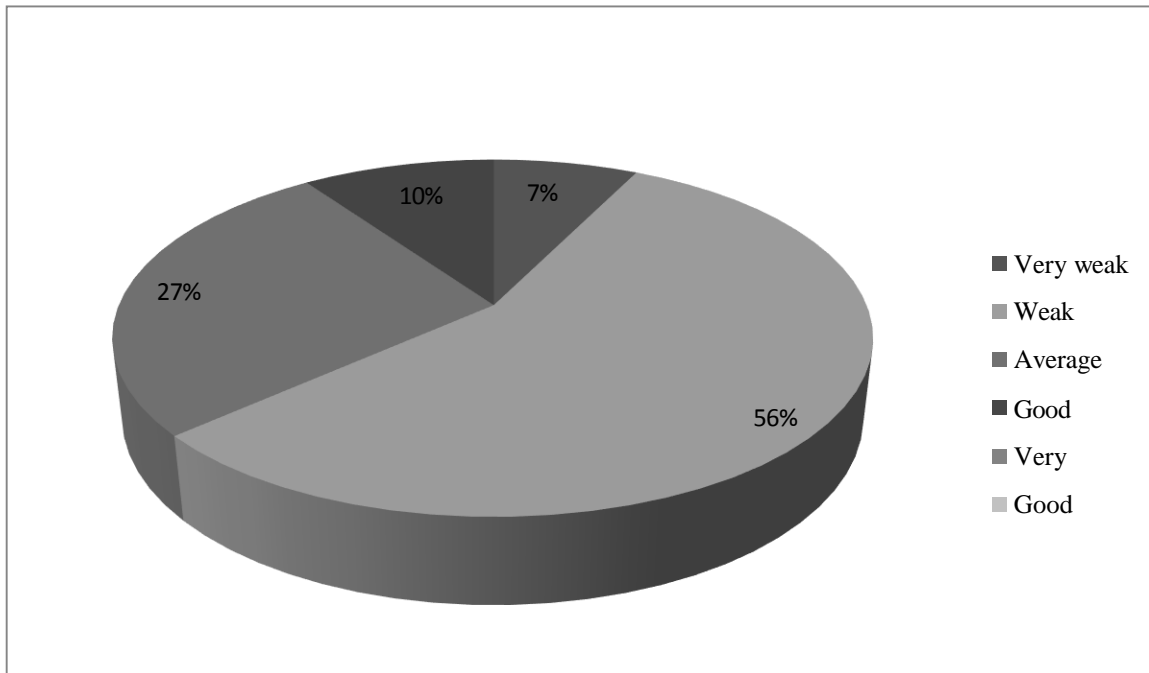
This question inquires which skill they want to develop. The collected data reveal that almost all participants (35) want to develop banking and insurance register, while more than half of them (25) want to develop general vocabulary along with sentence structure (22) and grammar (21). The remaining skill took minor importance for them to crucially develop in which pronunciation, speaking along with writing are picked only by (17) and (12) students.



Graph 3.5. Students' skills to develop

Question Eight: Students' Level in the English Language

After looking at their knowledge in the language, this question intends to explicitly identify their level. As displayed in the pie chart, (56%) of the respondents regard themselves weak, while others (27%) consider themselves having an average level. The remaining participants approach their level as being good (7%) and very weak (10%).



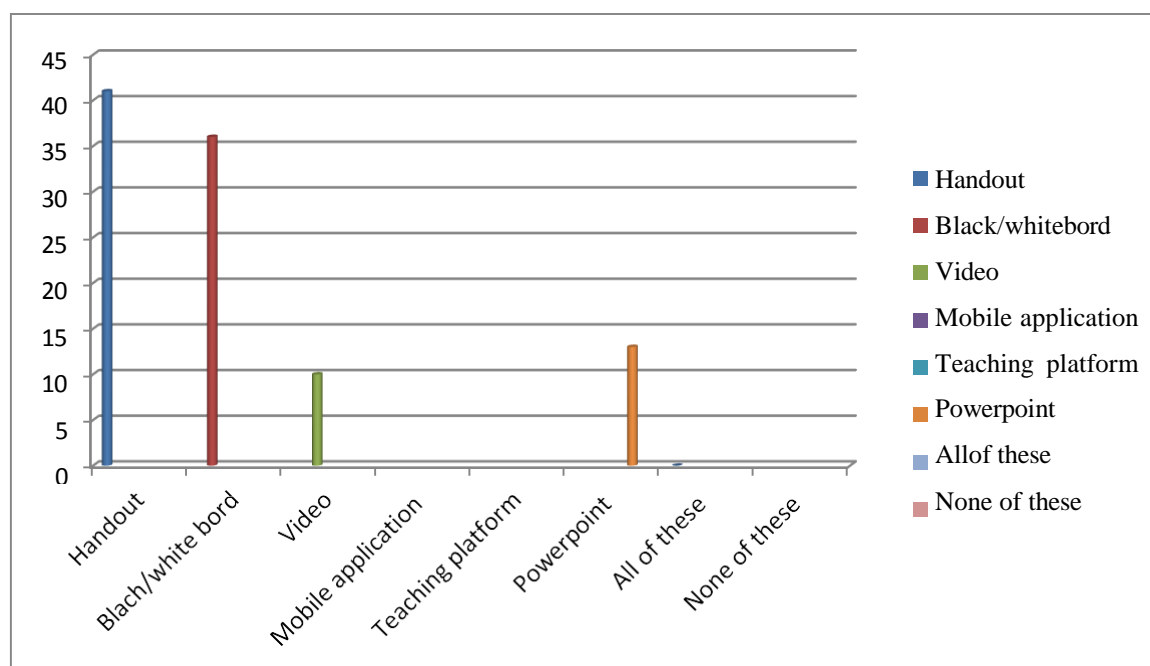
Pie Chart 3.5. Learners' level in the English language

Question Nine: Teachers' Grammar, Vocabulary and Sentence Pattern Instruction for their Students

When students were asked whether or not their instructors taught them some aspects as to grammar, vocabulary, and sentence pattern, all of the participants (100%) said yes.

Question Ten: Teachers' Teaching Materials when in Grammar, Vocabulary and Sentence Pattern Teaching

The researcher designed this question purposefully to detect what sort of teaching materials their teachers use when grammar, vocabulary, and sentence pattern teaching. Students reveal that their teachers make use of handouts, black/white board, PowerPoint, and videos. The following graph summarises these findings.

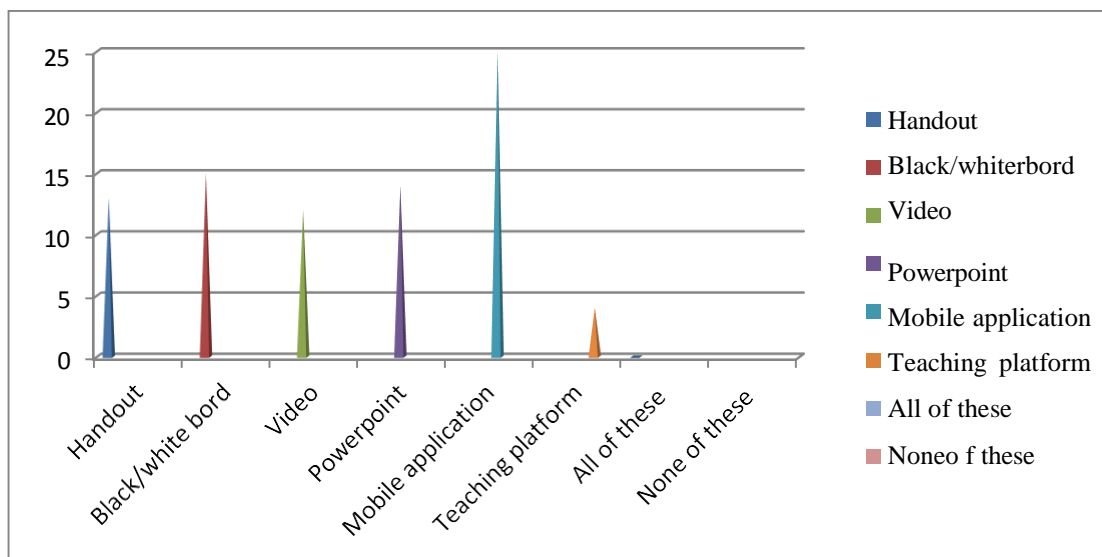


Graph 3.6. Grammar, vocabulary, and sentence pattern instructional materials

Question Eleven: Students' Teaching Material Preference as to Grammar, Vocabulary, and Sentence Pattern

The rationale from designing this question is to call for students' preferences concerning the best teaching tool they prefer when it comes to grammar, vocabulary, and sentence pattern learning. After analyzing the respondents' answers, the researcher foundout that a considerable number of participants (25) prefer using mobile applications in grammar, vocabulary, and sentence pattern learning. However, others (15) still mull over the use of black/white board when they learn these skills. Approximately, the same number of participants (14) approach PowerPoint the favourite material in grammar, vocabulary, and sentence pattern. Similarly, (13) of the

research informants still consider handout the preferred material for them. When it comes to video and teaching platform, a least number of students (12) and (4) consider them their preferential teaching materials. The graph below represents these results.



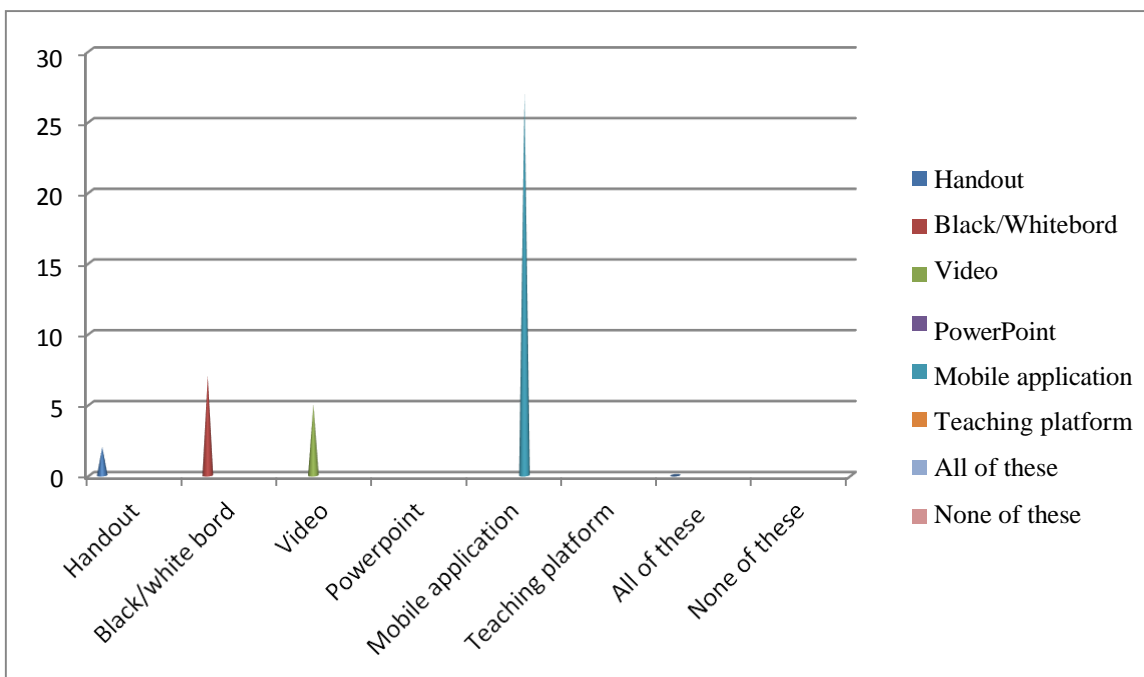
Graph 3.7. Students' preferred teaching material for grammar, vocabulary, and sentence pattern

Question Twelve: The Best Teaching Material for Grammar, Vocabulary and Sentence Pattern

As far as students' best teaching material for grammar, vocabulary, and syntax learning is concerned, a considerable number of them (27) approach mobile application their best teaching material for grammar, vocabulary, and sentence pattern learning. As shown in the above graph, a very small number of participants (7), (5), and (2) account for black/white board, video, and handout their best teaching material, respectively. The respondents' were required to provide reasons or some motivations behind their selection. Those who claim for mobile application as the best teaching material mention that learning grammar, vocabulary, and sentence pattern through them is innovative, interesting and extremely motivating. They add that mobile applications expose a wide range of information and knowledge on these skills in interesting ways that make learning fascinating and entertaining at the same time.

More than that, they reveal that learning with mobile applications is new and as foreign language learners, they need to experience this new way in learning to develop and enhance other skills in the future. Furthermore, learning with them breaks the routine and feel not bored when learning these skills. However, those who regard black/white board and handouts the best teaching materials for grammar, vocabulary, and sentence pattern highlighted that though the necessity to adapt and adopt potential changes in the teaching learning process, the black/white board and the handout continue to play a significant role mainly for grammar, vocabulary, and sentence pattern instruction. They add that these skills need to be explained and stressed on the board or highlighted in the handout because when the teacher circles, double underlined a particular language reality, students will grasp it better than it is orally said as they both help them to memorize that language reality.

One participant affixed that using technological moves to spice up the teaching learning process is crucial in today's digital age, but the experience she has lived impulses on her to stick to traditional ways and methods in learning these skills. With reference to those who deem videos their best teaching material when in grammar, vocabulary, and syntax claim that when they are taught with this material, they have the opportunity to understand better since it focuses on a particular aspect in the language with no deviation. They argued that some teachers may deviate from the concern they are subject to deliver and move to another issue which this switching harms their comprehension and understanding. Yet, the video is set to reveal one aspect or a sum of aspects without these sidetracks. Besides, one of them declares that videos on these skills make students exposed to the culture of those people. She stated that learners have the opportunity to listen to native speakers explaining rules, exceptions and the like with authentic examples different from those used in the class, since teachers tend to use simple forms and repeated ones which make students feel unenthusiastic to learning.



Graph 3.8. The best teaching material among students in grammar, vocabulary and sentence pattern learning

Question Thirteen: Mobile Devices for Grammar, Vocabulary and Sentence Pattern Learning

When analyzing this question from students' questionnaire, all the participants (100%) replied with yes, meaning that they believe on using mobile devices for the learning of grammar, vocabulary, and sentence pattern.

Question Fourteen: The Extent of Using Mobile Devices for Grammar, Vocabulary and Sentence Pattern

This question is designed to gather data on participants' agreements and or disagreements concerning mobile devices for grammar, vocabulary, and sentence pattern learning. After the analysis of this question, the researcher finds that almost all participants (39) strongly agree on the fact that mobile devices are motivating devices for grammar, vocabulary, and sentence pattern learning, whereas only 2 students show agreement. 36 students strongly agree on the statement (statement d) which states that mobile devices user are dependent on their mobile devices which may act well in building habits to use them for the learning of grammar, vocabulary, and sentence pattern

learning. While only 5 students crossed “agree” option. Statement “b” and “c” which indicate the notion that because mobile devices are portable can help in learning grammar, vocabulary, and sentence pattern anywhere, and the fact that mobile devices help in remembering and practicing the learnt knowledge inside and outside the classroom, respectively, similar numerical information are collected in which 34 students do not only agree but strongly agree on these statements, whereas 7 research informants only agree.

Looking at how many participants show strong agreement on the last statement, 31 students strongly agree on the fact that mobile devices act well for life long learning. When analyzing students’ response concerning the first statement, 30 students strongly agree on the idea that it is an innovative way to learn and acquire some aspects mainly in grammar, vocabulary, and sentence pattern via mobile devices. The remaining participants (11) only agree on this fact.

Table 3.5. The extent of using mobile devices for grammar, vocabulary and sentence pattern learning

Statement	Agree	Strongly agree	Disagree	Strongly disagree	I do not know	AF	RF
a-It is an innovative way to Learn and acquire some Language aspects mainly in grammar,vocabulary,and sentence pattern.	X	X				30 11	100%
b-Mobile devices are portable and can help in learning the three anywhere.	X	X				34 7	100%
c-Mobile devices help me remember and practice the learnt knowledge inside and outside the classroom.	X	X				34 7	100%
d-Mobile device users are dependent on their mobile devices which may act well in building habits to use it for the learning of grammar, vocabulary, and sentence pattern.	X	X				36 5	100%
e-Mobile devices motivate learners to learn grammar, vocabulary,and sentence pattern.	X	X				39 2	100%

<i>f</i> —Mobile devices are equipped with options and sufficient life memory that suit for knowledge retention in a desirable period of time.	X	X				27 14	100%
<i>g</i> —Mobile devices act well for lifelong learning.	X	X				31 10	100%

Question Fifteen: The Importance of Grammar, Vocabulary and Sentences Pattern in Workplace

The gathered data on whether or not the respondents find grammar, vocabulary, and sentence pattern significant in their workplace reveals that all students said yes.

Question Sixteen: Grammar, Vocabulary, and Sentence Pattern in Students' Workplace

This question is designed to collect data on the situations students believe that grammar, vocabulary, and sentence pattern help them in their workplace. The researcher has provided possible alternatives for them to select from without limiting the number they should respect. Findings uncover that all respondents crossed the following suggested statements:

- a-** They are useful when speaking/writing to foreigners
- b-** They are useful when in customer service
- c-** Writing and/or reading emails, reports, resume, motivation letter, etc
- d-** They are helpful in conferences and/or traineeship overseas, etc.

Rubric Three: Mobile Application for Grammar, Vocabulary and Sentence Pattern Learning*Question One: Mobile Application Use among Students*

The intention from asking this question is to see if these learners have already used a mobile application in their learning practices in general. Findings uncover that 39 students have not practiced any kind of mobile applications, while 2 others have used some. One of them has used “Duolingo” for vocabulary learning, whereas the other one used English Grammar application to learn some English grammatical rules.

Question Two: Students’ Motivation in Using Mobile Applications for Grammar, Vocabulary and Sentence Pattern Learning

When asking this question, all the respondents answered with yes which refers to the fact that students are motivated to learning grammar, vocabulary, and sentence pattern.

Question Three: Mobile Application for Grammar, Vocabulary and Sentence Pattern Learning

This question aims to collect data on whether the respondents find grammar, vocabulary and syntax mobile applications helpful. After analyzing this question, all students replied with yes. When they were asked to highlight interesting motivations behind their selection, varied answers are given. Some of them claim that mobile applications expose more information which helps in developing and storing interesting facts about the language. Some others reveal that with mobile applications, they can learn at ease, gain time, and the lesson is stored and could be retrieved any time anywhere. Others add that with mobile applications, they are not required to copy and past the lesson in their copybooks which help first learn in an innovative way, second they help them remember very quickly. Others highlight that using mobile applications for grammar, vocabulary, and sentence pattern assist in understanding the learnt knowledge to develop it as mobile devices are friendly to the users and one should exploit its functions and affordances positively.

Question Four: Mobile System Preference among Students

This question is purposefully defined to learn about which system these respondents prefer to work with when in grammar, vocabulary, and sentence pattern learning. After analyzing their responses, the vast majority (23 students) favour to work with online applications while 18 others opted for offline applications. Those who claimed on using online applications argued that when working with online applications, they can understand better in case they fail. Others claim that online applications always expose a wider range of knowledge, and are able to switch to use another application according to what they need, aim, prefer and without any kind of constraint.

However, those who prefer using offline applications reveal that the internet access is not available for every single student. They add that working with offline applications is not destructing when learning in the sense that students are not subject to receive notifications, messages from other installed applications like Messenger, Viber etc. Some others enclose the idea that offline applications do not require WiFi /3G/4G internet access and hence learners have the possibility to focus and carefully consider what they are learning at a given point in time and pace.

Question Five: The Extent to which Mobile Applications Improve Grammar, Vocabulary and Sentence Pattern Learning

Indeed, different responses were collected when research participants are asked about the extent to which mobile applications serve grammar, vocabulary, and sentence pattern learning. The researcher has suggested possible alternatives for students to select from. After analyzing their responses, varied answers were collected. All of the participants admit that mobile applications help in experiencing learning in a digital format anywhere. 36 of them acknowledge that mobile applications allow them to learn with no limitations as to time and amount. More than half of the research informants (31) reveal that they have the possibility to broaden their knowledge about all aspects of the English language. Concerning statement “b”, 27 students claim that mobile applications permit them to live a new learning experience. Half of them (20) approach mobile applications as assistant tools which help them learn with applications that suit and correspond to their actual level in the language. These findings are overtly reflected in

the below table.

Table 3.6. The extent to which mobile applications improve grammar, vocabulary and sentence pattern learning

Statement	AF	RF
a-Mobile applications help me learn every where and in a digital format	41	100%
b-They allow me experience a new way to learning	27	65%
c-They help me broaden my knowledge about the language	31	75%
d-They help me learn with the application(s) that suits my level of understanding	20	48%
e-They help me learn with no restriction to time and amount	36	87%
f-Others...	/	/

Question Six: Mobile Application and the Learning Environment

The rationale behind asking this question is to collect data on students' preferences on the environment they prefer to be in when using mobile applications for the learning of grammar, vocabulary, and Sentence pattern. As displayed in the above table, more than half of the participants (65%) tend to find learning in the classroom with their teachers and classmates the best setting for grammar vocabulary, and sentence pattern. They claim that the classroom setting help learners grasp the instructed input better than other alternatives. Some add that in the classroom they can call teachers' as well as mates' assistance, clarifications, and further explanations in situations where a potential gap takes place. Others maintain that because mobile applications are convenient and helpful to teachers at large and to learners in particular, being in the classroom is beneficial for learners to cope with immediate difficulty they may come across, and for teachers to explain and guarantee its usefulness and applicability among learners.

A least number of students (26%) opted for the first statement in which the classroom is their best and appropriate learning environment with teachers' assistance only. They justified their selection by mentioning the fact that the teacher has sound knowledge and potential skills in the language s/he is instructing, along with the idea that teachers have the necessary skills to teach with these applications. However, (7%) of the respondents selected statement "d". According to them, learning from home with teachers' e-feedback is their best learning environment. When they were asked to sitesome objectives, they mentioned that because learning is mobile in today's digital age, they find it challenging to adapt some changes in their learning practices to try e-learning.

Table 3.7. Mobile application and the learning environment

Statement	AF	RF
a-In the classroom with the assistance of the teacher	11	26%
b-In the classroom with the assistance of my classmates	00	00%
c-In the classroom with the assistance of the teacher and classmates	27	65%
d-At home with teachers e-feedback	03	7%
e-At home with classmates e-feedback	00	00%

Question Seven: Assimilating Grammar, Vocabulary and Sentence Pattern with Students' Field of Study

Concerning students' preference on assimilating grammar, vocabulary, and sentence pattern learning in connection with their field of expertise, all of them selected yes. Within the same question, the researcher purposefully required from them to provide some motives. In this light, some of them claim that when learning grammar, vocabulary, and sentence pattern with reference to their field of expertise, they find their learning much more motivating, challenging, and interesting. They add that, dealing with

sentences and phrases related to banking and insurance particularly help them learn them along with unfamiliar lexis and structures. Add to this, they highlight the fact that when the teacher exhibited known, simple, and familiar sentences as examples and activities out of their field, harm their understanding to apply the input and does not provide the expected output when it comes to doing or producing unexpected contexts, to a certain extent.

Question Eight: Students' Preferences on Ready-made Mobile Application Use for Grammar, Vocabulary and Sentence Pattern

Concerning their responses on their preference as to ready-made mobile applications for grammar, vocabulary, and syntax, the vast majority (6students) selected the yes option while the remaining 33 opted for no. When they were asked to identify the reason(s) behind their selection, interesting answers were given. Those who said that ready-made applications in learning the three skills is not their preferred application claim that the designer may take nearly all the aspects related to banking and insurance which in return hamper their understanding and make them confused. They add that although ready-made mobile applications in learning them align with their field of expertise, they do not meet their actual needs to a larger extent. However, regarding those who maintain that ready-made mobile applications in learning the aforesaid skills are their favourite, highlight the idea that since the application covers knowledge and information in the three skills and in their field of study, they find them interesting to adopt as their source to knowledge exposure. Others state that ready-made applications do not consume teachers' and students' time and efforts to lesson plan and understanding, respectively.

The remaining 2 respondents did not opt for neither yes nor no, but they provided their reasons. One of them simply put that it does not matter to whom the design belongs to as long as the content and the activities are related to banking and insurance. Similarly, the other one admit that it is interesting to learn from the others and to expend knowledge and information from ready-made applications.

Question Nine: Students' Preferences on Teacher's Mobile Application Design for Grammar, Vocabulary and Sentence Pattern Learning

When the respondents were required to reflect on whether or their teachers' mobile application best suit their grammar, vocabulary, and sentence pattern learning with reference to their field of study, almost all respondents (35) said yes while 6 opted for the no option. Those 6 students who regard teacher-made mobile application not interesting claim that they have faith on the fact that teachers are not competent to design applications to combine these skills into one application. Add to this, these respondents claim that even when an attempt is done in this concern, teacher are subject to focus on a particular reality, with slight negligence on the other one.

Regarding those who acknowledge that teacher-made mobile application best suit their grammar, vocabulary, and sentence pattern learning with their field of interest, has provided interesting answers. They said that the teacher is the one who knows his/her learners' level of English, interests, needs, and lacks which s/he takes all that into consideration to construct appropriate application. Some others admit that teacher is the one who has the qualifications to select, and organize contents in the application according to what his/her learners' level in the language (using delicate lexis and vocabulary s/he is sure that his/her learners will understand), which aspects to start with, and which ones to end up with. With regard to this, they add that the teacher who designed the application takes into consideration the Algerian context, therefore the knowledge presented and the type of activities used suit the learners.

Question Ten: Further Suggested Considerations

The last question is meant to recognize the research informants' recommendations to their teachers. Different responses were given in which some have been assigned to the pedagogy and others have been highlighted to other dimensions. To begin with, the respondents assert that teachers should change their state of mind and switch to mobile learning spirit to align with the requirement of the present information age. They add the idea that because English is significant in their studies and work place, grabbing their attention should always be taken into account because their job is to satisfy students' needs and expectations. Besides, the wide range of mobile applications in play store and

app store are most of the time free to access and download which are helpful for teachers to select and use according to the level of their students. They add the fact that they need to be active learners as most teachers do not invite them to take active roles. Therefore, they admit that when the teacher uses a mobile application, all learners are impulsed to use it and therefore active learning is possible.

3.2.2. Analysis and Discussion of the Structured Interview of Teachers

The researcher has designed a structured interview primarily to collect data on their perspectives regarding mobile devices use for instructional and educational devices for teachers and learners respectively in the ESP context. The structured interview as the term implies covers a definite number of questions which are not designed but asked while interviewing. Therefore, the structured interview as a whole gathers 49 questions. It covers two sections in which the first section begins with ESP teachers' profile to define their gender, ESP teaching experience with similar related information. The following section gathers questions that are grouped into three different rubrics namely: teacher's attitudes on the use of mobile devices in the classroom, mobile devices for grammar, vocabulary, and sentence pattern learning, and mobile applications for grammar, vocabulary and sentence pattern learning, respectively. Each rubric aims to collect data according to how the rubric is labeled. The number of the questions is practically similar for balancing between these rubrics.

Section One: Teacher's Teaching Profile

Question One: ESP Teachers' Gender

This question is designed mainly to identify the interviewees' gender. Consequently, 2 males and 8 females are interviewed.

Question Two and Three: ESP Teachers' Age and Teaching Position

As far as the interviewees' age is concerned, their age ranges from less than 35 years with (50%) to more than 35 years old with (50%). Regarding the second half of the question which concerns their position, half of them are assigned to be full-time teachers, while the others (50%) are just part-time in the department of Finance and accountancy, whereas one of them enjoy part-time role in the department of English as well. Those who claim that they are full-time teachers, they enjoy this role in the English department, while 3 of them have extra-sessions in different departments, namely: the department of science of matter, department of engineering, and the department biology.

Question Four: ESP Teachers' Educational Degree

Concerning the degree these research informants hold, the researcher comes to know that half of them (5 teachers) hold the doctorate degree, while 3 teachers are doctorate students. The remaining 2 participants hold the master degree.

Question Five and Six: ESP Teachers' Teaching Experience in the University and in the Department

When these participants were asked on their teaching experience period of time in the university at large and in the department, different responses were collected. As far as the duration in teaching at the level of the university, half of the participants (50%) maintain that they have between 10 to 15 years of teaching experience, while the remaining half mentioned they have experienced teaching English in the university for less than 5 years. However, those who reveal that they have more than 10 years teaching experience (5 teachers) maintain that they have only from 2 to 3 years teaching experience where English is taught for specific purposes. The remaining teachers who said that they have less than 5 year experience in the university claim that they have from 4 to 5 years teaching experience in the context where English is not the core concern.

Question Seven and Eight: Teachers' Teaching Level

This question is asked in hope to see what level the respondents teach. The gathered data reads that these respondents combine and switch between the levels they teach depending on the department they teach in. Some of them (5 teachers) reveal that they deliver knowledge in the English department to L1, L2, L3, M1, and M2 while they deliver language specific content, i.e., in the ESP context, to L1, M1, and L3 for Management and Accountancy, Finance and Accountancy, Biology, Science of Matter, and Electrical and Electronic Engineering students. Whereas the remaining 5 instructors, 3 of them teach L1 and L2 students in the English department, and teach L1, L2, L3, M1, and M2 where English serves specific needs. The 2 others teach L1, L3, and M1 in ESP contexts to students of Finance and Accountancy.

Question Nine: Switching between Fields among Teachers

When this question is asked, interesting results were obtained. All teachers said that they switch to different fields in order to come across different levels and different lectures, while another one maintains that it's always challenging to try new experience, and the other teacher reveals that she needs ESP learners to conduct her doctorate research. Some said that because the ESP context is an appealing area where English is taught to serve particular needs and requirements, living this experience broadens teachers' knowledge and makes him/her subject to discover other aspects and information s/he is not familiar with. Another teacher claims that before enjoying the role of full-time teacher, she used to switch but after being recruited, she finds switching destructing as the time load does not suit her to try other fields.

Question Ten: Teaching Material Design among Teachers

This question is purposefully asked to collect data on the initial steps the interviewees take when in syllabus design. The interviewer suggests possible alternatives for them to select and /or add others. All teachers conduct needs analysis to syllabus design arguing that it is the first step which should be taken into consideration mainly in the ESP context. Concerning the remaining steps, 4 teachers mention that negotiating the content with other teachers, and downloading some lectures from the internet are other steps which help in syllabus design. None of them opted for adopting former syllabuses and adapting other university's syllabus. When the researcher asked them why not these, they state that these steps are not convenient to take them into consideration as these learners have particular needs different from others. Besides, they assert that adapting other university's syllabus may not meet their learners' needs and therefore putting these alternatives aside and focusing on the ones mentioned is a wise move to keep track with the current situation. While, 4 teachers add that they collaborate with subject specialists as their contribution is of paramount important for successful syllabus design.

Question Eleven: Students' Appreciation to the Taught Contents

The intention from this question is to see whether students are satisfied with the contents they are learning. All teachers claim that their learners are pleased with the course they have. The interviewer raise attention to what makes teachers sure about their answers, and the interviewees respond that their students are always present, asking questions which indicate their motivation, taking part in the lecture. Some others (6) claim that they are satisfied because the contents work with the target and the learning needs. 1 teacher says that her learners are appreciating what they are learning because of the use of web-retrieved materials which makes them highly motivated to learn.

Question Twelve: Teachers' Teaching Material

This question is addressed mainly to collect data on which teaching materials they use in their teaching practice. From the total number of the interviewed teachers, 7 of them claim that they use black/white board, handouts, and PowerPoint, while the remaining 3 instructors opted for black/white board and handout claiming that these two materials are commonly used. When they interviewer asked them to voice out the teaching material they use the most, all most all of them(08) state that the black/white board is their teaching material they find themselves using it the most. 2 teachers mention that handout and black/white board in combination are the most used materials when they instruct.

Question Thirteen: The Best Teaching Material for their Learners

The purpose behind this question is to identify the teaching material teachers believe that it suits their learners the best. 6 teachers mention that black/white board is the best for their learners maintaining that their learners may feel comfortable and accustom to it. Others (4 teachers) state that black/white board with video is the best material their learners like because they have the habit to read and learn from it.

Section Two:**Rubric One: Teacher's Attitudes on the Use of Mobile Devices in the Classroom**

This rubric in the interview is meant to collect data on teachers' attitudes and perspectives regarding the use of mobile devices in their classes. The researcher encloses a number of questions and inquiries to meet the intention.

Question One: Identifying Teachers' Mobile Device

This opening question is asked to introduce to the interviewee which type of mobile they have. All of them mention that they have PCs and Smartphones, with Windows and Android as their operation system, respectively.

Question Two: Didactic Use of these Devices

This question is addressed to see if teachers make use of their personal mobile devices for didactical purposes. Varied answers were given in which all of them claim that they do use them for didactical purposes with some restrictions and according to different situations. 5 of them mention that they use only their PCs to deliver knowledge while they use their smartphones to check word meaning and or spelling in the online version of dictionaries. They add that they use smartphones to read and share lectures with their colleagues, send email, and other similar tasks. Others state that they use smartphones to download educational apps and ask their learners to download them in order to use them in future assignments.

Question Three: Smartphones in the Classroom

A yes/no question was asked to know teachers' perception in the possibility of using smartphones in the classroom setting. All teachers said yes.

Question Four: Smartphone Frequency in the Classroom

Smartphone frequency in the classroom is another inquiry the interviewer voiced out. After analyzing what sort of findings is collected, distinct alternatives were selected. As displayed in the table below, almost all teachers (8) claim that their use is very interesting. They rationalized the fact that because these learners are grown up in the digital age where their use is not of exception, exploiting the opportunity to use them in the classroom setting make them more aware of their role in education and shorten their conception of smartphones to be only used for other social and personal reasons. Besides, these devices are motivating and helpful for learners to get engaged and enjoy their practices. The remaining 2 teachers approach their use in the classroom as “fair enough” in which their use could not always be useful as there is the possibility to be destructed devices in the teaching learning process at any time because teachers cannot one-hundred percent ensure the control of all students’ devices usage. The other one states that their use could only be restricted to check word meaning, word spelling and word translation. The remaining alternatives are not picked up by the interviewees.

Table 3.8. Smartphone frequency in the classroom

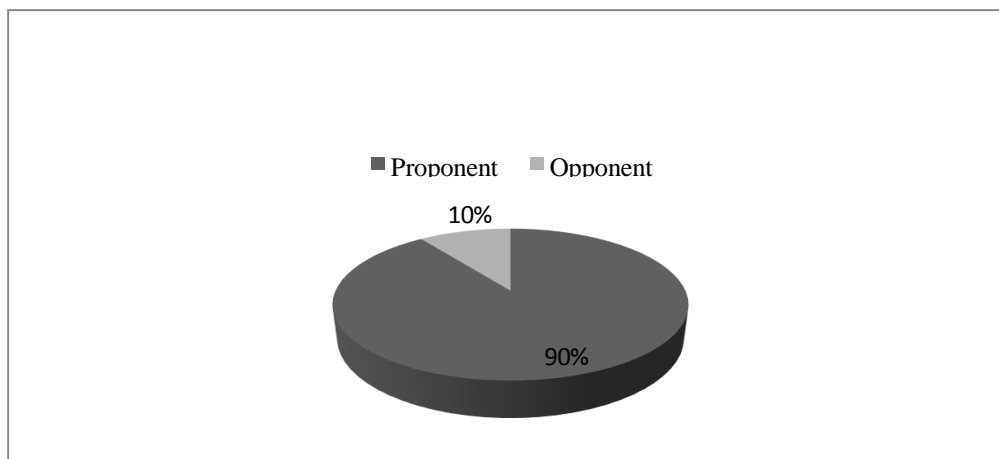
Frequency	AF	RF
Not interesting	00	00%
Interesting	00	00%
Fair enough	02	20%
Very interesting	08	80%
Tremendous	00	00%

Question Five: Teachers as Proponent or Opponent Agents

The interviewer designed this question with the aim of detecting the interviewees’ state of mind in being either proponent or opponent teachers for mobile use in the classroom. As reflected in the above pie chart, 9 teachers regard themselves proponent to their use in the classroom, while one teacher does not. Proponent teachers mention that mobile devices are flexible to almost all domains, contents, and fields and hence their use is of paramount significance. They add that it is high time to use these devices for

learning and teaching purposes. It is also claimed that these devices are motivating, help teachers and learners to economize time and efforts, minimize paper pencil assignments and make students and their teachers up-to-date.

One adds that due its functionality affordances they give, their use should not extensively used; meaning that is needs to be employed under certain conditions. These conditions range from time allotted to its use, assignment type, number of students, and internet access. However, the one who claims that she is an opponent instructor maintains that she prefers students to use it outside the classroom to further their own learning or to help them become autonomous learners. Yet, if they are used inside the classroom, there is high possibility to harm their learning and understanding to the lecture.



Pie Chart 3.6. Proponent and opponent teachers to mobile devices in the classroom

Question Seven: Effects of Smartphone Use among Students

The researcher adds this question to further ensure the interviewees' responses when these devices are used by their students. Findings indicate that all teachers have categorized mobile devices effects as positive and negative effects. As far as the positive effects are concerned, most of them state that:

- It helps them to be autonomous, develops their reflection in the sense that they can use it outdoors to further their comprehension and overall understanding.
- Motivates both teachers and learners in lesson flow.
- Encourages students to be active and take part in the lecture.
- Does not require students to spend money to do copies and print handouts Concerning

the negative effects it may bring, the respondents claim that:

- It reduces students' attention to their teachers' instructions.
- Destroys the classroom environment for instance creating a mess when students ask themselves about the activity number or page number... or when checking answers.

Question Eight: Students' Wants as to Learning with Smartphone

This question is designed to see whether teachers know the concept of "students' wants" first, and take their wants into consideration, second. Findings indicate that all teachers mentioned that because the wants is a significant concept in ESP in general and in ESP course design in particular, taking into consideration their wants is what ESP instructors should examine. Hence, they state that if their wants is to use their smartphones while in learning, they are in need to take it into account.

Question Nine: Teachers' Expectations on Smartphones Use among their Students

The researcher designs this question in hope to collect data on what expectations teachers would have when students make use of their smartphones in learning English. In order to guide to certain extent the interviewees' focus in answering this question, possible alternatives are put forward. The interviewer highlights these choices for them to select and request to assert other according to what they see and believe. Findings of this question are summarized in the following table.

As displayed, all teachers ranked statement "d" as the first expectation believing that using smartphones in the classroom bring learners into a new learning environment which make them motivated to learn English. The latter is then ranked the second in which two teachers add the idea that bringing change in the situation, especially making it more stimulating, students' motivation is activated and therefore they will be in one way or another engaged in the classroom. The third statement is put and these two teachers refer to it without being stated by the interviewer. In parallel, the others opted for it because learners' engagement is not witnessed in the ESP context as required, so allowing and or using them in the classroom to perform tasks makes them evolved in the learning process. Statement "f" is ranked the fourth by 6 teachers in which when this device is used, learning is personalized to them. That is to say, learners regard learning with smartphones as personal and individual which dictate that "owning" their learning is similar to owning their smartphones.

Table 3.9. Teachers' expectations on smartphones use among their students

Statements	Ranking	Number of Teachers/ Percentage
a-Motivate learners to learning	2	(80%)
b- Act well for life long learning	5	(50%)
c-Destruct learners from learning	/	/
d-Bring learners to a new learning environment	1	(100%)
e-Help learners to get engaged in the learning process	3	(70%)
f-Make learning personalized	4	(60%)
g-Do not correspond with their learning styles	/	/
h- Their screen size make them uncomfortable to take them as a learning tool	/	/
Others...	/	/

Question Ten: Smartphone Frequency in the Classroom

In asking this question, 7 teachers mentioned that smartphones should be used sometimes, while the 3 others find it to be used very often.

Question Eleven: Teachers' Attitudes on Using Mobile Devices in Teaching Practices

The last question in this rubric seeks the respondents' perspectives in using mobile devices in the classroom. Teachers showed agreement to a large extent as to the use of mobile devices in the classroom for learning purposes. Taking into account each statement, most of the respondents display strong agreement with the notion that old/veteran are not ready to adopt mobile devices into their teaching practices. This is rational and possible to be accepted as they are named as digital emigrants who are considered emigrants in today's digital age. However, what is interesting is that most of them (08) showed a moderate agreement as to the fact that mobile devices are distractive sources in the teaching learning process.

One of the participants claimed that they behave in such a way because the teacher cannot extremely ensure that the students are learning. Another teacher mentioned that though they are important tools to benefit from, they are in a way inappropriate tools during the class as today's students are uncontrollable with or without this device. Yet, they reflected total agreement with the notion of training. That is, teachers showed positive attitudes in using learners' own devices for learning, but if training is delivered to them, then their acceptance is subject to be generalized. Almost all of them (09) are motivated to adapt MALL as an approach into their practices. Three of them insisted on the aspect of training, as they mentioned that training, regardless if it is online/face to face or long-term or short-term, is gives teachers the bases in their implementation.

They showed strong agreement when they were asked if these devices help shy and weaker students in lesson engagement. They elaborated this aspect by voicing out that in the ESP classes, a very limited number of student participate in the lesson delivery, and when they assigned some students to answer a particular question/enquiry they respond correctly. Teachers stress the fact that their classes are full of students who are shy and weaker, and by allowing them to use their personal devices, they are subject to get engaged, even if their responses are not correct or what the teacher is expected to hear.

Nevertheless, most of them (07) claimed that they are not possible for classroom management. They elaborated that if the students are numerous and classes are overcrowded, it is less possible to manage the classroom, and hence the learning. The issue of crowded classes is evident and highly noticed in today's tertiary classrooms. Therefore, classroom management is assimilated to learning management and hence managing the classroom remains a wish to them. Indeed, almost all of them showed strong agreement to the fact that mobile devices are tools that meet today's learners' interests and they are tools that both students and teachers can benefit from. Such a conception dictates that mobile devices, though they have some limitations, remain positive and interesting tools to be used in today's classrooms.

Almost half of the participants showed agreement that because learners are found dependent on their personal portable devices, exploiting such a relationship would benefit

in starting considering them as learning tools. Most of them said that such exploitation is for those students who may feel less confident in learning the language and or not motivated. One of the participants mentioned that this relationship is appreciated due to social media effects. In other terms, the advent of social media and the non-stop of text messaging and the endless sharing of new updates the whole world is witnessing, students are found curious to be the first to get informed at any change. This behavior generates other horizons and becomes through time a daily practice to check user's personal device anytime anywhere.

In the last statements whether respondents are required to give credits as to the notion that even though the device is first designed to fulfill personal needs, it could be used for educational purposes, all of the participants showed agreement. These findings are expected because the actual situation reflects that. When visiting any classroom, you are expected to find some students using their mobile devices either to learn or entertain. The fact of carrying their devices, then the fact of using them to solve a particular reality in the classroom is welcomed. Their responses are grouped in the following table.

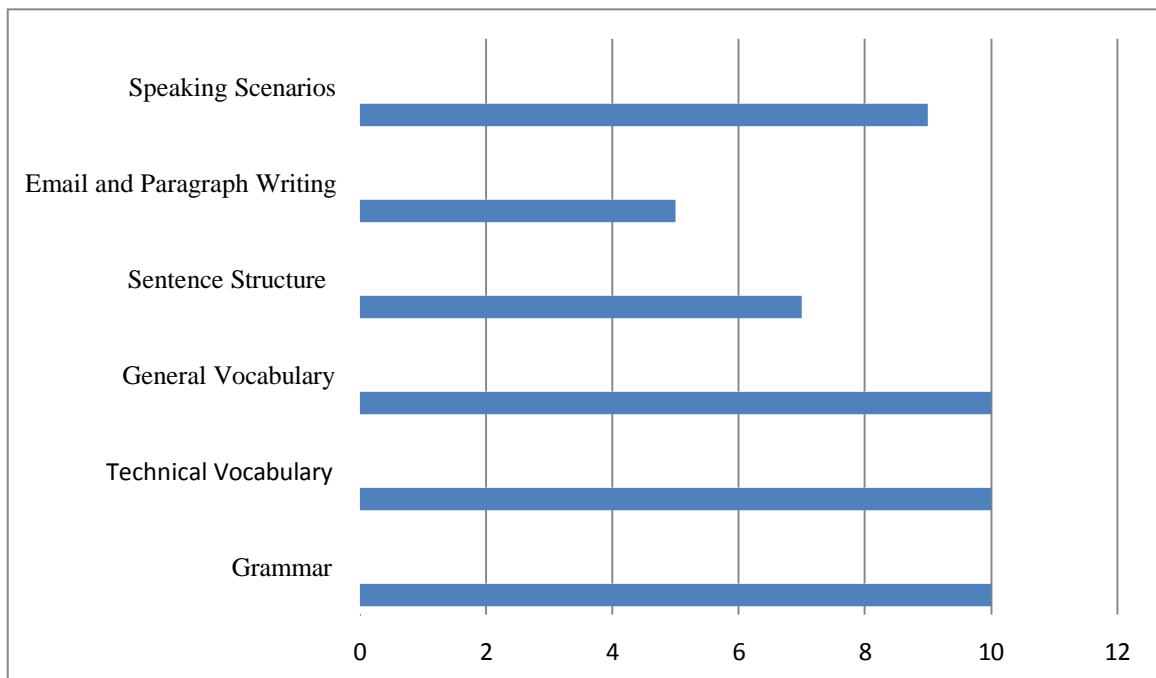
Table 3.10. Teachers' attitudes on using mobile devices in teaching practices

Statement	SD	D	A	SA	Don't know
-Veteran teachers find it difficult to adapt to smartphones usage in the Classroom			02	08	
-Smartphones in the classroom destruct teacher in the lesson flow			08	02	
-Teachers are reluctant and feel uncomfortable to mobile devices in the Classroom		08		02	
-Teachers welcome the fact of using mobile devices in the classroom but need training				10	
-Teachers are motivated to adapt another approach (MALL) to language Teaching		01	09		
-Mobile devices particularly benefit weaker and shy students to lesson Engagement				10	
-Mobile devices help teachers in classroom management	07	02	01		
-Mobile devices meet today's digital natives needs				10	
-Mobile devices are key tools both teachers and students can benefit from			01	09	
-Students are dependent on their mobile devices that could help teachers bridge them together for educational purposes.			06	04	
-Though hmobile devices are designed for personal uses, they could be used for educational purposes.			10		

Rubric Two: Mobile Devices for Grammar, Vocabulary, and Sentence Pattern Learning

In this rubric, the intended data to be gathered is related to the personal device for grammar, vocabulary and sentence pattern. The opening questions in this rubric aim to find out teachers' practices in their ESP teaching, mainly the teaching of grammar, vocabulary and sentence structure in relation to using and or implementing mobile devices. The researcher started this section by collecting data on the content these teachers use when teaching their ESP students of different needs, and based on the suggested alternatives, all of them opted for teaching them some grammar aspects, technical and general English, but in terms of sentence pattern, not all of them selected it (only 7). However, the remaining teachers said that it is taught at the same time when they expose them to email writing, and similar related pieces of writings.

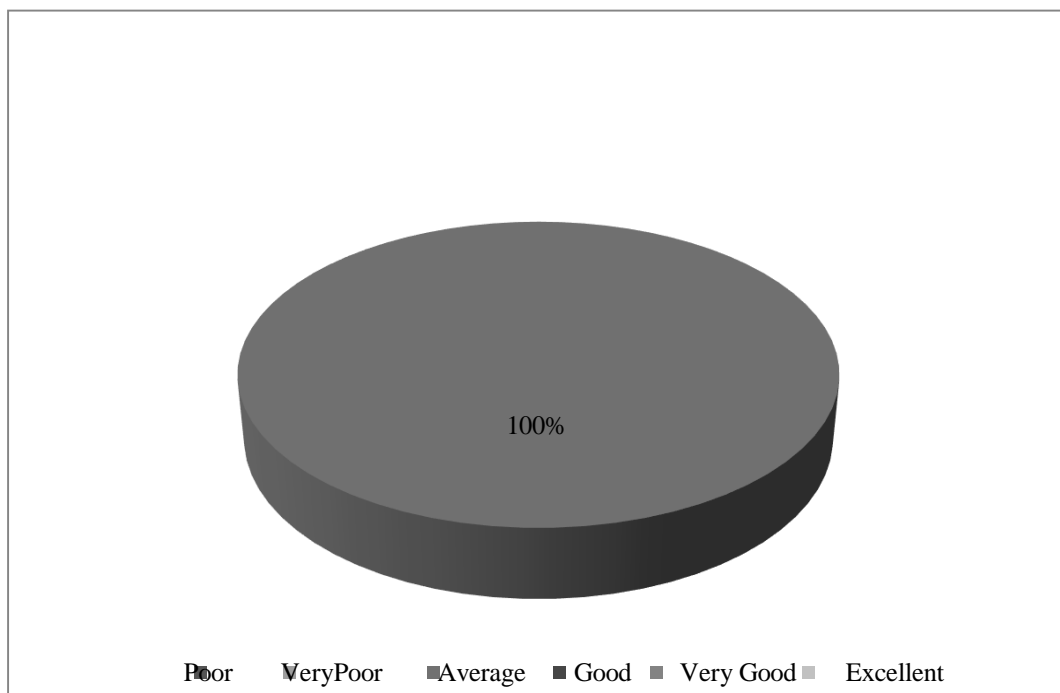
When they were asked to rank the alternatives from the most important to the less, the firm claim they have raised is that all of them are important to be taught to these learners. That is, all of them ranked grammar, technical and general vocabulary the first. This is anticipated because grammar and vocabulary are not separated and they are in no way important aspects to get involved in ESP teaching syllabus. Most of them focus on the speaking skill as both learners and teachers are interested in its acquisition. In terms of sentence pattern, they claimed that it is not heavily instructed because it could be taught within teaching some pieces of writings like emails and paragraphs.



Graph 3.9 . Teachers’ teaching content

Question Three: Students’ Actual Performance in Sentence Pattern

Teachers were asked on the present competence students are in sentence pattern. All of them regard their level as average.



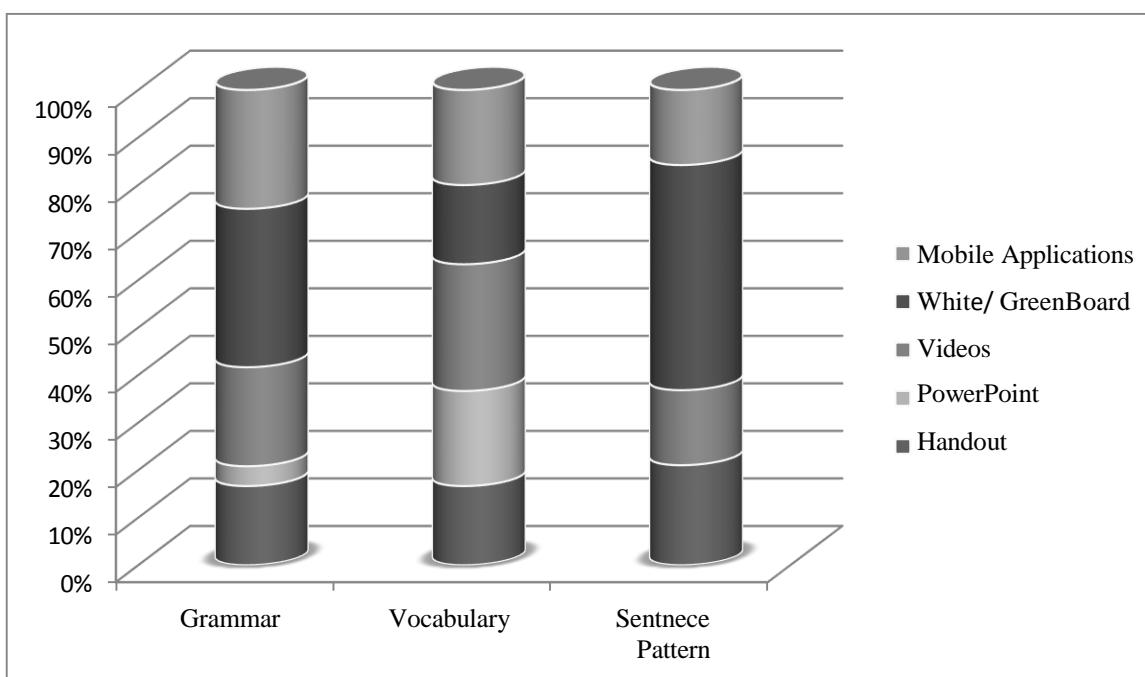
Pie Chart 3.7. Students' present performance in sentence pattern

Question Four: The Importance of Grammar, Vocabulary and Sentence Pattern

Total agreement has been achieved among teachers on the fact that the three studied language aspects are important for ESP students. They mentioned that they are important because any language reality is important for students regardless of their stream of interest. Others revealed that because they need English to serve their needs (target situation), learning them is the ground to build their knowledge upon.

Question Five: Teaching Materials for Grammar, Vocabulary and Sentence Pattern

Teachers, actually, reflected various teaching materials they use in the teaching of grammar, vocabulary and sentence pattern. It appears that teachers used the traditional method in teaching grammar vocabulary and sentence pattern. As reflected, high percentage is devoted to teaching sentence pattern, followed by grammar teaching and then vocabulary. Mobile apps took minor importance in teaching these three language skills. This is evident as teachers are not yet trained or get used to adopt them in their teaching practices. However, they are using a sort of innovation in their practices, mainly in using PowerPoints and videos. The following representation summarized the collected data.

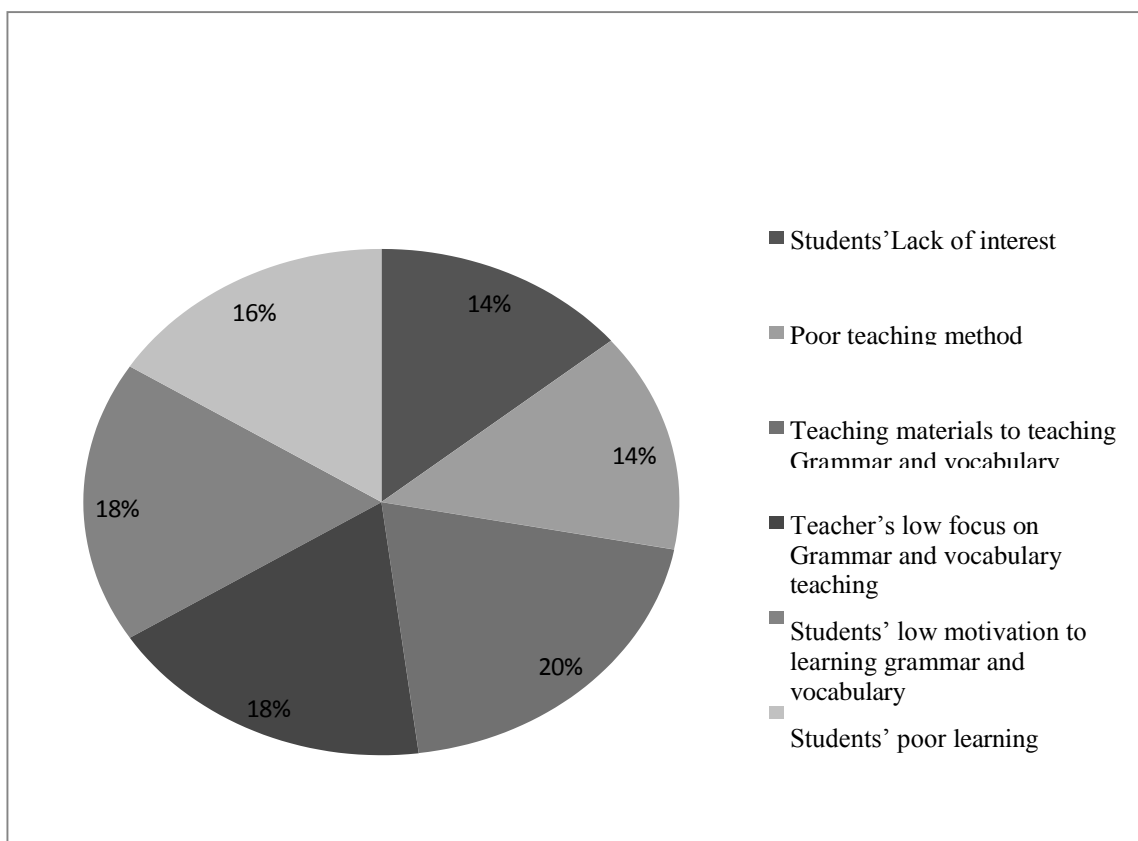


Graph 3.10. Teaching materials for grammar, vocabulary and sentence pattern

Question Six and Seven: Students' Actual Performance in Grammar and Vocabulary and Reasons for their Performance.

All teachers claim that their students are quite poor in grammar and vocabulary due to a number of reasons. Indeed, the researcher provides some common reasons for students' poor performance wherein the respondents may select from. The following figure summarizes their responses.

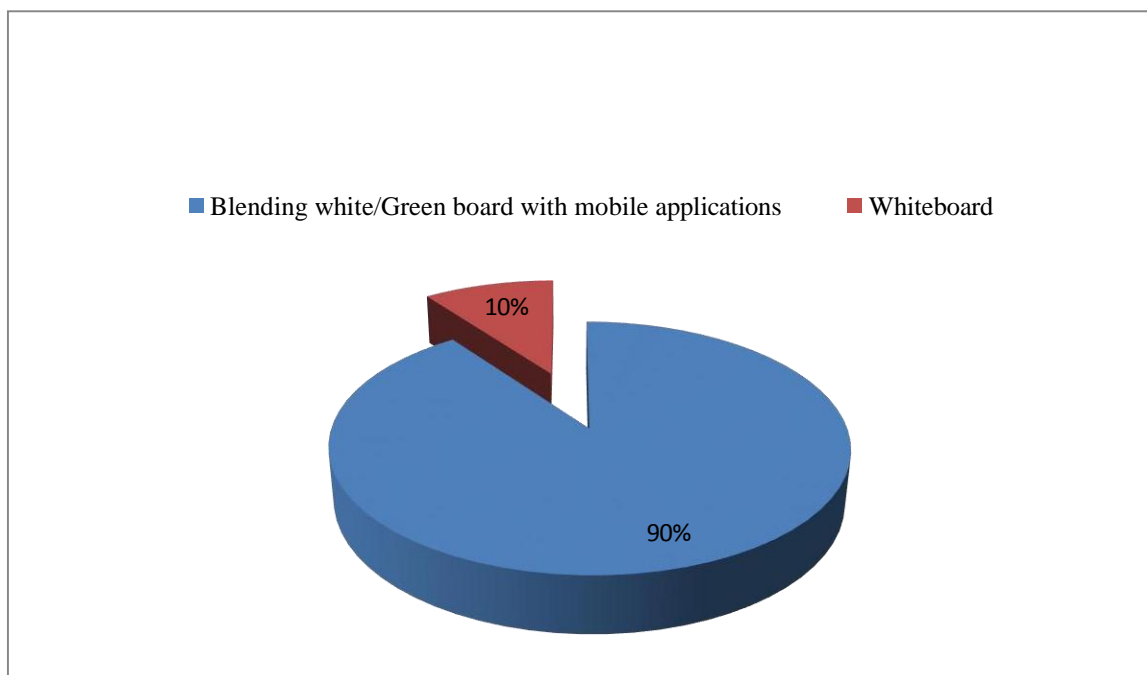
The presented alternatives appear to be the most common reasons for students' low performance in grammar and vocabulary. The most common reason is related to the teaching materials teachers use in grammar and vocabulary teaching. This is evident in their previous responses when they were asked to reveal the teaching materials they use in grammar and vocabulary. Because they responded as using traditional materials, the most reason behind their poor performance is expected. The other reasons are also significant because students' lack of interest, poor teaching method, teachers' low focus on teaching them grammar and vocabulary, along with students' poor motivation in earning grammar and vocabulary and the learning performance took large portion among the respondents.



Pie Chart 3.8. Reasons for students' poor performance in grammar and vocabulary

Question Eight: The Best Teaching Material for Grammar, Vocabulary and Sentence Pattern

In this question, the respondents were required to select, according to their knowledge/experience, the best teaching material(s) for grammar, vocabulary and sentence structure teaching. Almost all the respondents claimed for the blending system of white/green board and mobile applications; that is combining both methods when in teaching the three language competences. But what is interesting is that they showed preference to using mobile applications over the traditional method of teaching. Only one teacher finds the white board influential in teaching grammar, vocabulary and sentence structure. He claimed that the white board still remains significant for students' concentration especially in teaching the system of the language. He showed acceptance and enthusiasm to mobile applications, but his interest turned to the traditional method of teaching.



Pie Chart 3.9. Best teaching material for grammar, vocabulary and sentence pattern
Question Nine: Teachers' Belief as to Teaching Grammar, Vocabulary and Sentence Pattern through Mobile Applications

This question is intended to discover whether grammar, vocabulary and sentence pattern are best taught with mobile apps. All of the participants said “yes”. They claimed that they enable learners to learn on the go and in an authentic context. This is to indicate that mobile applications invite the learners to use the language in its relative context. This environment motivates learners to learn.

Question Ten: The Extent of Mobile Device in Grammar, Vocabulary, and Sentence Pattern Instruction

The respondents were asked to show the extent to which mobile devices serve grammar, vocabulary and sentence pattern learning. The researcher presented a number of possible answers to select and to add others according to the interviewee's prior knowledge and experiences. Based on the suggested alternatives, almost all the participants regard their use as:

- a- Students are dependent on their mobile devices which may act well in building habits to use it for the learning of grammar, vocabulary and sentence pattern.

- b- Mobile devices motivate learners to learn grammar, vocabulary, and sentence pattern.
- c- It is an innovative way to learn and acquire some language aspects mainly in grammar, vocabulary and sentence pattern.
- d- Mobile devices are portable and can help in learning the three anywhere.
- e- Learning grammar, vocabulary, and sentence pattern constantly encourage students to take advantage of their mobile devices for educational purposes.
- f- Mobile devices are effective tools for students to memorize and retrieve since these devices accompany them very often.

All of the participants selected these choices because, as claimed, they all facts and are also based on research. Despite the fact that the one who showed partial agreement in using these devices in his teaching practice, he showed satisfaction.

Rubric Three: Mobile Applications for Grammar, Vocabulary and Sentence Pattern Learning

This rubric is addressed to collect data on using mobile apps for grammar, vocabulary and sentence pattern. It actually covers a number of questions. The first question aimed to gather data on whether they know some of mobile apps either in grammar, vocabulary or sentence pattern. Only three of them have provided some names, like: Duolingo for building skills in grammar and vocabulary, British Council grammar for grammar learning, and English sentence master app. The others claim that they cannot recognize some names but they proclaimed that there are countless apps for these purposes.

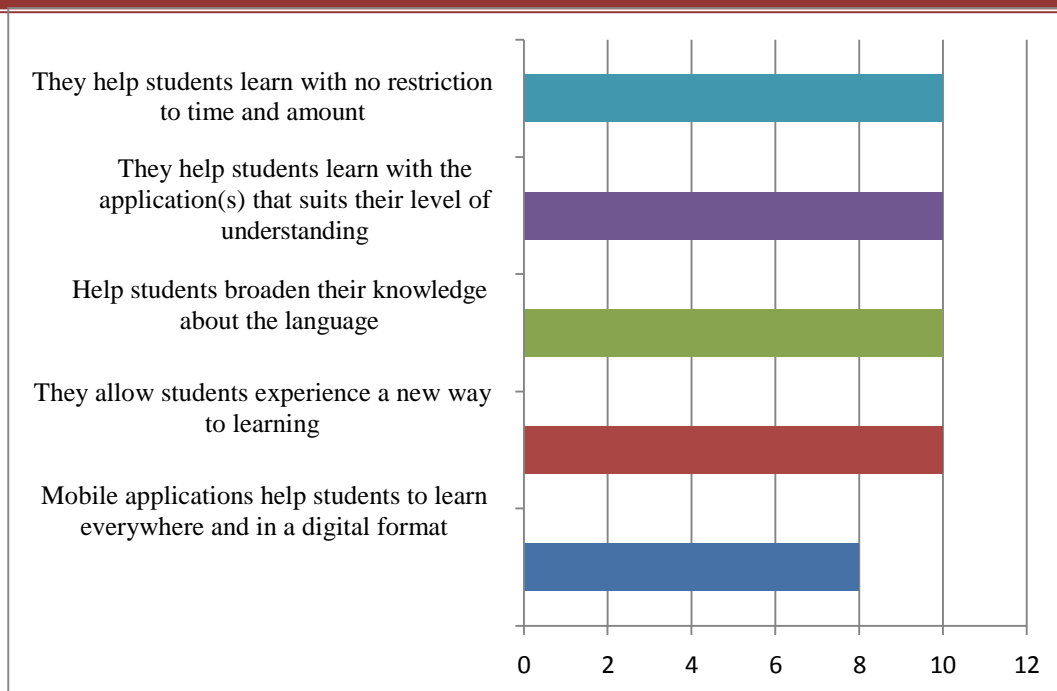
Question Two, Three and Four: Mobile Apps for Grammar, Vocabulary and Sentence Pattern Learning

In this question, they were assigned to share their belief as to using mobile apps for grammar, vocabulary and sentence structure learning. All of them said that they find their use effective for the stated purposes.

Question Five: The Extent of Mobile Applications to Improve Students' Grammar, Vocabulary, and Sentence Pattern Learning

When this question was raised and after presenting some relevant choices for them to select from, the following information was collected, in which teachers are positive to mobile apps to grammar, vocabulary and sentence pattern learning. All of them find them helpful sources to learn with little to no restriction to time and amount. They also regard them useful to satisfy each learner's level of understanding. Most of them said that this is important because students are not limited to one or two apps to learn, rather they can use the app that suits them and corresponds to their actual level in the language. At the same time, they can broaden their knowledge in the language by learning other sentence patterns and new immense amount of vocabulary.

The most important aspect they all agreed is that they help learners experience new way to learning. They elaborate this aspect claiming that the mobile learning environment and the use of apps are what these digital natives aim to experience as they are no more relaxed and satisfied with the mode of learning they are living. The fact that they are informed and why not convinced that mobile learning environment with this use of apps exist, then they are aiming to live this experience very soon. Add to this, mobile apps enable them learn on the go in a digital format.



Graph 3.11. The Extent of mobile applications to improve students' grammar, vocabulary, and sentence pattern learning

Question Six: Adapting/Adopting Mobile Apps for Grammar, Vocabulary and Sentence Pattern

This question is designed to test teachers' acceptance or rejection as to adapting and or adopting mobile apps to instruct grammar, vocabulary and sentence pattern. Most of them showed acceptance, but they claimed that the use of the app should be based on the faculty or the department. That is, they explained that they are not trained or have any sort of information on the criteria to select the apps, and because of this fact, the apps should be put forward by the committee and the stakeholders.

Question Seven: Online/Offline Apps Preference

Teachers regard this question important because most of them preferred offline apps for a number of reasons. First, online apps do not require a mobile device to be connected to a network or WiFi, which means that the mobile device is devoted to serve the task learners are assigned to. In this way, learners have no ways to tolerate any issue related to the app or the network. More than that, they can accomplish their tasks even in areas where it seems impossible to have the app and learn. They add that the internet found in the faculty is of poor quality and its access is still an issue. They also uncovered that offline apps keep the students focus for a long period of time, as they cannot read or

share notifications and contents (either on FaceBook or Snapchat,...). The same teachers shared the idea that when they are previously informed that the app necessitate no internet, they come ready and prepared to learn the presented knowledge. What is interesting is that offline apps reduce noise and unwilling behaviours and increase students' engagement in a moderate rate.

However, the other teachers prefer online apps and they gave various answers. To begin with, they find that online apps enable learners to switch between and among different apps to realize particular outcomes. Besides, online apps are popular and have wide audience among today's digital natives. Online apps allow learners receive immediate feedback and they respond positively as such. Moreover, online apps motivate learners to join the class and accept the learning because they are used to work and operate their personal devices with 3G or 4G. Online apps help learners to get engaged in the learning process especially in vocabulary learning. Although their engagement may appear less positive, as long as there will be positive results, the app is appreciated.

Question Eight: Grammar, Vocabulary, and Sentence Pattern Teaching with Reference to Students' Field of Study

Teachers showed total agreement with the fact of relating the content of grammar, vocabulary and sentence pattern to their learners' field of interest. They raised that when students feel that their teacher is doing efforts to teach them these language aspects in relation to their stream will motivate them to learn and continue learning. The more the teacher does efforts as to these learners, the more learners are learning and getting motivated, involved and more interested. In this way, they can generate similar constructions and by and large their learning will be effective. Another teacher claimed that this is the actual role ESP teachers should enjoy because it makes part of what is called discipline specific knowledge. The initial step in course design, finding out students needs and wants is a requirement and therefore, it is important to take this fact into account.

Question Nine: Use of Ready-Made or Self-Designed Mobile Applications to Teaching Grammar, Vocabulary and Sentence Pattern

The vast majority of teachers (8) claimed for using self-made app in teaching grammar, vocabulary and sentence pattern, and they presented various arguments. At first, self-design app is designed according to what needs analysis process reflects. Consequently, the teacher can teach what his/her learners are lacking and interested in. In addition, self-designed app motivates learners to take it because they feel that the app is designed only for them. In this way, they regard their learning personal and more specific which sustained strong motivation and engagement. Another participant went for self-designed app as they indicate successful teaching practice and enable them to sense true ESP.

Yet, the other who opted for ready-made apps claimed that these apps are designed by specialists who are aware enough about the situation. They strongly stressed the idea that it does not require efforts and time because designing them themselves necessitates time and efforts. More than that, ready-made apps allow teachers to respond to current and immediate needs especially if the instructor has limited time.

Question Ten: Teachers' Expected Challenges in Designing a Mobile Application to Improve Grammar, Vocabulary and Sentence Pattern

In this question, teachers were required to select and or add the expected challenges in designing a mobile app to teaching grammar, vocabulary and sentence pattern. The researcher displayed some possible alternatives. Teachers' responses that the big challenge for them is the effort and time mobile app design may take. In their former responses, they showed that self-app design is better and based on students' needs and wants, but because they are not trained or have any sort of experience in this respect, they regard time and effort two parameters to either succeed or fail in its design. Among the challenges they have selected is that because it calls students and teachers to act different roles to its design, the, its design is in a way impossible or subject to failure. They elaborate that coordination among the teaching staff is not well as expected, because they appear not interested to develop those skills among their learners claiming that it is too

late and redundant. They also stated that they have little faith on their students to support such a perspective because only minority students show motivation to learning those language aspects. Their responses are presented in the following table.

Table 3.11. Teachers' expected challenges in designing a mobile application to improve grammar, vocabulary and sentence pattern

Statements	Teachers' Responses
Mobile application design to teach the Three is cost effect	10
Teacher's mobile application design helps teachers meet their students' expectations in terms of using their mobile device to learning in parallel to improving their grammar, vocabulary, and sentence pattern knowledge.	3
Teacher's mobile application design motivate learner to learning the three	5
Teacher's mobile application design enable learners to get engaged in the learning process	7
Teacher's mobile application design Requires time and effort	10
Teacher's mobile application design Invites students and teachers to combine efforts to positive outcomes	8
Teacher's mobile application design help teachers assess students progress to grammar, vocabulary, and sentence pattern learning	9
Teacher's mobile application design calls teachers and students to act different roles as tutors and active agents, respectively	10

Teacher's mobile application design help teachers ensure students' needs, lacks and wants and promote digital literacy	10
Teachers are skeptical to designing mobile applications to teaching grammar, vocabulary, and sentence pattern due to the lack of training and unfamiliarity to mobile devices	10

Question Eleven: Further Additions

The researcher ends the structured interview with a closing question requiring them, willingly, to add other additions as to the studied issue. Not all of them answered this last query, but some of them do. Those who answered this question highlight that the idea of integrating mobile devices in learning sounds very interesting but it needs:

- ❖ Ground preparation
- ❖ Teacher approach change (adaptation)
- ❖ Learners' consciousness

Another instructor mentioned that teaching ESP is a hard task. Therefore, it should be taught by specialists who are well-trained. Teachers should rely on innovation, creativity and variation and avoid routine. An interesting response has been given is that the field of English language teaching and learning is not as similar as scientific fields that are considered as productive sectors the government needs and supports. Put differently, if combining both productive sectors like engineering, for example with non-productive sector like English in this respect, then the non-productive sector would become productive and hence the government may rely on and support it. Combining or blending efforts to give a genuine structure is a significant leap that deserves a stare.

With regard to the above gathered data from the questionnaire and the structured interview with students and teachers, respectively, the following sections display the analysis of pre-test and posttest to find out the impact of the intervention outlined in chapter four.

3.3. Pretest Results for both Groups

The present table encompasses the results obtained from the pretest analysis. The researcher grades the test in order to measure the correct answers.

Table 3.12. Students' pretest scores in grammar, vocabulary and sentence pattern

Students	Pretest Scores	Scores in Grammar	Scores in Vocabulary	Score in Sentence Pattern
1	22	10	08	04
2	10	04	04	02
3	18	09	06	03
4	27	15	8	04
5	08	06	00	02
6	32	18	09	05
7	35	16	12	07
8	05	00	05	00
9	22	07	09	05
10	12	08	04	00
11	15	08	04	03
12	20	10	06	04
13	23	14	02	07
14	26	10	09	07
15	30	10	10	10
16	17	07	05	05
17	21	06	12	03
18	23	10	07	06
19	26	11	08	07
20	11	04	02	05
21	19	06	07	06
22	10	06	04	00
23	05	03	01	01
24	29	16	07	06
25	13	09	04	00
26	16	06	06	04
27	10	05	03	02
28	11	07	00	05
29	19	10	07	02
30	21	00	13	08
31	19	09	08	02

32	07	02	05	00
33	16	07	06	03
34	23	12	11	00
35	13	08	04	01
36	25	10	09	06
37	17	06	07	04
38	33	17	11	05
39	20	09	09	02
40	12	06	03	04
41	16	10	06	00
<i>Mean:18.48</i>				
<i>SD:07.50</i>				

As reflected, the pretest analysis showed that the vast majority of students are poor in vocabulary and sentence pattern, and when compared to grammar, it wasn't the case. That is, some students showed average competence in grammar as they have selected the correct choice from the proposed presented choices. Yet, some of them showed minor competence in grammar, as displayed in the below table:

Table 3.13. Students' pretest grammar average score

Student	Average Score in Grammar/20
1	10
2	15
3	18
4	16
5	10
6	14
7	10
8	10
9	10
10	11
11	16
12	10

13	12
14	10
15	17
16	10

3.4. Posttest Result of both Groups

The following table summarises students' results after the intervention for both groups.

Table 3.14. Students posttest score in grammar and vocabulary

Students	Control Group Posttest Scores/20		Students	Experimental Group Posttest Scores/20	
	Grammar/10	Vocabulary/10		Grammar/10	Vocabulary/10
1	05.00	03.50	1	07.00	08.00
2	08.50	06.00	2	05.50	07.50
3	09.00	04.00	3	09.00	09.00
4	04.00	04.50	4	04.50	08.50
5	08.00	06.50	5	07.50	10.00
6	03.50	04.00	6	08.50	09.50
7	07.00	02.50	7	06.00	08.00
8	03.00	00.00	8	07.00	07.50
9	05.00	05.50	9	09.00	08.00
10	07.50	03.00	10	05.50	09.50
11	10.00	09.00	11	04.00	07.50
12	09.00	07.00	12	03.50	07.00
13	04.50	03.50	13	10.00	10.00
14	08.00	05.50			
15	07.00	04.50			
16	05.50	03.00			
17	03.00	01.00			
18	06.00	03.00			
19	02.00	04.00			
20	04.50	03.50			
21	06.00	06.50			
22	01.50	03.00			
23	07.50	07.00			
24	04.00	01.00			
25	04.50	04.50			
26	10.00	06.00			
27	07.00	04.50			
28	05.00	03.50			
<i>Mean:</i>	<i>09.66</i>		<i>Mean:</i>	<i>15.15</i>	
<i>SD:</i>	<i>03.78</i>		<i>SD:</i>	<i>02.69</i>	

As reflected, the number of students showed significant progress in the post test in the experimental group regarding sentence pattern, in which almost all the obtained scores are above the average. However, those in the control group showed minor competence in sentence pattern as only thirteen students got the average.

3.5. Interpretation and Discussion of the Main Findings

The intention from both students' questionnaire of the students and the structured interview conducted with teachers is to uncover students' needs in their learning practices, at the same time collecting data on their attitudes to using smartphones as assistant tools to improve their grammar, vocabulary and sentence structure learning, in addition to their outlooks as to using mobile apps to develop their learning in respect to grammar, vocabulary and sentence pattern. The structured interview was designed with the hope to identifying teachers' attitudes in employing mobile devices in their practices as tools to improve their learners' competences in grammar, vocabulary and sentence pattern. The gathered data from these two research instruments are of paramount importance to design appropriate course for these learners.

Starting from the first research question which aimed to investigate students' attitudes to using mobile devices into their learning practices, the results showed that ESP students have positive attitudes to using their smartphones in the English class to improve their learning. They are aware and ready to adapt their smartphones to satisfy their needs. Question 5, 6, 9 and 10 in Rubric one from the questionnaire devoted to students reflect that they have a strong desire to use their smartphones in their learning practice. This denotes the fact that they have positive attitudes to using them. These findings coincide with other researches in which they find their use convenient to supplement in-class instruction (Vo, 2023). In another context, Vietnam for example, Pham and Truong (2023), also admit that students have positive attitudes towards using smartphones for learning intentions. In addition, the same outcome is perceived also by Salhab and Daher (2023) who also came up with the conclusion that learners possess optimistic outlook/mindset in using these devices for their study environment. If one carefully looks at the period when data has been collected and what current literature reveals about such a perspective, the way learners observe the use of their smartphones

remains static/steady and hence the first research question has validity.

The second research question which aimed to identify the attitudes teachers have as to employing smartphones by their students in their classes, a number of questions and elaborations have been made in this concern. As noticed, the questions used when in semi-structured interview were organized in the order to collect the desired data. As expected, teachers appear to have positive outlooks to smartphones use in the classroom with some reservations. A whole rubric, if one may say so, was devoted to accumulate and ensure teachers' attitudes unlike for the first research question. This is obvious as these learners are called as digital natives/ GenZ and therefore possessing positive attitudes is the awaited response the researcher gathers. Whereas, devoting a rubric to collect as much data as possible regarding teachers attitudes is seen as a safe move since teachers are the agents of change and their outlooks matter a great deal. In this concern, the initial questions from the structured interview namely question 2 , 3, 4 5 all together brought into concern that students smartphones can be used in their classes for learning purposes and they perceive their use effective, and they are to some extent advocate and friendly to their use by their students. In a study conducted by Selwy and

Aagaard (2021), it has been concluded that smartphones usage cannot be banned as they neither can solve all educational issues nor reinforce better learning for all learners, but their use can invigorate an array of benefits in the teaching learning process. This is also argued and claimed by UNESCO (2023) that these devices are deemed important for students to experience some risks and find ways to live with them instead of their definitely abandonment. When they were overtly questioned about considering students' wants, they directly reacted positive to contemplate it (question 8). This is in line with the study of Alakurt and Yilmaz (2021) who find that mobile phones are essential and indispensable devices in today's classrooms. Consequently, teachers are in the spot to accept their use by their learners. Instructors also found to be proponent to mobile device use (question 8) since they act as a source of motivation to learners (question 9). This finding tightly matches with the study performed by Wang and Wu (2025), who come up with the conclusion that learners who use mobile devices for academic content learning experience increase in their motivation. This result is also in

consistent with Attah and Anaba (2025) wherein mobile devices support content exploration and activate learning.

Teachers approach these devices as a sort of engagement and facilitate group/team work (question 9), and this outcome accords with Garzon et.al (2023) and Pedraja-Rejas et.al (2024). Teachers find their use helpful in sustaining personal learning as it shapes learning according to learners' preferences (question 9). Indeed, this outcome aligns with the study done by Wang and Haggerty (2024). They claimed that mobile devices open doors for students to access course materials at their time convenience and nurture independent/self learning. Teachers strongly agreed that they wrestle with mobile device usage (question 11) because and as admitted by Nikolopoulou (2020) and Rana and Poudel (2024), the devoid of confidence and training in using mobile devices for teaching purposes weakens their pedagogical practices. It is now important to mention that though teachers favour mobile device use and hold positive attitudes to their use, hands-on training continues to be the ultimate issue in the Algerian context. Overall, it is therefore safe to conclude that the second research hypothesis is confirmed to a great extent.

As far as the third research question is concerned, MALL is effective in boosting learners' skills to a considerable extent merely in grammar rules, vocabulary knowledge and sentence pattern. This research question is examined under the cover of students' questionnaire, teachers' semi-structured interview, and pretest-posttest analysis. Based on this assumption and the gathered findings from students' questionnaire analysis shows that learners are conscious enough about the target situation necessities (Question 3) and still struggle with grammar rules, vocabulary knowledge and sentence pattern (question 5). These findings denote an urgent call for reflections and interventions to better the situation. The existing gap between the necessities of the target situation and the lack they have in the language is, in this research, linked to teachers' conventional way of teaching these three skills (question 8). Students, rather, find it fascinating to be taught using mobile applications (question 9, 10 and 11). This conception strengthens the notion that with mobile devices, learners are able to overcome vocabulary and grammar difficulties and hence MALL contributes a great deal (Wardak, 2021).

In consideration to the results obtained from posttest analysis, mainly from the first part (grammar) of both groups reveal that students' progress in acquiring knowledge on it. Yet, the majority of them achieved satisfactory scores in this part of the post-test (experimental group) comparing with those obtained in the same part in the pre-test (control group).

Dealing with the second part of the tests (vocabulary) which aims to develop students' abilities to comprehend and understand both types of vocabulary (technical and non-technical), it was observed that students reach a certain degree of achievement in vocabulary learning by filling appropriate words or phrases that explain an overall comprehension. This is shown in the scores obtained in this part of the posttest in comparison with those obtained in that of the pre-test.

Concerning the grammatical part introduced in both tests which aims to test the mastery of grammatical rules dealt with in the course under investigation, it was proved that students scored better in the posttest compared to the pre-test since the majority of them obtained satisfactory scores in the post-test. This explains their progress and better understanding of the grammatical patterns involved in the implemented course. As for the results attained from both tests as to sentence pattern, it was clearly concluded that students achieved approximately good mastery in sentence pattern, mainly in question and sentence formats. The progress they have showed signified the effectiveness of the app.

It is safe to say that the the use mobile learning along with mobile app adaptation and researcher's self-designed proved to a large extent the feasibility of this attempt. In fact, learners showed interest in being active members during the experiment and none has shown withdrawal and/or boredom during the course. Learners have themselves noticed their progress during the teaching journey as the app helps them concretely notice their improvement. Hence, the intervention is worthy by bringing into life the essence of mobile learning, especially in ESP practices.

The revealed data regarding both tests are similar to what has been found by Yang and Liu's study (2020), wherein mobile applications not only improve Chinese students' vocabulary, but are also considered as a preferred learning way over traditional classroom instruction. In Saudi Arabia, Alshahrani (2022) investigated the application of mobile applications for vocabulary learning, and found that they are

effective in vocabulary learning and retention. Furthermore, an empirical study undertaken by Maharani et al. (2024) reflects that the use of Duolingo improves students' grammar skills and reduces grammatical mistakes in their writing. From students' stand point, they agree on the fact that mobile devices and the potential they possess can work well in boosting their skills in grammar, vocabulary and sentence pattern. For teachers, the analysis performed basically for question 15 shows that they regard their students' competences in grammar rules, vocabulary knowledge and sentence pattern as poor due to the teaching materials they are using (question 16).

Almost all of them claim for blending both methods (white-board and mobile apps), but still consider mobile apps and mobile devices as effective for these learners and for the improvement of the three skills. As noted by Wardak (2021) in another paper, MALL has magnificently contributes in improving today's learning environment for better learning outcomes. Teachers consider mobile apps and mobile devices important in shaping learners own space for learning, motivating them in their learning experience, and improve their own abilities in learning a second language. These findings are similar to some previous attempts that mobile apps assist learners to boost their learning of vocabulary and grammar (Yu et al., 2023). They also find that motivation is another factor why mobile apps should be incorporated.

As far the results obtained from students' posttest analysis, the findings overtly reflect the effectiveness of mobile apps and mobile devices in improving students' grammar rules, vocabulary knowledge, and sentence pattern. An in-depth explanation has been made in this regard to carefully find the change in students' performance in the three examined skills. At the beginning, their overall level appears to be poor and this weakness in one way or another represents a challenge for the researcher to concretely test the adequacy of the intervention and better the actual competency of the students. In chapter four table 4.1., students' poor level in the three skills is presented by ways of means and standard deviation 18.48 and 07.50, respectively. This reads that the standard deviation is higher and hence confirms their weakness. During the intervention, however, a smooth progressive change took place and is reflected in chapter four. Posttest results being presented in chapter 4 table 4.3. uncover the difference between those students who receive the intervention and those who were taught with the conventional method in both grammar and vocabulary with the standard deviation 2.69

and 3.78, respectively. Concerning sentence pattern, similar interpretations are made wherein students in the experimental group improved their sentence pattern competence at the standard deviation 0.90 compared to those in the control group with 1.42. Taking into consideration the above evidence to certify whether or not MALL proves its promising effect to enhance students' level in grammar rules, vocabulary knowledge and sentence pattern, it is by now safe to record that the third research question is confirmed.

In relation to the last research question which theorises that students are much more reliable on online applications to improving their competence in grammar rules, vocabulary knowledge, and sentence pattern, the collected data from students' questionnaire analysis showed that these learners regard online apps more reliable and interesting in the sense that it promotes teachers and students interaction (rubric 3 question 3 and 6). This notion encourages the essence of the constructivist teaching approach that effective learning happens when both students and instructors interact with each other. It also sheds light on the fact that collaborative learning is important to construct trust and learning. More than that, they gravitate towards the use of teacher-made app(s), because they claimed that their teacher is aware of their weaknesses and teacher self-developed app will certainly cover related content and respond to their actual needs, at the same time are not subject to be distracted to large flow of information (question 7, 8 and, 9).

An empirical study conducted by Wang (2017) in which she designed a mobile app to improve her learners' vocabulary. In her study, she has also designed a questionnaire administered at the end of her study timeline to learn about her students' outlooks after using her app. With the proposed English vocabulary app, students improved their vocabulary, assimilating that with their serene in using it and their motivation increased along with being engaged in learning. The study's findings prove the significant role teacher self-developed app play. In her study too, self-developed app encourages learners' self-learning habits. Teachers, on the other hand, recognize the safe use of mobile app in developing the skills (question 6), but in terms of whether online or offline apps are better, different answers were highlighted (question7). In this respect, teachers prefer offline apps over online apps since the network provided in the study

environment is poor.

They mentioned that offline apps keep students focused at the same time direct them to stay tuned in the lesson they are learning. These answers funnel into teachers' poor or no training. That is, they receive no training on how to design an app or have knowledge on how to construct a self-made app. Indeed, if one sheds some light to those who favour online apps, their answers sound challenging and motivation. They regard online apps inevitable since they respond to the demands of the present age. Reflecting on the reasons they have revealed, they go beyond mobile device and mobile apps use, they have the head of the curve. This means that they have the seeds to modernize the teaching learning sector and embrace the challenge. This entails to recall today's teachers' role as being the agents of change and enthusiastic to change. In light of these interpretations and the intervention performed by Wang (2017), and based on the objective of the researcher and what has been suggested by students, the forth research question is partially confirmed.

3.4. Conclusion

This chapter analysed and interpreted the findings obtained from the questionnaire of the students, structured interview of teachers, and pre-test/posttest. Each data gathering instrument was first carefully analysed, and later interpreted and discussed. The analysis of the data showed that the majority of students need to improve their skills particularly in the three stated with the aim of doing well and satisfying their needs and the necessities of the target situation. In this respect, the next chapter displays in details the integrated and the constructed course to improve their grammar, vocabulary and sentence pattern needs.

Chapter Four

Course Design

and

Implementation of

MALL

Chapter Four: Course Design and Implementation of MALL

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4.1. Introduction

The present course is designed based on the findings met and heavily considered in the previous chapter. It is then addressed to third-year Finance of Banking and Insurance, belonging to the department of Finance and Accountancy, Tlemcen University. Because the study took place in the ESP context where students have particular and specific needs to be answered and met, the need to design a specialized course for them is a requirement.

The necessity to teach and learn specific type of English in today's age is obviously what educationalists and teachers should consider, because English is found everywhere and most documents are found written in English. Hence, satisfying students needs (personal needs and target needs) is mandatory to enable them function effectively in their examination (EAP) and in their relevant work place (EOP). Moreover and since wireless devices are taking popularity and ownerships among tertiary students connected to a network (3G/4G/5G) along with their portability and ease of use, investigating their use to serve these learners needs is a significant endeavour. Hence, the current chapter outlines in details the designed course and how it is implemented.

4.2 Approaches to ESP Course Design

The aim of the course design is therefore to meet learners' needs after undertaking needs analysis. Hutchinson and Waters (1987, p.65) define a course as "An integrated series of teaching-learning experiences, whose ultimate aim is to lead the learners to a particular state of knowledge." In the same line of thought, Munby continues saying (1978:2) that ESP courses are: "Those where the syllabus and the materials are determined by the prior analysis of the communication needs of the learner." In addition, teachers should find answers on the nature of topic areas will need to be covered, what the students need to learn, and what aspects of language will be needed and how will they be described (Hutchinson and Waters, 1992, 19- 22).

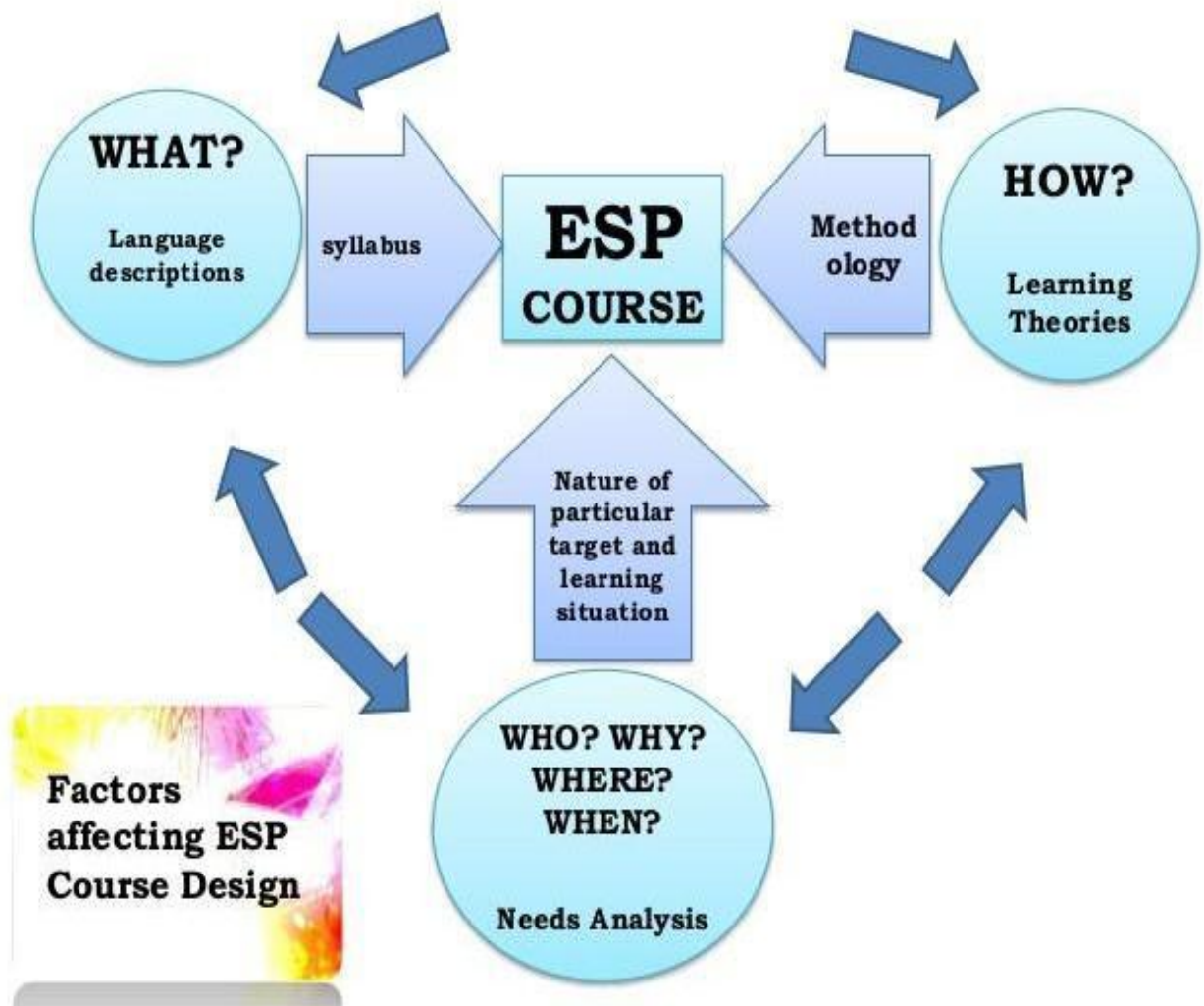


Figure 4.1. Factors affecting ESP course design (Hutchinson & Waters, 1992, p.22)

Therefore, the required steps and procedures for successful course design is complex and because the interaction between students needs, necessities of the target situation, relevant teaching materials and teaching and evaluating should be well met and successfully designed. Such a fact revealed the complexity of this task, as shown in the present representation.

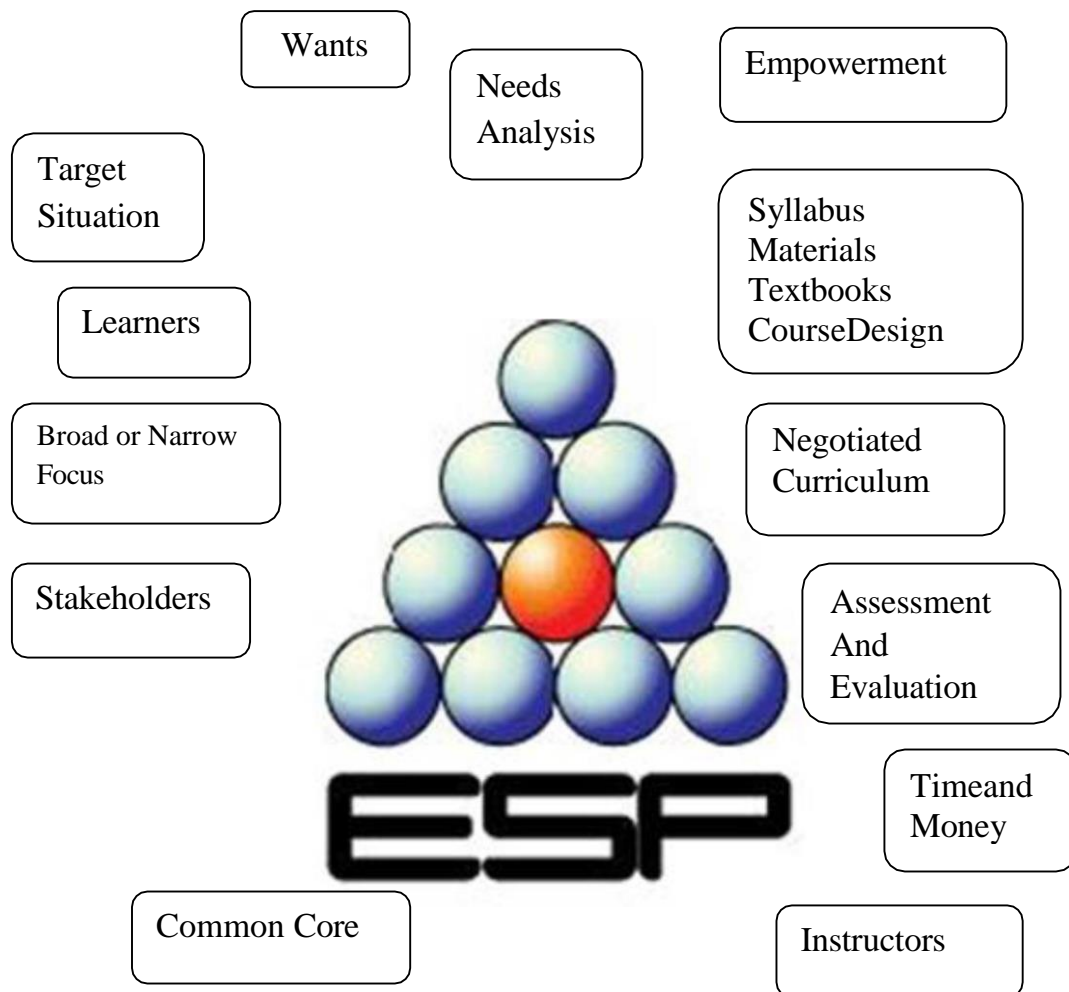
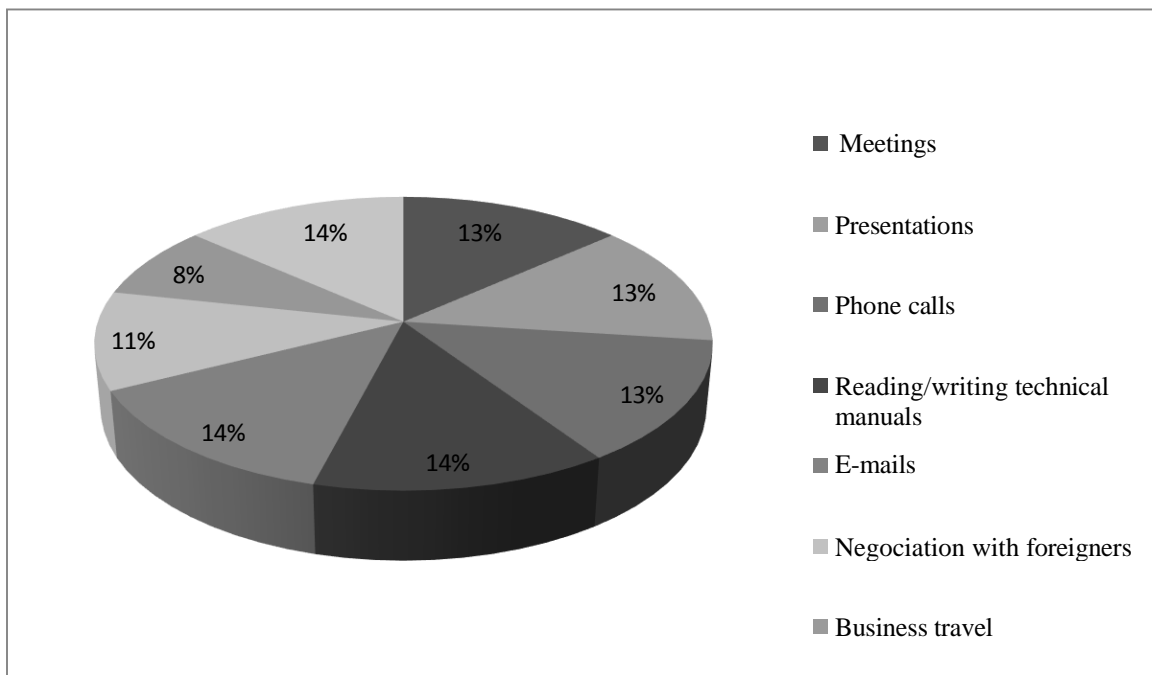


Figure 4.2. Juggling ESP balls (Brunton, 2009, p. 9)

It comes safe to mention that ESP course design is not an easy task to accomplish, and there are different approaches in its design. The literature revealed three main ones, namely: language-centered course design, skills-centered course design and learner-centered course design. In the first approach to course design, the focus is associated with the linguistic aspect of the target situation to define learners' needs. This classical view is not functional and enough, and therefore this approach to course design was subject to revisions. Those revisions pronounce skill-centered course design the new one that may serve well in ESP course design. It focuses on learner as a user of the language and not as a learner himself. Consequently, the birth of a new approach has been recognized, and the learner-centered approach becomes to the dominant one. As the term implies, the

learner is the active agent where learning experiences is shaped. It doesn't focus on the learners' metal abilities, rather learning is shaped by interaction among the individuals and the society (learning environment) (Hutchinson & Waters, 1987). After reading such knowledge, opting for the eclectic approach is a safe decision ESP teachers need to do in order to triangulate various needs. The researcher considered the necessities of the target situation by conducting an unstructured interview with the principles (05) to collect data on the necessities of the target situation. Put differently, the investigator visited banking and insurance institutions to find out what tasks and requisites university learners should perform in these institutions.

To start with, a surprising reality was discovered. In these two institutions, the practice of the English language is not required to a large extent, because specific documents are required and written either in Arabic or French. They claimed that English is needed to fulfill some needs, as summarized in this chart.



Pie Chart 4.1. Necessities of the target situation

In addition to the above collected evidences, all of them claim to the use of the English language and wish new recruiters to come to the work place with important skills to solve any sudden and unpredicted issue(s). Two of them claimed that they faced critical misfortunes that urged them to lose some VIP (Very Important Person) customers (business men) due to ill-formed personnel in the English language. They added that they lost some affairs because some important manuals were written in poor English full of mistakes in the register and grammar. When they were asked to elaborate on the vocabulary and grammar, as they used them as cover terms, they mentioned that the mastery of important register is enough, but regular vocabulary is not satisfied. In terms of grammar, they claimed that sentences are poor in the grammar system (tenses, additions to remark, subject-verb agreement ...) and even in the structure of the sentence.

When the researcher collected those pieces of information, the expectations drawn from previous knowledge and what literature has raised, it is now clear and systematically proven that the three language competences being studied in the present attempt are pronounced important to be solved on the spot. Although the aspect of grammar is seen irrelevant and not given much importance among some early researchers and educators, it is the skeleton that learners should weapon themselves with to produce safe constructions.

4.3. English for Banking and Insurance Specificities

The researcher used EBP as a cover term to mean English for Banking and Insurance Purposes. In terms of grammar, the following sub-headings are used to refer to some aspects of grammar needed for these learners.

a- Present and Past Tense

Present tenses (simple present tense, present perfect tense, for example) take popularity not only in general English course, but also in the ESP course. They are found there because writing emails, manuals, to name a few require the use of these tenses. Past tenses; mainly the past tense is also needed for these learners to meet the requirements of any assigned task (academic task and or professional one).

b- Articles

All article types (definite and indefinite) are needed for these learners, especially in performing oral tasks.

c- Active and Passive Voice

In any field of interest, passive voice is regarded formal and recommended to give good impression on the knowledge one wishes to deliver. It is important in both modes of communication, to convince and persuade customers, for instance.

d- Nouns and Adjectives

ESP students should be taught some common and useful nouns and adjectives. Compound nouns and the different types of adjectives are important in their work place, especially in written documents.

e- Reported Speech

Reporting others' claims is expected in business talks. Coming to know the basic rules for successful communication is a requirement for these learners.

f- Quantifiers and Collocations

Quantifiers they actually use are: little, many, some, any, much and few. Collocations are also of important role in BE course design. Collocations like: arrange meeting, making loans, money withdrawal and similar ones are needed.

Vocabulary inclusion in the ESP course design is compulsory. Vocabulary in these learning contexts is called technical vocabulary. Though instructors are language teachers who teach the language, they are conditioned to expose relevant and technical vocabulary to their learners. In course design, the researcher includes the teaching of some general vocabulary both implicitly and explicitly to run over each context the technical vocabulary is used. That is, the researcher finds it workable and required to teach these learners some general vocabulary simply because if learners understand the surrounding words, then those words act as clues to get prepared to understand the new concept.

In addition to these two types of vocabularies, the use of acronyms and abbreviations in the field of business English is found. Indeed, the process of shortening words into shorter words is what is very common and more important in this field. Therefore, they should be taught and known.

As far as sentence structure is concerned, the expected characteristics are as follows:

g- Sentence Types

Sentence types that are commonly used are: simple, compound, complex and compound-complex sentences. Almost all these types are concerned in both modes of communication as they serve particular intentions. Moreover, affirmative and negative sentences are also needed.

h- Asking/Answering Questions

➤ Yes/No Questions

Short answers with yes or no are highly expected in the target situation.

➤ WH Questions

Even WH questions are needed in learners' workplace.

I- Question Types

Questions and answers serve particular intentions, especially in the work place. For instance, evaluation question (phone calls), affective questions (customer service), structuring questions (conference and meetings), probing questions (presentation). These question types are significant to be clear and understood by these learners to function effectively in the target situation.

4.4. Aim of the Course

It is understood that aims are the general outcomes a given course wish to achieve. Therefore, the present course has two aims; short-term aims and long-term aims. Short-term aims are highlighted in the following terms:

- To improve ESP learners' grammar, vocabulary and sentence pattern;
- to practise the use of mobile devices in improving grammar, vocabulary and sentence pattern;
- to evaluate the researcher's self-made app using Bloom's digital taxonomy to serving students' needs;
- to observe the blending of mobile device use and researcher's mobile app in serving learning needs and target needs; and
- to persuade teachers and learners to adapt mobile devices in their practices.

In addition to the above-stated aims, long-term aims are also revealed:

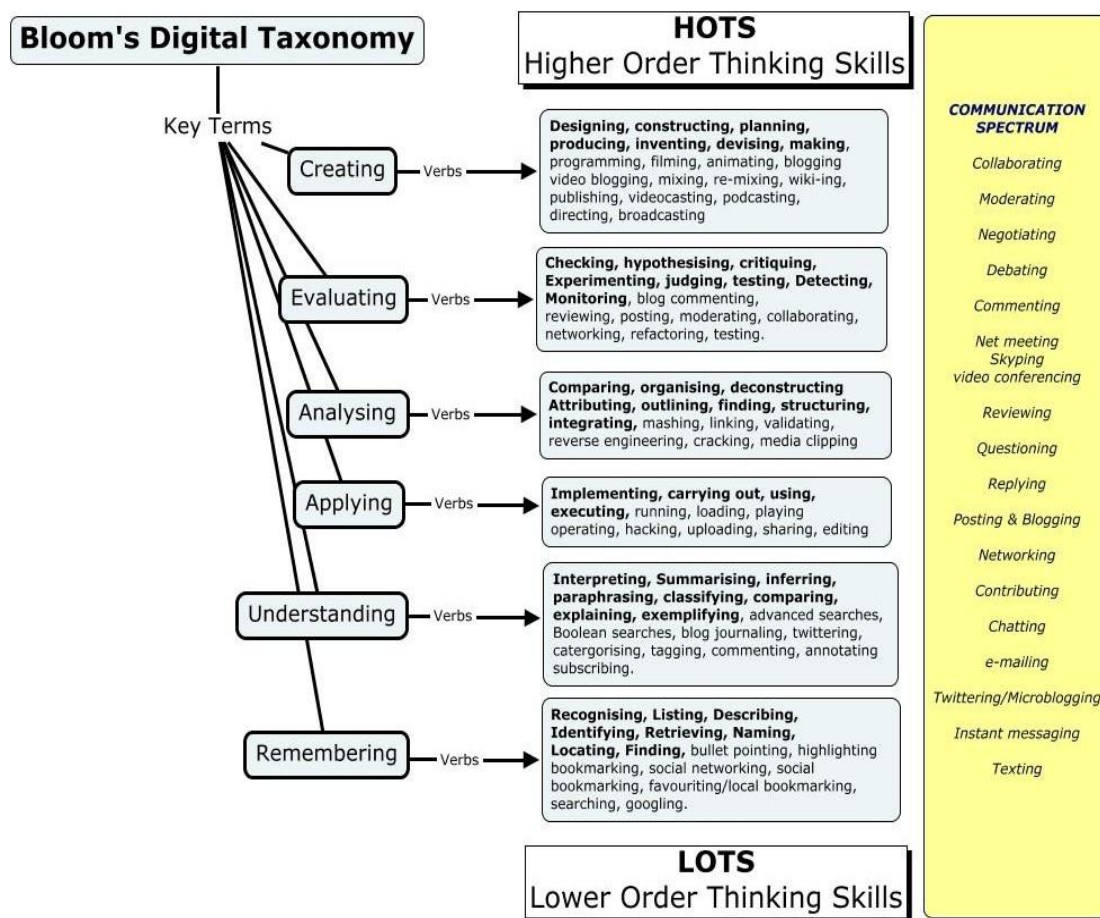
- To prove that grammar, vocabulary and sentence pattern learning are best instructed in mobile learning environment and generate similar intentions;
- to prove the intervention worthy especially for the Algerian ESP context; and
- to contribute enormously in the field of ESP.

4.5. Course Presentation and Organization

In ESP, course design is not possible to be constructed without needs identification and analysis. The latter is then took place taking into account its parameters. The administered questionnaire to ESP students covers important questions to uncover their needs, lacks, wants, and necessities. It was administered to these learners as the situation urges such an investigation.

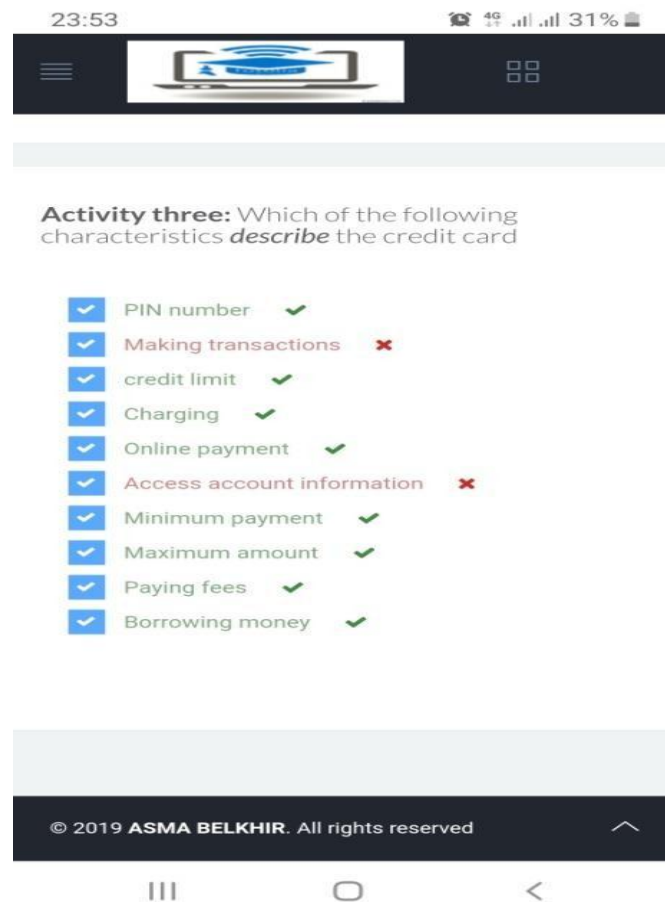
The process of needs analysis revealed significant and challenging aspects that help the researcher in organizing and designing specific course devoted to these learners. The analysis reflects that these learners (FBI) needs to language to serve both academic and occupational needs in their studies in the university as well as in their field work. They also need to practice the use of mobile devices in their learning practices. They also need to remedy their weaknesses in the language through the use of different learning materials and hence opted for mobile apps. In terms of lacks, they lack the basic skills in producing safe and correct language forms. This is shown in their poor performance in the pretest and before that in the questionnaire analysis. The presentation of the course is based on these motivations along with those of the investigator who always aims to experiment on this area of research.

As far as course organization is concerned, a lot must be revealed in this concern. That is, its organization is based on two important parameters; the first parameter is that it respected the classification presented by Bloom's Digital Taxonomy (6 levels) taking into account the use of verbs instead of nouns. Second, the course is based on grammar, vocabulary and sentence structure. The second parameter is detailed in the material design section (the section that follows) to cover in-depth information. The course covers four units and each unit encompasses six stages (levels) with six activities; that is each level covers one activity. To begin with, it is important to recall the diagram that represents Blooms Digital Taxonomy.



Level 1. Remembering

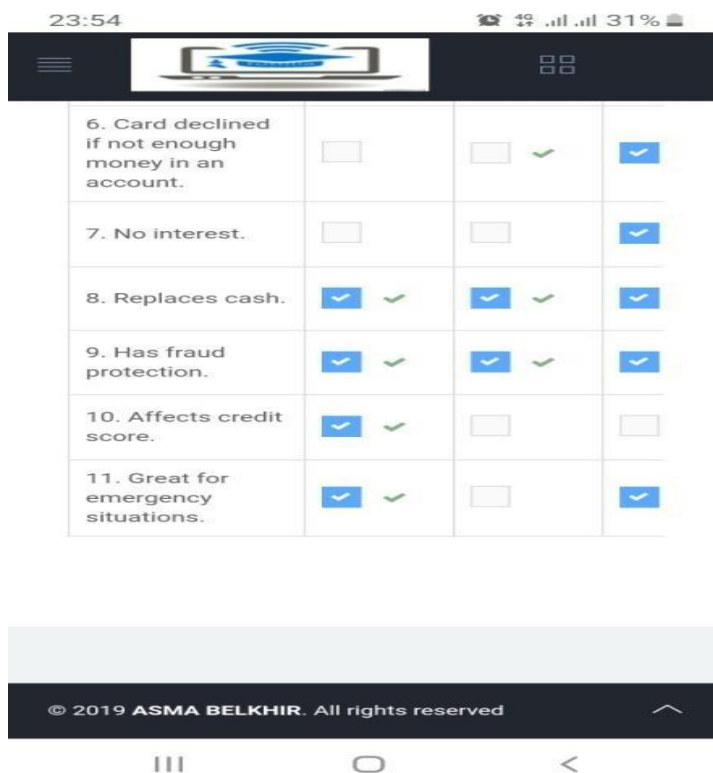
It is indeed the first cognitive skill for any new learning input. It is said that learners should first memorize the new input. Such a notion stresses the importance of memory learners have so as to go to the next level of the Bloom's pyramid. The researcher uses the verbs in the instruction in order to respect the revised taxonomy. In this way of thinking, the researcher is exposed to use one of those verbs highlighted in bold in the instruction of the assigned task. In this first level, the researcher implemented both general and technical vocabulary. This implementation is rational and anticipated because it is based, as the term implies, on the act of remembering. As a matter of fact, if the lesson started with remembering grammar rules, learners may escape or withdraw from the task and therefore, lose interest and motivation. Hence, starting with vocabulary is crucial. The purpose addressed in this level is to see whether learners remember the new learnt vocabulary.



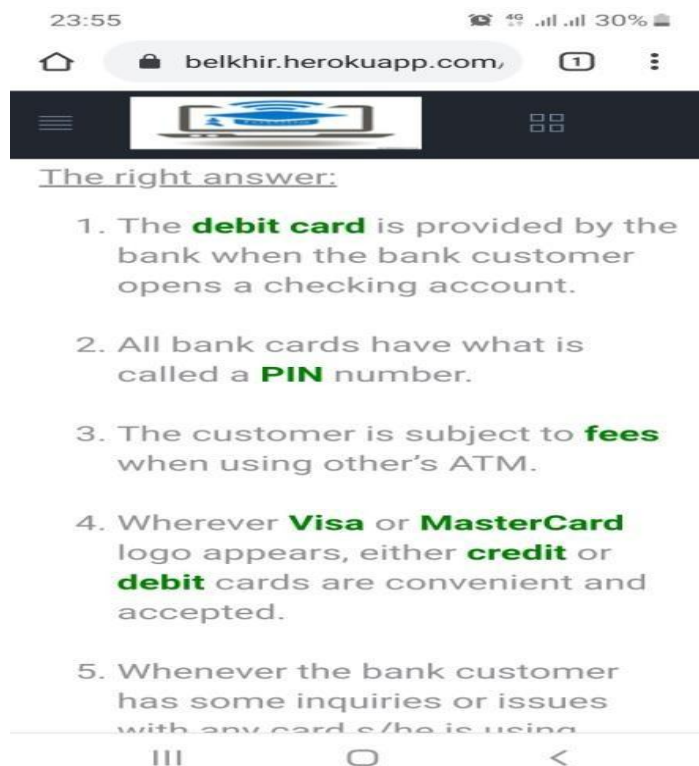
Level 2. Understanding

It is wiser to depart from the conception that state learners cannot apply the new knowledge if they did not understand it. Therefore, understanding is the second level in Bloom's taxonomy. The verbs associated with this level are, for instance: infer, classify... Students were given a moderate set of vocabularies for them to classify them into the appropriate column. The verbs used varied because the course covers four units. In this level, learners were assessed on understanding of the learnt vocabulary in relation to the unit being studied. The aim is to see if learners understood the new knowledge.

Level 3. Applying

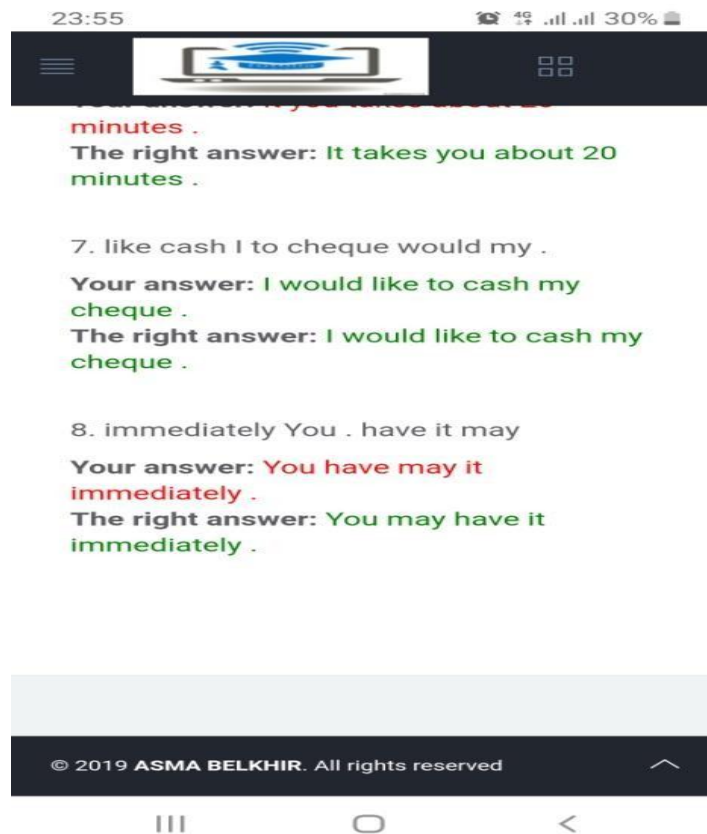


As the term implies, applying is the process of applying the learnt knowledge into different context. In this level, if the two above skills are grasped, then this task will generate positive outcomes. More significantly, if the student understood the concept studied, it is therefore possible for him/her to apply/use it in particular contexts. According to the diagram highlighted above, the verbs to be used are: put, use, execute, implement, and so on. In this level, the researcher requires students to apply both the vocabulary and the grammar learnt. Put differently, the activities used for this level are in both vocabulary and grammar. As far as grammar is concerned, the research designed an activity to see whether learners can put what has been studied in the grammar app to perform the grammar activity in specific contexts, and the vocabulary to be applied in different contexts.



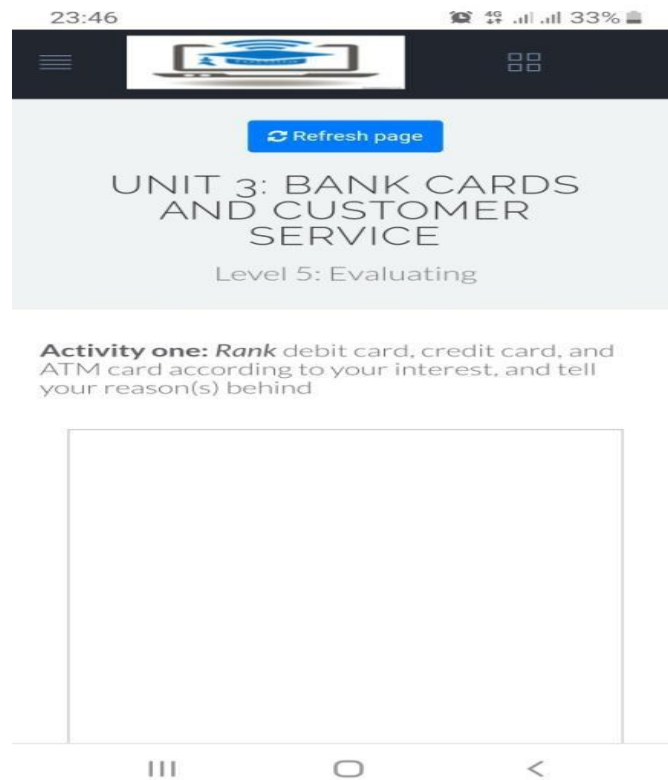
Level 4. Analysing

This level is the beginning level to develop among learners higher-order- thinking skills. In this level, the researcher implemented grammar, vocabulary and sentence structure. Analysing denotes the process to analyse knowledge as it is already remembered, understood and applied. In the taxonomy, analyzing is associated with the following verbs: deconstruct, organize and structure. Therefore, the investigator used these verbs to instruct learners to deconstruct, organize and structure certain knowledge in an activity.



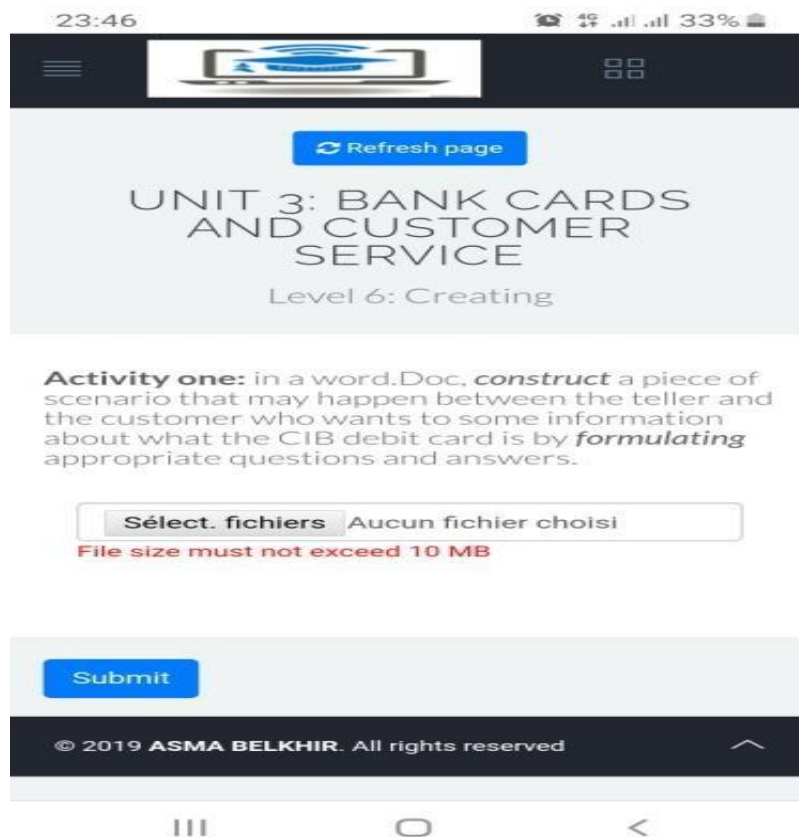
Level 5. Evaluating

This is the before-last stage which it recommends higher-order thinking skill. Learners cannot evaluate if they cannot remember, understand, apply and analyse certain inputs. In the taxonomy, the associated verbs are: hypothesize and detecting, to quote a few. Hence, the researcher implemented grammar, vocabulary and sentence pattern in this level. Evaluation was made according and in respect to the teaching unit.



Level 6. Creating

Creating is the last skill in Bloom's digital taxonomy. It is possible to be achieved by students if they previously could remember, understand, apply, analyse and evaluate a particular input. In this stage, students need to create or design entire understanding from the entire unit they have studied. The verbs related to this level include: design, create, produce and publish, to name just a few. It functions as a formative assessment because it is done at the end of the teaching unit and at the same time it requires learners to implement all what has been studied throughout the unit in terms of grammar, vocabulary and sentence pattern.



4.6. Supporting and Complementary Skills

Indeed, there are some sub-skills involved because they were intended not only to deal with grammar, vocabulary and sentence structure aspects, they were also unintentionally involved in other sub-skills. Reading is the expected to be performed as they have to read the presented material through scanning and skimming. Listening is also involved as they had some listening materials that were attached in order to vary the content presented. Speaking is another sub-skill that was implemented because learners had some tasks that necessitate them to speak either in presenting reclamations, further explanations and feedback. Writing is also used for learners to write their answers in level five and six. They were also asked to check the spelling of some unfamiliar words, for example.

4.7. Material Design

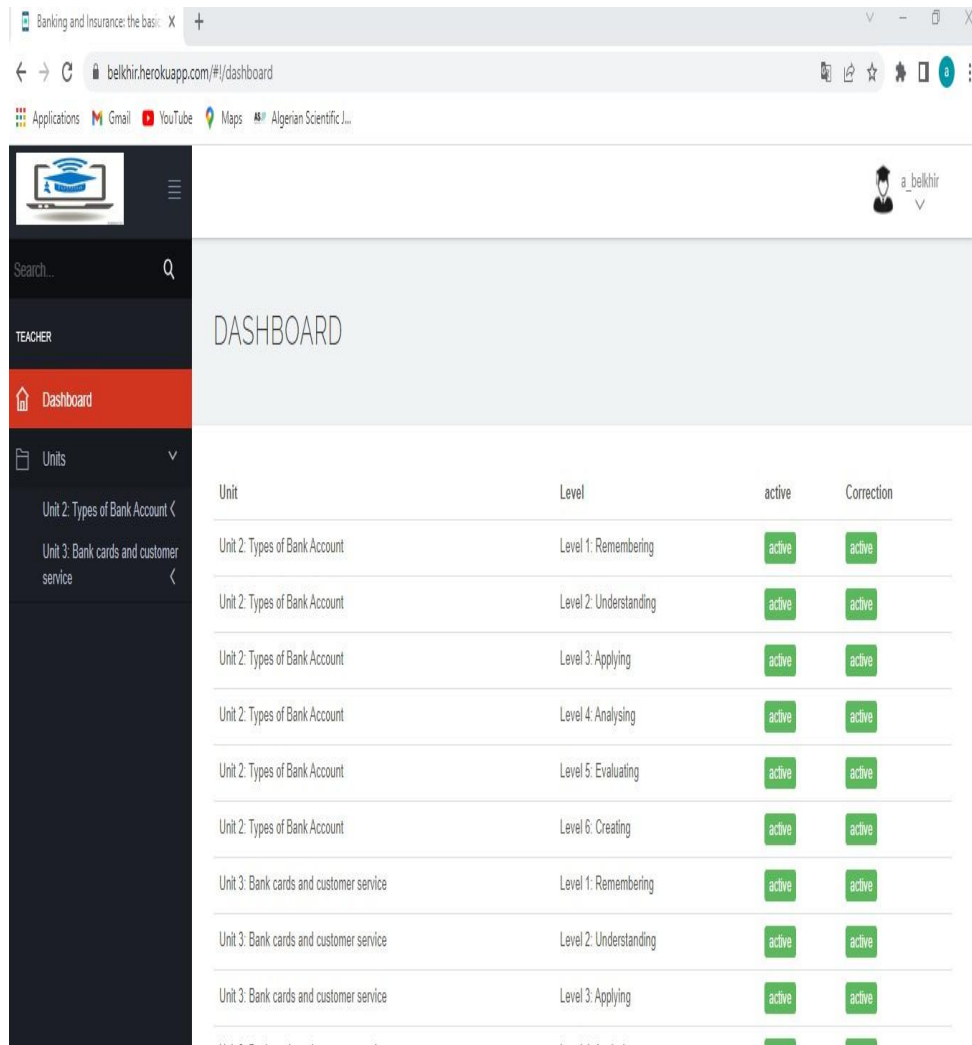
Material design in the ESP context is critical and challenging because of a number of reasons. The main reason is related to the availability or unavailability of specific sources and references for adaptation. In other terms, the mass availability of resources is challenging because it puzzled the ESP instructor on what source to take and implement, meanwhile if the resources are limited they are obviously critical for the ESP teacher to satisfy the ESP course. However, it is now infrequently impossible to find limited materials because ESP as a field of study and as an area of research is flourishing owing to globalization and context specific.

In this research, material design is taking different and interesting design because it took place in a world that any endeavour is partially or completely possible to be achieved. Taking into account needs analysis process, the design of the material is of two pushing facets. The first is to respond to students' needs and expectations in the enrolling course, and second to approach to teachers' positive attitudes, as reflected in the chapter three. In this regard, material design in the current research incorporates Bloom's Digital Taxonomy with grammar, vocabulary and sentence pattern in a researcher's self-designed app. It is important to unveil the fact that the content of the materials were adapted from different resources; that is texts and videos were taken from the internet, but their collection was organized and presented to students in researcher's self-designed app.

Texts presentation was electronic and therefore students were not concerned to devote a specific sum of money to make copies. Rather, they were concerned to check their battery life and bring their charger device. In addition, the internet was not a heavy issue to worry about because the researcher had bought a wireless modem of 4G to enable and ensure internet access during the course. More than that, the selection of the modem 4G was based on the one that is accessible in various conditions (foggy day, wind, etc). Even the classroom where they were gathered was selected based on some criteria (noise, near the canteen/parking/library/ department entrance, etc). The discussed facts were the first contemplations in material design.

As the investigator designed a mobile app for these learners, going through its design is mandatory. As previously mentioned in course organization, material design went through and considered Bloom's Digital Taxonomy (Higher-Order Thinking Skills and Lower-Order Thinking Skills). Before going through its internal design, it is important to give some descriptions on its programming. To start with, the app was designed on a free of charge background as others should be paid via Master/Visa Card which necessitate the Euro Currency, and since its design is for piloting purposes (for research only) and not for commercial purposes (generate money from it), the engineer suggested to opt for the one of free-of-charge. Second, the requirements of Bookmarking, Media clipping, social networking, Blog commenting, and similar ones were not possible to be made in free-of-charge background. Even in the verb "matching", it was impossible to issue arrows to perform the task. Therefore, the researcher respected the verbs used for each level and used them in the instruction of the activity. The use of colours like "green" for correct answers and "red" for wrong ones was the only solution to distinguish between correct and incorrect responses.

The number of the attached texts and videos is not limited. Text presentation in the app does not necessitate the students to move the screen left and right to finish reading sentences, because the act of moving is in itself an interruption and may lead students to lose focus and interest to finish reading or follow those while reading. Letter size was visible and readable in order not to harm readers' eye as well as to read safely and correctly, and the character employed in its presentation took the standard form. The used verbs were written in bold and italics to attract students' intention and to insist on the use of verbs. For app confidentiality, user-name and pass-word was used for logging purposes. The investigator has accessibility to see all users' responses and did not aim to add the criteria of those who logged in to give freedom to the students to do it later on. This has something to do with "anytime" "anywhere". In terms of scoring, it was based neither on numeral scoring (grading) nor on giving praises (good, well-done, etc). This is done indeed to keep students focusing on learning (quality learning) and not on grading (quantitative learning). The use of the dashboard is compulsory to enable students notice the units and the levels and to switch among levels and units where necessary.



After such a description, the following sub-sections detailed the researcher's self-made app based on Bloom's taxonomy along with reflecting how grammar, vocabulary and sentence structure were implemented.

Remembering

This stage reflects the level of remembering in which students were asked to remember particular knowledge. It was designed by attaching the reading text of unit one. The latter was entitled "Types of Bank Account", as reflected in the above representation. Within the first level, students were required to read the text which is context specific. After reading the text, they were asked to click on level one and go to remembering being labeled as "level 1: Remembering".



As displayed, the activity presented required learners to select the characteristics that go with the debit card. The alternatives provided are already studied in the text. The learners are allowed to change their answers before submitting their finale responses as they cannot do so after the submission. When the researcher receives all the responses, feedback on the correct answer was shared immediately by clicking on “active”. The latter permits the students to see where they respond correctly and where they did not. This is done, as already mentioned, using the colours green and red for right and wrong answers, respectively.

Understanding

In this level, learners were inquired to show understanding of the learnt vocabulary they have already exposed to. The investigator used the verb “associate” to respond to the requirements of the taxonomy. The researcher varied the type of tasks to give good intuition and attention to the students. A number of statements were given for them to read first and tick on the appropriate column. This indicates not only understanding the technical vocabulary, but also the entire sentence. In this level, some students require immediate understanding of some incidental concepts that are unfamiliar (general vocabulary included). After finishing the task, the submission of their answers was received and the same process was made in terms of correct and wrong answers. There were some situations where students recommend further explanations and details and this was done orally by referring to the text in the level of remembering. After ensuring total understanding among the students, moving to the next level is needed.

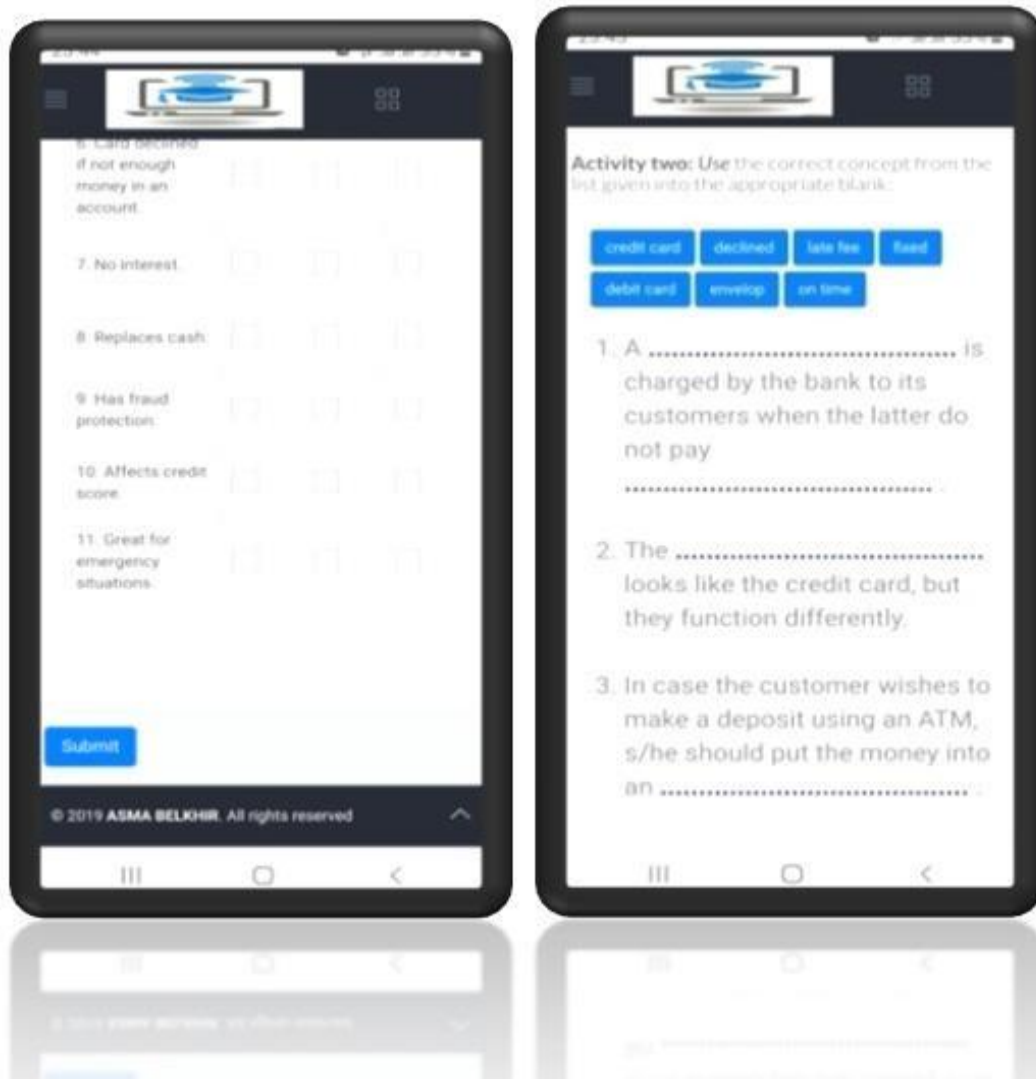
23:54 31%

6. Card declined if not enough money in an account.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
7. No interest.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Replaces cash.	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
9. Has fraud protection.	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
10. Affects credit score.	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Great for emergency situations.	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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Level 3: Applying

In this level, however, students were assigned to apply what has been already remembered and understood in former levels.

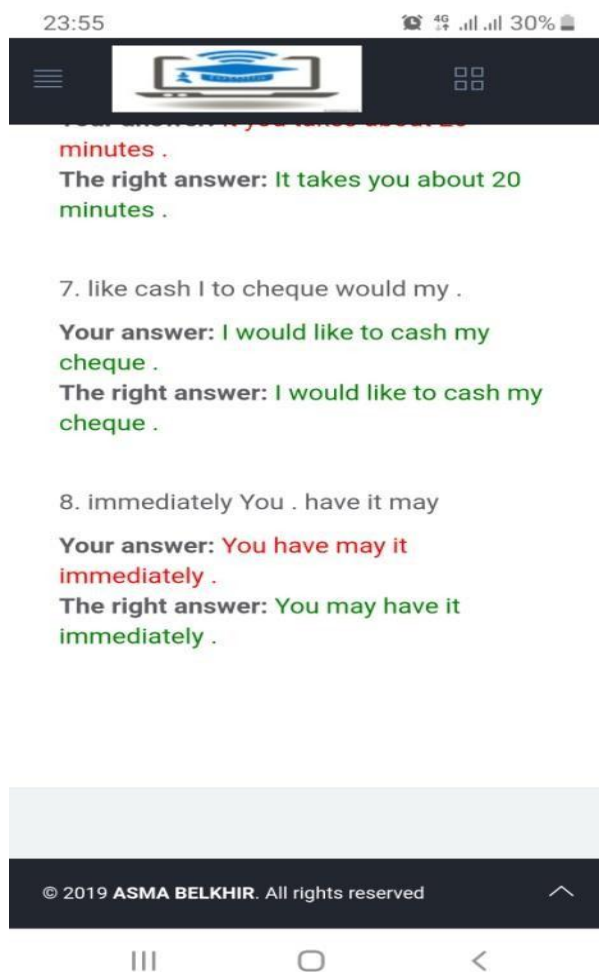


The verb used is “use” to directly respond to the name of the level. Students were given some relevant concepts to be applied to the corresponding blank. They were not required to type the selected concept for each blank; instead they were required to swing the choice made to the blank using their fingers. Using swinging movement brings variation in answering and hence keeps them thirsty and wondering on what they are exposed to do in the next level. In this level, learners read the sentences and try to use the surrounding words as clues to help them find or select the right alternative. The researcher kept reminding them to check and revise their answers before the submission is made. Till now, the researcher stresses the mastery of technical and general vocabulary using varied activities for each respective level.

Analysing

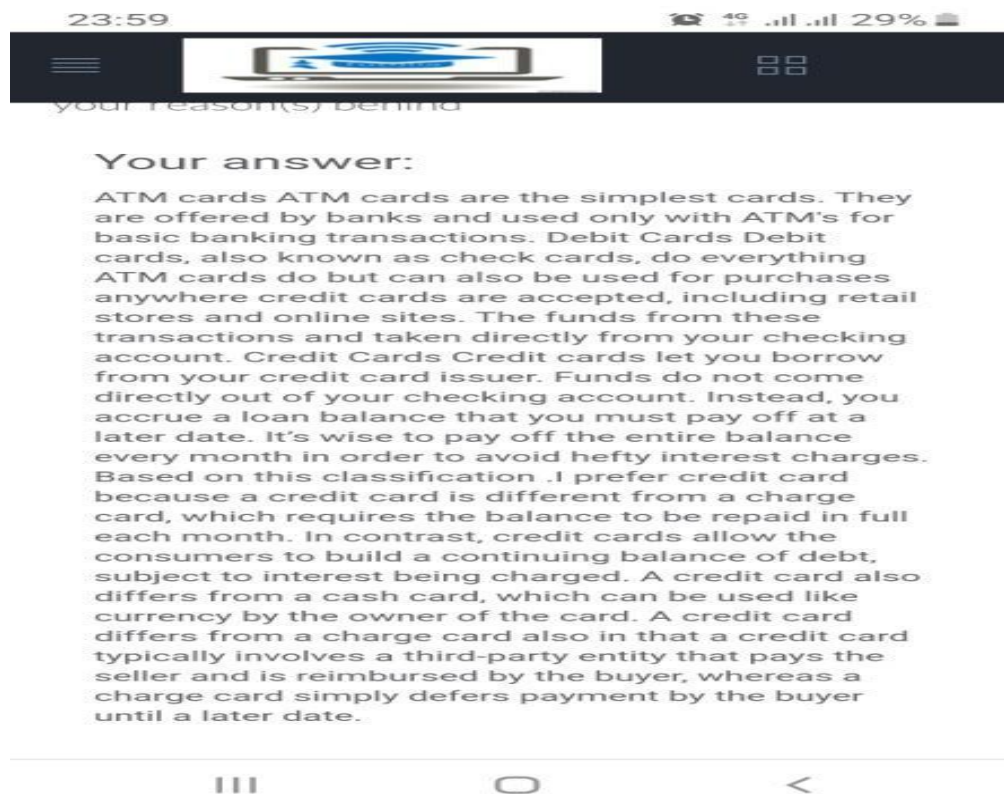
As previously highlighted, starting from this level, the introduction of grammar started with the downloading process of the selected grammar app. It covers the grammar rules with examples and illustrations. Students took some extra hours to deal with the grammar aspect needed for them. The first grammar rule learnt is related to present and past tenses which took approximately four sessions organized in a fifteen day period of time. They were very poor in tenses, but they showed interest especially when they were told that they need to grasp the rules to move using researcher’s self- designed app. Sentence structure app was also used and downloaded from Google Play to get informed on the type of sentences, and those already mentioned in the former pages.

It took them using both apps about six weeks and they came back to practice the leaned knowledge. In this level, then they were asked to arrange the words in each set into the correct order to form varied sentences and questions. They were also required to arrange punctuation marks accordingly and if they missed or forgot to swing a period into the end of the arrangement made, then the answer is considered wrong. The below screenshot reflect what is stated.



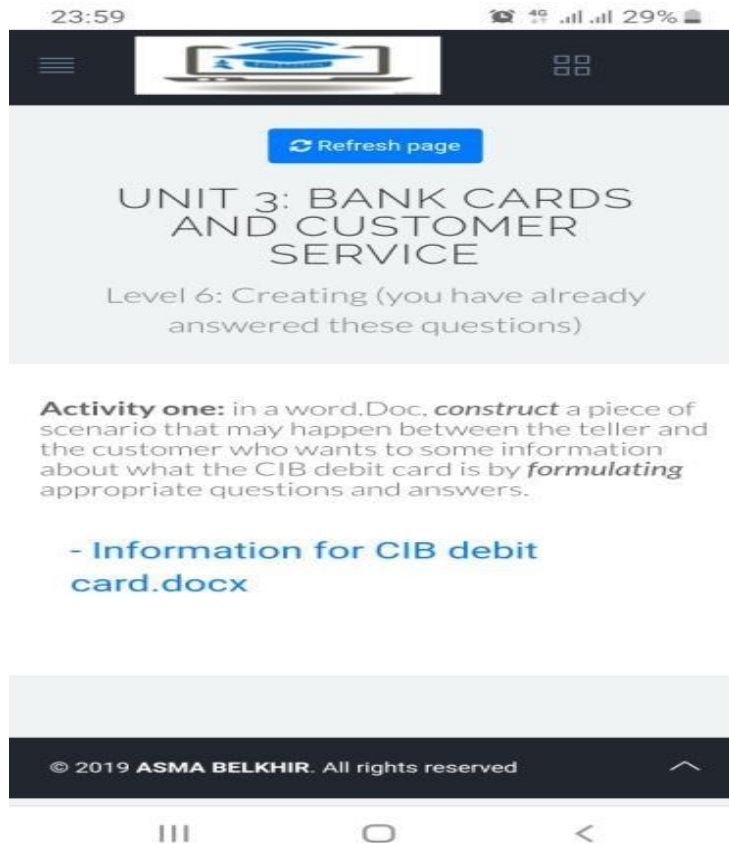
Level 5: Evaluating

In this level and as mentioned previously, the level of evaluation too reflects grammar, vocabulary and sentence structure learning among these students. In order for this to happen, the researcher asked the students to rank a specific reality according to their present situation by giving relevant and important arguments. They have a white box where they can type their answer. The number of words to express themselves is not limited, but they were informed to provide direct and short answers in a form of a paragraph. In this level, the submitted answer is read by the instructor to provide oral feedback in case a mistake is raised. The following screenshot reflects an illustration of one of the students.



Creating

The last level in the taxonomy is creating. The latter is the point where the instructor can collect rich answers and study learners' grammar, vocabulary and sentence pattern. As reflected in the screenshot, the students are required to upload a Word.Doc to show learner's answer.



Indeed, before coming to the teaching method used in this research paper with the use of researcher's self-made app, it is important to reveal the process of piloting the app.

4.8. App Piloting and Administration

Before the app was administered to learners, it was first pilot to test and evaluate its functioning. First, a testing account was used to test the validity and reliability of the app. The engineer designed the test account for the researcher to go through each level and submit random answers. The logging process was also tested. Because the engineer himself opened the account for all the students (experimental group), the researcher was given those accounts and went through each learner's personal account for testing purposes. The diagnosing process covers also the presentation of texts, videos, and activities. There were some revisions that took around two days to be fixed to start experimenting. After those revisions, testing took place for the second time, but was restricted to those already highlighted ones like the verbs that were made in italics need to be also reflected in bold to be clearly seen. Also, the statements in the table were first looked incomplete as words were missing. The engineer used a pseudo-picture for the

teacher (from Google) and was removed as the researcher wanted the app to appear professional.

After these revisions, the researcher did not wish to start the first class before piloting it with the concerned students. At the beginning, the instructor gathered students in their break (around half an hour) to logging into the app using their true accounts in their smartphone after being sent to them via email. Such a process was necessary as each smartphone has its specificities different from others. The instructor brought the 4G Modem for those who do not have a network. This is rational as they were told one day before coming. After such an endeavour, students were asked to keep their accounts open or to remember them. Even their passwords were based on the birth of dates which is obviously not subject to get forgotten. A technical issue raised is that some pages were blocked, and hence it was revised by adding “refresh page” to come back to the task again without losing answers if given.

App administration was smooth and simple. That is to say, students were grouped in a U-shape and were asked to take their phones and the charging device on the table. They were also asked to keep their phones in a silent mode and to reject any call or SMS (Short Message System). The light of their smartphones should be strong for the researcher to see their confidence and devotedness to doing the tasks.

4.9. Teaching Method

With the hope to achieve course any course objectives and aims, it is important to select the best and suitable teaching method. In this research work, opting for the blended approach is important. In other terms, the use of face-to-face teaching method and using the mobile learning approach called for such a teaching method. Indeed, it is a recent teaching method that occurs in the classroom where the teacher interacts with the students in a face-to-face environment using mobile devices to perform different tasks and practices. This teaching approach is also motivated by the availability of the internet and the students’ possession of smartphones. The existing triangulation of these three conditions generates such an implementation. In addition, students are still attached in the total dominance of face-to-face instruction in the different modules they have to attend. If switching attention to adopt e-learning as the new teaching method, then they may fail or insist in keeping learning face-to-face solely. Therefore, blending both

methods bring learners to experience both modes at once. In this mode of teaching, both feedback types are experiences. It is also helpful and interesting for teachers in order to train themselves not only in teaching, but also in material design and assessment.

4.10. Assessment and Evaluation

Assessing students' progress and learning in ESP is obligatory. Therefore, in the current research work, the investigator has used four methods for assessment. The first is formative assessment wherein learners are assessed after completing each unit. The researcher opted for this type of assessment so as to check and evaluate learners' entire comprehension not merely on their learning, but also in using the apps. Put differently, formative assessment allowed the researcher to see students' command for in each level. In this way, learners themselves can notice their progress since they can refer to the levels to see their areas of strength and weakness. As far as app assessment is concerned, through the process of formative assessment of learners' progress, it is possible to evaluate the needy greedy of the app in helping/prohibiting their learning in general. It is important to reveal that formative assessment is hard and inflexible to be processed in regular classes because it is time consuming. However, it was not that complex to be implemented in a mobile learning environment as it is viable especially in using a mobile app. It is also practical in this regard for their assessment to be stored in the app as a portfolio.

The second method of assessment that was implemented is e-assessment. That is to say, students were assessed not on paper-pencil method, but they were evaluated electronically. This type of assessment is time gaining as it doesn't require learners to spend time copying on their notebooks the correct answers using pens, rather they can have immediate feedback on their responses effortlessly. More than that, e-assessment is an innovative way to be presented in today's classes; for instance learners have entirely the open floor to submit their answers anytime anywhere and they could receive the feedback on the spot. Since the researcher used mobile learning where learners are not restricted to accomplish their tasks in a fixed environment, then e-assessment is useful for them and expected. The researcher can also collect all the responses on the app to be later corrected and sent back to the learners via email.

The third evaluation method is the use of pretest to assess learners' competences in

grammar, vocabulary and sentence pattern before starting the designed course. This test allowed the researcher study in a head student' actual and present needs to be covered in the process of course design. The last evaluation method used is the posttest which, as the term implies, administered at the end of the teaching course.

4.11. Course Experimentation

The researcher mentioned in the research design (chapter two) that quasi-experimental design was used wherein both pretest and posttest were designed and administered to students at two distinct stages to collect the intended data. The pretest was designed and adapted from varied sources like dissertations and standardized tests. It was also organized in three main sections (grammar section, vocabulary section and sentence pattern section). Its design was standardized to be familiar to students to answer at ease. That is to say, it was constructed in a form of activities one after the other in order not to look unfamiliar and at the same time to collect the intended results. Activities were multiple choice based, i.e., students were requested to select one alternative from the suggested ones. The last section inquired them to structure the sentences and or questions based on the words already given in disorder. The content of the activities was varied, meaning that the sentences and vocabulary used is based on general English.

However, posttest was similar to the pretest but was content specific. Put differently, the posttest took nearly the similar form as in the pretest but in terms of context it was restricted merely on banking and insurance. Its administration took place after completing the designed course but the context of its administration was different. Because of some limitations (See chapter five), it was organized as their final exam. Its design was also as similar as practiced and experimented during the course (app). It run over the six levels in Bloom's taxonomy without eliciting that they are in level 1, remembering, for example. It was constructed in activity format with scoring because it was a requirement to give scores.

a- Grammar

In this section, the researcher used some relevant tasks from three main sources. It was constructed in a multiple choice format for students to select from the proposed choices. Only one answer is correct. It covers a number of situations according to each

unit specificities and turned around varied grammar aspects (tenses, articles, prepositions, and similar ones).

b- Vocabulary

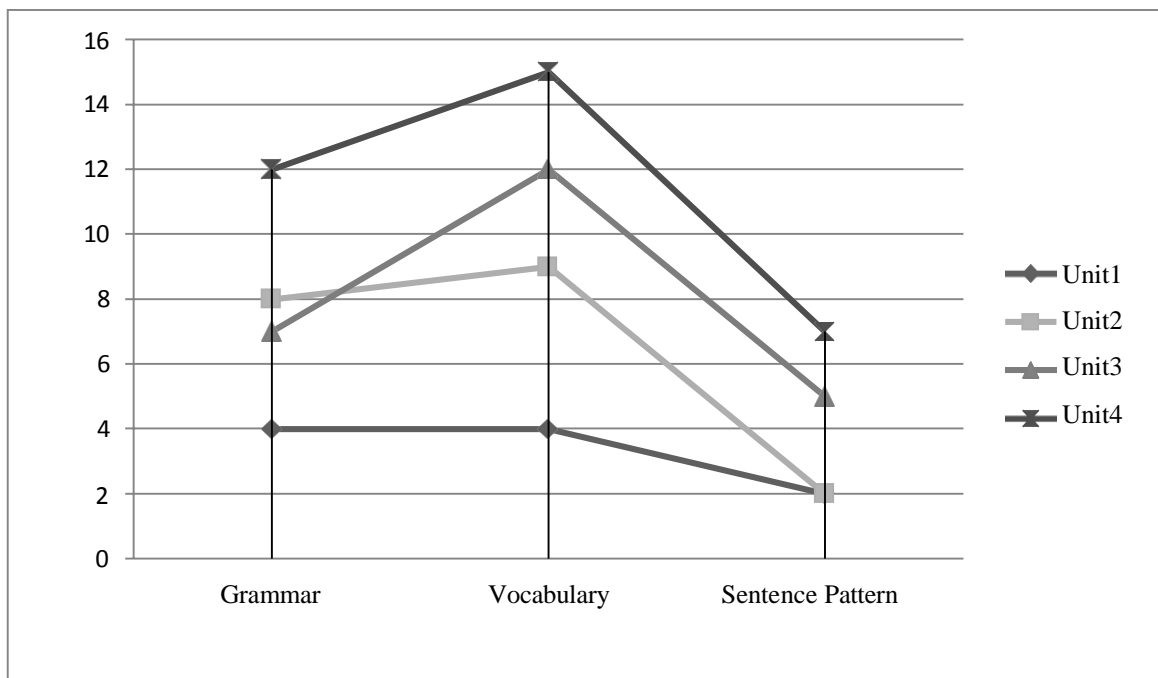
In this section, however, students were given some related activities with varied choices to select the best alternative. It was also adapted from three sources. Similar to the grammar section, only one possible answer is correct. The vocabulary introduced is both on general and context specific vocabulary to enlarge their overall competence in both types of vocabularies. Giving students the room for selecting is a way to make them aware of the selection they should make.

c- Sentence Pattern

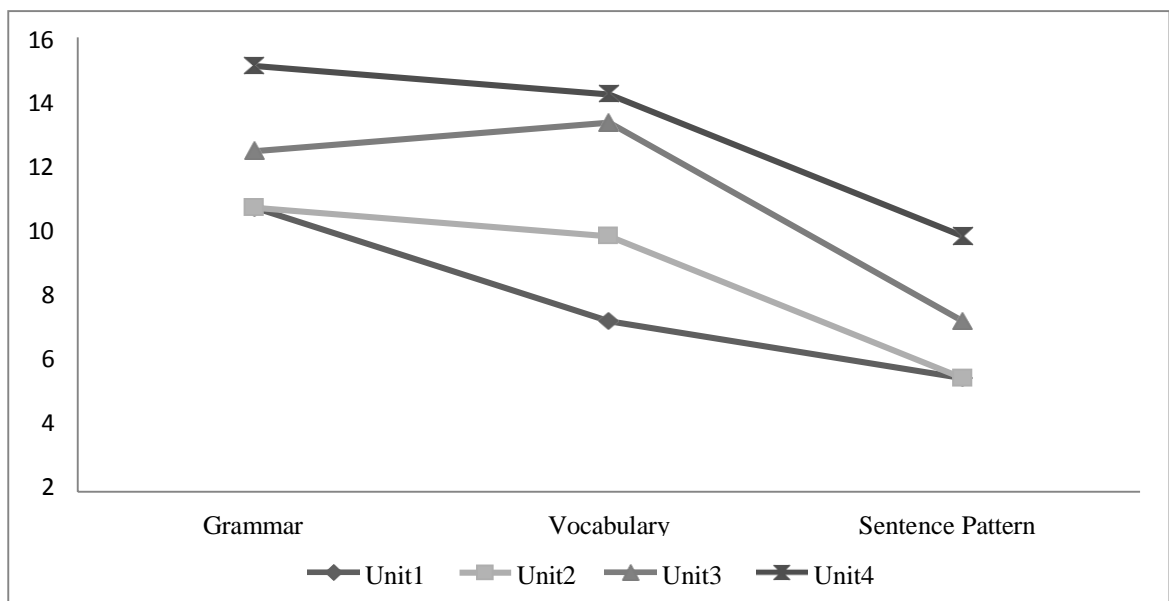
This phase inquired students to give correct structures and forms of both sentences and questions. It covers random words and concepts in which they were first required to think about the appropriate structure (sentence or question) they have to provide by to arranging those words into correct structures. Indeed, the time spent to complete each task was not defined at the beginning of the course, so as to keep students focused on the task they have to deal with, at the same time no grading is devoted for all activities because the purpose is to gather data on their performance in grammar, vocabulary and sentence pattern to accomplish the research needs.

4.12. The Intervention

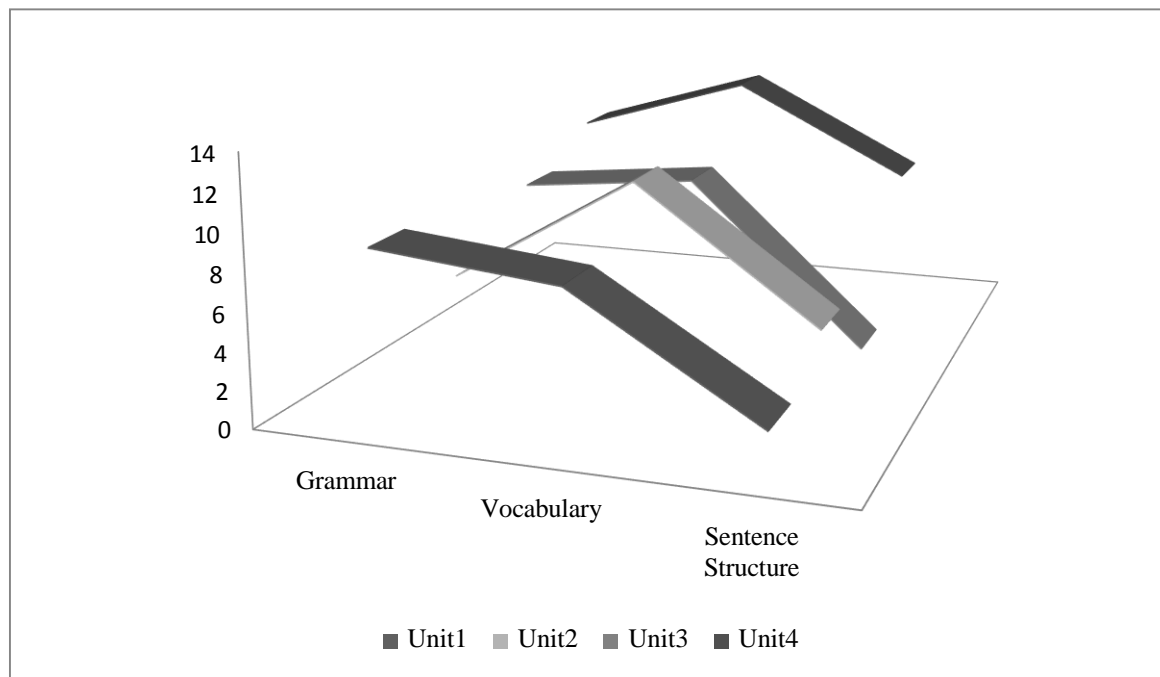
The researcher finds it interesting to reveal some of students' progress in during the course, because learners showed remarkable improvement after completing two units. These data were collected from the researcher's self-designed app as students' answers were stored.



Graph 4.1. Student score during the course

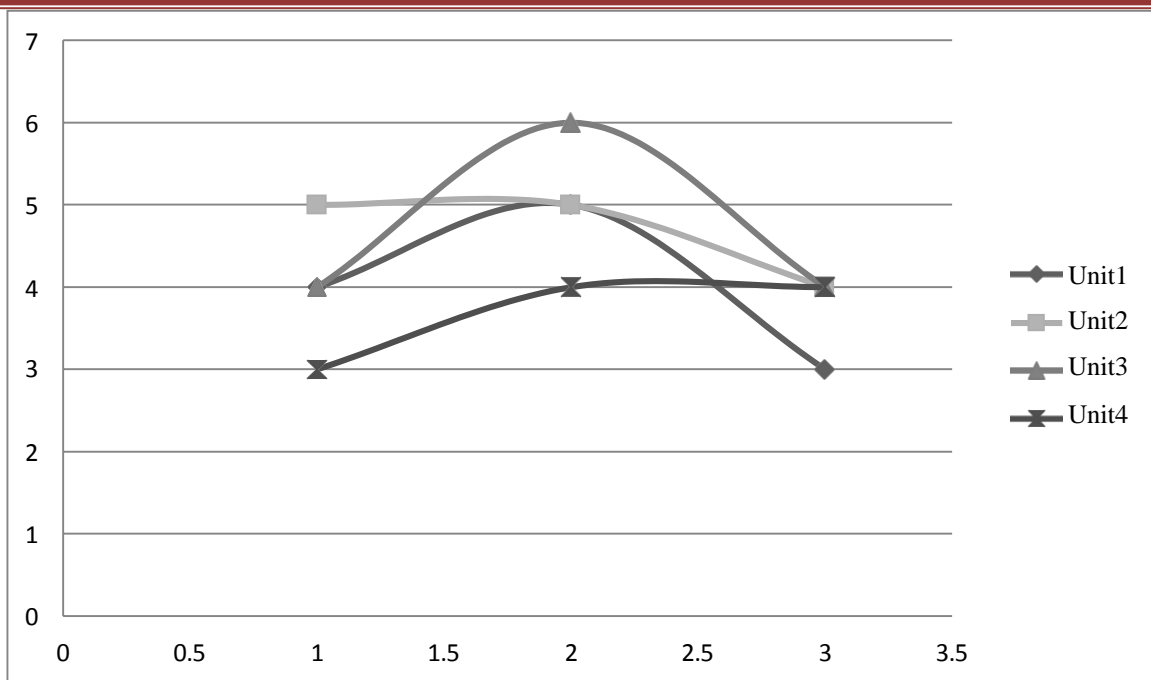


Graph 4.2. Student's progress during the course

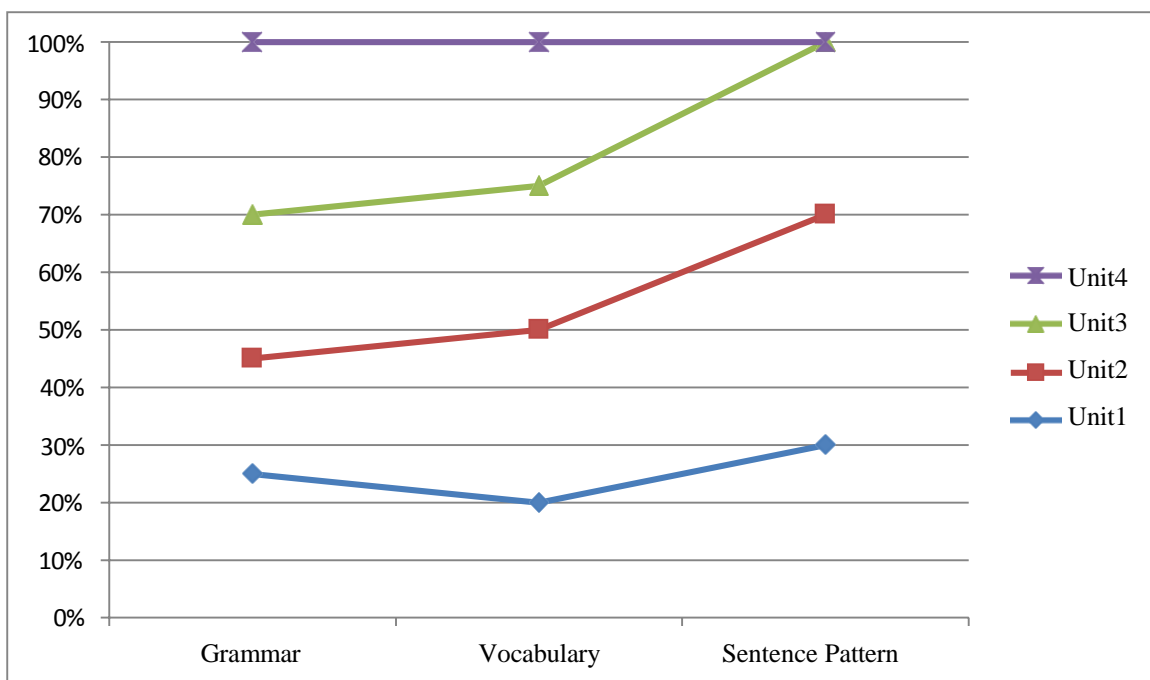


Graph 4.3. Student's progress during the course

The representations displayed in the above are illustrations of some students' progress during the course. The students showed remarkable progress in grammar, vocabulary and sentence structure, especially in the last unit. Actually, only minority have showed low progress if not remained the same throughout the four units. Some illustrations are reflected.



Graph 4.4. Student’s progress during the course



Graph 4.5. Student’s progress during the course

4.13. Challenges

The first challenge to be raised is time constraint. The researcher was in a rush to satisfy students' needs and design appropriate course for these learners. One hour and a half is not sufficient even though there were some added hours devoted to use different apps for grammar and sentence pattern purposes. Students were concerned with different courses in their stream of interest because they are third-year students who are supposed to have their License degree, and because of that they were more concerned to do efforts in other modules instead of focusing on English.

Another important limitation to be unveiled is that the researcher is indeed language teacher who is supposed to teach the language. However, because the issue studied took place in an environment where English is taught to satisfy particular needs, then it is compulsory to design a course with content specific that required her to do and make extensive readings and deep research not only on how to implement the intended intervention, but also on which and content to present to these learners, taking into account their needs and wants.

2.15. Conclusion

This chapter was devoted to present a thorough in-depth knowledge on the course designed for the presented and analysed needs. The course aimed to improve learners' grammar rules, vocabulary knowledge and sentence pattern learning using mobile devices as assistant tools. The implementation of mobile devices along with researcher's self-made app based and constructed according to Bloom's Digital Taxonomy brought learners into a learning environment where their needs are met and answered. In this concern, the next chapter is based on highlighting a number of recommendations and suggestions being suggested by the respondents and putting forward some others which may assist heavy adaptation of the present attempt.

Chapter Five

Suggestions and Implications to MALL Implementation

Chapter Five: Suggestions and Implications to MALL Implementation

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General Conclusion

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Appendices

المُلخَص

5.1. Introduction

In this study, the researcher scrutinized the impact of MALL on increasing grammar rules, vocabulary knowledge and sentence pattern learning to third-year ESP students, mainly students' of Banking and Insurance in the department of Finance and Accountancy, University of Tlemcen. After the successful implementation of MALL in the ESP class and according to needs analysis results and course design, the present chapter aims to introduce some recommendations that may sustain both educational institutions and ESP practitioners.

5.2. Synthesis of the Results of the Three Phases of the Study

The students' questionnaire and teachers' semi-structured indicated that the majority of participants welcomed the idea of integrating mobile technologies in ESP settings. These results motivated the researcher to initiate the implementation of this kind of technology by adapting some educational apps for grammar and sentence pattern (see chapter 4) and designed a self-designed mobile app to respond to students' needs and expectations, to certain extent.

Because learners showed lower level in grammar, vocabulary and sentence pattern, the researcher is instructed to remedy these poor performances by undertaking course design. The latter was conducted to approach to learners' needs and elaborate on their lacks and satisfy their wants, along with the necessities of the target situation. The experimental phase took place purposefully to study these issues and improve the situation. In this respect, adapting and designing are two integrated processes appeared an interesting move to move towards positive outcomes. The devoted amount of time and efforts were not for nothing as they were worthy especially in obtaining those positive and expected results. The use of pretest and posttest brought interesting findings by proving that mobile devices are indeed important tools that could serve educational purposes and develop learning practices. In addition, mobile apps are beneficial in presenting relevant and appropriate knowledge for learners to practice grammar, vocabulary and sentence pattern learning.

Hence, after these results, the investigator confirmed to a great extent the significant of mobile learning and mobile apps in improving ESP students' grammar rules, vocabulary knowledge and sentence pattern. The below conclusions should be highlighted:

RQ1. What concerns or reservations do business students have regarding the usability of smartphones in accessing their learning?

Based on the results obtained, the vast majority of students (from students' questionnaire) showed acceptance and readiness to use their smartphones for learning purposes. The analysis also showed that they tend to regard mobile device use important in their English classes to align with today's digital age as they are called digital natives. Their awareness and eagerness helps and encourages the research to meet such a need as it is the researcher's interest at first.

RQ2. How do ESP teachers perceive the use of smartphones by their students when in the classroom?

As expected, ESP teachers showed similar motivations and acceptance to using mobile devices by their learners to improve the learning needs. Although they reflected some reluctance and hesitation as to their use claiming for training, they regarded them tools that could be used to improve particular practices.

RQ3. How effective is MALL in enhancing third-year business student competence in grammar rules, vocabulary knowledge and sentence pattern learning?

The results obtained from this question are crosscheck from two research tools; students' questionnaire and teachers' semi-structured interview. Results from students' questionnaire analysis proved that MALL has short-term and long-term aims. Put differently, MALL enables learners to learn with no restrictions to time and place. They can learn inside the classroom setting or in the bus stop. This reflects the notion of formal and informal learning. Informal learning doesn't necessarily mean that the learning content is informal; rather it shows that learning can happen wherever the individual is located.

RQ4. What sort of software can assist third-year finance students' linguistic competence via their smartphones?

In highlighting the sort of software favoured by both respondents, different results were obtained. The majority of students favoured online apps by giving various reasons, but the main one is related to using the language in authentic context. However, for teachers they preferred the use of offline apps highlighting that offline apps enable learners to focus their attention on the learning. They also claimed that offline apps may not destruct the learning process as some students were found waiting for any escape to answer or respond to personal interests.

The overall findings showed that MALL can be used in the ESP context to empower learners with the necessary tools to do well in the language, and since they claimed for using their smartphones in their learning practices to sustain grammar, vocabulary and sentence pattern, then such a need was responded. Although both respondents showed interest and positive outlooks to its implementation, it is necessary to call for some implications and recommendations for better practices. Thus, the following section revealed those reclamations. It is important that the following section is partially related to elaborate on the suggested recommendations being revealed by the respondents during questionnaire and structured interview analysis.

5.3. Need for Ongoing Innovation in ESP Instruction

Because the integral aspect in ESP as a field of study is to equip learners with specific skills and competences to do well in their work place, it is important to reflect on the best way(s) to support this target. In this vein, a number of research papers have discussed on how to make ESP instruction more accurate, and to do so is by way of keeping innovative moves invade this area of research. The first facet to reveal in this context is the use of AI in ESP contexts. That is, AI-driven adaptive learning platforms, as an illustration, help in customizing instructional content based on individual learner profiles, enabling personalized and needs-responsive instruction. Tang (2023) demonstrated how AI-based needs analysis could align learning materials with the specific linguistic and professional demands of engineering students. Such platforms diagnose gaps in understanding, recommend targeted materials, and adjust pacing accordingly; addressing the challenges of technical terminology and time constraints common in ESP contexts.

In the same line of thought, Tang (2023) highlighted that AI-enabled needs analysis empowered ESP teachers to tailor materials that align with learners' professional and linguistic requirements, particularly in technical disciplines. Likewise, Zhu (2022) emphasized how AI tools facilitated a move toward performance-based, project-oriented teaching models that prioritize practical application over rote learning. Digital tools such as video platforms, Learning Management Systems (LMS) and online simulations offer opportunities to contextualize and personalize ESP learning (Dmitrenko et al., Citation2024; Kakoulli Constantinou, Citation2022; Vukšić et al., Citation2024). Citation (2024) observed that learners engage more deeply with ESP content when it is supported by technology, which allows them to access discipline-specific materials and authentic tasks.

However, instructors must be technologically literate and pedagogically prepared to integrate these tools effectively. In Indonesian higher education, limited IT infrastructure and low instructor readiness hinder the full adoption of such innovations (Citation, 2018; Citation, 2025). Furthermore, as Citation (2018) noted, classroom-based instruction alone is insufficient; learners benefit from digital exposure and self-paced learning to reinforce what is taught. Therefore, developing ESP programs today requires not only linguistic and content alignment but also strategic use of technology and institutional support for instructors. The continuous practice of innovation in ESP classes provides students with a lot of learning opportunities and advantages ranging from providing interactive and communicative activities related to their professions to tools for giving feedback and self-evaluation on that specific context (Butler-Pascoe & Wiburg, 2003). Moreover, technology use in ESP also provides students with the strategies to learn languages for specific purposes, task-based and collaborative learning activities, content-based authentic materials, and tailored learning environments to students' own needs (Dashtestani & Stojković, 2015).

It is understood that the need to innovative interventions in ESP instruction has an immense range of benefits to both teachers and learners, and therefore the more of these interventions happen in the ESP context, in particular, the more learning outcomes would be positive and progressive.

5.4. Strategies for Effective MALL Instruction in the ESP Context

In this section, the researcher pointed out up-to-date strategies for effective MALL instruction, mainly in the ESP context. The intention from such a review is to clearly display the importance of such strategies for successful learning outcomes in the field of ESP.

5.4.1. Augmented Reality

Augmented reality (henceforth abbreviated as AR) has emerged as the latest trend in English language teaching. It has been defined differently by different researchers. In this respect, Cuendet et al. (2015) describe AR as a "technology that projects digital materials onto real-world objects" (p. 554), effectively bridging the gap between real and virtual domains. Billingham et al. (2021) perceive AR as a tool for object manipulation that fosters dynamic educational experiences. Cabero and Barosso (2016) characterize AR as the "realtime mixing of digital and physical information via various technological devices"(p. 44), emphasizing its potential in creating immersive learning environments.

One obvious strength of this technology deals with its capacity to create student-centered learning (Aniuranti et al., 2024). The development of AR environments necessitates the integration of diverse technologies, as evidenced by prior studies (Kipper & Rampolla, 2012). These technologies encompass devices capable of capturing environmental imagery, such as computer screens, smartphones, webcams, or gaming consoles; display systems that integrate real-world and virtual imagery, utilizing the aforementioned devices; computational units, including computers, mobile devices, and gaming consoles, which process realworld data and generate the requisite virtual components; specialized software tailored for AR development; activators or markers, including QR codes, physical objects, or GPS signals; and content servers that store virtual data to be overlaid onto the real-world environment.

In the ESP context, AR appears to be influential in sustaining learner motivation, engagement, and enjoyment. Sharma (2021) and Al-Sinani and Al-Taher (2023) agree that AR provides a unique learning experience that boosts student motivation and enjoyment. They further argue that through the effective integration of AR, educators can develop more engaging, interactive, and comprehensive learning environments that address various learning styles, ultimately enhancing the understanding and retention of academic concepts for anaesthesiology students. ESP students are found impressed when

a mobile AR-based app is designed to meet their needs. In a study conducted by AlKhresheh et al. (2024), findings reveal that teacher self-developed app effectively made the material readable and easy to understand, with students being able to assess their mastery on their own. This reality underscores the significant role of AR in promoting social interaction, student-centered activities, and learner autonomy, thereby transforming the educational process into a more dynamic and inclusive experience for both teachers and students.

5.4.2. Gamification

The first thing to think about when the concept of gamification arises is what makes the difference between the word of playing and gaming. The word "playing" refers primarily to a child's activity, which takes place in a spontaneous, self-indulgent state. The word "gaming", on the other hand, is more associated with games, which are usually governed by rules and objectives (Caillois, 1961). The concept of gamification emerged in the early 2000s and has been evolving ever since. The term was first coined in 2002 by the British game developer Nick Pelling, who defined it later in a 2011 article as the game-like user interface of electronic devices and the making of them more enjoyable and fast (Pelling, 2011). In education, Zichermann and Cunningham (2011) wrote that the purpose of its application is to achieve some behaviour. According to Puztai (2020), gamification is a strategy where game elements are used in a non-gaming environment to move users' behaviour in a positive direction.

The essence of gamification is to make them motivated as rewards and recognitions invite them to enjoy the task they are performing. Gamification is used as an incentive at all levels of education and development, merely in university settings because researchers have obtained positive results in promoting deep learning, and strengthening student-centered approach (Aguiar-Castillo et al., 2021). It is important to note that integrating educational games into the learning process aligns with the theory of constructivism, which emphasizes that students should participate in building knowledge through active interaction and active learning (Lee, 2018). Educational games provide a dynamic platform for students to engage with abstract and complex concepts through interactive, visual methods. By actively participating in game-based learning, students can better understand and internalize scientific concepts. A review of the literature demonstrates that the gamification strategy affects students' learning and academic

achievement differently in various academic subjects (Alomari et al., 2019). For example, Gaurina et al. (2025) conducted an experimental study among high school students that found the gamification strategy had a significant impact on physics students' learning that make them more motivated and involved. Similarly, Richter and Kickmeier (2025) revealed that gamification in physics class significantly enhanced students' engagement and motivation.

An empirical study took place in Oman wherein a quasi-experiment research was conducted showed that mobile applications based on gamification statistically improved the learning of scientific concepts (El-Hosni, 2023). For teachers, it assists them in doing formative assessments and reducing teachers' workload (Topirceanu, 2017), along with optimizing feedback to all students (Gilyazova & Zamoshchanskii, 2020). Its implementation in the ESP context appears to be effective in developing and implementing several activities that enhance students' social behaviors, logical reasoning, critical thinking abilities, the development of cognitive abilities, the improvement of concentration and attention levels, the development of complex thinking and strategic planning abilities, the support of multidisciplinary learning, and the enhancement of motivation for learning.

5.5. Pedagogical Implications to MALL Implementation

In this section, the research put forward relevant ways to incorporate MALL successfully, mainly in the ESP context.

5.5.1. Teachers and Learners' Training

It is important to record that ESP teachers' training is considered an additional task these teachers should attain to be more functional in their teaching practice. By definition, training is a short-term and or immediate set of activities they deal with to be enough prepared in their new work place. Indeed, there are some important features/characteristics ESP teachers should possess so as to be successful ESP practitioners. In this vein, Bracaj (2015) put forward some aspects that that should be enjoyed. The first aspect concerns teachers' ability to be contributors and can do well in the ESP as a field of study. The second feature relates to his/her personal education. Put differently, teachers should be well educated to perform well enough in the ESP context. This feature also denotes the fact that ESP teachers need to be wider knowledgeable at the teaching phase including the teaching phases, materials selection, and so forth. These

skills are not merely related to ESP but in teaching in general.

Another issue to recall is teachers' perceptions to using mobile devices for learning. This means that training is closely related to the mind set of the teacher in accepting technology to become a partner in their journey. This is because if teachers showed poor/negative attitude to such a revolution, training would not be possible or practical. Therefore, sustaining and raising awareness on the capabilities of these devices is mandatory to a larger extent. Students' perspectives in mobile devices to be used in their learning practice are regarded as motivating source for teachers to start reflecting upon such a preference. In other words, learners' positive attitudes and continuous support and claim of mobile devices to be used in their classes are put together to call teachers, willingly or unwillingly, to do efforts and change perspectives to mobile device usage in education.

5.5.2. Pedagogy

The researcher finds that an appropriate method to teaching is the key to run a class. Pedagogy relates to teachers' overall knowledge as to the best and the relevant method, approaches, and theories to use in his/her teaching practice. In this research and when discussing the implementation of smartphones amongst learners in their English class with both parties, the gathered data showed positive attitudes and readiness to such a method of teaching and learning. In this sense, best practices are handled and accomplished when new perspectives are brought in the teaching-learning process. More than that, using MALL in the ESP context, as displayed in chapter three and four, improved the linguistic competence among these learners. In this area of interest and when referring to pedagogy, a lot should be expended to discuss almost all the components that go under the term "pedagogy".

5.5.3. Expand Connectivity Options and Infrastructure

As claimed before, pedagogy is a cover term that calls for a number of parameters that function together when this specific term is raised. Because the issue investigated is the use of MALL to improve ESP students' linguistic competence, the concept of MALL necessitates in its functioning internet connectivity. Accordingly and as demonstrated by Hockly (2013, p3), "Having reliable connectivity when implementing mobile-based activities is clearly a key consideration". It is claimed in the study findings that poor network is a hindrance to successful technology integration. However, the current movements by the government read that they are showing some potentials in promoting internet connectivity in the whole country to foster any intergration and or intervention that urges network. The more connectivity is spreaded all over the educational section, including universities, the more motivations to use technology will be witnessed.

5.5.4. Adopting Bring Your Own Device (BYOD)

Adapting flexibility for learners to bring their own devices into their learning classes is a challenging issue. However and after experimenting such a concept, BYOD model is approaches as rational simply because students own device brings confort and trust to the device users. Mobile user is confident is selecting the best devices s/he wishes to employ because ease of use and familiarity of the device are of paramount importance that educators and stakeholders should carefully and consistently consider. This claim is emphasized due to the benefits that could generate. The first to name is the concept of learner centredness; that is when the learner uses his/her own personal device, s/he would feel the power of the learning responsibility. This means that students would feel responsible, autonomous and can do well with the device as long as it is used to overcome their weaknesses in the language. Collaboration is another advantage that could be sorted out when it is used.

Motivation is another benefit that is promoted when BYOD is used. In a situation where learners are demotivated to attend classes, BYOD reduces and minimizes this uninterest and starts to uncover some habits students may not know. Kraut (2013, p12) maintained that mobile devices "can give students greater flexibility to move at their own pace and follow their own interests, potentially increasing their motivation to pursue learning opportunities". Indeed, ESP course design revolved around students' needs,

wants and necessities, and since students feel the need to use their devices or mobile devices in general to support and ease their learning practice, it is now significant to respect their needs as they are in fact no more called students or learners, rather they are labeled as “digital natives” or “millinials”.

5.5.5. Bridging Formal and Informal Learning

Because MALL is performed with little to no restrictions to time and space, then it could happen both inside and outside the physical learning environment. In this vein, Kraut (2013) claimed that “Mobile devices facilitate learning by blurring boundaries between formal and informal education” (p. 21). This indicates that learning may start in the physical learning environment and accomplished outside that setting, or vice versa. Therefore, using MALL gives the floor for students to expend their potential and skills outside the classroom thanks to the functionality, flexibility and availability of the mobile device. Teachers are no tighter to time to accomplish a specific syllabus at a specific timing. The use of these devices gives ample opportunities and chances both students and teachers to feel released and easy when time may not be enough to perform certain tasks. Therefore, these devices when used wisely and appropriately support the teaching learning journey.

5.5.6. ICT Centre

This is also highlighted by an instructor who claimed for combining ICT engineers to work together with language teachers to make the faculty of foreign languages a productive sector by issuing productive and innovative materials in language teachers’ practices. This is recommended by an ICT centre for each language department for ease accessibility to these centres, especially for veteran teachers. The endeavour is beneficial as seen in this research paper’s findings.

5.5.7. Educational Events

Organizing educational journeys like seminars, workshops and conferences where important facts and interventions are put known, discussed and analysed could be the starting point to change and adapt new perspectives and standpoints to accept this approach. These events are important not only for instructors, but also for students, parents and educators in general to spread awareness and stress on some important aspects to MALL integration. These events are also important for veteran instructors who

may show persistent and unwillingness to adapt such an approach in their practices.

5.6. Study Limitations

The current research works covers a number of limitations. They are therefore summarized in the following points:

- The researcher found some limitations in designing the self-designed app according to Bloom's Digital Taxonomy. Adaptation concerned this matter.
- Students' number in the experimental group was limited to thirteen participants.
- Internet access in the department was very limited.
- Some data were missed in the analysis since the platform where the app was grounded turned to be based on money basis. That is, the free-of-charge platform turned to be based on money through Master/Visa card.
- "The blessed movement 2019 " that took place in the country harmed data to get collected in its desired time.
- The teaching load was limited to one hour and a half.
- Covid-19 is another limitation that prohibited the researcher to administer a posttest interview to students to collect their feedback on the experience they have lived. Indeed, the researcher called them in Zoom and Teams, but none showed interest.
- The English language was not included as a teaching course for these learners (see in the appendices). Such a hidden fact is the main constraint that harms course design.

5.7. Further Research

The study identified several areas where further work would be useful, especially for researchers and stakeholders at universities in Algeria, and the ESP context in particular:

- The research population does not need to be limited to third-year Banking and Insurance students at Tlemcen University.
- Similar research should be conducted in other universities, so that conclusions may facilitate better decision making for the development of learning and teaching processes in Algeria.

- Since this research is limited to the implementation of MALL in the department of Finance and Accountancy, extended research should engage other students from other branches.
- It is believed that more attention should be paid to the interplay between mobile technologies, and raising ESP teachers' awareness.
- More empirical researches need to probe the effectiveness of MALL on other aspects of English language.

5.8. Conclusion

This research work provides illuminating findings of how MALL has improved ESP learners' grammar, vocabulary and sentence pattern. This chapter dealt with the main conclusions which were drawn from the research findings, and proposed some recommendations for both educators and for further researches. Interestingly, mobile devices can support or hinder language learning, depending upon how it is implemented and utilized by educators. MALL should also not be merely viewed as an alternative, or as a new flavor of existing education but it should be thought of as a complementary way to support and enhance learning environments.

General Conclusion

General Conclusion

The mastery of the English language is no longer a choice, but rather a must. As a point of fact, third-year tertiary students, after a lengthy experience of learning English for a moderate number of years, are unable to express themselves in English neither accurately nor fluently. The current status of students' actual competence in the English language at the department of Finance and accountancy, Tlemcen University is tough that requires immediate action and convenient remedies. For this reason, the main concern of this study is to investigate the effectiveness of integrating MALL on the development of performance, mainly in grammar, vocabulary and sentence pattern. Hence, this study is carried out to confirm or reject the research hypothesis stating that ESP students who use mobile devices will show better performance than their counterparts who do not use the intervention. In this regard, the fundamental purpose of this research is to show whether the integration of mobile devices can help and, thus, motivate students to improve their learning practices in these three aspects of language.

To attain the intended purposes, a mixed research method "triangulation" was adopted which was an amalgam between quantitative and qualitative approaches. It was undertaken to answer to the following research questions:

1- What concerns or reservations do business students have regarding the usability of smartphones in accessing their learning?

How do business teachers perceive the use of smartphones by their students when in the classroom?

2- How effective is MALL in enhancing third-year business students' linguistic competence merely in grammar, vocabulary and sentence pattern?

3- What sort of software can work well for third-year business students' in linguistic competence learning?

General Conclusion

In doing so, different data gathering tools were employed (experiment tests, questionnaire, and interview) to address the above stated questions and suggest some fitting recommendations. The manifold perspectives provided by the various research tools allowed the investigator to gather a variety of data. The methodological triangulation pursues to support the reliability and validity of the data gathered through a combination between the different research tools, which in turn provided insightful findings.

It begins with the analysis of students needs by questionnaire administration to third-year Banking and Insurance students in the department of Finance and Accountancy, Tlemcen University. The analysis showed that these learners have poor proficiency in grammar, vocabulary and sentence structure. Another important striking result is that mobile technologies are pervasive among these students, and they have the capacity to use them skillfully. Assimilating these findings appears workable to introduce mobile learning. They also confirmed their willingness to incorporate these highly prevailing technologies in oral expression class. Ergo, the results of the first phase provided the environment for the experimental phase. Similar findings were also met for teachers as they aimed to improve their learners' grammar, vocabulary and sentence pattern.

During the experimental phase, the experiment was conducted as an intervention to integrate MALL in the English class by designing a self-made app in accordance to Bloom's digital taxonomy along with adapting some mobile apps for grammar and sentence structure learning in an attempt to scrutinize its efficacy and significance in improving those language aspects. The results of posttest revealed a sound progress in these aspects for students who construct the experimental group.

After data analysis phase, intervention and posttest analysis, it is important to highlight the following conclusions:

- 1- MALL implementation is pronounced significant and possible in the ESP context as a sort of motivation and as a new teaching/learning approach.
- 2- Improving grammar, vocabulary and sentence pattern through the use of mobile devices and mobile apps was successful.
- 3- Researcher's self-designed app by adapting Bloom's digital taxonomy appeared

General Conclusion

significant in grammar, vocabulary and sentence pattern improvement according the six levels that sustain continuous knowledge recycle.

- 4- Students' motivation, engagement and willingness to attend English classes was supported by the principle of BYOD.
- 5- Formative assessment looked possible and fruitful in a mobile learning environment.
- 6- E-assessment enabled learners to receive feedback electronically that invited them into a different learning experience.

Having gained considerable knowledge on this issue, MALL should not be regarded as an end in itself; however, it should be viewed as a supporting tool in language teaching and learning. At the first place, it is recommended that teachers need to allow students to use mobile technologies as a supporting tool in the teaching/learning of grammar, vocabulary and sentence pattern to keep their interests and meet their needs as digital natives. However, this latter cannot be fully achieved, unless through training teachers and students. As a point of fact, learning events, such as conferences and workshops should be organized to increase students and teachers' awareness on the effectiveness of MALL in learning. Moreover, blended learning as an innovative teaching mode is highly recommended for teaching. Furthermore, to increase the opportunities of MALL integration in EFL context, mainly in teaching speaking, infrastructure should be put at the university to power learning and teaching via handheld devices.

When bringing our research to its conclusion, this modest contribution is a significant attempt to address the implementation of MALL in the ESP context. Due to the limited scope of the sample, other researchers can expand the boundaries of the present research and study larger number of participants. In addition, extended researches need to engage other students from different disciplines in different universities. Moreover, further research is needed to address other issues in the field, such as developing language skills (listening, speaking, reading and writing). In fact, MALL investigation is a promising fertile field of research for ambitious researchers who wish to invest into MALL.

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Appendices

Appendix A

Students' Questionnaire

Actually, I am a teacher in the department of Finance and Accounting and a third-year doctoral student in the department of English where I am undertaking my doctoral research on the issue of using ESP students' mobile devices to improve their English learning mainly in Grammar, vocabulary, and sentence pattern. Therefore, this questionnaire is designed to collect data about third-year of finance of banking and insurance students' outlooks regarding the use of their mobile devices in the classroom, also to see their reliability of online smart phone applications (apps) on the improvement of vocabulary, grammar and sentence pattern among them.

I-Background Information:

1-Gender:

Male Female

2-Age:19-24 25 and more

3-Do you work?

Yes No

If yes, say the nature of your work, and mention how many years you are practicing it

.....

II- Rubric One: Students' attitudes on the use of mobile devices for learning purposes in the classroom setting

1- What sort of mobile device do you actually use? (You can cross more than one)

- a- Mobile phone
- b- Smartphone
- c- Blackberry
- d- Tablet PC
- e- Iphone apple
- f- PDA (Personal Digital Assistant)
- g- PC (Personal Computer)
- Others,

.....

2- Which mobile device do you use the most? (Cross only one (01) box)

- a- Mobile phone
- b- Smartphone
- c- Blackberry
- d- Tablet PC
- e- Iphone apple
- f- PDA (Personal Digital Assistant)

3-What is its operating system?

- a- IOS
- b- Windows
- c- Android

Others,.....

4- For which purpose (s) do you use this mobile device? (rank from 1to3 from

the most important (1) to the least important (3))

General Use	Examples	
Personal Use	Making/receiving calls, writing short messages, using social media (facebook, Instagram,viber...),taking photos,writing notes and reminders...	<input type="checkbox"/>
Educational Use	Downloading educational mobile application (dictionaries, grammar & vocabulary apps...), sharing screenshots & educational documents, downloading & reading pdfs, using Web browsers...	<input type="checkbox"/>
Entertainment Use	Watching YouTube channels, downloading game apps, sharing...	<input type="checkbox"/>

5- According to you, is this device useful for learning purposes?

Yes No

If yes, select from the options below why it appears helpful: (You can cross more than one)

a- Because I can use the browser to check any information I need and at

any time. .

b- Because I can use it to share information using Bluetooth,
SHAREit...with others.

c- Because I can screenshot any information I read from written
documents.

d- Because it has enough space to download some educational
applications.

e- Because it is light; it can be hold easily to read, write, listen, and
watch anything and anywhere.

Others,.....
.....

6- Do you think that this mobile device is a helpful learning tool in the
English class?

Yes No

If no, which mobile device do you think the most helpful in the English class?

(Select only **one** mobile device)

- a- Mobilephone
- b- Smartphone
- c- Blackberry
- d- Tablet PC
- e- Iphone Apple
- f- PDA (Personal Digital Assistant)

7- Have you ever used this mobile device in the English class?

Yes No

If yes, please specify:

- Its use (language area)

.....

- Its ownership:

-The university ownership

-Personal ownership

-Others ownership

8- Which ownership you prefer the most?

a- The university ownership

b- Personal ownership

c- Others ownership

Why?.....

9- How often do you perceive the use of this mobile device in the English class?()

Cross only one (01) box)

a- Always

b- Very often

c- sometimes

d- rarely

e- Never

10-How do you perceive the use of this mobile device in the English class?(Cross

only one (01) box)

a- Not interesting

b- Fair enough

c- Very interesting

d- Tremendous

Justify your answer:

.....

.....

Rubric Two: Students' grammar, vocabulary and sentence pattern improvement through MALL

1- Do you like to attend your English class?

Yes No

2- Do you think that English is important to you ?

Yes No

If yes, why do you think so?

- a- Because I need it in my future career
- b- Because I wish to carry on my studies overseas
- c- Because it is a global language, I need to learn it
- d- Because I need to have enough grade to satisfy my overall grade
- e- Because I need to learn and understand the register of banking and insurance

Others,

.....

If no, why do you think so?

- a- Because I do not need it in my future career
- b- Because I have no objective(s) from learning it

Others,.....

3- What are your expectations from taking the English class? Rank your selection from the most (1) to the least (08)

- a- To improve my repertoire as to banking and insurance
- b- To develop some knowledge about the language (grammar,vocabulary...)
- c- To be able to use the language verbally in my future job
- d- To be able to use the language verbally and non verbally in my future job

- e- To be able to use the language verbally for personal purposes
- f- To be able to use the language verbally and nonverbally for personal purposes
- g- To be able to use the language verbally for personal and occupational purposes
- h- To be able to use the language verbally and non-verbally for personal and occupational purposes
- I- I have no expectation

Others,

.....

4- What is/are the skill (s) you need to develop the most? Rank your selection

From the most (01) to the least (04)

- a- Listening
- b- Speaking
- c- Reading
- d- Writing

5- Use the following key to answer each column:






→ Which of these you think yourself knowledgeable at? (You can cross more than one)



→ Which of these you are weak at? (Rank them from the most (01) to the least(08))



→ Which of these you would like to improve yourself in? (Rank them from the most(01) to the least (08))

			
Grammar	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vocabulary related to Banking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sentence Pattern	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Speaking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vocabulary related to Insurance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pronunciation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
General Vocabulary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Writing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6- As third-year learners, how do you consider your level in the English language?

- a- Very weak
- b- Weak
- c- Average
- d- Good
- e- Very good
- f- Excellent

7- Did your teachers of English teach you a little on grammar, sentence pattern, And vocabulary?

Yes No

If yes, please specify.

.....

8- What teaching materials did your teacher use when teaching you some aspectsof grammar, sentence pattern, and vocabulary?(You can cross more than one (01) option)

- a- Handouts
- b- Theblack/whiteboard
- c- Videos
- d- Mobile applications
- e- Teaching platform

f- PowerPoints

g- Allofthese

h- Noneofthese

Others,



9- What kind of teaching material you like when you learn grammar,vocabulary,
and sentence pattern?

a- Handouts

b- Theblack/whiteboard

c- Videos

d- PowerPoints

e- Mobileapplications

f- Teachingplatform

g- Allofthese

h- Noneofthese

Others,



10-According to you, what is the best way to teach and learn grammar,
vocabulary, and sentence pattern? (Cross only one (01) option)

a- Handouts

b- Black/white board

c- Videos

d- Mobile applications

e- Teachin gplatforms

f- Powerpoint

Why do you think so?

.....

.....

11-Do you think that teaching and learning grammar, vocabulary, and sentence

pattern with mobile devices fruitful?

Yes

No

12-To what extent the teaching and the learning of grammar, vocabulary, and

Sentence pattern with mobile devices can be helpful? Cross the box that corresponds with your desire

Statement	Agree	Strongly Agree	Disagree	Strongly Disagree	I do not Know
a-It is an innovative way to learn and acquire some language aspects mainly in grammar, vocabulary, and sentence pattern.					
b-Mobile devices are portable and can help in learning the three anywhere.					
c-Mobile devices help me remember and practice the learnt knowledge inside and outside the classroom.					
d-Mobile devices users are dependent on their mobile devices which may act well in building habits to use it for the learning of grammar, vocabulary, and sentence pattern.					
e-Mobile devices motivate learners to learn grammar, vocabulary, and sentence structure.					
f- Mobile devices are equipped with options and sufficient life memory that suit for knowledge retention in a desirable period of time.					
g-Mobile devices act well for lifelong learning					

13-Do you think that grammar, vocabulary, and sentence pattern knowledge are important in your workplace?

Yes

No

14- Which situations you think that grammar, vocabulary, and sentence pattern knowledge help you in your work place?

a. They are useful when speaking/writing to foreigners

b. They are useful when in customer service

c. Writing and/ or reading emails, resume, motivation letter etc

d. they are helpful in conference and/ or traineeship overseas

Others,

.....

Rubric Three: Mobile Applications for Grammar, Vocabulary and Sentence Pattern Learning

1- Have you ever used any grammar, vocabulary, and sentence pattern mobile applications for learning?

Yes

No

If yes, name/ describe some.

.....

.....

2- Are you motivated to learn some grammar, vocabulary, and sentence pattern with mobile applications?

Yes

No

3- Do you think that learning grammar, vocabulary, and sentence pattern with mobile applications is helpful?

Yes

No

Why do you think so?

.....

.....

4- According to you, which system you like to work with when learning with Mobile applications?

On line

Off line

Justify your choice.

.....

.....

5- To what extent mobile applications help you improve your grammar, vocabulary and sentence pattern? You can cross more than one box

a- Mobile applications help me learn everywhere and in a digital format

b- They allow me experience a new way to learning

c- They help me broaden my knowledge about the language

d- They help me learn with the application(s) that suits my level of understanding

e- They help me learn with no restriction to time and amount

f- Others

.....

6- In which environment would you like to use mobile applications to learning grammar,vocabulary and sentence pattern?

a- In the classroom with the assistance of the teacher

b- In the classroom with the assistance of my classmates

c- In the classroom with the assistance of the teacher and classmates

d- At home with teachers e-feedback

e- At home with classmates e-feedback

Justify your answer(s).

.....
.....

7- Do you think that learning grammar, vocabulary and sentence pattern are best learnt with reference to your field of study?

Yes No

.....
.....

Why do you think so?

.....
.....

8- Do you like to use ready-made mobile applications to learning grammar, vocabulary,and sentence pattern with regard to your field of study?

Yes No

Explain.....
.....

9- Do you think that teacher's self-mobile application design best suit your learning of grammar, vocabulary, and sentence pattern with reference to your field of study?

Yes No

Explain

.....
.....

10- What other considerations would you like to address to your teachers of English?

.....
.....

Thank you for your collaboration

Appendix B

ESP Teachers' Semi-Structured Interview

Section One: Teacher's Teaching Profile

1- Gender:

Male Female

2- Age:

25 years- 35years 35 years and more

3- Are you:

Part-time teacher Full-time teacher

Specify the faculty and/ or the department

.....

4- What educational degree do you have?

Master

Magister

Doctorate

Professor

5- How long have you been teaching English in the university?

0-5 5-10 10-15 16 and more

6- How long have you been teaching English in that department?

0-5 5-10 10-15

7- Which level do you teach?

L1 L2 L3 M1 M2

8- Which area of expertise your students belong to?

9- Do you teach the same field regularly or you switch to others?

Why?

10- How do you design your teaching syllabus?

By conducting a needs analysis process

By adopting former syllabuses

By downloading some lessons from the internet

By adapting other university's syllabus

By negotiating the contents with other teachers

Others,.....

11- Are your students satisfied with the content you are appreciating?

How?

12- What teaching material (s) you use in your teaching? Select more than one and among which do you use the most? select only one

- Handouts
- Blackboard
- PowerPoint
- Mobile Applications
- Video
- Teaching platform

13- What teaching material suits your learners the best?

.....

Why do you think so?

- Maybe because they feel comfortable
- Maybe be they are accustomed to it
- Others,
-

SectionTwo: Rubric One: Teacher’s Attitudes on the Use of Mobile Devices in the Classroom

- 1- What mobile device do you have? What is its operating system?
- 2- Do you use it for didactic purposes? Explain
- 3- Do you think that mobile devices/ smartphones can be used in the classroom setting?
Yes / No
- 4- How do you perceive the use of mobile devices in the English class? (Cross only one (01) box)
 - e- Not interesting
 - f- Fair enough
 - g- Very interesting
 - h- Tremendous

Why?

- 5- Are you a proponent or an opponent teacher to mobile devices/ smartphones usage in the classroom by your students? Why

- 6- Do you believe that mobile devices use in the classroom has some effects? Explain

- 7- How would you react when mobile devices are used in the classroom by your students?
- 8- Are you going to consider students wants if they ask for using their personal devices/ Smartphones in the classroom to learning, why?
- 9- What expectations do you believe mobile devices may offer when used in the classroom? Select and then rank them from the most to the least
- a- They motivate learners to learning
 - b- They act well for lifelong learning
 - c- They destruct learners from learning
 - d- They bring learners to a new learning environment
 - e- They help learners to get engaged in the learning process
 - f- They make learning personalized
 - g- They do not correspond with their learning style
 - h- Their screen size make them uncomfortable to take them as a learning tool
- Others,.....
- 10- How often do you perceive it use in the classroom?
- Rarely
 - sometimes
 - very often
 - always
- 11- For each statement below, select the alternative that reflects your level of agreement:

Statements	Agree	Strongly Agree	Neutral	Disagree	Strongly Disagree
Veteran teachers find it difficult to adapt to smartphones usage in the Classroom					
Smartphones in the classroom destruct teacher in the lesson flow					
Teachers are reluctant and feel uncomfortable to mobile devices in the classroom					
Teachers welcome the fact of using mobile devices in the classroom but need training					
Teachers are motivated to adapt another approach (MALL) to language teaching					
Mobile devices particularly benefit weaker and shy students to lesson engagement					
Mobile devices help teachers in classroom management					
Mobile devices meet today's digital natives needs					
Mobile devices are key tools both teachers and students benefit from					
Students are dependent on their mobile devices that could help teachers bridge them for educational purposes.					
Though mobile devices are designed for personal uses, they could be used for educational purposes.					

RubricTwo: Mobile Devices for Grammar, Vocabulary, and Sentence Pattern Learning

- 1- Which of the following do you teach to your students:
- a- Technical vocabulary
 - b- Grammar
 - c- General vocabulary
 - d- Sentence pattern
 - e- Formal writings (paragraph writing, e-mail writing, essay writing...)
 - f- Speaking norm (job interview, contextual conversations (scenarios related to their field of study)...))

Specify,

- 2- Which of the followings you focus on? Rank them from the most (1) to the least (6)
- a- Technical vocabulary
 - b- Grammar
 - c- General vocabulary
 - d- Sentence pattern
 - e- Formal writings (paragraph writing, e-mail writing, essay writing...)
 - f- Speaking norms (job interview, contextual conversations (scenarios related to their field of study)...))

Why?.....

- 3- Do you teach sentence pattern to your students?

Yes No

How?

- 4- What sentence pattern(s) do you instruct?

1. All sentence types / Phrases Others.....

- 5- How do you approach students' sentence pattern?

Poor / very poor / average / good / very good / excellent

- 6- Do you think that grammar, vocabulary, and sentence pattern important for ESP students?

Yes No

7- In which context they are helpful?

8- What teaching material(s) do you use when teaching grammar, vocabulary and sentence pattern?

Grammar	Vocabulary	Sentence Pattern
a- Handouts	a-Handouts	a-Handouts
b- Videos	b-Videos	b-Videos
c- Mobileapplications	c-MobileApplications	c-MobileApplications
d- Power Point	d-Power Point	d-PowerPoint
e- Teachingplatform	e-TeachingPlatform	e-TeachingPlatform
f- Black/ White board	f- Black/ White board	f-Black/ White board
Others, specify.....		

9- How do you teach grammar, vocabulary and sentence pattern to your students?

1. Using the direct method
2. Using the indirect method

10- What type of activities do you use in grammar, vocabulary and sentence pattern teaching?

11- Are your students satisfied with those types of activities?

12- What sort of assessment do you use to evaluate their understanding in grammar, vocabulary and sentence pattern?

13- Do you find formative assessment convenient to strengthen grammar, vocabulary and sentence pattern instruction? **Why?**

14- Is it possible to integrate formative assessment in your ESP classes? **If yes, why? / If no why?**

15- How do you evaluate your students' level in grammar and vocabulary?

- a- Poor
- b- Very poor
- c- Average
- d- Good
- e- Good enough
- f- Very good
- g- Excellent

16- Do you think that their actual level in grammar, vocabulary and sentence pattern is due to:

- a- Students' Lack of interest
- b- Poor teaching method
- c- Teaching materials to teaching grammar and vocabulary
- d- Teacher's low focus on grammar and vocabulary teaching
- e- Students' low motivation to learning grammar and vocabulary
- f- Students' poor learning environment

Other,.....

17- Have you ever heard or used a mobile device to teaching grammar ,vocabulary and sentence pattern?

Yes No

18- Which of the followings do you believe that grammar, vocabulary and sentence pattern could be best taught:

1. Handouts
2. Videos
3. Black/ White board
4. Mobile applications
5. Power Point
6. Teaching platform

Others,.....

Why?.....

19- Do you believe that grammar ,vocabulary and sentence pattern are best taught with mobile devices?

Yes No

Why?.....

20- To what extent mobile devices serve grammar, vocabulary and sentence pattern instruction?

- a- Students are dependent on their mobile devices which may act well in building habits to use it for the learning of grammar, vocabulary and sentence pattern.

- b- Mobile devices motivate learners to learn grammar, vocabulary, and sentence pattern.
 - c- It is an innovative way to learn and acquire some language aspects mainly in grammar, vocabulary and sentence pattern.
 - d- Mobile devices are portable and can help in learning the three anywhere
 - e- Learning grammar, vocabulary, and sentence pattern constantly encourage students to take advantage of their mobile devices for educational purposes.
 - f- Mobile devices are effective tools for students to memorise and retrieve since these devices accompany them very often.
- Others.....

Rubric Three: Mobile Applications for Grammar, Vocabulary and Sentence Pattern

Learning

1- Do you know some grammar, vocabulary, and sentence pattern mobile applications?

Yes No Name some

2- Do you believe that mobile applications serve grammar, vocabulary and sentence pattern instruction?

Yes No

Explain.....

3- Are mobile applications to learning grammar, vocabulary and sentence pattern helpful to ESP students?

Yes No

4- Will mobile applications help students improve grammar, vocabulary and sentence pattern learning?

Yes No

5- To what extent mobile applications help students improve their grammar, vocabulary, and sentence pattern learning

- Mobile applications help students to learn everywhere and in a digital format
- They allow students experience a new way to learning
- They help students broaden their knowledge about the language
- They help students learn with the application(s) that suits their level of

understanding

- They help students learn with no restriction to time and amount

Others,

6- If you are asked to adapt and / or adopt mobile applications as tools to teach grammar, vocabulary, and sentence pattern, do you accept?

Yes No Why?

7- Do you prefer online or offline mobile applications to teach grammar, vocabulary, and sentence pattern?

a- Online

b- Offline

Why?.....

8- Do you think that grammar, vocabulary, and sentence pattern are best taught with reference to students' field of study?

Yes No Why?

9- As an ESP teacher, do you like to use ready-made mobile applications to teaching grammar, vocabulary and sentence pattern, or you like to design it yourself?

Why?.....

10- What challenges do you expect when designing a mobile application to improve grammar, vocabulary and sentence pattern among your students?

a- Mobile application design to teach the three is cost effect

b- Teacher's mobile application design helps teachers meet their students' expectations in terms of using their mobile device to learning in parallel to improving their grammar, vocabulary, and sentence pattern knowledge.

c- Teacher's mobile application design motivate learners to learning the three

d- Teacher's mobile application design enable learners to get engaged in the learning process

e- Teacher's mobile application design requires time and effort

f- Teacher's mobile application design invite students and teachers to combine efforts to positive outcomes

g- Teacher's mobile application design help teachers assess students

progress to grammar, vocabulary, and sentence pattern learning

- h- Teacher's mobile application design calls teachers and students to act different roles as tutors and active agents respectively
- i- Teacher's mobile application design help teachers ensure students' needs, lacks and wants and promote digital literacy.
- j- Teachers are skeptical to designing mobile applications to teaching grammar, vocabulary, and sentence pattern due to the lack of training and unfamiliarity to mobile devices

Others,.....

11- If further information you would like to insert, I will be very grateful

.....

.....

.....

.....

Appendix C

This pretest consists of three parts namely, grammar, vocabulary, and sentence pattern. Your responses are used for research only.

Part One: Grammar

Circle the appropriate alternative to complete each sentence:

- 1- The marketing department is _____ the meeting.
 - a- organizing
 - b- organize
 - c- organized

- 2- If he doesn't come in the next 10 minutes, we _____ without him.
 - a- started
 - b- would start
 - c- will start

- 3- Is he a clerk? A:No, he's _____ manager. (*There's more than one manager*)
 - a- the
 - b- 0 article
 - c- a/ an

- 4- He always comes _____ time. (= at the right time, neither late nor early)
 - a- in
 - b- at
 - c- on

- 5- I don't care ----- expensive it is.
 - a- How
 - b- How much
 - c- How many
 - d- What

- 6- August 31st is a national holiday, ----- everybody dances in the streets.
 - a- That
 - b- When
 - c- Which
 - d- Where

- 7- Which company do you work _____?
- a- No preposition
 - b- In
 - c- For
- 8- I've transferred _____ money to your bank account.
- a- some
 - b- many
- 9- Be patient. I won't be _____ longer.
- a- Many
 - b- Much
- 10- The report is too long and badly written. _____ it's inaccurate.
- a- Whereas
 - b- Therefore
 - c- Although
- 11- She walked home by herself, _____ she knew that it was dangerous.
- a- Meanwhile
 - b- Subsequently
 - c- Despite
- 12- Turn these adjectives into adverbs
- good He paints _____.
 - Happy They lived _____.
- 13- It is _____ dream I have ever made.
- a- Worst
 - b- The worst
 - c- Worse

Adapted from

<https://www.businessenglishsite.com/business-english-grammar-tests.html>

<http://www.perfectyourenglish.com/toefl-grammar-test-6.htm>

<https://www.esl-lounge.com/student/toefl/toefl-075-grammar-many-some.php>

Part Two: Vocabulary:

Circle the appropriate alternative to complete each sentence:

- 1- The dress _____ at my job doesn't allow us to wear sleeveless shirts.
 - a- Code
 - b- Rule
 - c- Trend

- 2- Some companies visit universities and try to _____ the most promising students to work there after graduation.
 - a- Absorb
 - b- Convert
 - c- Recruit

- 3- The success of our company is largely _____ on having strong and capable staff.
 - a- adept
 - b- defendant
 - c- dependent

- 4- Several of the sales _____ told me that they have received numerous complaints from customers.
 - a- persons
 - b- Personal
 - c- Personnel

- 5- Regular automated payments of the same amount (e.g.charity) are called:
 - a- Standing order
 - b- Direct debit
 - c- Direct order

- 6- If you need to borrow more money from your bank, you can ask them to increase your:
 - a- Overdraft limit
 - b- Overdraft level
 - c- Overdraft supply

7- With my savings account, I have to _____30 days notice if I want to _____
a withdrawal.

- a- Say/do
- b- Give/make
- c- Ask for/take

8- Two or more customers may apply for a _____

- a- Two-person account
- b- Joint account
- c- Together account

9- Many employees receive their salaries directly into their account by:

- a- BACS payment
- b- BATS payment
- c- BAPS payment

10-A person who has taken out insurance cover is known as:

- a-Insurer
- b-Insured
- c-Insurance

11-... or the _____

- a-Policy holder
- b-Policy taker
- c-Policy

12-In many cases, the insurance company doesn't take the financial _____

- a-Risk
- b-Problem
- c-Damage

13-A__proves you have insurance while the policy is being processed.

- a-Cover letter
- b-Cover paper
- c-Cover note

14-person who assesses insurance claims is called a _____.

- a-Loss adjuster
- b-Claim adjustor
- c-Insurance adjustor

<https://www.espressoenglish.net/business-vocabulary-quiz/https://www.learnenglishfeelgood.com/vocabulary/business-english-basics6.html>
<https://www.academia.edu/34771602/Check-your-vocabulary-for-banking-and-finance.pdf>

Part Three: Sentence Pattern

Choose the correct sentence:

1.

a- To who was he talking?

b- Who was he talking to?

2.

a- He rarely goes to the swimming pool.

a- He goes rarely to the swimming pool.

1.

a- She asked me what I wanted.

b- She asked me what did I want.

a- She isn't old enough to drive.

b- She isn't enough old to drive.

Put the words in brackets in the correct order:

1- We _____ along time for the bus.(to/have/always/wait)

2- My sight isn't very good. I _____ with glasses.(read/can/only)

3- I _____ tomorrow.(probably/early/leaving/will/be)

4- Tim is a good pianist. He _____.(very/sing/also/well/can)

Put the words in the correct order to have correct sentences:

1- Friday/go/bank/I/every/the/to

2- Write/page/please/ top /name/of/ the/ at/your/the

3- football/Ken/play/does/weekend/every

?

4- London/going/few/to/I'm/week/a/for/days/next

5- the/on/see/night/at/Saturday/you/didn't/I/party

Adapted from

<http://fl.univ-biskra.dz/images/saihi/lesson%20eleven-word%20order.pdf>
https://www.williambertrand.fr/pdf/Exercices_Tests_Intermediate_1.pdf

Appendix D

Posttest for Banking and Insurance Students

Activity One: tick the right alternative in the following sentences:

- 1- In and accounts, withdrawals are subject to certain restrictions.
a- RD and FD b- savings and current c- savings and FD
- 2- A savings account is generally opened by
a- Businessmen b- college students c- the general public
- 3- is the only account that the account holder receives no interest on the amount deposited.
a- Saving account b- checking account c- current account
- 4- takes place when a given amount of money is withdrawn before the maturity period.
a- Penalty b- tax c- fees
- 5- The maximum period of time for money to be deposited in RD account is said to be.....
a- 20 years b- 10 years c- 06 months

Activity Two: Decide if the following sentences are **true** or **false**:

- a- The debit card is used in emergency situations.....
- b- ATM card helps checking account information in an ATM
- c- Customer service position requires poor communication skills
- d- Both debit and credit cards share Visa and MasterCard Logo
- e- The card verification value appears in the front of the debit card

Activity Three: Underline as possible adjectives as you can in these sentences and name the type they belong to: **coordinate adj, non-coordinate adj, indefinite adj, adj of quality, definite adj**

- 1- Customer service is such an enjoyable, pleasant and charming position my cousin prefers the most.
- 2- Tom finds that only one bank account suits his actual situation.
- 3- Credits/debit/ATM cards are convenient payment cards most people appreciate.
- 4- “This is your actual balance”, tell said.

Activity Four: use either the comparative or the superlative form of the adjectives in ():

- a- Because businessmen do unlimited number of transactions a day, current account is (useful) account to them.
- b- In the past, money transfer was (difficult) in today’s.
- c- ATM is (easy) way to withdraw money from.
- d- Madam/Sir is (significant) label you should say when in call centre.

Activity Five: reorder these ill-formed sentences to get a correct pattern:

- 1- Florida State Bank – is – This- Melanie Cooper is talking. Help- I – How- you- can-?
- 2- This is Joe Smith. Apply- like – loan- how – 6 to- can – would – a – for
- 3- Assist- may- you- I- this - .- with
- 4- Fill in- submit- from- application- the – it- .- and
- 5- Bank- the- submit- it -?- May- in- I
May- yes- .- you

Appendix E

برنامج تخصص: مالية البنوك و التأمينات

كيفية وخصائصها (مدخل للنظام المحاسبي البنكي .2) المعالجة المحاسبية لأنشطة البنوك ومختلف العمليات البنكية (الإيداع، السحب، التحصيل، الخصم، المقاصة... إلخ)3- المعالجة المحاسبية لمختلف العمليات البنكية ومحاسبة الأدوات المالية 4- التقارير والقوائم المالية في البنوك

وخصائصها - مدخل للنظام المحاسبي في شركات التأمين - المعالجة المحاسبية لأنشطة شركات التأمين ومختلف عقود التأمين، اعادة التأمين، مؤونات التأمين
مختلف العمليات في شركات التأمين ومحاسبة الأدوات المالية - التقارير والقوائم المالية في شركات التأمين

للتكافلي:
هيم أساسية حول التأمين؛ نظرية الخطر والطلب على التأمين؛ مراحل وأنواع وطرق تكوين عقود التأمين؛ التأمين المشترك وإعادة التأمين؛
2- التأمين التكافلي: التأمين التعاوني التقليدي؛ التأمين التعاوني الإسلامي (التأمين التكافلي)؛ نظرية الخطر والطلب على التأمين التكافلي؛ مراحل وأنواع
مين التكافلي؛ إعادة التكافل .
أمين التجاري وعقود التأمين التكافلي

دراسة السوق البنكي؛ سلوك مستهلك الخدمات البنكية؛ المزيج التسويقي البنكي

روعات؛ معايير قياس جدوى المشروع؛ المفاهيم الأساسية حول الإستثمار - جدول التدفقات النقدية- طرق تقييم المشاريع الإستثمارية في حالة التأكد (معدل العائد
رداد- صافي القيمة الحالية- معدل العائد الداخلي)- طرق تقييم المشاريع الإستثمارية في حالة المخاطرة و عدم التأكد (صافي القيمة الحالية المتوقعة- نظرية
ة القرار- المحاكاة)

خي للتأمين - عقد التأمين، الأركان، الآثار و الإنتهاء؛ أقسام التأمين (التأمين البري بنوعه- التأمين على الأشخاص- التأمين على الأضرار - التأمين على
حري -- التأمين الجوي

المالية:

إمدخل لإدارة المخاطر المالية (مفهوم، الأنواع، التطور والمراحل)؛ 2. سبل إدارة المخاطر المالية (التأمين وإدارة التوازن بين الأصول والخصوم، التغطية "التحوط") "البعد الإستراتيجي لإدارة المخاطر؛ 3- تسيير المخاطر من خلال معايير الإبلاغ المالي الدولية (مخاطر السوق، مخاطر السيولة، مخاطر الائتمان IFRS7) 4- المخاطر المالية في المؤسسات المالية الإسلامية

مادة التسيير المالي:

1. إمدخل للتسيير المالي؛ 2. تحليل القوائم المالية (دراسة الميزانية، دراسة حسابات النتائج حسب الطبيعة وحسب الوظائف، جدول التدفقات النقدية، جدول تغيرات الأموال الخاصة)؛ 3. دراسة التوازنات باستخدام المؤشرات والنسب المالية؛ 4- التخطيط المالي من خلال عتبة المردودية واستخداماتها؛ 5- الرفع المالي (الرافعة المالية والرافعة التشغيلية)؛ 6. إدارة الأصول المتداولة (المخزون والائتمان).

مادة الهندسة المالية:

إمدخل (عموميات وفلسفة الهندسة المالية، مجالات الهندسة المالية؛ أدوات ومنتجات الهندسة المالية (الخيارات المالية، المستقبلات، العقود الآجلة، عقود المبادلات، تقنيات تقييم المؤسسة، فارق الاقتناء.... الخ)؛ أدوات ومنتجات الهندسة المالية الإسلامية (عقد الخيار، بيع العربون، العقود الآجلة، الصكوك الإسلامية والتوريق الإسلامي)

مادة : منتجات التأمين

دور التأمين الاقتصادي؛ تأمين الأشخاص؛ التأمين الإجتماعي؛ تأمين الكوارث الطبيعية....

مادة : التدقيق البنكي

-المبادئ و القواعد الأساسية في التدقيق البنكي . -المتطلبات الأولية لتدقيق بنكي ناجح. -تقييم إجراءات الرقابة الداخلية البنكية. -تنظيم دائم للتدقيق البنكي . (المخاطر المرتبطة بالنشاط البنكي. إعداد و تطبيق إجراءات الحيطة و الحذر). -خطوات التدقيق البنكي. -معايير التدقيق البنكية

مادة : قانون النقد و القرض

نظرة تاريخية (قانون النقد و القرض 90) التركيز على أهم المستجدات المتعلقة بقانون النقد و القرض.

المخلص

الدراسة هي محاولة للتحقيق في استخدام تعلم اللغة بمساعدة الهاتف المحمول (MALL) في تطوير قواعد اللغة و المفردات و تركيب الجمل لطالب السنة الثالثة إدارية الأعمال في قسم المالية و المحاسبة بجامعة أبو بكر بلقايد. تم الافتراض بأن الطالب الذين يستخدمون الأجهزة المحمولة سيظهرون أداء أفضل في القواعد و المفردات و تركيب الجمل من أقرانهم الذين لا يستخدمونها في تعلمهم ، و لتحقيق أهداف الدراسة ، تم اعتماد على نهج مختلط ، و هو مزيج في مناهج البحث الكمي و النوعي ، و قد تم إجراء هذا البحث في الواقع على ثلاث مراحل : مرحلة ما قبل التجريبية ، و المرحلة التجريبية ، و مرحلة ما بعد التجربة، و في مرحلة ما قبل التجربة ، قام الباحث بجمع البيانات الأولية لبناء أرضية للتجربة باستخدام اختبار تمهيدي تم تصميمه و إدارته للطالب من أجل فحص مدى استعداد الطالب و موافقهم استخدام أجهزةهم المحمولة الخاصة ، و خلال المرحلة التجريبية ، اعتمدنا نهجاً شبه تجريبي مع مجموعتين (تجريبية و ضابطة) ، و تصميماً الاختبار القبلي/البعدي من أجل تأكيد الفرضية المذكورة أعلاه أو عدم تأكيدها ، و تتكون المجموعة التجريبية من ثلاثين (30) طالباً و المجموعة الضابطة غطت ثمان و عشرون طالباً ، و استخدم الباحث مقابلة شبه منظمة مع الاساتذة التي شملت عشرة استاذ للتعرف على المزيد في نظرتهم إلى استخدام الاجهزة المحمولة من قبل طلابهم على أمل تحسين القواعد و المفردات و تركيب الجمل. كشفت البيانات التي تم جمعها أن الطالب مستعدون للاستفادة من مهاراتهم و تحسينه امن خلال استخدام أجهزةهم المحمولة. كشفت النتائج عن وجود فروق ذات دلالة إحصائية بين المجموعتين لصالح المجموعة التجريبية في الكفاءات اللغوية الثالث المعلنه نتيجة تطبيق MALL، كما أظهر المعلمون قبلهم استعداداً لاستخدام الاجهزة لمحمولة للطلاب لتحسين تلك المهارات القائمة و كانت النتائج مرضية ليس فقط في تعزيز هذه المهارات بل و ايضا في اثبات ان هذه الاجهزة مهمة لتلبية الاحتياجات التعليمية و بناء على هذه النتائج تم اقتراح سلسلة من التوصيات التي قد تفيد الطلاب و المعلمين.

الكلمات المفتاحية: تعلم اللغة - الهاتف المحمول - قواعد اللغة - قواعد المفردات - تركيب الجمل.

Résumé

L'étude est une tentative d'enquêter sur l'utilisation de l'apprentissage des langues assisté par mobile (MALL) dans le développement de la grammaire, du vocabulaire et de la structure des phrases pour les étudiants de troisième année en Anglais à l'Université Abou Bakr Belkaid, département des finances et de la comptabilité. Par conséquent, on a émis l'hypothèse que les élèves qui utilisent des appareils mobiles afficheront de meilleures performances en grammaire, en vocabulaire et en structure de phrases que leurs pairs qui ne les utilisent pas dans leur apprentissage. Pour atteindre les objectifs de l'étude, une approche à méthodes mixtes a été adoptée, qui est un mélange de méthodes de recherche quantitatives et qualitatives. En effet, cette recherche s'est déroulée en trois phases : la phase pré-expérimentale, la phase expérimentale et la phase post-expérimentale. Dans la phase pré-expérimentale, le chercheur a collecté des données initiales pour construire une base pour l'expérience à l'aide d'un pré-test conçu et administré aux étudiants afin d'examiner la préparation et les attitudes des étudiants à utiliser leurs propres appareils mobiles. Au cours de la phase expérimentale, nous avons adopté une approche quasi-expérimentale avec deux groupes (expérimental et contrôle) et un plan pré/post-test afin de confirmer ou d'infirmer l'hypothèse susmentionnée. Le groupe expérimental était composé de trente-deux (32) étudiants et le groupe témoin de trente-deux (32) étudiants. Le chercheur a utilisé une entrevue semi-structurée pour connaître leur point de vue sur l'utilisation des appareils mobiles par leurs élèves dans l'espoir d'améliorer la grammaire, le vocabulaire et la structure des phrases. Les données recueillies ont révélé que les étudiants sont prêts à utiliser et à améliorer leurs compétences grâce à l'utilisation de leurs appareils mobiles. Plus important encore, les résultats ont révélé qu'il existe une différence statistiquement significative entre les deux groupes en faveur du groupe expérimental, dans les trois compétences linguistiques énoncées en raison de la mise en œuvre de MALL. Les enseignants ont également montré qu'ils acceptaient et étaient prêts à utiliser les appareils portables des élèves pour améliorer ces compétences. Les résultats sont satisfaisants non seulement pour améliorer ces trois compétences, mais aussi pour prouver que ces appareils sont importants pour répondre aux besoins éducatifs. Sur la base de ces résultats, une série de recommandations pouvant bénéficier aux étudiants et aux enseignants ont été proposées.

Mots-clés : Apprentissage des langues - Téléphone portable - Grammaire - Vocabulaire - Structure des phrases.

Abstract

The study is an attempt to investigate the use of using Mobile-assisted Language Learning (MALL) in developing grammar, vocabulary and sentence structure to third-year business students of English at Abou Bakr Belkaid University, department of Finance and accountancy. Hence, it has been hypothesized that students who use mobile devices will show better performance in grammar, vocabulary and sentence structure than their peers who do not use them in their learning. To achieve the study aims, a Mixed-methods Approach was adopted, which is an mixture of quantitative and qualitative research methods. In effect, this research was conducted throughout three phases: The pre-experimental phase, the experimental phase, and post-experimental phase. In the pre-experimental phase, the researcher collected initial data to build a ground for the experiment using a pretest designed and administered to students in order to scrutinize the students' readiness and attitudes for using their own mobile devices. During the experimental phase, we adopted a quasi-experimental approach with two groups (experimental and control), and pre/post-test design in order to confirm or disconfirm the aforementioned hypothesis. The experimental group consisted of thirty two (32) students and the control one covered thirty two (32) students. The researcher used a semi-structured interview to learn about their outlooks as to the use of mobile devices by their students in the hope to improve grammar, vocabulary and sentence structure. The gathered data revealed that students are ready to utilize and improve their skills through the use of their mobile devices. More importantly, the results uncovered that there is a statistically significant difference between both groups in favour of the experimental group, in the three stated language competences owing to the implementation of MALL. Teachers also showed acceptance and readiness to use students portable devices to improve those based skills. The results are satisfactory not only in enhancing those three skills, but also in proving that these devices are important to serve educational needs. Based on these findings, a series of recommendations that may benefit students and teachers were proposed.

Keywords: Language learning - Mobile phone - Grammar - Vocabulary - Sentence structure.