DEVELOPMENT AND EFFICACY OF INFOGRAPHICS AND E-BOOK INSTRUCTIONAL PACKAGES IN BUSINESS STUDIES AMONG JUNIOR SECONDARY SCHOOL STUDENTS IN IBADAN, NIGERIA

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CERTIFICATION

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DEDICATION

This work is dedicated to: God Almighty, the Giver of life, who gave me the grace to sail through the Ph.D programme; my lovely Parents Mr. and Mrs. Olalude and my darling wife, Temitope Olalude.

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ABSTRACT

Business Studies is a vocational subject at Junior Secondary School (JSS) aimed to equip students with knowledge and skills required for self-reliance upon school completion. But evidence has shown that learning outcomes in Business Studies is not satisfactory among many JSS students in Ibadan, Nigeria. Previous studies focused largely on factors influencing learning outcomes in Business Studies, with little attention paid to interventions involving development and efficacy of instructional packages. Therefore, this study developed infographics and e-book instructional packages and determined their efficacy on JSS students' learning outcomes (achievement, attitude, and entrepreneurial intention) in Business Studies in Ibadan, Nigeria. The moderating effects of Computer Skills (CS) and Computer Anxiety (CA) were also examined.

The Constructivist Learning and Cognitive Multimedia Learning theories formed the framework, while the study adopted the pretest-posttest control group quasi experimental design with a 3x3x2 factorial matrix. Three public junior secondary schools with functional computer laboratories and standby generators were purposively selected in Ibadan. Three intact classes of Junior School II students were randomly assigned to infographics (50), e-book (42) and control (90) groups. The development of the packages followed ADDIE rubrics and were trial-tested among students outside the Ibadan before used. The instruments used were Business Studies Achievement Test (r=0.80), Students' Attitude to Business Studies (r=0.75), Students' Entrepreneurial Intention (r=0.70), CA (r=0.79), CS Rating (r=0.78) scales and instructional guides. The treatment lasted 15 weeks. Data were analysed using Analysis of covariance and Bonferroni post-hoc test at 0.05 level of significance.

There were significant main effects of treatment on achievement ($F(2;181)=86.67$; partial $\eta 2=0.51$), attitude ($F(2;181)=49.15$; partial $\eta 2=0.37$) and EI ($F(2;181)=41.68$; partial $\eta 2=0.33$). The students exposed to e-book had the highest post-achievement mean score (39.66), followed by infographics (38.34) and control (24.60) groups. The students in e-book had highest adjusted post-attitude mean score (70.33), followed by infographics (69.19) and control (60.61) groups. The e-book group had highest adjusted post-EI (68.61), followed by infographics (66.02) and control (61.36) groups. There were no significant main effects of CS and CA on achievement, attitude and EI. There were no significant interaction effect of treatment and CS on achievement, attitude and EI. There was a significant interaction effect of treatment and CA on students' EI ($F(2;181)=9.78$; partial $\eta 2=0.11$) in favour of high CA students from e-book group, but none on achievement and attitude. There were significant interaction effects of CS and CA on achievement ($F(2;181)=3.57$; partial $\eta 2=0.04$) and attitude ($F(2;181)=3.81$; partial $\eta 2=0.04$) in favour of high CS and CA students, but none on EI. There was significant interaction effect of treatment, CS and CA on EI ($F(4;179)=4.27$; partial $\eta 2=0.005$) in favour of high CS and CA students from e-book group, but none on achievement and attitude.

Infographics and e-book instructional packages improved students' achievement in, attitude to and entrepreneurial intention in Business studies among Junior Secondary School students in Ibadan, Nigeria. Teachers should adopt these packages to teach Business Studies.

Keywords: Infographics instructional package, E-book instructional package, Achievement in and attitude to Business studies, Entrepreneurial intention

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LIST OF ABBREVIATIONS

BAT: Business Studies Achievement Test

CA: Computer Anxiety

CS: Computer Skills

CP: Conventional Package

TF: Technology Familiarity

EI: Entrepreneurial Intention

EIP: E-book Instructional Package

IIP: Infographics Instructional Package

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Business studies is an integral part of pre-vocational and compulsory subject incorporated in the Oyo state secondary school curriculum at junior secondary school level. The curriculum aimed at providing students with knowledge and skills that would enable them to adapt to changes in office technology and develop a broad understanding of business activities, the structure and functions of business institutions and their inter-relationships.

In the drive towards meaningful realization of these laudable objectives, efforts of the Nigerian government are directed towards building an individual for self-reliance especially through entrepreneurial activities and to contribute in no small measure to the world economic growth. It is in respect of this that Business studies was incorporated into the curriculum of junior secondary schools in Nigeria (Mustapha, 2018). Business studies is established to provide students with business knowledge and skills in different subject areas such as Book Keeping, Commerce, Office Practice, Shorthand and Typewriting. The subject has different trade areas which are capable of motivating students' entrepreneurial intention and equipping the graduates with required job skills to secure paid employment or personal job creation for those who may not have the opportunity to further their education beyond junior secondary school (Akpojotor, 2021). Despite the fact that students have been exposed to Business studies from Junior Secondary School one to three and beyond, findings have revealed that many graduates still find it challenging to be self-employed or secure jobs several years after graduation (Akpojotor, 2022; Ogwunte and Okolocha, 2016**)**.

Nigeria as one of the most populous nations in Africa with approximately 200 million people ranked as 7th most populous nation in the world with an ever-increasing unemployment rate of 3.50 million to 12.160 million between 2009 to 2020 unlike in the past when people are employed on graduation (Trading Economics, 2021). This unemployment rate is higher for persons between the age of 15 to 24 approximately

25.2%. Between the ages of 15 to 24 are Secondary School and University graduates which are mostly unemployed and this has increased to 33.3 percent in the fourth quarter of 2020 from 27.1 percent in the second quarter of 2020 (Trading Economics, 2021).

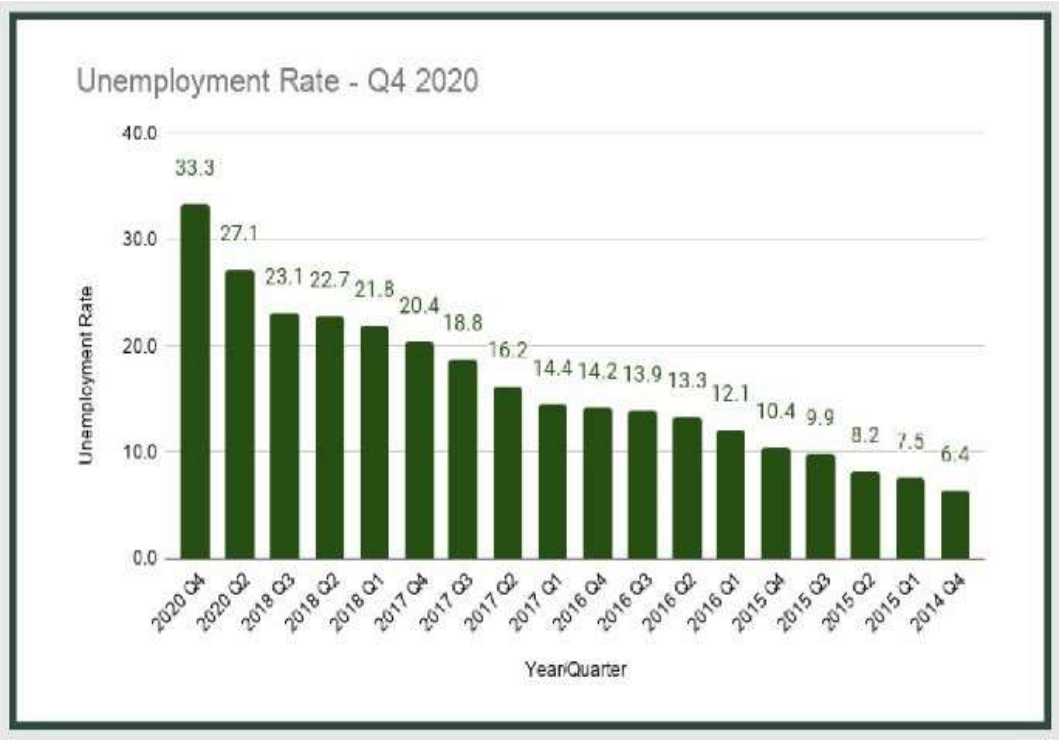

Figure 1.1: Statistic of Unemployment in Nigeria

Source: Trading Economics, 2021 (National Bureau of Statistics)

There are several reasons for the persistent increase in the unemployment rate in Nigeria. One of the most prominent one is that students seem not to have the requisite knowledge of starting their own business. This has been a major factor affecting students' entrepreneurial intention thus they depend on getting white collar jobs from public and private companies which are not readily available in both sectors (Global Business School Network 2013; Olowookere and Iyiola, 2016; Brussevich, Dabbla, Norris, and Khalid, 2020). Hence, entrepreneurial intention summarizes the willingness of an individual to start his/her own business. In support of this, Ibrahim, Bakar, Asimiran, Mohamed and Zakaria (2015), posited that entrepreneurial dreams of many students are hindered by the teachers' inability to engage students in Business studies activities through effective instructional strategies. Furthermore, other studies revealed that students' participation in Business studies activities has a positive effect on students' entrepreneurial intentions (America and Skelly, 2021; Oluwalola, 2019). However, what these previous studies have not been able to elucidate is how the engagement of an appropriate pedagogy, stimulate students entrepreneurial intention to identify business opportunities because the teaching and learning of Business studies concepts transcends the issue of students just having credit passes in the subject without being able to transfer the knowledge gained in the classroom to their immediate environment as shown in Table 1.1.

Table 1.1: Analysis of BECE Business Studies Result, 2011 – 2022

Year	Total Candidates	No/% of Distinction (A)	No/% of Credit (C)	No/% of Pass (P)	No/% of Fail (F)
2011	72,690	13,019 (17.91%)	29,540(40.64%)	23,443 (32.25%)	6,688 (9.20%)
2012	88,223	11,018 (12.40%)	50,918 (57.72%)	17,572 (19.75%)	8,745 (9.84%)
2013	75,351	420 (0.56%)	44,299 (58.79%)	23,762 (31.54%)	6,870 (9.12%)
2014	86,421	10,848 (12.55%)	69,900 (80.88%)	5,323 (6.16%)	350 (0.40%)
2015	93,328	17,842 (19.12%)	69,465 (74.43%)	5,874 (6.29%)	147 (0.16%)
2016	93,088	13,520 (14.52%)	55,396 (59.51%)	23,190 (24.91%)	192 (1.05%)
2017	100,734	53,310 (52.92%)	45,198 (44.87%)	2,214 (2.20%)	12 (0.01%)
2018	101,282	55,289 (54.54%)	44,128 (43.52%)	1,856 (1.83%)	001 (0.01%)
2019	104,264	62,430 (35.83%)	40,451 (38.80%)	1,293 (1.24%)	90 (0.08%)
2020	107,428	48,796 (45.42%)	56,423 (52.55%)	2,159 (2.01%)	50 (0.50%)
2021	121,124	64,364 (53.44%)	54,567 (45.05%)	2,161 (1.08%)	32 (0.03%)
2022	126722	76,356 (60.35%)	48,503 (38.51%)	1,559 (1.23%)	04 (0.00%)

Source: Ministry of Education, Evaluation Department, Oyo State (BECE), 2011 2022

This implies that students are expected to complete secondary schools not only having these high scores in Business studies, but being able to effectively apply the knowledge and competence gained in the classroom to solve personal and societal challenges by identifying business opportunities which will be useful for them in setting up their own businesses which is the sole aim of Business studies in reducing the high rate of unemployment in Nigeria. These high scores in achievement does not translate to the stated Business studies objective as the rate of unemployment keep persisting every year as shown in the figure 1.1.

Subject like Business studies whose goal is to expose students to the world of business, achievement scores only are insufficient to measure whether the goals of the subject have been achieved or not (Akpojotor, 2022). Studies carried out by Mustapha, 2018; Tambuwal and Yusuf, 2020, revealed that some Business studies students depend on rote memory that is, cramming of facts and obtaining high scores rather than understanding Business studies concepts to reason out solution and this has been the cause of students not wanting to embrace entrepreneurial intention and their negative attitude to Business studies. Reports from previous studies have show that students' negative attitude towards learning in one way or the other affected their learning outcomes.

For instance, in the study carried out by Ogonu, (2019), it was revealed that students developed negative attitude towards business studies as a result of the conventional teaching method adopted by the teachers. Similarly, Ogwunte and Okolocha, (2016) also reported that the conventional method used by Business studies teachers seemed to affect students' attitude negatively toward the subject, and this may be the factor that most affected the students' acquiring the basic business studies knowledge and skills. This trend could be attributed to ineffective instructional methods that is, the conventional teaching method adopted by the teachers which gives more emphasis on verbal narration while students are just passive listeners and this method is said to be associated with inadequate stimulation of students' innovative capacities, intellectual thinking, memorization, cramming of facts, poor knowledge retention and high dependency among students (Futterman, 2020; Ekoh, 2016). This implies that instructional methods that encourage memorization and reproduction are short of knowledge that can be used to solve problems in new situations.

The role of effective pedagogical approaches in motivating a shared vision and opportunity identification by Business studies students cannot be over emphasized

because the quality of education an individual receives determines the extent of his usefulness to himself and the nation at large. Achieving this therefore means that the instructional contents need to be incorporated with motivating components to stimulate students' entrepreneurial intention and engage them with the content of the subject. This would strengthen students' capabilities to effectively apply the knowledge and competence gained in the classroom to solve personal and societal challenges and also lay a solid foundation to pursue the subject at higher level of education. Therefore, there is a need for instructional packages that will not only improve academic performance but will enhance students' entrepreneurial intention and attitude towards business studies.

Hence, the need to investigate into demystifying Business studies by making it more interesting, engaging, friendly and applicable to real life situation in order to enhance students' positive attitude, entrepreneurial intention and better academic understanding towards Business studies. This challenge is well captured in the assertion of Oluwalola (2019) that secondary school teachers are consistently using teacher-centred method which has not been yielding positive outcomes and if teaching and learning of Business studies would become productive, it is imperative for teachers to change their methodologies and incorporate more student-centered approach to classroom instruction. Business studies is an application concept and teachers need to employ appropriate teaching approaches which will ensure that learning takes place in authentic and real world contexts. It should be noted that teachers, in every subject, are rapidly taking advantage of the affordances provided by Information and Communication Technology (ICT) tools to overcome the challenge of abstractness, with a view to engaging students in classroom activities.

Business studies, as an important subject, cannot be left out of this revolution. Educators are adopting and integrating technological devices for instructional delivery process, with a view to addressing the inherent shortcomings in conventional method of teaching. Scholars like Ogonu (2019), Parveen and Husain (2021) have encouraged the need for Business studies teachers to integrate technology into their repertoire of teaching-learning toolkits, with a view to demystifying Business studies concepts and make it connected to real life situation. They revealed in their studies that, conventional method which is widely used should be enriched with technological innovations to overcome the challenges of abstractness and content mastery in teaching of Business studies among students and conform to expected national quality and standard.

Consequently, Akinola (2019) suggested that one way to bring about more practical change in the attitude of learners to Business studies and enrich business studies activities in the classroom is by using student centered technique through the integration of computer assisted instruction approach to teaching and learning process. In light of this, teachers can take advantage of the multi-sensory environment created by the multiple media elements to create materials that would not only stimulate a variety of senses, but also develop students' entrepreneurial intention.

Different instructional packages like computer multi-media package, computer graphics and animation learning packages, simulation packages, tutorial mode learning package, audio graphics self-instruction packages, among others have been used to facilitate the teaching and learning of Business Studies and non-business related subjects at secondary school level, with positive outcomes in terms of students' academic performance and attitude. For instance, Abimbade (2014), used computer assisted instruction to teach Mathematics while Falode (2014) developed simulation package to teach map reading at the senior secondary school level, Taner (2016), used infographics learning package to teach Geographiy while Odawn (2018), used e-book self-learning package to teach English at secondary school level. These efforts by scholars revealed positive outcomes in terms of students' academic performance and attitude compared to conventional-based instruction in all the subjects mentioned.

Findings have shown that not much studies have been done in the area of developing and utilizing computer-assisted instructional package for imparting learning contents and stimulating students' entrepreneurial intention in Business studies in Nigeria, despite all these strategies and efforts of researchers (Joshua and Bibiano, 2015; Elogbo and Akek, 2019). However, previous studies have concentrated largely on predisposing students-factors such as non-possession of textbooks, teaching facilities and inadequate teachers with little attention paid to the development of instructional package which is capable of arousing the entrepreneurial intention of students and attitude to Business studies (Otunla, Sanusi and Ekundayo, 2016; Ekoh, 2016).

Therefore, there is still a need for additional research on instructional packages that can help in enriching the teaching and learning of Business studies by making Business studies activities more attractive and realistic to students. In other words, there should be a shift in the focus of conventional method of teaching Business studies to incorporate technological tools that would engage students in entrepreneurial activities. Emerging tools like computer graphics, animation, interactive e-book, digital puzzles,

and simulation, among others, could be used by teachers to engage students in instructional content. One of the emerging technologies that could be used by Business studies teachers to overcome the challenges associated with the teaching and learning of Business studies and also engage students in instructional content are infographics and e-book instructional packages.

These instructional packages (infographics and e-book) are digitalised instructional learning packages that are developed through the use of text combined with pictures, scenarios and the elements of interactive such as clickable area and quizzes in a delivery mode for the purpose of helping the students grasp essential ideas and mastery of business studies concepts through entrepreneurial activities and at the same time aids teachers' effectiveness in impacting rightful knowledge to stimulate students entrepreneurial intention and attitude to business studies. The two instructional packages were made up of three major modules and activities that students responded to as they interact with these instructional packages.

The infographics and e-book instructional packages have the following: topic, instructional objectives, instructional materials, interactive section, evaluation, and feedback section. These instructional packages were designed and developed using ADDIE (Analysis, Design, Development, Implementation, and Evaluation) instructional design model. There are various adaptations of the ADDIE model but it generally consists of five cyclical phases which are Analysis, Design, Development, Implementation, and Evaluation. These process is necessary in order to systematically develop the packages so as to get necessary feedback to improve on the instructional packages if found deficient in any area. At this point, there is a need to explain infographics and e-book as a computer-assisted instructional packages in learning.

The term "infographics" emerged in 2014, when reports and studies investigated the efficacy of infographics in an instructional context. The effectiveness of infographics and e-book as computer-based instructional package can be explained with the help of Piaget constructivism learning theory and Cognitive theory of multimedia learning by Mayer (2009) respectively. An infographic is information arranged visually. It is a visual representation of information that integrates different modes and its communicative function is to inform, by describing or explaining something or narrating a factual story to help the learner grasp essential ideas and content (Ismaeel and Al Mulhim, 2021).

Several studies have shown that learners remember more information if a text is followed by key illustrations (Antonova, 2016; Mayer, 2009). Furthermore, other studies

have shown that students are able to retain information for longer period when using textual material that carries graphics (Al Hosni, 2016; Alotiabi, 2016; Rezaei and Sayadian, 2015; Alrajhi, 2020). According to the Cognitive Load Theory (CLT) Sweller (1988), such phenomena happen because the use of graphics together with text reduces the cognitive load, which is the mental effort that a learner applies on learning, and thereby the learners can focus more on the content rather than trying to decode the way it is presented (Sweller, 2017).

Several studies have indicated obvious improvement of students learning outcomes as a result of reliance on graphics and text as an effective tool for learning. Fowler (2015) in his study involved students in creating infographics for science lessons and determined that infographics depicted and adjusted scientific misconceptions, developed high-order thinking skills including analysis, synthesis and critical thinking; and facilitated the development of creative presentations. Meacham (2015) conducted a study in 2015. He used infographics in her science class. She confirmed that the students could present complicated processes and concepts and that infographics could be used almost anywhere in instructional design either as a pre-teaching tool or to reinforce certain topics.

Subsequent studies (Ismaeel and Al Mulhim, 2021; Parveen and Husain, 2021; Sudakov, Bellsky, Ismaeel and Al Mulhim, 2021; Usenyuk, and Polyakova, 2016) also affirmed Meacham's statement that infographics could be used as a starting point for a discussion and as a culminating experience of authentic learning by allowing students to demonstrate their ability to fully comprehend a topic and summarize its central themes in a concise manner. In addition, Dur (2014) examined the current and potential expansion of infographics in education and concluded that in addition to their role in improving students' academic achievement, infographics could develop students' life skills and attitudes, such as research, systematic thinking and teamwork skills (Dur, 2014). Thus, this appealing information visualization has the ability to guide and focus the attention of students, and therefore, may be used as learning material with the potential to increase knowledge acquisition.

In addition, e-book is another computer-assisted instructional package used for this study. In this digital age, the usage of e-books in the classroom is becoming increasingly popular. E-books are electronic books that contain educational materials and functions, and which can be used for educational purposes (Adeyanju, Achonna, and Yaya, 2012; Leong, Abidin and Saibon, 2019). According to Odawn (2018), e-

books usually offers these following features such as displaying various digital resources, such as digital texts, photos, animations, simulations, videos, audio and other resources. There are several studies involving the use of e-Books in the classroom as a medium of teaching (Shelburne, 2019; Odawn, 2018). These studies discussed the effectiveness of e-books in enhancing the learning process. In support of this view, Baharuddin and Hashin (2020), Martinez-Estrada and Conaway (2012) reported that the features of interactive e-books attract students over traditional printed text.

Baharuddin and Hashin (2020) stated that e-books could offer students diverse learning situations, which, in comparison with general teaching, could better enhance self-directed learning and reading motivation of students, provide interaction experience between students and media, enhance logical thinking and integration ability of students, and allow students to learn with their senses (sight, hearing, and touch). Also, Odawn (2018) in his study found out that e-books enhance learning comprehension, the construction of learning strategies, and the promotion of learning achievement. However, some factors have been identified as critical parameters that could hinder the adoption and integration of technology in instructional process (Ternenge and Kashimana, 2019). These factors include computer self-efficacy, computer skills, computer anxiety and gender among others. Some variables that could interfere with the achievement, entrepreneurial intention and the attitude of Business studies students which need to be moderated are computer skill and computer anxiety due to their strategic roles in technology use for instructional delivery. Therefore, in this context, computer skills stand as an important moderating variable that can influence the students' participation in computer related activities.

Computer skills refer to ones' ability to use the software and also operate the hardware of a computer (Fati and Airen, 2017). They include basic computer skills like knowing how to switch on the computer, ability to use a mouse to interact with elements on the screen, being able to use the computer keyboard and ability to shut down the computer after use. In Business studies, the business profession recognizes that individuals entering the profession must have sufficient knowledge of computer skills to be successful because of its pervasiveness in business activities (Ononye, Oguejiofor and Ezenwagu, 2021). The inability of business studies teachers to utilize ICT skills in their teaching means that students on graduation may not be adequately equipped with relevant computer skills needed for gainful employment or self-reliance in this technological age (Oladimeji, Yusuf, Njoku and Owolabi, 2022). Using computer in

Business studies is an integral means for helping students to provide needed skills and it is vitally important that Business studies students have the proper experience and a positive attitude towards computers because of the relationship between attitudes towards computers and motivation and performance (Adewole-Odeshi, 2014; Shelburne, 2019). Many researchers like Fati and Airen (2017), Cazan, Cocorada and Miacan (2016) have examined the nexus between students' computer skills and their participation in computer related activities. According to the study carried out by Fati and Airen (2017), revealed that computer skill had a significant influence on students' readiness to participate in computer related activities. It should be noted that different activities that culminate into Infographics and E-book instructional packages are executed using computer technology and for students to be able to use these packages, they must have a basic computer skill. Therefore, students' computer skill is an important moderating variable and should be investigated in this study.

In the same vein, computer anxiety is another moderator variable investigated in this study. It is an important factor to be considered in any technology-related activity. It is a kind of reluctant disposition towards the use ofcomputer as a result of imaginary fear (Oyadeyi, 2016). Among other factors, computer anxiety may be a serious barrier against learning how to use computers effectively in Business studies. Studies like Osisanwo, Ehioghae, Abdulsalaam (2019), and Akpan (2018), have investigated the impact of computer anxiety on students' achievement and the results emphasised the strategic position this factor occupies in instructional process. Computer anxiety is an important factor in any classroom setting. Every student, whether participating in computer related activity or not, has some level of computer anxiety (Oyadeyi, 2016). The classroom environment is rapidly becoming technology-based and students are generally confronted with the challenges of using digital tools for classroom activities at different levels (Oyadeyi, 2016).

Therefore, computer anxiety becomes an important factor for students, whether participating in computer-based learning or the conventional teaching strategy. Fears of failure, computer anxiety and inadequate ICT knowledge have been cited as some of the reasons for students' reluctance to use technology for learning (Osisanwo, Ehioghae, Abdulsalaam, 2019). Akpojotor (2021) asserted that the use of technology sometimes has side effects, which may include negative emotional states that arise not only during interaction but even before, when the idea of having to interact with the computer begins. Osisanwo, Ehioghae, Abdulsalaam (2019) carried out a study to determine effect of

computer anxiety on students' perceived ease of use of learning management system (LMS) for learning. The findings showed that computer anxiety had a significant influence on students' perceived ease of use of the LMS for learning.

This is contrary to the findings of Oribhabor (2020) that computer anxiety had no significant influence on students' readiness to participate in educational technology course in the university. It should be noted that infographics and e-book are computer related activities and students' computer anxiety could affect their participation in classroom activities. Even, students who were not exposed to this strategy could also be confronted with the issue of computer anxiety anytime there is a need to participate in computer related activities. According to Osisanwo, Ehioghae, Abdulsalaam (2019), whether students are presently participating in computer related activities or not, computer anxiety would always be a challenge due to differences in students' technological background and competence in using technology for classroom activities.

In summary, infographics and e-book instructional packages adds to the power of traditional method of teaching and Business studies teachers could leverage the capabilities of these packages to make Business studies more interesting and applicable to the society and this could facilitate the realisation of the objectives of teaching Business studies at the junior secondary school level. However, researchers have suggested the use of constructivist teaching strategies and a shift in focus from teacher-centered teaching method to learner-centered such as the use of infographics and e-book instructional packages to enrich the instructional process. Studies have shown that these instructional packages are influential in determining students' learning outcomes in some other school subjects such as Biology, Geography, English, Social studies and so on, but the extent to which these would combine to influence students' learning outcomes in Business studies has not enjoyed much research focus in Nigeria, most especially in Oyo state.

This study is not meant to criticise traditional teaching method, but to enrich it through interactive instructional packages such as infographics and e-book by reducing the level of abstractness in the instructional delivery and stimulating students' entrepreneurial intention as well as improving students' attitude towards business studies. In view of the foregoing, this study developed infographics and e-book instructional packages and their efficacy on junior secondary school students' learning outcomes in Business studies in Ibadan, Nigeria.

1.2 Statement of the Problem

Business Studies is a compulsory subject established to provide students with business knowledge and skills in different subject areas such as Book keeping, Commerce, Office practice, Shorthand, and Typewriting at Junior Secondary School level. The subject has different trade areas which are capable of motivating students' entrepreneurial intention and equipping them with required job skills to secure paid employment or personal job creation for those who may not have the opportunity to further their education beyond junior secondary school.

Despite the fact that students have been exposed to business studies from Junior Secondary School one to three and beyond, findings have revealed that many of them still find it challenging to be self-employed several years after graduation. The persistent increase in unemployment rate in Nigeria is an evidence to support this. Studies have revealed that entrepreneurial intentions of many students and attitude towards Business studies are being hindered by the teachers' inability to engage students in entrepreneurial activities through effective instructional package which do not allow mastery of the contents. The methods are usually devoid of appropriate technology integration, which could not provide support for students' interactivity that would engage them in classroom activities. Therefore, students depend on cramming of concepts and obtaining high scores rather than understanding business studies concepts to reason out business opportunities for them to be self-employed. However, there is more to the teaching and learning of Business studies than students scoring high marks. The instructional content needs to be incorporated with elements that could motivate students, arouse their entrepreneurial intention and at the same time improve their attitude and academic achievement.

In an attempt to tackle these challenges, scholars have consistently advocated the need to employ technology-based instructional packages such as infographic and e-book instructional packages that are capable of engaging and making students interact with technology. However, the efficacy of infographic and e-book instructional packages on students learning outcomes in business studies had not been properly examined to demystify the concept and make it more connected to real life situation. No study had been carried out in Nigeria to determine the efficacy of infographic and e-book instructional packages in enriching classroom instruction and improving learning outcomes in business studies coupled with the intervening effect of the students' computer skills and computer anxiety at the junior secondary school level. These are the

gaps in literature that are yet to be filled by scholars at all levels of education. Therefore, this study developed infographic and e-book instructional packages and its efficacy on students' learning outcomes in business studies in Ibadan, Nigeria.

1.3 Research Objectives

The main purpose of this research was to develop infographics and e-book instructional packages and their efficacy on junior secondary school students' learning outcome in Ibadan, Nigeria. The specific objectives of this study were to:

1. determine the difference(s) in the post-test performance of students exposed to infographics and e-book instructional packages and their counterparts using the conventional method.
2. determine the attitude of students towards the use of infographics and e-book instructional packages in business studies instruction.
3. determine entrepreneurial intention of students through the use of infographics and e-book instructional packages in business studies instruction.
4. determine the interaction effect of computer skills and computer anxiety on students' learning outcome.
5. determine the interaction effect of treatment, computer skills and computer anxiety on students' learning outcomes.

1.4 Hypotheses

The following null hypotheses were tested at 0.05 level of significance:

H_O1: There is no significant main effect of treatment (infographics, e-book and conventional teaching strategies) on students'

(a) Achievement in Business studies

(b) Attitude towards Business studies

(c) Entrepreneurial intention

H_O2: There is no significant main effect of computer skills on students'

(a) Achievement in Business studies

(b) Attitude towards Business studies

(c) Entrepreneurial intention

H_03: There is no significant main effect of computer anxiety on students'

(a) Achievement in Business studies

(b) Attitude towards Business studies

(c) Entrepreneurial intention

H_O4: There is no significant interaction effect of treatment and computer skills on students'

(a) Achievement in Business studies

(b) Attitude towards Business studies

(c) Entrepreneurial intention

H_O5: There is no significant interaction effect of treatment and computer anxiety on students'

(a) Achievement in Business studies

(b) Attitude towards Business studies

(c) Entrepreneurial intention

H_O6: There is no significant interaction effect of computer skills and computer anxiety on students'

(a) Achievement in Business studies

(b) Attitude towards Business studies

(c) Entrepreneurial intention

H_O7: There is no significant interaction effect of treatment, computer skills and computer anxiety on students'

(a) Achievement in Business studies

(b) Attitude towards Business studies

(c) Entrepreneurial intention

1.5 Scope of the Study

This study developed infographics and e-book instructional packages and their efficacy on junior secondary school students' learning outcomes in Business studies in Ibadan, Nigeria. Three junior secondary schools that offer Business studies were purposively selected to participate in the study within Ibadan, Oyo State.

The topics taught were Trade, Market and Channel of distribution as contained in the junior secondary school Business studies curriculum. Junior secondary school II Business studies students were involved in the study. The choice of JSS II students was premised on the fact that they have completed a session in JSS and would have been exposed to Business studies and computer studies for one year and are not currently preparing for any external examination like JSS III students. Computer skills and

computer anxiety were used as moderatoring variables to examine their effects on the learning outcomes.

1.6 Significance of the Study

The study has been able to developed infographics and e-book instructional packages which have been found to be viable instructional packages that provide students with the opportunities to demystify Business studies concepts and stimulate students' attitude, entrepreneurial intention in the instructional content and achievement in Business studies as well as provided empirical basis on effects of computer skill and computer anxiety on the students learning outcomes.

It is expected that the findings of this study would provide empirical basis for determining the effectiveness of infographics and e-book instructional packages on students' achievement, attitude in Business studies and entrepreneurial intention, as well as the effects of computer skill and computer anxiety on the students learning outcomes in those concepts.

It is expected that the findings of this study would give a policy direction to educate teachers on how to overcome the challenges of abstractness in the teaching and learning of Business studies through the development of infographics and e-book instructional packages that would strengthen students' capabilities to effectively apply the knowledge and competence gained in the classroom to solve personal and societal challenges.

The findings of this study would give the teachers in secondary schools guidelines for adopting effective packages that can be used in teaching Business studies concepts. Also, the exposure of the teachers to infographics and e-book instructional packages would help them to master the art of the use of the packages. This would enable them to become capable of using these packages effectively to teach their students and consequently reducing the level of abstractness in the instructional delivery.

The findings of this study would provide students with the opportunities to demystify business studies concepts and stimulate students' attitude, entrepreneurial intention in the instructional content and achievement in Business studies through the use of infographics and ebook instructional packages. The study would help to improve the basic computer skills of students through their interaction with infographics and ebook instructional packages. In addition, students would be able to reflect on their own meta cognitive processes, when students are aware of their own thinking patterns, they

can develop independent use of effective learning packages. The results from this study would also improve students' performance and provide opportunities for student-constructed learning, increase mastery of subject-matter, and influence students' entrepreneurial intention and attitude towards Business studies.

The findings from this study would further inspire more research works that would cater for other areas of study and this would increase teachers' and students' involvement in the use of computer for teaching and learning process. The results from this study would help in achieving one of the objectives of teacher education programme in Nigeria that states that 'teacher education will continue to take cognizance of changes in methodology and curriculum and teachers will be regularly exposed to several forms of innovation in their profession.

Finally, it could be a basis for media specialists to develop skills for production of learning packages and be able to adopt appropriate media for learning some difficult concepts in Business studies.

1.7 Operational Definition of Terms

The following terms are operationally defined:

Students Business studies Achievement: It is the performance of students in Business studies as measured by Business studies achievement test.

Attitude to Business studies: junior secondary school Business studies students' predisposition towards concepts in Business studies as measured by Students' Attitude to Business studies Questionnaire.

Computer anxiety: the fear entertained by junior secondary school Business studies students when confronted with computer related activities as measured by Computer Anxiety Questionnaire.

Computer skills: Business studies students' ability to demonstrate their level of computer proficiency to use computer especially in learning Business studies with infographics and e-book instructional packages. This was measured by observation rating scale for Computer Proficiency Skill

E-book Instructional package: This is a digitised instructional learning package that combines the use of text, pictures and the elements of interactive such as clickable area, or hotspot link and quizzes in a delivery mode for the purpose of teaching and learning different concepts in business studies.

Entrepreneurial intention: It is the willingness of Business studies students to start

his/her own business and this was measured by Entrepreneurial Intention Questionnaire.

Infographics Instructional package: This refers to an instructional package that combines the use of little text and graphics such as drawings, charts, arrows, with use of colour and 'white space', to help the students grasp essential ideas and mastery of Business studies concepts and at the same time aids teachers' effectiveness in impacting rightful knowledge to students.

CHAPTER TWO

LITERATURE REVIEW

This chapter presents a theoretical framework, conceptual review, empirical review and an appraisal of the literature.

2.1 Theoretical Framework

2 .1.1 The Constructivist Theory of Learning by Piaget (1977)

Constructivism emphasizes building (i.e. constructing) that occurs in peoples' minds when they learn. According to constructivists, individual learners construct their own learning based on learners' prior experience (Piaget 1960 and Brunner 1990). Therefore, learning is as a result of construction, collaboration, reflection and negotiation within a rich context in which learning is situated. Mayowa (2017), Thomas, Martins, Paul and Jonnah (2016) emphasized the four major system attributes on which the design of constructivist learning environment are based and these are context, construction of knowledge, collaboration and conversation.

To constructivists, knowledge building results when learners interact with their peers, re-evaluate their initial positions and negotiate meaning. The teacher then becomes more of a manager on the side rather than the main source for delivering information. That is, the teacher is not a transporter of knowledge, but a learner who is actively engaged in the classroom activities as if he/she is learning with the students and is preparing a self-learning environment (Turkish National Primary Science Curriculum, 2005).

Constructivist learning theory suggests a number of points about teaching and learning which state that: learners have ideas, learners idea often contradict those of teachers, learners like their ideas, learners need first-hand experience, learners need other people, learners see what they want to see, learners often are not aware of what they know; learners may not discover experts conclusion, and students need to know how to learn.

Although there may be many different versions of what constructivism entails, the general view held is that learning is an active process of constructing rather than

acquiring knowledge. The implication of this theory is that it encourages business knowledge to be transmitted. It also encourages every student to face the challenges of advanced technology, such as computers, mobile-phones and many others. This theory demands an education based on science and technology with computer literacy as its hall mark and to improve teaching and learning.

In schools where constructivist teaching is employed teachers are working at creating learning environment in which students actively pursue knowledge rather than passively receiving it; and where they can develop the advanced skills of comprehension, composition, reasoning, and experimentation (Potashnik 1996). It is on these theory that the experimental instructional package (infographics) employed in this study is based. The students will use the learning package with computer system to construct their learning in Business studies within their cognitive structures. Such ability according to (Cobbs, 2018) predicts that knowledge encoded from data by students themselves will be more flexible, transferable and useful than knowledge encoded for them by experts and transmitted to them by an instructor or other delivery agents.

The application of infographics instructional package for learning Business studies may benefit students by empowering them to develop their own understanding of business studies concepts. Students will have the opportunity to learn by constructing their own ideas and knowledge from the infographics experiences, with supportive direction from the instructor. According to Johnson (2017) students who are actively involved in their own learning usually become more independent learners and problem solvers.

2.1.2 Cognitive Theory of Multimedia Learning by Mayer (2009)

The Cognitive Theory of Multimedia Learning (CTML) centers on the idea that learners attempt to build meaningful connections between words and pictures and that they learn more deeply than they could have with words or pictures alone (Mayer, 2009). According to CTML, one of the principle aims of multimedia instruction is to encourage the learner to build a coherent mental representation from the presented material. The learner's job is to make sense of the presented material as an active participant, ultimately constructing new knowledge. According to Park and Brünken (2015) and Mayer (2010), CTML is based on three assumptions: the dual-channel assumption, the limited capacity assumption, and the active processing assumption. The dual-channel assumption is that working memory has auditory and visual channels based on

Baddeley's (1986) theory of working memory and Paivio's 1986; Clark and Paivio, 1991 dual coding theory. Second, the limited capacity assumption is based on cognitive load theory (Sweller, 2020) and states that each subsystem of working memory has a limited capacity. The third assumption is the active processing assumption which suggests that people construct knowledge in meaningful ways when they pay attention to the relevant material, organize it into a coherent mental structure, and integrate it with their prior knowledge (Park, Münzer, Seufert and Brünken, 2016).

CTML accepts a model that includes three memory stores known as sensory memory, working memory, and long-term memory. Sweller (2017) defines sensory memory as the cognitive structure that permits us to perceive new information, working memory as the cognitive structure in which we consciously process information, and long-term memory as the cognitive structure that stores our knowledge base. We are only conscious of information in long-term memory when it has been transferred to working memory. Mayer (2010) states that sensory memory has a visual sensory memory that briefly holds pictures and printed text as visual images; and auditory memory that briefly holds spoken words and sounds as auditory images. Ögren, Nyström and Jarodzka (2016) refers to sensory memory as sensory registers or sensory channels and points out that though we tend to view the dual channel sensors as eye-to-visual working memory and ear-to-auditory working memory, that it is possible for other sensory channels to introduce information to working memory such as "reading" with the fingers through Braille or a deaf person being able to "hear" by reading lips.

Working memory attends to, or selects information from sensory memory for processing and integration. Sensory memory holds an exact sensory copy of what was presented for less than 25 second, while working memory holds a processed version of what was presented for generally less than thirty seconds and can process only a few pieces of material at any one time (Mayer 2010). Long-term memory holds the entire store of a person's knowledge for an indefinite amount of time. Figure 2 is a representation of how memory works according to Mayer's cognitive theory of multimedia learning.

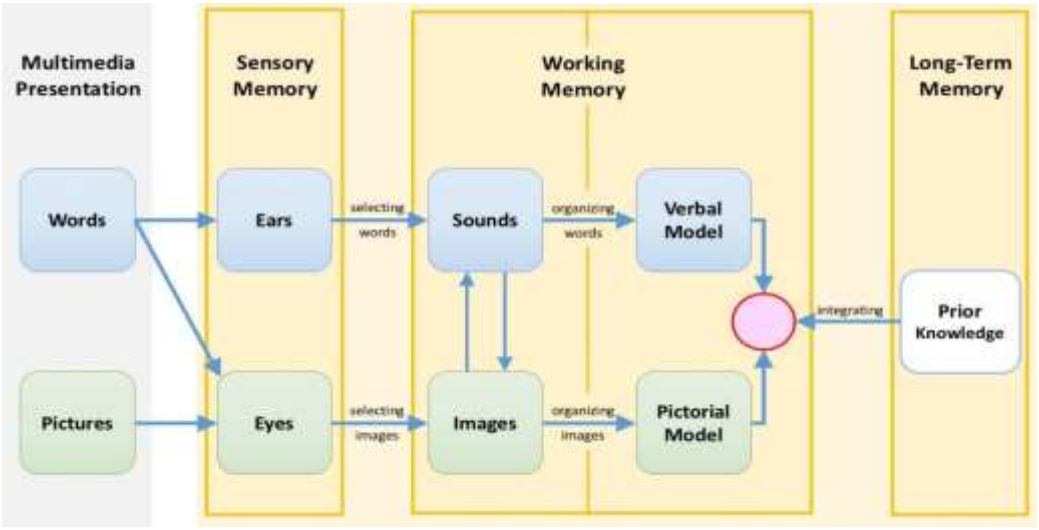

Figure 2.1 Mayer's Cognitive Theory of Multimedia Learning (Mayer, 2009)

Figure 2 summarizes the cognitive theory of multimedia learning. Words enters via the ears, so the learner selects some of the words for further processing in the verbal channel, organizes the words into a cause-and effect chain, and integrates it with the verbal material and prior knowledge. Pictures enters through the eyes, so the learner selects some of the images for further processing in the visual channel, organizes the images into a cause-and-effect chain, and integrates it with the visual material and prior knowledge. According to this theory, the cognitive process of integrating is most likely to occur when the learner has corresponding pictorial and verbal representations in working memory at the same time. Instructional conditions that promote these processes are most likely to result in meaningful learning. As you can see, this theory predicts that multimedia presentations (such as words pictures) are more likely to lead to meaningful learning than single-medium presentations.

2.1.3 ADDIE Instructional Design Model

ADDIE instructional design model promotes a learner-centred approach rather than the traditional teacher-centred approach to instruction so that effective learning can take place (Burguillo, 2010). This means that every component of the instruction is governed by the learning outcomes which have been determined after a thorough analysis of learners' needs. There are various adaptations of the ADDIE model but it generally consists of five cyclical phases which are; Analysis, Design, Development, Implementation, and Evaluation. These processes represent a dynamic, flexible guideline for building effective training and performance support tools. Below is the diagram that describes the ADDIE Instructional Design Model in details

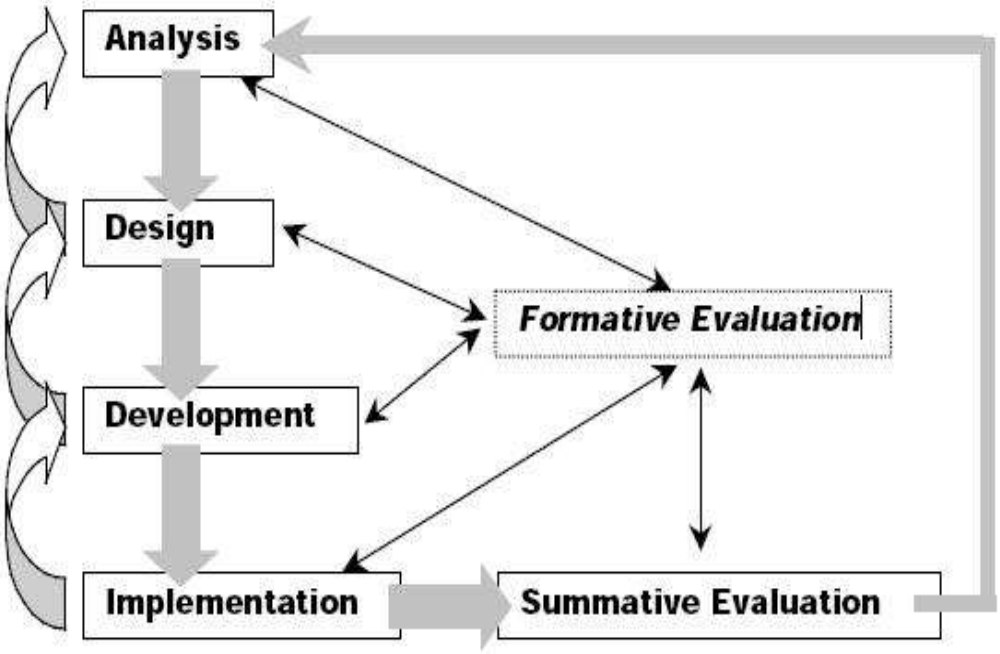

Figure 2.2: ADDIE Instructional Model (Burguillo, 2010).

Five steps of ADDIE Instructional Design Model

Analysis: The Analysis phase is the foundation for all other phases of instructional design. During this phase, you must define the problem, identify the source of problem and determine possible solution. The phase may include specific research techniques such as needs analysis, job analysis and task analysis. The process involved in this phase can de sub-divided into two major categories which are:

i. Analysing the learners to gather as much information as you can on them. This involves understanding the learner and having adequate knowledge about them before learning can take place.

ii. Analysing the broad goals for the lesson or unit. These involve the purpose of our design. They are questions that need to be answered before designing any course or lesson. Some questions are:

- What are my goals?
- What do I hope that students will know at the end of our experience?
- What do I want the students to be able to do?

Design: The Design phase involves using the outputs from the Analysis phase to plan a strategy for developing the instruction. During this phase, you must outline how to reach the instructional goals determined during the Analysis phase and expand the instructional foundation. Some of the elements of the Design phase may include writing a target population description, conducting a learning analysis, writing objectives, and test items, selecting a delivery system and sequencing the instruction. It involves the following:

i. Identifying learning objectives which involve the specific skills and knowledge you wish the students to obtain, and

ii. Identifying the outcome: this involve, how you know that the students have achieved your learning objectives and how the students will be assessed.

The outputs of the Design phase will be the inputs for the Development phase.

Development: The Development phase builds on both the Analysis and Design phases. The purpose of this phase is to generate the lesson plans and lesson materials. This phase involves the development of the instruction, all media that will be used in the instruction, and any supporting documentation. It involves the following processes:

i. Development of instructional strategies: how will you facilitate students in learning the objectives you identified so that they are able to achieve the outcomes you have set for them?

ii. Planning of the logistics. How will you group the students? How will you arrange the classroom? What tools and materials will students have available to them?

Implementation: The Implementation phase refers to the actual delivery of the instruction. Whether it is classroom-based, laboratory-based, or computer-based. The purpose of this phase is the effective and efficient delivery of instruction. This phase must promote the students' understanding of material, support the students' mastery of the objectives, and ensure the students' transfer of knowledge from the instructional setting to the job. It also involves the try-out of the lesson plan or unit with the students.

Evaluation: This phase measures the effectiveness and efficiency of the instruction. Evaluation should actually occur throughout the entire instructional design phase – within the phases, between the phases, and after implementation. Evaluation may be formative or summative. Formative evaluation is on-going during and between phases. The purpose of this type of evaluation is to improve the instruction before the final version is implemented. Summative evaluation usually occurs after the final version of the instruction is implemented. This type of evaluation assesses the overall effectiveness of the instruction. Data gather from the summative evaluation is often used to make a decision about the instruction such as whether to purchase an instructional package or continue/discontinue instruction (Burguillo, 2010).

In summary, ADDIE instructional design model was selected to guide in the design and development of infographic and E-book packages for junior secondary school Business studies students that will be used for the study.

2.2 Conceptual Review

2.2.1 Concept of Business Studies

The definition of business studies has evolved over time. This is evident in the different definitions offered by various authors and researchers in trying to make clear the meaning of business studies. Agwumezie (2020) defined business studies as a course that prepares students for entry in advancement of jobs within business; and prepares them to handle their own business affairs to function intelligently as consumers and citizens in a business economy. Similarly, Adeleye (2017) opined that business studies encompass knowledge, attitudes, and skills needed by all citizens in order to effectively manage their personal businesses and economic system.

Akpojotor (2022) remarked that Business studies is an embodiment of vocational knowledge and skills needed for employment and advancement in a broad range of business careers. In other words, business studies means education for business or training skills which is required in business offices, clerical occupation and business policy analysis. In his own view, Okoye (2013) extensively defined Business studies as an education program that orientate students in: art of business making (marketing), typing and shorthand skills (currently competing with computer appreciation and operation), service delivery, secretarial jobs, stenography, account clerking, office information system and management. He further elaborated that Business education prepares students in two interrelated areas; education for business, education about business.

Okoye (2013) believed that education for business provides professional training in: method of business making, techniques in business making, tactics to attract clients and make profit, scheming ideas for profitable venture, appropriate attitude and behaviour of a good business man. An education about business prepares individual to know: how and when to buy goods for profitable outcome (in-season and out season), where to obtain goods for better sales, where to situate business for continued existence, when to make best sales (increased turnover rate), When to make sales for increased profit, tricks in season forecast for good business making, self-conviction indicator about risk taking in business.

Finally, Oluwalola (2019). saw business studies as a dynamic field of study geared towards preparing youths and adults for and about business. It is a preparation for a career in business when instruction is designed to prepare youths and adults for actual practice in the world of business. On the other hand, education about business involves preparation of youths and adults for intelligent and effective consumption of economic goods and services offered to society in our free enterprise economy. From the forgoing definitions, it is clear that Business studies is a programme that prepares students for the demand of the business world. It is in keeping with the objective of Business education programmes, that the authors found it pertinent to seek strategies that will properly more practically prepare students for the demands of the business world.

2.2.2 Business Studies in Nigeria

Prior to 1977, no subject was called Business studies in Nigerian education system. It came into existence as a result of the introduction of Junior Secondary School

(JSS) in the 6-3-3-4 system of education in 1981, with five specific subject areas which included: office practice, bookkeeping / accounting, typewriting, shorthand and commerce. Due to the need to transform our secondary school system to be in tune with global and national demands, the FRN through NERDC made Typewriting an elective subject while Insurance and Store management were added to business studies in 2008.

Business studies form a means of laying foundation for national, technological, economical advancement and for higher education (N.P.E, 1981 revised in 2004) and (FRN, 2008). According to the researchers, it equips its recipients with personal skills, consumer skills, and knowledge for clerical and managerial (Kimotho, 2016) abilities needed to adapt to changing economic and business realities and these skills made them to be wealth and job creators rather than wealth and job seekers. Adeleye (2017) posits that it is that aspect of education that concern itself with vocational and professional preparation for career in business. Sakina (2016) see it as a comprehensive, practical and skill subjects while Oluwalola (2019) maintained that business education equips students with knowledge and skills that will help them to find a job after schooling or create their own employment.

The main objectives of business studies and other related subjects according to Oluwalola (2018) is to instill in the students a pattern of thinking, develop attitudes and values before such habits become unchangeable, since it has become a psychological fact that after few years of one's life, ways of reasoning, behaviours, analysis and economic decisions somehow follow a fixed pattern. In the field of business studies as in other aspect of education, teaching effectiveness makes learning not only meaningful but interesting and applicable to work and environmental demands.

2.2.3 Methods of Teaching Business Studies in Nigeria

Teaching methods according to Adeleye (2017) are the broad pattern of thinking which a teacher follows to help his students reach the goal set for the course. In other words, they are techniques, ways, principles or strategies that enable the teacher to communicate the lessons. A method that is appropriate to one kind of material may not be suitable for another. Therefore an appropriate teaching method needs to be carefully selected. There is the need to be familiar with major theories of learning which would enable teachers understand students, their interests, mental attitude, individual differences, their readiness level, those things that motivate them to learn as well as a

variety of learning experiences, which the students could be exposed to, and made to participate actively (Amesi and Giami, 2018).

Business studies as a subjects form a means of laying foundation for national, technological, economical advancement and for higher education (NPE, 1981 revised in 2004) and (FRN, 2009). According to Ogwunte and Okolocha (2016), Business subjects equip its recipients with personal skills, consumer skills and Knowledge for clerical and managerial abilities needed to adapt to changing economic and business realities and these skills made them to be wealth and job creators rather than wealth and job seekers. Sakina (2016) See business subjects as comprehensive, practical and skill subjects, while Oluwalola (2019) maintained that business subjects equip students with knowledge and skills that help them to find a job after schooling or create their own employment.

Business subjects at the junior secondary school level comprised subject taught at pre-vocational level and as an integrated subject. These include; book-keeping, shorthand, office practice, typewriting and commerce. At the Senior Secondary School level as contained in the new senior secondary school business subject curriculum launched in September 2011, business subjects include the following: financial accounting, store management, insurance, commerce and office practice. Whether at the Junior Secondary school level (JSS1-3) or Senior Secondary School level (SSS1-3), the principal objective of these subject remain the provision of student with the relevant skills, knowledge and attitude necessary for paid or self-employment as well as for higher education in business area. Today, any youth without skills is without a future, and any business subject programme which does not pay adequate attention to how students will acquire and practice technical and vocational skills is not useful. As the acquisition of skills for paid or self- employment is at the centre of business subject and youth empowerment, practical skill is not acquired by chance. It is planned, taught learnt and practiced in a strategic manner especially in secondary school. Some schools of thoughts believe that the growing number of unemployed school leavers in Nigeria is not as a result of scarcity of jobs, but lack of skills. This therefore requires youths to acquire the right knowledge, skills, competencies and attitude needed by the labour market and environment.

Obi (2013) observed that the practical approach to teaching business subjects in secondary schools is a major missing link. To buttress this fact, they contended that the solution does not lie only with the availability of qualified teachers and modern teaching facilities, but also the effectiveness of the strategies applied in teaching. Brussevich,

Dabbla, Norris, and Khalid (2020) affirmed that the reforms in Nigerian Education were aimed at promoting functional education for skill acquisition, job creation and poverty eradication. Teaching strategy is a method, step, means, approach, or procedure of achieving the stated goals of education (Marcella and Kysika, 2019). Teaching strategies play very important role in teaching and learning process. Effective strategies are very crucial in teaching and learning business subject at secondary school level. In regards to teaching strategy, Mannison (2009), Proposed six groups of instructional strategies for effective teaching of job skills as follows:

1. Direct Instructional Strategies: these strategies are highly teachers-centered and very effective for providing instructional information to student. Examples are, lecture method, listen and visualize method, programmed instruction method, individualized instruction method.
2. Indirect Instructional Strategies: these are student centered strategies which seek a high level of students' involvement in observing, investigating, drawing inferences from data and forming hypotheses. Examples are: inquiry method, assessment or Dalton method, questioning technique, read and practice method.
3. Interactive Instructional Strategies: these strategies rely heavily on discussion and sharing among participants. Student can learn from peers and teachers, at the same time, develop social skills and rationalhinking. Examples are discussion, invitation of guest speaker/ resource persons, debates, role play, conferencing.
4. Experimental instructional strategies: These strategies are described as learner-centered and activity oriented. It involves personal and practical experience of the leaner. Examples are, field trip, office visit e.t.c
5. Independent Instructional strategies: these are range of instructional methods which are purposefully provided to foster the development of individual student initiative, self – reliance and self-improvement. Example are critical thinking methods, E-learning, Project method, computer assisted instruction.
6. Material/ Visual Aid Strategies: this involves the use of instructional materials and visual aids in teaching and learning process. It enables the learners to learn through sight and sound. Example are television, video tapes, use of textbooks, instructional films.

In business subjects, the major thrust of effective teaching strategies according to Tema (2007) are: to deliver quality teaching and learning of business subject in schools, to ensure employability of business subject graduates, to enhance status and attractiveness of business studies programme. While the guiding principles that are

considered major drivers of these strategies are effectiveness, quality, accessibility, entrepreneurship, employability and sustainability. On this premise, a good number of researchers and scholars in this area of study including America and Mallon, (2020), Curtine (2019), and Adeleye (2017) agreed that effective teaching strategies are not receiving adequate attention from the teachers, school and educational authorities as well as government. Also, teaching and learning of skills in business subject will continue to suffer a set back and unemployment among school leavers with its social ills and will continue to soar if urgent steps are not taken to ensure effective teaching of skills at secondary school level.

In recent times, the academic performance of post-primary school students, especially in the internal and external senior secondary school certificate examination (SSCE) in business subjects has been on the decline (Oluwalola, 2019). Observation by parents, teachers and government shows that there seems to be the absence of effective strategies which among others include direct, independent and experimental instructional strategies for teaching business subjects at the secondary school levels not only in South-South, Nigeria, but the whole nation. This has given rise to increase in unemployment and high rate of crime among young school leavers. It is generally believed that if business studies' students are properly taught the requisite skills before leaving schools, they should certainly acquire the desired job skills necessary for paid or self-employment. Moreover, unemployment and poverty will be eradicated in our society.

2.2.4 Classroom Utilisation of Infographic

The term "instructional infographics" emerged in 2014, when reports and studies investigated the efficacy of infographics in an instructional context. Studies revealed that infographics could achieve a variety of instructional objectives. In 2014, Saurbier used infographics to integrate high-order thinking skills in undergraduate leadership instruction and concluded that infographics improved her students' disciplinary competence and enhanced their success skills and creativity (Ismaeel and Al Mulhim, 2021). Fowler involved students in creating infographics for science lessons and determined that infographics depicted and adjusted scientific misconceptions; developed high-order thinking skills including analysis, synthesis, and critical thinking; and facilitated the development of creative presentations (Fowler, 2015).

Meacham (2015) conducted a study in 2015 and used infographics in her science class; she confirmed that the students could present complicated processes and concepts and that infographics could be used almost anywhere in instructional design either as a pre-teaching tool or to reinforce certain topics. Subsequent studies Alqudah, Bin, Azizul and Hussin (2019); Sudakov, Bellsky, Usenyuk, and Polyakova (2016) have affirmed Meacham's statement that infographics could be used as a starting point for a discussion and as a culminating experience of authentic learning by allowing students to demonstrate their ability to fully comprehend a topic and summarize its central themes in a concise manner. Infographics have been effective when used to teach English grammar to learners of English as a foreign language (Al Hosni, 2016; Alotiabi, 2016; Rezaei and Sayadian, 2015; Vanichvasin, 2013).

Davis and Quinn claimed that infographics can effectively support writing and reading comprehension and can clarify complicated subjects such as science, history, and math while strengthening critical thinking and synthesizing skills (Davis and Quinn, 2014). In addition, Dur examined the current and potential expansion of infographics in education and concluded that in addition to their role in improving students' academic achievement, infographics could develop students' life skills and attitudes, such as research, systematic thinking and teamwork skills (Dur. 2014). Infographics can also be used for hands-on learning (Davidson), problem solving, engagement (Meacham, 2015), and to enhance students' reflective and creative thinking (Islamoglu et al., 2015; Karre, 2015).

2.2.5 Classroom Utilisation of E-book

E-books in the classroom are part of a crucial long-term approach for many teachers. Besides being creative, teachers find the e-books a utilitarian medium to replace conventional text books. Several research reports have covered successful pedagogical techniques for e-books resources. Wells (2018) discovered from a Delphi research of professionals in instructional technology and constructivism that online programs developed from constructivist principles should be appropriate, interactive, project-based, and collaborative, while providing pupils with many options or control over their learning.

Abidin and Saibon (2019) examined effective online e-books instructional practices based on a structure of effective teaching practices in face-to-face instruction in higher education. In this study, Abidin and Saibon interviewed faculty in post-secondary institutions, who ranked the effectiveness of online instructional methods.

These faculty members gave higher rankings to online instructional techniques that had created an environment that supports and promotes inquiry, broadened the learner's experience of the subject matter, and elicited active and significant expression by learners on their growing experience base (Olabode, 2016).

In a study of pedagogical practices, Olabode (2016) found only 23-45 percent of online instructors surveyed actually used online activities related to crucial and innovative thinking, hands on performances, interactive labs, data evaluation, and scientific simulations, although 40 per cent of the participants mentioned those activities were highly vital in online learning environments (Shelburne, 2019). In effect, a substantial gap divided preferred real online instructional practices. Technology has played and continues to play a huge role in the improvement and growth of online education. Accordingly, several schools have reported an increase in the use of online resources.

In the past decade, numerous initiatives have sought to incorporate growing Internet technologies into the teaching and learning approach in higher education. Several researches have reported cases related to the use of websites to enhance student effort and representation. Some experts have publicized the plausibility of using wikis (a website that allows the collaborating editing of its content and structure by its users), student collaboration and podcasting is starting to garner interest from educators for its instructional use (Olabode, 2016). Although some discussions in the literature relate to efficient practices in the use of emerging technologies for education, scientific facts to support or oppose the effectiveness of such technologies, or, probably more essentially, guidance on how to use such resources successfully based on scientific evidence, is lacking.

2.2.6 The Role of Technology in Business Studies

Information and communication technologies (ICT) provide a range of tools that can significantly extend and enrich teachers' instructional strategies and support students' learning in business studies (Akpojotor, 2021). These tools include simulations, multimedia resources, databases, spreadsheets, and computer-assisted learning modules. Teachers can use ICT tools and resources both for whole-class instruction and to design programmes that meet diverse students needs. Information and communication technologies can also be used to connect students to other schools, at home and abroad, and to bring the global community into the local classroom (Akpojotor, 2022).

Through Internet websites, students can now access resources held in libraries, archives, public institutions, and private businesses across the country and around the world. They can find the most current information available on topics relevant to all business studies courses. ICT resources allow secondary school students to conduct more far-ranging and authentic research than ever before. Applications such as databases, spreadsheets, word processors, and presentation and multimedia software can be used to enhance student learning in all business studies courses (Amadi and King, 2018). In the information and communication technology courses, they are an essential tool for learning. In these courses, students acquire skills in the use of word processing, spreadsheet, database, desktop publishing, website design, and presentation and multimedia software that meet current business standards and that are transferable to other courses as well as to the workplace. Information and communication technologies are integrated into the business studies curriculum in a way that mirrors the dynamic environment in which business is conducted today, creating an authentic and relevant learning environment for students (Obidile and Onyeagba, 2019).

2.2.7 Computer Skills and the Use of Computer for Classroom Instruction

Many of the same characteristics that have been observed in the development of student efficacy in the use of computer tools in the classroom as in the case of teacher efficacy; however, there are also some issues that have been identified within the literature of students effectiveness that are unique in this case. Childhood use of computers has been shown to be important in the development of emotional and cognitive development (Fati and Airen, 2017). Development of increased visual attention, spatial cognitive skills, and iconic recognition has been identified as major positive benefits of computer skills, as well as improvement of academic performance (Ononye, Oguejiofor and Ezenwagu, 2021).

In the United States, early computer use has been found to improve the school readiness of students in the Head Start programme (intended to provide pre-primary educational support for students of lower socioeconomic status) (Adewole-Odeshi, 2014). Childhood computer use has also been shown to be important in early formation of three-dimensional visualisation skills (Sorby, 2019). There is even an argument that students of this generation can be considered digital natives, or those that have grown up with computer technology and Internet, and are more comfortable than adults in a digital world (Shelburne, 2019). Given that this concept has been developed in a Western

context, it is not certain that this could also be said of Nigerian students, who may have different levels of access to the Internet and computers.

However, there are significant differences in these developmental factors in relation to a wide range of student-specific characteristics and factors (Adegbite, 2017). It is reasonable to assume that student characteristics, as well as teacher characteristics, will impact the effectiveness of computers in the classroom, and the existing bulk of the literature bears out this assumption. A number of student characteristics and attitudes that impact computer use in the classroom have been identified within the literature that may prove to be relevant to the current research process (Akpojotor, 2021). The socioeconomic status of students cannot help but impact the development of effective computer skills either within or outside the classroom. One aspect of learning using computers that has been examined extensively is that of the Digital Divide, or the difference in learning between children that have access to home computers and those that do not (Nidhi and Sunita, 2019). The Digital Divide has been studied and factors that are found to be indicative include per capita income, urbanisation rates, illiteracy, educational levels, infrastructure and regulatory quality (Adegbite, 2017).

2.2.8 Computer Anxiety and the Use of Computer for Classroom Instruction

The need for computer education in schools cannot be over emphasized. This is because computers make things easy in our society. Almost everything has to do with computer, any person at this age of ours, be it an adult or a child who lacks knowledge of computer could be regarded as an incomplete human being (Osisanwo, Ehioghae, Abdulsalaam, 2019). Computers have now been accepted " unconditionally " as an integral part of our entire educational system. The increase in computer usage is rapid and has also generated new challenges. In fact, one of the most dynamic and innovative areas of growth in education is the utilization of computer technology.

Akpojotor (2021) asserted that for a school to remain competitive it also must adapt to changes and be innovative with its use of computer. The study further stated that, despite income, school budgets and location, soon all students will have access to information through the internet. As the academic and business environment continues to move forward in computer technology, the gap is widening between development in computer technology and those people who experience computer anxiety. In fact, the term, "Computer Anxiety" is used in the literature vocabulary due to teacher and student resistance to computer use. The causes of this resistance according to Oribhabor (2020)

are not unconnected with feelings of stupidity, fear of obsolescence, fear of the unfamiliar operations done with computers and the thought that computers have a dehumanizing effect.

Psychological factors are important in educational research; they have been linked with improving student academic performance (Oyadeyi, 2016; Akpan, 2018). Psychological factors are also important in correcting deviant behaviours of young people (Scandroglio, Lopez-Martinex, Jose, 2020). Therefore, in considering computer utilization, it is important to consider psychological factor like computer anxiety. Studies have shown that computer anxiety, lack of confidence, and lack of enjoyment influence both the acceptance of computers and their use as teaching and learning tools (Oribhabor (2020). The need to therefore disabuse the mind of both teachers and their students from such fears and replace these misconceptions with confidence building measures is more than ever paramount. In this regard, computer ownership and computer experience are two very important and interrelated factors that can help in mitigating fear and anxiety about computers from the minds of teachers and students. Anxiety by definition is intense dread, apprehension, or worry.

Computer anxiety as defined by Osisanwo, Ehioghae, Abdulsalaam (2019) is the fear of impending interaction with a computer that is disproportionate to the actual threat presented by the computer. Computer anxiety is a concept specific anxiety type, which regularly occurs in a specific type of situation (Akpojotor, 2021). Computer anxiety has been associated with avoidance of information technology. Avoidance can seriously affect some students' academic progress, lower performance in business settings and ultimately affect career opportunities (Akpan (2018)). Those who have computer anxiety may experience fear of the unknown, feeling of frustration, possible embarrassment, failure and disappointment (Osisanwo, Ehioghae, Abdulsalaam, 2019).

Oyadeyi (2016) stated that increased computer use may not necessarily eliminate anxiety from all computer anxious users. Osisanwo, Ehioghae, Abdulsalaam (2019) noted that due to the lack of training and experience even when computers are available, teachers rarely use them in their educational practice. Limited computer experience has been found to be a factor that influences anxiety (Gressard and Loyd, 2006). Lack of training and experience is also believed to be, in part, the reason why many students have not been well disposed to computers and consequently deprived of their usefulness in the classroom (Collins, 2018).

In Nigeria, many public schools lack functioning computer systems to teach and train students (Akpojotor, 2021). Most research reports and literature review on computer education are being carried out from developed countries. Many teachers are yet to incorporate Computer-Assisted Instruction in teaching. Many students who do not have access to internet facilities in school make use of commercial internet centres (cyber cafés) outside the school. Though computer technology is not a substitute for quality teaching and learning, yet there is need for conscious efforts to utilise computers effectively to enhance teaching and stimulate students' interest in learning.

2.3 Empirical review

2.3.1 Infographic and Students' Achievement in Business Studies

Several studies have shown that learners remember more information if a text is followed by key illustrations (Brigas, and Ramos, 2015; Mayer, 2010). Furthermore, other studies have shown that students are able to retain information for longer time when using textual material that carries images (Çifçi, 2016). According to the Cognitive Load Theory (CLT), such phenomena happen because the use of graphics together with text reduces the cognitive load, which is the mental effort that a learner applies on learning, and thereby the learners can focus more on the content rather than trying to decode the way it is presented (Mayer 2009). Thus, a positive approach to reduce cognitive load is design activities and instructional materials that match visual information, such as pictures and graphics, to textual content in order to reduce the effort spent by learners to comprehend the material (Baglama, Yücesoy, Uzunboylu, and Ozcan, 2017**)**. In this context, infographic is a more recent and popular type of information visualization able to support learning. Infographics, contraction of 'information graphics', are designed to communicate a specific set of information to a certain audience by turning complex and abstract concepts into intuitive knowledge (Putra, 2021). There is no restriction about the area (example sciences, business) or type (example numerical, data) of information that an infographic can represent. The essence/core of an infographic is in its visual appeal, blending graphical elements to represent numerical data with short and objective textual explanation.

Furthermore, infographics illustrate mostly of data and textual information using icons, images, colors and elements of graphic design (Davidson, 2014). This appealing information visualization has the ability to guide and focus the attention of an audience, and therefore, may be used as learning material with the potential to increase knowledge

acquisition. Some of the studies that apply infographics as learning material report teachers' experience on using infographics design as a template (Wilkes and Hodson, 2013). The students described the class content by using an infographic to expose their understandings. Although the authors compliment this method, these studies did not perform any test to verify students learning, also they did not compare learning by infographics with other types of educational material.

Zhang-Kennedy and Biddle (2013) tested students to compare learning of those who used infographics to learning of students using pure text. Both studies identified greater results for learners who used infographics. Students who used pure text had little gain regarding learning, information retention and usefulness of the information. Despite the evaluation, these studies did not concern about individual factors that may interfere in how students perceive the learning material.

Parveen and Husain (2021) explored the use of infographics on learning adding levels of game elements. They evaluate and discuss infographics concerning insights and learning. In a questionnaire, the researchers asked the participants to evaluate how enjoyable and fun was their experience on a Likert scale. However, the students' rating was concerning the various degrees of game elements instead of material presentation. Ultimately, Parveen and Husain (2021) characterize the research field about 'infographics in education'. Still, few works provide evidences on how the appealing design of an infographic can affect learning process, and whether individual factors such Learning Styles and enjoyment of the information interpose on those evidences.

2.3.2 Infographic and Students' Attitude to Business Studies

Attitude is a determining factor in learning showing the extent a particular object is valued or approved of by individual learner (Ismaeel and Al Mulhim, 2021). The instructional method employed by teacher could influence attitude positively or negatively. In a relatively short period of time computer technology has increasingly changed the way we teach and learn. Newly developed instructional software that integrates text, sound and infographic now can present material to students in a multimedia form that may maximize its effectiveness. According to Mayer (2010), multimedia is the presentation of the learning media using both pictorial form and verbal form such as spoken and text. This is one way of bringing about a change of emphasis in teaching from teacher directed approach to a facilitated approach. One important combination of media is infographic.

The flexibility of learning through animation allows a wider range of stimulus, thus increasing the students' engagement in learning. Hattwig, Bussert, Medaille, & Burgess, (2013) studies show that students who learn from infographic have greater self-esteem and motivation. According to Ismaeel and Al Mulhim (2021), infographic learning can stimulate more than one sense at a time and that may be more attention holding. In their own comment, Kibar, and Akkoyunlu (2014) when discussing the effect of computer assisted instruction approach on grade 6 students' academic achievement and attitude towards business studies. The researcher used experimental design. The experiment was operated on grade six students in one of the rural areas in Louisiana State in U.S.A. The researcher divided the students into (audio-visual- sensory- mixed). Results referred that audio learners represent the vast majority of learners. They represent the least mark in the business studies achievement test while students who used the visual learning style got the highest grades among the rest of the groups.

In the study of Matrix, and Hodson, (2014), a programme was designed to incorporate the use of computer technology innovation called the computer mediated simulations (CMS) programme to enhance pupils learning outcomes in business education. The finding of the study has demonstrated the use of well-designed computer simulations learning environments. And this can be effective in improving learners' perception of classroom environment and attitudes toward the subject.

Futhermore, Obi (2013), suggests that one way to bring about more practical change in the attitude of learners to business studies is by using student centered technique through the integration of computer assisted instruction approach (infographic) to teaching and learning process. Obi (2013), added that, conventional approach which is widely used need to be integrated with technological innovations in teaching to improve the students' attitude and their inability to remember what has been learnt and conform to expected national quality and standard in Business studies. It is believed that the major language students in the 21st Century understand is technology, and business educators need to leverage on the capabilities and affordances offered by digital tools to reach students more appropriately. This would go a long way in reducing the problem of abstractness in teaching and learning of business studies at all levels of education.

2.3.3 Infographics and Students' Entrepreneurial Intention

The important of educational technology and media for instructional delivery cannot be overemphasized.In this 21st century, students are born in the auditory, visual and kinesthetic world, so teaching them with the use of past methods and instructional media will be ineffective or would not have a considerable outcome. Teachers need to have enough information about educational technology in its holistic form and new educational media and also deal with them with a positive attitude. In recent years, great attention has been displayed to the use of new media in education most especially infographics learning tools.

According to Ismaeel and Al Mulhim (2021), revealed that the utilization of infographics in classrooms gives learners the opportunity to learn faster with better function and with more satisfaction from their class attendance. Infographics are promising learning tools that can be adapted to any learning setting to enhance students' learning experience. Some of the learning benefits associated with infographics include: (a) improved comprehension of information, ideas and concepts; (b) enhanced ability to think critically and develop organized ideas; and (c) improved retention and recall of information (The Institute for the Advancement of Research in Education at AEL, 2013). However, using this learning tool can create the environment that stimulates students'entrepreneurial intention for business creation (Aja-Okorie and Adali 2013).

Infographics are often used to present content in a compressed form. In addition, the efficient presentation style enables teachers to prepare various entrepreneurial activities including warm-up sessions and unit summaries to engage students more deeply with the subject and increase chances for interaction (Vanichvasin, 2013). Infographics present the same information that can be traditionally presented with words alone or both words and images. According to Krauss (2012), representing data and ideas visually engages more parts of the brain; therefore infographics allow individuals to see a problem from multiple perspectives. Bicen and Beheshti (2019) pointed out that the inherent features of infographics attract the curiosity of learners and engage them in practical entrepreneurial activities that involve real- life business scenarios and also motivate them to study further.

Therefore, infographics is likely to improve students' entrepreneurial intention, students' visual communication skills including thinking, learning, and expressing themselves visually, and more general learning skills such as information organization

and collaboration. Hence, infographics can be utilized as an alternative assessment tool in stimulating students' entrepreneurial intention and enabling the students to demonstrate their higher-level achievements in business studies (Schrock, 2014).

2.3.4 E-book and Students' Achievement in Business Studies

There is no doubt that e-learning no longer needs to prove its efficiency in learning process, many countries and nations have preceded in using e-learning and computer in education, this is included in its strategic plans and objectives. Several studies have been performed to examine the effectiveness of different types of e-learning and usage computer in education in acquisition and enhance students' skills and increase the effectiveness of their achievement capabilities (Akinoso, 2018). With the emergence of educational technologies, with believing in the importance of the diversity of methods of providing information and its effect on increasing student achievement, the e-book emerges as one of the modern technology emergencies in introducing e-content in a more attractive and interactive manner which has never been seen before through the traditional printed book

Shelburne (2019) reported at the level of applied practice, e-books proved that they are attractive tools for many learners, because it can be easily integrated within educational programs for literacy, which required teachers to have a bit of procedural knowledge and practical skill to use computer. Several studies which used empirical designs to examine the effect of interactive e-books on students' academic achievement revealed the effectiveness of using e-books in teaching and in acquisition skills and increase achievement. For example, Yee and Zainuddin (2018) confirmed the effectiveness of using e-books in increasing the achievement of first-grade students of secondary school in reading course. Wells (2018) also confirmed the effectiveness of Individual self- learning simulated by computer and e-books in the development of creative thinking for second-grade science students at the Faculty of Education in Oman.

Whereas Alzaq's study (2018) reported the effectiveness of diversity of interface e-book interaction on academic achievement and skill performances for educational technology master students and their attitudes towards it. In addition, Mubarez (2017) showed the effectiveness of e-books in developing the skills of producing multimedia presentations for KG teachers. These results supports the findings of Chau study (2018).

2.3.5 E-book and Students' Attitude to Learning

The emergence of multimedia software in the classroom challenges the traditional method, as the medium for students' communication (Kumbhar, 2018). Twenty-first century students do not learn the same way as their teachers did when they were students. Yet most schools continue to teach without taking into account the needs of the 21st century student. The same is true in the business studies classroom. Changes need to be made to better meet the needs of the 21st century students. The appropriate use of technology in the classroom can be a challenge for the 21st century teachers.

Technology in the classroom can be appealing to educators. However, determining the benefits of technology and asking whether those benefits outweigh the traditional tools of instruction is very challenging. One specific technology issue educators are currently debating is whether or not interactive e-books benefit student learning over traditional printed text. According to Oyediran, Omoare, Owoyemi, Adejobi, Fasasi (2020), the younger generation has grown up and is familiar with new technology; they are likely to have different expectations and behaviors towards it. Huang et al. (2012) conducted a study of 166 elementary school students using the Interactive E-book Learning System (IELS) and their research noted how easily students adapted to interactive e-books as well as their high level of preference for the electronic format. One major component to student success in learning is engagement. Typically if there is a lack of engagement, there is a disconnect in learning. Twenty-first century students learn differently in part due to the fact that they are engaged differently in the classroom.

Many studies (Odawn, 2018; Leong, Abidin and Saibon, 2019; Huang, Liang, Su, and Chen, 2012; Martinez-Estrada, and Conaway, 2012) give evidence that interactive e-books can have a very positive impact on student interest. According to a study done by Shelburne (2019), students preferred e-Books over traditional printed text because of the larger range of titles they could choose from as well as the additional text features available. The students in the study became quickly familiar with the eBooks and welcomed the technology into their reading classroom. In this study, 22 third-grade students read one traditional printed text novel and two interactive eBook novels. The participants were asked to complete a satisfaction survey as well as reading comprehension tests for each book. Results indicated that while students preferred the

e-books, the reading achievement tests did not show a significant increase in students' achievement when using an interactive e-book.

One of the possible benefits of interactive eBooks over printed text is the e-book's extra features. Interactive e-books have a variety of features that printed text does not allow. For example, interactive e-books technology provides adjustable font size, a built-in dictionary, and text-to-speech features. These features make interactive e-books better able to meet the diverse needs of students in the general education classroom. According to Baharuddin and Hashin (2020), e-books have the potential to create new learning and teaching possibilities that were not available before. Akinoso (2018) stated that e-books seem to be more flexible and accessible than paper texts. In addition, the study also indicated that e-books can also better support personalized learning. Electronic books might, therefore, have the power to bridge the gap between print and other media, and thereby encourage reading in those students who are reluctant readers.

In conclusion, studies have not yet proven that the use of interactive eBooks increase student reading achievement. According to Ternenge and Kashimana (2019), although eBooks have been available for almost 20 years, studies examining the correlation between eBook text and student achievement are still few and the results are conflicting. Before schools implement interactive e-books in replacement of traditional printed text completely, further studies need to be done.

2.3.6 E-book and Students' Entrepreneurial Intention

The primary purpose of teaching at any level of education is to bring a fundamental change in the learner (Uzoamaka, Ayolugbe and Igwe, 2019). To facilitate the process of knowledge transmission, teachers should apply appropriate teaching methods that best suit specific objectives and level exit outcomes. E-book instructional strategy aims to have students actively participate in learning activity to achieve the set learning outcomes (Pew Research 2014). One of the problems of teaching and learning is the method of imparting knowledge to learners. The major difficulty in teaching of business studies has been the method by which the subject is customarily taught without regards to instructional materials. The pedagogical approach in imparting business knowledge to learners has become inadequate to their needs. There is no doubt that e-book no longer needs to prove its efficiency in learning process (Olabode, 2016). Several studies have been performed to examine the effectiveness of different types of

e-learning in education in acquisition of knowledge and skills, and increase the effectiveness of students' achievement capabilities.

Adewole-Odeshi, (2014) reported at the level of applied practice, that e-book are attractive tools for many learners, because it can be easily integrated within educational programs to stimulate students' entrepreneurial intention, which required teachers to have a bit of procedural knowledge and practical skill to use computer. However, educational decisions relevant to using e-book are based on more than just the ease of application of e-book in the educational process, rather than on the research results that demonstrated the effectiveness of e-book in terms of stimulating students' entrepreneurial intention (Pew Research 2014). It is apparent that e-book can engage students in a more attractive and interactive manner to develop students entrepreneurial intention.

2.3.7 Computer Skill and Students' Learning Outcomes in Business Studies

Computer skills refer to ones' ability to use the software (and sometimes hardware) of a computer (Fati and Airen, 2017). They include basic computer skills like knowing how to switch on the computer, being able to use a mouse to interact with elements on the screen, being able to use the computer keyboard and being able to shut down the computer after use. Intermediate skills include being able to use the word processor, e-mail, spreadsheets, databases, and the use of internet, while advance skills include programming and the use of computer for scientific research (Ononye, Oguejiofor and Ezenwagu, 2021). As personal computer become common-place and they become more powerful, the concept of computer literacy is moving beyond basic functionality to more powerful applications under the heading of multimedia literacy. Being able to learn with a computer is essential across all subjects and grades for information retrieval, processing, and reporting. In addition, integrating computers into instruction is a direct and indirect goal of school improvement. This, then calls for determination of students' computer skills and their learning outcomes in business studies.

In order to be successful in academic programs and careers, it is essential that students possess improved computer skills (Oladimeji, Yusuf, Njoku and Owolabi, 2022). The proliferation of personal computers throughout business environments will continue to place demands on workers at all levels to develop proficient computer skills. In business studies, the business profession recognizes that individuals entering the

profession must have sufficient knowledge of computer skills to be successful because of its pervasiveness in business activities (Kumbhar, 2018).

Using computer in business studies is an integral means for helping students to provide needed skills and it is vitally important that business studies students have the proper experience and a positive attitude towards computers because of the relationship between attitudes towards computers and motivation and performance (Adewole-Odeshi, 2014; Shelburne, 2019). Due to the importance placed on computer skills, it is important to determine the impact of teaching computer skills that business studies have on business studies students in terms of the perceived skills.

For over twenty years, business studies' researchers have been studying the cognitive effects of a variety of techniques for integrating computers into the business studies curriculum; however, the results are frequently contradictory. After a comprehensive review of the studies concerning computer used in business studies instruction, Oladimeji, Yusuf, Njoku and Owolabi (2022) opined that based on existing evidence, computing is irrelevant to the learning of business studies concepts. Earlier than this, Baxter (2014) and Clement and Joshua (2019) examined differences in examination scores between experimental groups, which used template programs, and control groups, which did not use computers. In both studies, no differences were found in examination scores between control and experimental groups, leading them to conclude that the use of computers did not enhance business studies proficiency. Therefore, further research is definitely needed to determine if students' knowledge about computer change their attitudes and performance toward business studies.

2.3.8 Computer Anxiety and Students' Learning Outcome in Business Studies

The teaching and learning process has been altered by the convergence of a variety of technological, instructional, and pedagogical developments in recent times (Khaloufi and Laabidi, 2017). Technology is challenging the boundaries of the educational structures that have traditionally facilitated learning. Recent advances in computer technology and the diffusion of personal computers, productivity software, multimedia, and network resources over the last decade heralded the development and implementation of new and innovative teaching strategies. Educators who advocate technology integration in the learning process believe it will improve learning and better prepare students to effectively participate in the 21st century workplace (Adarkwah, 2021; Darkwa, and Antwi, (2021; Okundaye and Dwyer, 2019).

In the same vein, the use of technology for classroom instruction is being affected by a number of factors among which are computer anxiety and attitude of students. Generally, computer anxiety has to do with the fearfulness or apprehensiveness that students exhibit when confronted with challenge of using computer for classroom activities. Use of technology sometimes has unpleasant side effects, which may include strong, negative emotional states that arise not only during interaction but even before, when the idea of having to interact with the computer begins, (Awofala, Olabiyi, Awofala, Arigbabu, Fatade, and Udeani, 2019).

According to Kanwal (2017), an individual is considered computer anxious if the emotional state during interaction with computer reduces the benefits of the use of computers and discourages necessary use of computers. Computer anxiety obviously affects students' knowledge and performance in Business studies. Some researchers have posited that inadequate knowledge of computer might increase the level of students' anxiety, which may invariably affect students' performance in Business studies (as cited in Akpojotor, 2021). Computer anxiety results from lack of examinees' experience in using computers and if they become more familiar with computer use, computer anxiety might be reduced.

Awofala, Olabiyi, Awofala, Arigbabu, Fatade, and Udeani (2019) reported that there is no significant difference between male and female students' computer anxiety. They also reported that as students' computer knowledge increases, computer anxiety level of student's decreases. Studies have also established the link between computer anxiety and performance in Business studies. For example, Olowookere and Iyiola, (2016) reported that computer anxiety was not statistically significant for performance in Business studies. Also, Adenuga, Victor, Mbarika, and Zacchaeus, Omogbadegun, (2019), reported that students who reported medium and high levels of computer anxiety perform worse than those with low levels of computer anxiety.

According to Schlebusch (2018), anxiety is a constant companion of education. Every student feels some anxiety at some time, but for certain students' anxiety seriously inhibits learning or performance. Type and degree of anxiety differ widely among students. For some students small amount of anxiety can facilitate learning while in others a high level of anxiety affects achievement. For some students' anxiety is a generalized fear of the total situation for others a fear of specific aspects. Kanwal (2017) are of the view that higher anxiety more likely results in the lower achievement.

2.4 Appraisal of Literature Review

From the reviewed literature, it is clear that the method used by teachers in sharing knowledge with students is factor influencing learning achievement of students at all tiers of the education system. While appropriate instructional methods are likely to enhance learning achievement, inappropriate approaches are known to stifle knowledge retention, realization of learning objectives, and encourage students cramming of facts and concepts.

With the availability of user-friendly software and digital tools, Computer-based instructional packages (infographics and e-book) are at the threshold of becoming an indispensable transformative technology-supported approach, to actively engage learners with diverse abilities in classroom activities and promote students' critical thinking skills. In different parts of the world, especially in developed countries, scholars have examined the effectiveness of infographic and e-book instructional packages in promoting learning outcomes across all levels of education. Also, a few studies have been carried out in Nigeria on the use of infographic and e-book instructional packages for instructional delivery.

However, the efficacy of infographic and e-book instructional packages on students learning outcomes in business studies had not been properly examined to demystify the concept and make it more connected to real life situation. No study had been carried out in Nigeria to determine the efficacy of infographic and e-book instructional packages in enriching classroom instruction and improving learning outcomes in business studies at the junior secondary school level. Literature has shown that infographic and e-book instructional packages have the capabilities to reduce the level of abstractness in instructional delivery and make learning more realistic to the students. In other words, the appropriate use of infographic and e-book instructional packages in classroom activities could help Business studies teachers overcome the inherent challenges associated with the teaching and learning of business studies at the junior secondary school level. While students interact with infographic and e-book instructional packages, the capabilities of media usually stimulate learning and along the line, students are able to give attention to the details of the instructional content. This is why many scholars believe that infographic and e-book instructional packages allows students to learn without realising. There is no particular strategy that could effectively cater for the diverse needs of students in the classroom, thus, infographic and e-book

instructional packages remains a veritable supporting instructional packages that could be integrated into classroom instruction to complement direct method of teaching.

Students' computer skill and computer anxiety are important factors that could undermine content delivery in the classroom. Computer skill is an individual's ability to be able to operate both hardware and software of a computer effectively. Also, Computer anxiety is the fear or uneasiness that individual exhibits when confronted with the challenge of using or participating in computer-related activities. Scholars have examined the moderating effects of these variables on students' learning outcomes across the world. Computer skill had been found to be an important factor in determining students' readiness to participate in computer related activities in subjects like Biology, Mathematics, Physics and Geography. However, the moderating effects of these important variables in determining students' learning outcomes in business studies had not been properly examined in literature. These are the gaps in literature that are yet to be filled by scholars at all levels of education. Therefore, this study developed infographic and e-book instructional packages and determined its efficacy on students' learning outcomes in business studies in Ibadan, Nigeria.

CHAPTER THREE
METHODOLOGY

This chapter describes the research design adopted for the study as well as variables in the study. Other elements in this chapter include selection of participants, instruments, validation of the instruments, procedure for the study and methods of data analysis.

3.1 Research Design

This study adopted the pretest-posttest control group quasi-experimental design

The design is structurally shown as foll0ws:

Experimental Group 1 O_1 X_1 O_2

Experimental Group 2 O_3 X_2 O_4

Control Group O_5 C O_6

Where:

O_1 = Pretest assessment for experimental group 1

X_1= Treatment 1 which represent Infographic Instructional Package

O_2 = Posttest assessment for experimental group 1

O_3 = Pretest assessment for experimental group 2

X_2 = Treatment 2 which represent E-book Instructional Package

O_4 = Posttest assessment for experimental group 2

O_5 = Pretest assessment for control group

X_c= Conventional teaching method

O_6 = Posttest assessment for control group

Students in group I were exposed to infographic instructional package, group II was exposed to E-book instructional package while the control group was exposed to conventional teaching method (Talk and Chalk strategy).

The 3x3x2 factorial matrix, which is the analytical design of the study is presented in Table 3 .1.

Table 3 .1: 3x3x2 Factorial Matrix

Treatment	**Computer Anxiety**	**Computer Skills**		
		High	Average	Low
Experimental Group 1 Infographic Instructional package	High			
	Low			
Experimental Group 2 E-book self-instructional package	High			
	Low			
Conventional Teaching Method	High			
	Low			

3.2 Variables in the Study

The instructional packages are the independent variable for the study varied at three levels while the moderator variables are computer skills at three levels and computer anxiety at two levels. Achievement in and attitude to business studies as well as students entrepreneurial intention are the dependent variables.

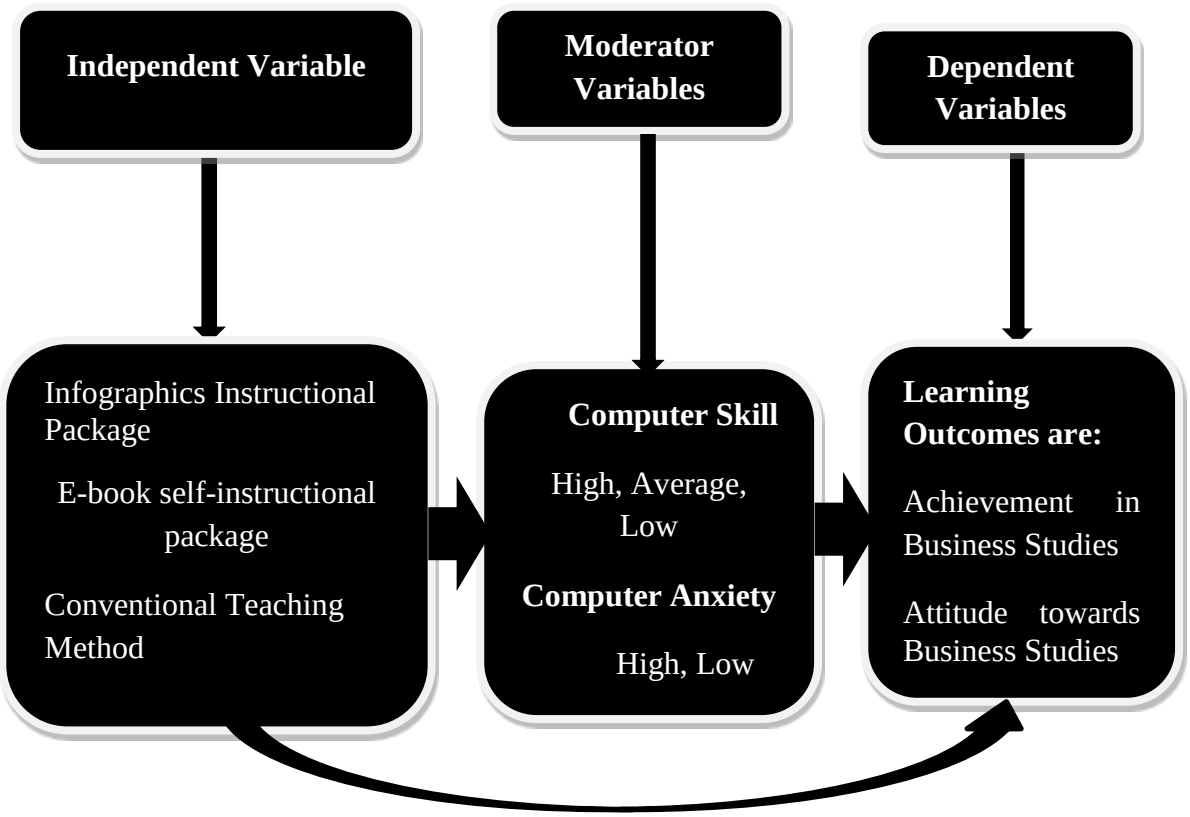

Figure 3.1: The Diagram Illustrating the Variables in the Study

3.3 Selection of Participants

The participants for this study comprised all junior secondary school two (JSS 2) Business studies students from three public secondary schools in Ibadan, Oyo state using intact classes. The choice of JSS II students was premised on the fact that they have completed a session in JSS and would have been exposed to business studies and computer studies for one year and are not currently preparing for any external examination like JSS III students.

3.3.1 Sample and Sampling Techniques

Three Local Government Areas (Ibadan North Local Government Area, Ibadan South-West Local Government Area, and Ibadan North-East Local Government Area) were randomly selected for this study out of the eleven local governments in Ibadan, Oyo state. Three junior secondary schools were purposively selected from each local government to participate in the study. The criteria for the purposive selection of the schools in the experimental groups and control group were as follows:

(i) Availability of computers to deliver the instruction.
(ii) Availability of alternative power supply in case of power outage.
(iii) Readiness and willingness of the school to participate in the study.
(iv) Availability of Business studies teachers and Business studies students in the schools.

From all the schools that met the criteria stated, three public schools were purposively selected to participate in the study.

3.4 Research Instruments

Twelve instruments were used for this study. They were divided into stimulus and response instruments.

Stimulus Instruments:

3.4.1 Infographic Instructional Package (IIP)
3.4.2 E-book Instructional Package (EIP)
3.4.3 Conventional Method (CM)
3.4.4 Teachers' Instructional Guide on Infographic Instructional Package
3.4.5 Teachers' Instructional Guide on E-book Instructional Package
3.4.6 Teachers' Instructional Guide on Conventional Teaching Method.

Response Instruments

3.4.7 Business Studies Achievement Test (BAT)

3.4.8 Students' Attitude towards Business Studies Scale (SABSS)

3.4.9 Students' Entrepreneurial Intention Questionnaire (SEIQ)

3.4.10 Computer Skills Observation Rating Scale (CSORS)

3.4.11 Computer Anxiety Scale (CAS)

3.4.12 Multimedia Package Evaluation Checklist (MPEC)

3.4.1 Infographic Instructional Package (IIP)

This is an instructional package that combines the use of text and graphics such as drawings, charts, and arrows to help the students grasp essential ideas and mastery of business studies concepts through entrepreneurial activities and at the same time aids teachers' effectiveness in impacting rightful knowledge to stimulate students' entrepreneurial intention and attitude to business studies. The infographics instructional package is in 3 modules beginning with instructional objectives before the contents of the package. There were class activities within the package to engender active engagement and mastery of the contents during instructional delivery as well as feedback section. It uses the computer as an interactive multimedia device to illustrate the presentation of materials to students within a typical classroom setting. In this, the researcher (not students) has control over the pace and sequencing of the instructional information and has the ability to verbally explain concepts as detailed as necessary.

3.4.2 E-book Instructional Package (EIP)

This is a digitised instructional learning package that combines the use of text, Scenarios, pictures and the elements of interactivity such as clickable area and quizzes in a delivery mode for the purpose of helping the students grasp essential ideas and mastery of business studies concepts through entrepreneurial activities.

It also aids teachers' effectiveness in impacting rightful knowledge to stimulate students' entrepreneurial intention and attitude to business studies. The EIP contains 3 major modules which also contain activities that students responded to as they interact with it. The package has the following; topic, instructional objectives, instructional materials, interactive section, evaluation, and feedback section.

3.4.3 Validity of Infographics and E-book Instructional Package

A three-stage procedure was adopted to validate the development of the instructional packages: first, a prototype version of it was given to experts in educational technology and experts in software development to review and critique the multimedia packages with regards to appropriateness of content and production technique. The validation (as already embedded in the design stage) involved a rating of the multimedia packages by experts in business studies drawn from government secondary schools in Ibadan. The experts' comments of the packages helped in making necessary adjustment to improve on the quality and appropriateness of the multimedia packages in meeting the desired objectives.

3.4.4 Conventional Teaching Method (CTM)

Students in the control group were taught with the conventional classroom practices/methods. They were not taught with any learning package. The trained teachers in this group used conventional strategy in form of text and Teachers' Instructional guide (TIG) on conventional teaching method prepared in form of note of lesson to maintain the conventional classroom environment.

The conventional teaching method guide developed by the subject teacher and modified by the researcher was based on the following outline;

Introduction of the topic

Presentation of the concept of the lesson using the recommended textbook

Students asked questions on any area not clear to them

The teacher asked students some questions based on the module treated

The teacher give assignment to students while students write down the assignment in their notebooks

3.4.5 Teacher's Guide for Infographics Instructional Package

This instructional guide was designed to regulate the activities of teachers while dealing with the students in infographics group. The guide was validated by trained instructional designers in Educational Technology Unit, University of Ibadan as well as the researcher's supervisor. Comments and corrections were effected and its inter-rater reliability was estimated using Scott's π. The inter-rater reliability index obtained was 0.79.

3.4.6 Teacher's Guide for E-book Instructional Package

This instructional guide was designed to guide the activities of teachers while delivering instruction in the E-book instructional group. The guide was validated by some Educational Technology lecturers in Educational Technology Unit, University of Ibadan as well as the researcher's supervisor. Comments and corrections were effected and its inter-rater reliability was estimated using Scott's π. The inter-rater reliability index obtained was 0.80.

3.4.7 Teacher's Guide for Conventional Teaching Method

Conventional teaching guide was designed by the researcher, it is a stimulus instrument that was used to teach the students in the control group. It consisted of three lessons, each of which had four steps including introduction, presentation, evaluation and assignment. It was design to direct the research assistants in creating learning experiences. The guide was validated by business studies teachers. Their possible observations, criticisms and suggestions were taken into consideration to improve the quality of the instrument. And after improving the quality, it was taken back to the researcher's supervisor.

3.4.8 Business Studies Achievement Test (BAT)

The test consisted of sections A and B. Section A included the background information on students while section B comprised thirty multiple choice questions to test achievement. The test was given to Business studies teachers and other experts in the field of Business studies for face and content validity. The original 35 questions were reduced to 30 based on the advice of the experts. In order to establish the reliability of BAT, it was administered to twenty students who were not part of the main study. A reliability coefficient index of 0.80 was obtained using Kuder-Richardson (K-R 20). The average difficulty level was also found to be 0.46 showing that the test was neither too simple nor too difficult.

Table 3.2: Table of Specification for Business Studies Achievement Test (Objectives) Blue Print

S/N	Topics	Remembering	Understanding	Applying	Analysis	Synthesis	Evaluating	Total
1	Trade	2 (1,14)	4 (9,11,15,19)	3 (2,3,4)	_____	2 (10,18)	2 (20, 21)	13
2	Market	4 (17,25,30,24)	1 (29)	2 (27,6)	2 (5,28)	1 (16)	1 (23)	11
3	Distribution	2 (8,13)	--------	--------	2 (12,22)	1 (26)	1 (7)	6
	Total	8	5	5	4	4	4	30

3.4.9 Computer Skills Observation Rating Scale (CSORS)

This assessment tool was developed by the researcher to evaluate computer skills acquired by the participants. There are four levels of assessment: minimal, developing, good, and excellent. Participants who were unable to display mastery and skill were at minimal level; they were scored 1point. Participants who received a lot of support from the instructors were at developing level, were scored 2 points. Participants who received minimal instruction were good enough for their level and were scored 3points. Participants who did not receive instruction were at an excellent level and were scored 4 points. To ensure that the rating scales are consistently reliable, the responses of 20 business studies students who were not part of the main study and its inter-raterreliability was estimated using Scott's π. The inter-rater reliability index obtained was 0.78.

3 .4.10 Computer Anxiety Questionnaire (CAQ)

The computer anxiety questionnaire developed by Heinssen, Glass, and Knight (1987) was adopted and modified for the purpose of this study. This questionnaire was designed to assess the issue of computer anxiety in junior secondary school business studies students. It contained fourteen (14) items to assess the magnitude of computer anxiety on a four likert scale of Strongly Agree (S A), Agree (A), Disagree (D) and Strongly Disagree (S D). The tool would elicit information about participants' feeling of competency and anxiety with respect to computer usage. Students are expected to choose options that indicate the extent of their agreement or disagreement with each item. The instrument was given to the researcher's supervisor and experts in the field of educational technology for face and content validity to comment on how logical the arrangement of materials and language was. In order to establish the reliability of CAQ, it was administered to sample of twenty participants which were not part of the main study but similar in characteristics to the students for whom the instrument was intended. The reliability coefficient of the instrument was calculated using the Cronbach alpha and the value was determined as 0.79.

3.4.11 Students' Attitude towards Business Studies Scale (SABSS)

The researcher developed a 20-item Likert type instrument to measure the students' attitude towards Business studies. The instrument was divided into section A and B. Section A contained information from the students in terms of their school, class, sex, age. Section B consisted of 20 items with a four-point scale of Strongly Agree (SA),

Agree (A), Disagree (D), Strongly Disagree (SD). The students were expected to tick an option that best described their feelings with the statement. Copies of the instrument were subjected to criticism by some experts in Educational technology, Educational Research and Evaluation, and to the researcher's supervisor for face and content validity. Their comments and suggestions were used to make better the instrument. To ensure that the items in the instrument were consistently reliable, the questionnaire was administered to twenty participants who were not part of the main study. Cronbach Alpha was used to analyse the data and reliability coefficient of 0.75 was obtained and this showed that the instrument was reliable.

3.4.12 Multimedia Package Evaluation Checklist (MPEC)

The multimedia package evaluation checklist was adapted from Miller and Bach (2001) software evaluation checklist. The original items which comprised a 41 – item questions to guide the assessment of the appropriateness of software packages, was modified to suit the context of this study. The 41 items of the original instrument were reduced to 34 items on the modified instrument for this study. The MPEC was used in the study to solicit opinion of the user in order to determine if the developed packages met the design features.

3.5 Design and Developmental Procedure for the Packages

ADDIE instructional design model was selected to guide in the design and development of Infographic and E-book packages for junior secondary school Business studies students that will be used for the study. ADDIE instructional design model promotes a learner-centred approach rather than the traditional teacher-centred approach to instruction so that effective learning can take place. This means that every component of the instruction is governed by the learning outcomes which have been determined after a thorough analysis of learners' needs. There are various adaptations of the ADDIE model but it generally consists of five cyclical phases which are; Analysis, Design, Development, Implementation, and Evaluation. These processes is necessary in order to systematically develop the packages so as to get necessary feedback to improve on the instructional packages if found deficient in any area. In order words, how well designed and systematically developed are the proposed multimedia packages. Below is the table showing how ADDIE Instructional Design Model was used to Design and Develop Infographic and E-book learning Packages.

Table 3.3: Adapting ADDIE Instructional Design Model to Design and Develop Infographics and E-book Learning Package

Stages in the Model	Implications in the Package
Analyse	a. **Learning Goals:** The design is to transform classroom instruction into a series of rich memorable experiences and thus, reduce boredom and forgetfulness in teaching subjects such as business studies and at the same time improve students' achievement and attitude toward business studies. b. **Learner' Characteristics:** JSS Two Students, 8-12 years of age, Mixed school (male and female students), Must be computer literate. Availability of functional computers in the selected secondary schools was also considered.
Design	This is the stage where the researcher will be engaged in the Selection of course content (based on selected topics in the scheme of work). Searched for relevant materials in form of pictures and graphics for the packages. Deciding the time needed to complete the subject. Deciding how the subject will be assessed. Develop test items.
Development	There are different sections in the package: and introductory section includes menu that allows the students to navigate through. There is introduction to the package, the objectives which state what the students should be able to do after using the package.
Implementation	This stage involves the try-out of the lesson plan or unit with the students. At this stages, all members involves knew which activity they are involved in, time to complete their task before the next task can begin. This helped in monitoring the activities of individual involved in the study at a given stage.
Evaluation	At this stage, drafts of the component of the instructional material and prototype were evaluated by relevant experts for necessary feedback for series of revision and refinement that should be carried out to improve the quality of the multimedia package. Infographic and e-book rubrics had been used to evaluate the quality of the package.

3.6 Research Procedure

The researcher visited the junior secondary schools that participated in the study to obtain approval and cooperation of subject teachers, business studies students who participated in the study. The procedures for the study across the two stages were as follows: Stage One: This stage has to do with the development of infographics and e-book instructional packages and a systematic procedure was followed in producing these instructional packages, to ensure that the required curriculum content was incorporated.

Time Plan for Stage Two of the Study (Implementation Stage)

Week 1: Training of participating research assistants on the rudiments of Infographics and E-book based instruction and how to coordinate the classroom activities. Three (3) research assistants were involved in the study. The first One for experimental I, the second for experimental II and the third for control group.

Week 2:-Administration of pre-test to selected junior secondary school business studies students. Prusiness Studies Achievement Test (BAT), Computer Skills Observation Rating Scale (CSORS) and Students' Attitude towards Business Studies Scale (SABSS). This was done by the researcher with the help of the research assistants. This was administered to the students in both control and experimental groups before the intervention.

Week 3 - Week 13:- Students were exposed to Infographics instructional package (Experimental group I); Interactive E-book instructional package (experimental group II) and conventional teaching method using print media in the control group.

Week 14-15:- Administration of post-tests on Business Studies Achievement Test (BAT), Computer Skills Observation Rating Scale (CSORS) and Students' Attitude towards Business Studies Scale (SABSS) were administered to the participants in both control and experimental groups after the intervention.

3.7 Treatment Procedure

In experimental group 1 which is Infographics instructional package, the researcher manipulated the package using projector and a computer. The researcher used the infographics instructional package to teach and at the same time use the text, pictures, scenarios and graphics embedded in the package to explain and illustrate business studies concepts to the students. In experimental group 2 which is E-book self-instructional package, the package was manipulated by the students alone.

Table 3.4: Treatment Procedures in Both Experimental Group and Control Groups for the Study

Procedure	Experimental Group 1 (Infographics)	Experimental Group 2 (E-book)	Control Group
Step 1	**Preparation stage** The teacher introduces the lesson and asked questions to ascertained entry behavior of students	The teacher introduces the lesson to students and told them the mode of the subject delivery	The teacher introduces the lesson and asked questions on the last topic to ascertain students' entry behavior.
Step 2	The teacher told the students the instructional objectives and the activities to be carried out at the end of the lesson.	The students were assigned to a computer each. The research assistant explained the steps involved to the participants.	The teacher introduced the topic to the students. .
Step 3	Students have individual access to the infographic package at least 24hours to the class through school computers.	The participants opened the folder lectora on the desktop and click on the open button which led to the Home page. .	The teacher gives detailed facts or information on the topic.
Step 4	**Introduction** In the class, students discussed what they have read before the class. It was a whole class discussion and members of the class interacted and discussed the content of the package.	On the home page was a visual clip that introduceed the lesson, instructional objectives and what students were to covered in the module.	The teacher gave note on the topic and using instructional materials like cardboard to convey the instructional content.
Step 5	**Teaching Phase** The teacher projected the infographic learning content on the screen	The participant selected from the menu the section of the content to be read.	The teacher concluded the lesson by asking questions on the topic to ascertain how far students have learnt the instructional content.
Step 6	Teacher explained and illustrated with the use of scenario embedded in the package the concepts of channel of	The students moved to the next slide to visualize and read the content.	The students answered those questions posed to them by the teacher.

	distribution from the screen projected.		
Step 7	Teacher showed different stages involve in channel of distribution already embedded in the infographic package.	The participant clicked the menu button on the bar to go back to the selection menu.	The teacher gave assignment to students to prepare them for the next class.
Step 8	Teacher told the students to visualize the various stages of channel of distribution as shown on the screen.	The student selected another section of the lesson to be read.	
Step 9	Teacher connected the idea in the illustration (scenario) to classroom use and later asked the students if they have any questions. Teacher responded to those questions asked by the students.	The participants clicks the quiz button on the last section of the package, to interact on what had been read in the package and as the same time get feedback to the questions as embedded in the package.	
Step 10	**Summary and Evaluation** Teacher summarized the lesson by using the screen to quickly clarify concepts.	Student click the restart button to re-view again or clicks the end button to quit the package.	
Step 11	Students click the quiz button on the last section of the package, to interact on what they have been taught in the class	The research assistant distributed assessment sheets to the students, which contained assignment to be executed	
Step 12	The research assistant distributeed assessment sheets to the students, which contained assignment to be executed and submitted in the next instructional class.	.The participants submitted the assessment sheets to the research assistant during the next instructional class	.

3.8 Method of Data Analysis

The data collected for this study were analysed using Analysis of Covariance (ANCOVA), to determine the main and interactive effects with pretest scores as covariate. Estimated Marginal Means (EMM) was also used to determine the magnitude and direction of the differences among groups. Finally, the Scheffe post-hoc analysis was used to determine the source of significant differences where it existed and line graph was used to disentangle any interaction effect. All hypotheses were tested at 0.05 level of significance.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.0 Introduction

This chapter presents the results and discussion of findings of the study.

4.1 Testing of Null Hypotheses

4.1.1 Effect of Treatment on Students' Achievement in Business Studies

Ho1a: There is no significant main effect of treatment on students' achievement in business studies

Table 4.1: Analysis of Covariance (ANCOVA) of Post-Achievement by Treatment, Computer Skill and Computer Anxiety

Source	Type III Sum ofSquares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	31376.854	16	1961.053	129.220	0.000	0.926
Intercept	2401.267	1	2401.267	158.228	0.000	0.488
Pre-Achievement	5040.044	1	5040.044	332.105	0.000	0.667
Treatment	2630.545	2	1315.272	86.668	0.000*	0.511
Computer skill	11.033	2	5.517	0.364	0.696	0.004
Computer anxiety	22.437	1	22.437	1.478	0.226	0.009
Treatment x Computer skill	50.193	4	12.548	0.827	0.510	0.020
Treatment x Computer anxiety	14.182	2	7.091	0.467	0.628	0.006
Computer skill x Computer anxiety	108.205	2	54.103	3.565	0.030*	0.041
Treatment x Computer skill x Computer anxiety	48.466	2	24.233	1.597	0.206	0.019
Error	2519.222	166	15.176			
Total	222121.000	183				
Corrected Total	33896.077	182				

* denotes significant $p<0.05$

Table 4.1 revealed that there was a significant main effect of treatment on students' achievement in business studies ($F_{(2, 181)} = 86.67$; $p<0.05$, partial $\eta^2 = 0.51$). Table 4.1 indicates that the effect is 71.0%. This implies that 71.0% of the total 92.0% (Adjusted $R^2 = 0.92$) variation in students' post-achievement scores in business studies was due to the significant main effect of the treatment on students' achievement in business studies. Thus, hypothesis 1a was rejected. In order to determine the magnitude of the significant main effect across treatment groups, the estimated marginal means of the treatment groups were carried out and the result is presented in Table 4.2.

Table 4.2: Estimated Marginal Means for Post-Achievement by Treatment and Control Groups

Treatment	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Infographics Package (IP)	38.34	0.86	36.65	40.03
E-book Package (EBP)	39.66	0.87	37.94	41.37
Conventional Method (CM)	24.60	0.85	22.92	26.28

Table 4.2 revealed that students in the E-book Package (EBP) treatment group 2 had highest adjusted mean score in their post-achievement in business studies (39.66) followed by students in the Infographics Package (IP) treatment group 1 (38.34) and Conventional method (CM) control group (24.60). This order is represented EBP > IP > CP. To determine which of the groups caused this significant main effect of treatment on students' achievement in business studies, the Bonferroni post-hoc test is carried out across the groups, while the result is presented in table 4.3

Table 4.3: Bonferroni Post-hoc Analysis of Post-Achievement by Treatment and Control Group

Treatment	Mean	IP	EBP	CP
Infographics Package (IP)	38.34			*
E-book Package (EBP)	39.66			*
Conventional Method (CM)	24.60	*	*	

Table 4.3 indicates that the post-achievement mean score of students in business studies in the E-book Package (EBP) was not significantly different from students taught with Infographics Package (IP) and but there was a difference between the mean scores of students in the E-book Package (EBP) and the Conventional Package (CM) was significant. Table 4.3 also indicates that there was a significant difference in the post-achievement mean scores of students exposed to Infographics package and their counterparts in the conventional method. This indicates that the significant difference indicated by the ANCOVA result was not due to the difference between the treatment groups but between the treatment groups and the control group as students' post-achievement scores in business studies is concerned.

4.1.2 Effect of Treatment on Students' Attitude towards Business Studies

Ho1b: There is no significant main effect of treatment on students' attitude towards business studies

Table 4.4: Analysis of Covariance (ANCOVA) of Post Attitude by Treatment, Computer Skill and Computer Anxiety

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	10498.787	16	656.174	41.678	.000	.801
Intercept	1638.345	1	1638.345	104.063	.000	.385
Pre-Attitude	2445.264	1	2445.264	155.316	.000	.483
Treatment	1547.496	2	773.748	49.146	.000	.372
Computer skill	12.232	2	6.116	.388	.679	.005
Computer anxiety	.175	1	.175	.011	.916	.000
Treatment x Computer skill	73.371	4	18.343	1.165	.328	.027
Treatment x Computer anxiety	31.909	2	15.954	1.013	.365	.012
Computer skill x Computer anxiety	120.094	2	60.047	3.814	.024	.044
Treatment x Computer skill x Computer anxiety	30.684	2	15.342	.974	.380	.012
Error	2613.475	166	15.744			
Total	796068.000	183				
Corrected Total	13112.262	182				

* denotes significant $p<0.05$

Table 4.4 indicates that there was a significant main effect of treatment on students' attitude towards business studies ($F_{(2, 181)} = 49.15$; $p<0.05$, partial $\eta^2 = 0.37$). Table 4.4 reveals that the effect is 37.0%. This implies that 37.0% of the total 78.0% variation in students' post-attitude scores towards business studies was due to the significant main effect of the treatment on students' attitude towards business studies. Therefore, hypothesis 1b was rejected. In order to explore the magnitude of the significant main effect across treatment groups, the estimated marginal means of the treatment groups were carried out and the result is presented in table 4.5.

Table 4.5: Estimated Marginal Means for Post-Attitude by Treatment and Control group

Treatment	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Infographics Package (IP)	69.19	0.82	67.58	70.80
E-book Package (EBP)	70.33	0.87	68.61	72.04
Conventional Method (CM)	60.61	0.81	59.03	62.20

Table 4.5 reveals that students in the E-book Package (EBP) treatment group 2 had highest adjusted mean score in their post-attitude towards business studies (70.33) followed by students in the Infographics Package (IP) treatment group 1 (69.19) and Conventional Method (CM) control group (60.61). This order is represented EBP > IP > CP. To determine which of the groups causes this significant main effect of treatment on students' attitude towards business studies, the Bonferroni post-hoc test is carried out across the groups, while the result is presented in table 4.6.

Table 4.6: Bonferroni Post-hoc Analysis of Post-Attitude by Treatment and Control Group

Treatment	Mean	IP	EBP	CP
Infographics Package (IP)	69.19			*
E-book Package (EBP)	70.33			*
Conventional Method (CM)	60.61	*	*	

Table 4.6 shows that the post-attitude mean score of students towards business studies in the E-book Package (EBP) was not significantly different from students taught with Infographics instructional Package (IIP) and but there is a difference between the mean scores of students in the E-book Package (EBP) and the Conventional Package (CP) is significant. Table 4.3 also indicates that there is a significant difference in the post-attitude mean scores of students exposed to Infographics package and their counterparts in the conventional package. This indicates that the significant difference indicated by the ANCOVA result is not due to the difference between the treatment groups but between the treatment groups and the control group as students' post-attitude scores towards business studies was concerned.

4.1.3 Effect of Treatment on Students' Entrepreneurial Intention

Ho1c: There is no significant main effect of treatment on students' entrepreneurial intention

Table 4.7: Analysis of Covariance (ANCOVA) of Post-Entrepreneurial Intention by Treatment, Computer Skill and Computer Anxiety

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	10696.676	16	668.542	74.974	0.000	0.878
Intercept	471.454	1	471.454	52.871	0.000	0.242
Pre-Achievement	3844.827	1	3844.827	431.180	0.000	0.722
Treatment	743.249	2	371.625	41.676	0.000*	0.334
Computer skill	0.196	2	0.098	0.011	0.989	0.000
Computer anxiety	4.616	1	4.616	0.518	0.473	0.003
Treatment x Computer skill	36.115	4	9.029	1.013	0.403	0.024
Treatment x Computer anxiety	174.369	2	87.184	9.777	0.000*	0.105
Computer skill x Computer anxiety	5.287	2	2.644	0.296	0.744	0.004
Treatment x Computer skill x Computer anxiety	76.210	2	38.105	4.273	0.015*	0.049
Error	1480.220	166	8.917			
Total	775116.000	183				
Corrected Total	12176.896	182				

* denotes significant $p<0.05$

Table 4.7 reveals that there was a significant main effect of treatment on students' entrepreneurial intention ($F_{(2, 181)} = 41.68$; $p<0.05$, partial $\eta^2 = 0.33$). Table 4.7 shows the effect of 33.0%. This means that 33.0% of the total 87.0% variation in students' post- entrepreneurial intention scores was due to the significant main effect of the treatment on students' entrepreneurial intention. Therefore, hypothesis 1c was rejected. In order to determine the magnitude of the significant main effect across treatment groups, the estimated marginal means of the treatment groups were carried out and the result is presented in Table 4.8.

Table 4.8: Estimated Marginal Means for Post-Entrepreneurial Intention by Treatment and Control Group

Treatment	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Infographics Package (IP)	66.02	0.63	64.79	67.25
E-book Package (EBP)	68.61	0.65	67.33	69.88
Conventional Method (CM)	61.36	0.60	60.17	62.56

Table 4.8 reveals that students in the E-book Package (EBP) treatment group 2 had highest adjusted mean score in their post-entrepreneurial intention (68.61) followed by students in the Infographics Instructional Package (IIP) treatment group 1 (66.02) and Conventional Method (CM) control group (61.36). This order is represented EBP > IP > CP. To determine which of the groups causes this significant main effect of treatment on students' achievement in business studies, the Bonferroni post-hoc test is carried out across the groups, while the result is presented in Table 4.9.

Table 4.9: Bonferroni Post-hoc Analysis of Post-Achievement by Treatment and Control Group

Treatment	Mean	IP	EBP	CP
Infographics Package (IP)	66.02		*	*
E-book Package (EBP)	68.61	*		*
Conventional Method (CM)	61.36	*	*	

Table 4.9 indicates that the post-entrepreneurial intention mean score of students in the E-book Package (EBP) is significantly different from students taught with Infographics Instructional Package (IIP) Conventional Method (CM) respectively. Table 4.9 also indicates that there was a significant difference in the post-entrepreneurial intention mean scores of students exposed to Infographics package and their counterparts in the conventional method. This indicates that the significant difference indicated by the ANCOVA result was due to the difference between the treatment groups and also between the treatment groups and the control group as students' post-entrepreneurial intention scores was concerned.

4.1.4 Effect of Computer Skill on Students' Achievement in Business Studies

Ho2a: There is no significant main effect of computer skill on students' achievement in business studies

Table 4.1 indicates that there is no significant main effect of computer skill on students' achievement in business studies ($F_{(2, 181)} = 0.36$; $p>0.05$, partial $\eta^2 = 0.004$). Therefore, hypothesis 2a was not rejected. This means that computer skill had no effect on students' achievement in business studies. In order word, the treatment provided equal learning condition for students' regardless of their computer skill levels.

4.1.5 Effect of Computer Skill on Students' Attitude towards Business Studies

Ho2b: There is no significant main effect of computer skill on students' attitude toowards business studies

Table 4.1 shows that there is no significant main effect of computer skill on students' attitude in business studies ($F_{(2, 181)} = 0.36$; $p>0.05$, partial $\eta^2 = 0.004$). Therefore, hypothesis 2a was not rejected. This means that computer skill had no effect on students' attitude in business studies.

4.1.6 Effect of Computer Skill on Students' Entrepreneurial Intention

Ho2c: There is no significant main effect of computer skill on students' entrepreneurial intention

Table 4.7 shows that there was no significant main effect of computer skill on students' entrepreneurial intention ($F_{(2, 181)} = 0.01$; $p>0.05$, partial $\eta^2 = 0.00$). Thus, hypothesis 2c was accepted. This means that computer skill had no effect on students' entrepreneurial intention.

4.1.7 Effect of Computer Anxiety on Students' Achievement in Business Studies.

Ho3a: There is no significant main effect of computer anxiety on students' achievement in business studies.

Table 4.1 indicates that there is no significant main effect of computer anxiety on students' achievement in business studies ($F_{(1, 182)} = 1.48$; $p>0.05$, partial $\eta^2 = 0.01$). Therefore, hypothesis 3a was not rejected. This shows that computer anxiety had no effect on students' achievement in business studies.

4.1.8 Effect of Computer Anxiety on Students' Attitude towards Business Studies

Ho3b: There is no significant main effect of computer anxiety on students' attitude towards business studies

Table 4.4 shows that there is no significant main effect of computer anxiety on students' attitude towards business studies ($F_{(1, 181)} = 0.01$; $p>0.05$, partial $\eta^2 = 0.00$). Therefore, hypothesis 3b was not rejected. This means that computer anxiety had no effect on students' attitude towards business studies.

4.1.9 Effect of Computer Anxiety on Students' Entrepreneurial Intention

Ho3c: There is no significant main effect of computer anxiety on students' entrepreneurial intention.

Table 4.7 reveals that the main effect of computer anxiety on students' entrepreneurial intention is not significant ($F_{(1, 182)} = 0.52$; $p>0.05$, partial $\eta^2 = 0.003$). Therefore, hypothesis 3c was not rejected. This means that computer anxiety had no effect on students' entrepreneurial intention.

4.1.10 Interaction Effect of Treatment and Computer Skills on Students' Achievement in Business Studies

H04a: There is no significant interaction effect of treatment and computer skills on students' achievement in business studies.

Table 4.1 reveals that there is no significant interaction effect of treatment and computer skill on students' achievement in business studies ($F_{(4, 179)} = 0.83$; $p>0.05$, partial $\eta^2 = 0.02$). Thus, hypothesis 4a was not rejeced. This shows that treatment and computer skill had no effect on students' achievement in business studies.

4.1.11 Interaction Effect of Treatment and Computer Skills on Students' Attitude towards Business Studies

H04b: There is no significant interaction effect of treatment and computer skills on students' attitude towards business studies

Table 4.4 reveals that the interaction effect of treatment and computer skill on students' attitude towards business studies was not significant ($F_{(4, 179)} = 1.17$; $p>0.05$, partial $\eta^2 = 0.03$). Thus, hypothesis 4b was not rejected. This means that treatment and computer skills had no effect on students' attitude towards business studies.

4.1.12 Interaction Effect of Treatment and Computer Skills on Students' Entrepreneurial Intention

H04c: There is no significant interaction effect of treatment and computer skills on students' entrepreneurial intention.

Table 4.7 shows that there was no significant interaction effect of treatment and computer skill on students' entrepreneurial intention ($F_{(4, 179)} = 1.01$; $p>0.05$, partial $\eta^2 = 0.02$). Thus, hypothesis 4c was not rejected. This shows that treatment and computer skill had no effect on students' entrepreneurial intention.

4.1.13 Interaction Effect of Treatment and Computer Anxiety on Students' Achievement in Business Studies

Ho5a: There is no significant interaction effect of treatment and computer anxiety on students' achievement in business studies.

Table 4.1 reveals the interaction effect of treatment and computer anxiety on students' achievement in business studies was not significant ($F_{(2, 181)} = 0.47$; $p>0.05$, partial $\eta^2 = 0.01$). Therefore, hypothesis 5a was not rejected. This implies that treatment and computer anxiety had no effect on students' achievement in business studies.

4.1.14 Interaction Effect of Treatment and Computer Anxiety on Students' Attitude towards Business Studies

Ho5b: There is no significant interaction effect of treatment and computer anxiety on students' attitude towards business studies

Table 4.4 shows the interaction effect of treatment and computer anxiety on students' attitude towards business studies was not significant ($F_{(2, 181)} = 1.01$; $p>0.05$, partial $\eta^2 = 0.01$). Therefore, hypothesis 5b was not rejected. This means that treatment

and computer anxiety had no effect on students' attitude towards business studies.

4.1.15 Interaction Effect of Treatment and Computer Anxiety on Students' Entrepreneurial Intention

H05c: There is no significant interaction effect of treatment and computer anxiety on students' entrepreneurial intention.

Table 4.7 shows that there was a significant interaction effect of treatment and computer anxiety on students' entrepreneurial intention ($F_{(2, 181)} = 9.78$; $p<0.05$, partial $\eta^2 = 0.11$) in favour of high computer anxiety students from e-book group. The effect is 11.0%. This indicates that 11.0% out of the total 87.0% variation (Adjusted $R^2 = 0.87$) in students' post-entrepreneurial intention mean scores is due to the interaction effect of treatment and computer anxiety. Therefore, hypothesis 5c was rejected. This indicated that the improvement in students' entrepreneurial intention was basically due to the e-book instructional package employed in the business studies instructional delivery. The effectiveness of interactive e-book with instructional scenarios embedded in it to actively engage students and stimulate their interest could have been responsible for this improvement in students' entrepreneurial intention after the treatment. In order to explore the interaction effect, Figure 4.1 presents the interaction in line graph.

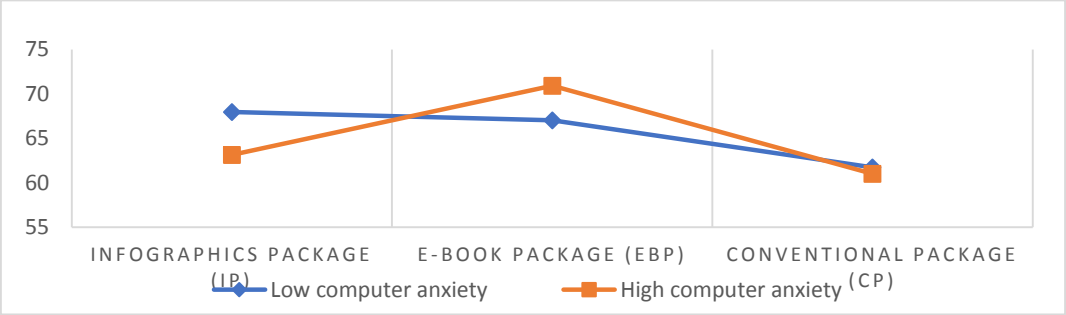

Figure 4.1: Treatment and Computer Anxiety on Entrepreneurial Intention

Figure 4.1 indicates that students with high computer anxiety in E-book package had the highest post-entrepreneurial intention mean score ($\bar{x}$ = 70.94), followed by students with low computer anxiety in infographics package ($\bar{x}$ = 67.96), students with low computer anxiety in E-book package ($\bar{x}$ = 67.05), high computer anxiety students in infographics package ($\bar{x}$ = 63.12), low computer anxiety conventional package students ($\bar{x}$ = 61.72), while those with high computer anxiety students in conventional method ($\bar{x}$ = 61.00) had the least mean score in post-entrepreneurial intention. This indicated that students in e-book instructional package group with high phobia towards computer usage have positive entrepreneurial intention than their fellow counterparts in infographic instructional package and conventional teaching method groups. The interaction is disordinal. This means that based on computer anxiety, it is not the same group of students across treatment groups have better entrepreneurial intention.

4.1.16 Interaction Effect of Computer Skills and Computer Anxiety on Students' Achievement in Business Studies

Ho6a: There is no significant interaction effect of computer skill and computer anxiety on students' achievement in business studies.

Table 4.1 indicates that there was a significant interaction effect of computer skill and computer anxiety on students' achievement in business studies ($F_{(2, 181)} = 3.57$; $p<0.05$, partial $\eta^2 = 0.04$) in favour of high computer skills and computer anxiety students. The effect is 4.0%. This indicates that 4.0% out of the total 92.0% variation in students' post-achievement mean scores in business studies wasn't as a result of the interaction effect of computer skill and computer anxiety. Therefore, hypothesis 6a was rejected. This implies that computer skill and computer anxiety had effect on students' achievement in business studies. In order to explore the interaction effect, Figure 4.2 presents the interaction in line graph.

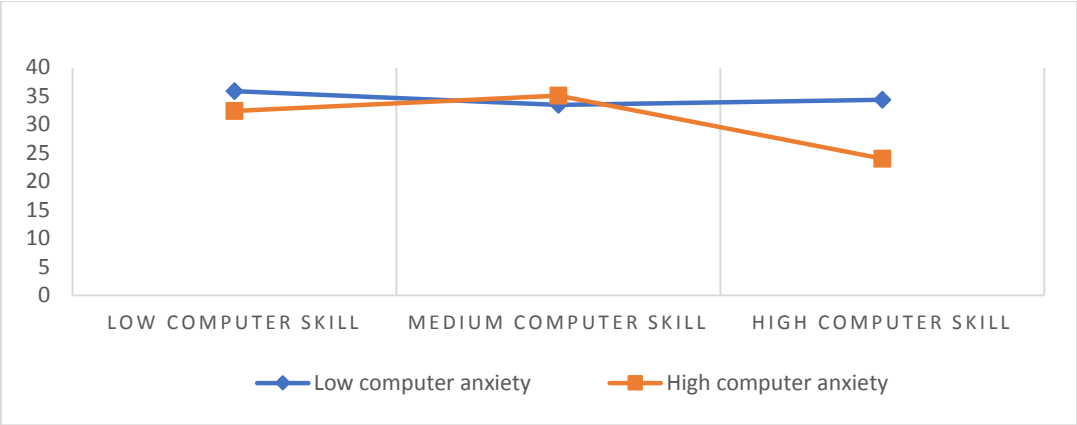

Figure 4.2: Computer Skill and Anxiety on Achievement in B|usiness Studies

Figure 4.2 indicates that students with low computer anxiety, low computer skills had the highest post-achievement mean score in business studies ($\bar{x}$ = 35.87) followed by their counterparts with high computer anxiety medium computer skills ($\bar{x}$ = 35.09), low computer anxiety high computer skill students ($\bar{x}$ = 34.37), low computer anxiety medium computer skill students ($\bar{x}$ = 33.45), high computer anxiety low computer skill students ($\bar{x}$ = 32.41), while their counterparts with high computer anxiety, high computer skills had the least mean score in post-achievement in business studies ($\bar{x}$ = 24.01). The interaction is disordinal. This implies that students with low computer anxiety and low computer skill had the highest post-achievement mean score in business studies and this could be as a result of the efficacy of the instructional packages with instructional scenarios embedded in it to actively engage students and stimulate their interest could have been responsible for this improvement in students' achievement and attitude after the experiment regardless of their computer skill.

4.1.17 Interaction Effect of Computer skills and Computer Anxiety on Students' Attitude towards Business Studies

Ho6b: There is no significant interaction effect of computer skill and computer anxiety on students' attitude towards business studies.

Table 4.4 indicates that there was a significant interaction effect of computer skill and computer anxiety on students' attitude towards business studies ($F_{(2, 181)} = 3.81$; $p<0.05$, partial $\eta^2 = 0.04$) in favour of high computer skills and computer anxiety students. The effect is 4.0%. This indicates that 4.0% out of the total 78.0% variation (Adjusted $R^2 = 0.60$) in students' post-attitude mean scores towards business studies is due to the interaction effect of computer skill and computer anxiety. Therefore, hypothesis 6b was rejected. This means that computer skill and computer anxiety had effect on students' attitude towards business studies. In order to explore the interaction effect, Figure 4.3 presents the interaction in line graph.

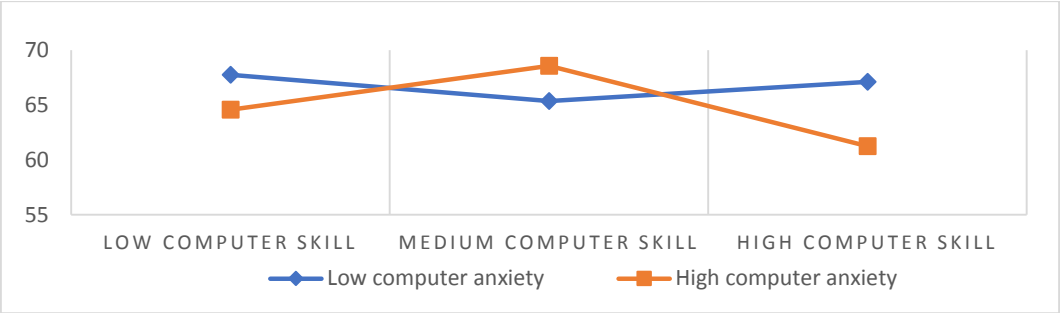

Figure 4.3: Computer Skill and Anxiety on Attitude in Business Studies

Figure 4.3 shows that students with high computer anxiety, medium computer skills had the highest post-attitude mean score towards business studies ($\bar{x}$ = 68.56), followed by low computer anxiety low computer skill ($\bar{x}$ = 67.76), low computer anxiety high computer skill students ($\bar{x}$ = 67.10), low computer anxiety medium computer skill students ($\bar{x}$ = 65.36), high computer anxiety low computer skill students ($\bar{x}$ = 64.57), while students with high computer anxiety high computer skill students ($\bar{x}$ = 61.24) had the least mean score in post-attitude towards business studies. The interaction is disordinal. The finding is an indication that the treatments, that is, the infographic and e-book instructional packages was highly potent that it nullified the effect of other variables that could reduce the depth of its own effect on students' attitude to business studies. The implication is that the treatments used in the study were effective on their own, regardless of computer anxiety.

4.1.18 Interaction Effect of Computer Skills and Computer Anxiety on Students' Entrepreneurial Intention

Ho6c: There is no significant interaction effect of computer skills and computer anxiety on students' entrepreneurial intention

Table 4.7 reveals that the interaction effect of computer skills and computer anxiety on students' entrepreneurial intention ($F_{(2, 181)} = 0.30$; $p>0.05$, partial $\eta^2 = 0.004$) is not significant. Therefore, hypothesis 6c was not rejected. This means that computer skill and computer anxiety had no effect on students' entrepreneurial intention.

4.1.19 Interaction Effect of Treatment, Computer Skills and Computer Anxiety on Students' Achievement in Business Studies

Ho7a: There is no significant interaction effect of treatment, computer skills and computer anxiety on students' achievement in business studies.

Table 4.1 indicates that the interaction effect of treatment, computer skill and computer anxiety on students' achievement in business studies is not significant ($F_{(4, 179)} = 0.24$; $p>0.05$, partial $\eta^2 = 0.002$). Therefore, hypothesis 7a was not rejected. This means that treatment, computer skill and computer anxiety had no effect on students' achievement in business studies.

4.1.20 Interaction Effect of Treatment, Computer skills and Computer Anxiety on Students' Attitude towards Business Studies

Ho7b: There is no significant interaction effect of treatment, computer skills and

computer anxiety on students' attitude towards business studies.

Table 4.4 reveals that the interaction effect of treatment, computer skill and computer anxiety on students' attitude towards business studies ($F_{(4, 179)} = 0.97$; $p>0.05$, partial $\eta^2 = 0.01$) is not significant. Therefore, hypothesis 7b was not rejected. This finding is an indication that the experiment, that is, the e-book instructional package was highly effective that it nullified the effect of other variables that could reduce the depth of its own effect on the attitude of students in business studies. The instruction engaged them in meaningful and active learning activities. The implication is that the experimental treatment used in the study were effective on their own, regardless of computer skill and computer anxiety.

4.1.21 Interaction Effect of Treatment, Computer Skill and Computer Anxiety on Students' Entrepreneurial Intention

Ho7c: There is no significant interaction effect of treatment, computer skill and computer anxiety on students' entrepreneurial intention

Table 4.7 shows the interaction effect of treatment, computer skill and computer anxiety on students' entrepreneurial intention ($F_{(4, 179)} = 4.27$; $p<0.05$, partial $\eta^2 = 0.05$) in favour of high computer skills and computer anxiety students from e-book group. The effect size was 5.0%. This indicates that 5.0% of the difference in students' treatment, computer skill and computer anxiety on students' entrepreneurial intention is accounted for by the interaction effect of treatment, learning style and numerical ability. Therefore, hypothesis 7a was rejected. This means that treatment, computer skill and computer anxiety of students had effect on their entrepreneurial intention. In order to explore the interaction effect, Figure 4.4 presents the interaction in line graph.

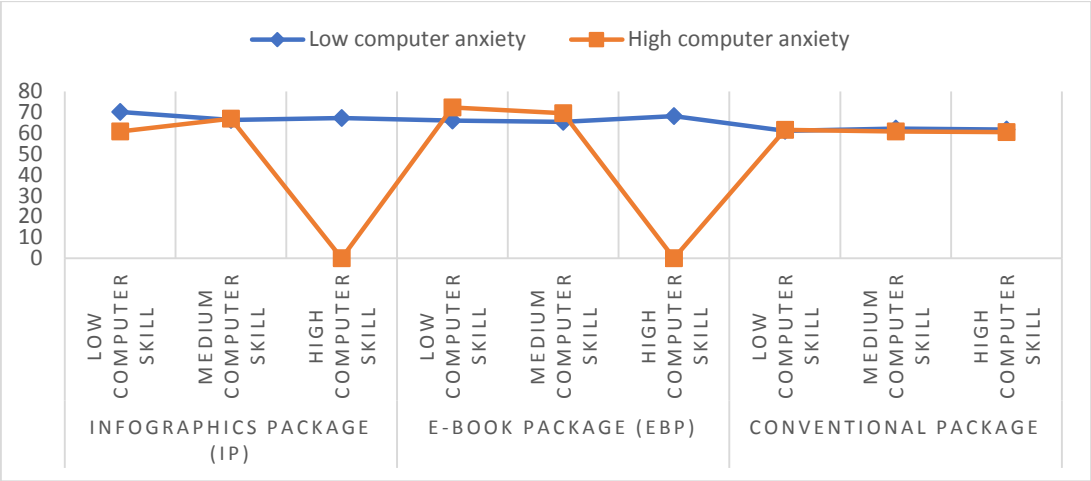

Figure. 4.4: Treatment, Computer skills and Computer Anxiety on Entrepreneurial Intention

Figure 4.4 indicates that students with high computer anxiety, low computer skills in E-book package had better post-entrepreneurial intention mean score ($\bar{x}$ = 72.31), followed by low computer anxiety, lcfr vow computer skill students in infographics package ($\bar{x}$ = 70.21), high computer anxiety, medium computer skill students in E-book package ($\bar{x}$ = 69.57), low computer anxiety, high computer skill students in e-book package ($\bar{x}$ = 68.24), low computer anxiety, high computer skill students in infographics package ($\bar{x}$ = 67.30), high computer anxiety, medium computer skill students in infographics package ($\bar{x}$ = 66.90), low computer anxiety, medium computer skill students in infographics package ($\bar{x}$ = 66.37), low computer anxiety, low computer skill students in e-book package ($\bar{x}$ = 66.03), low computer anxiety, medium computer skill students in e-book package ($\bar{x}$ = 65.44).

4.2 Discussion of Findings

4.2.1 Main Effect of Treatment on Secondary School Students' Achievement in Business Studies

Finding revealed that there was a significant difference in the achievement scores of students' in business studies across the two levels of experimental and control groups. This implied that computer assisted instruction (infographic and e-book instructional packages) had significant effect on students' achievement in business studies. In other words, students who were exposed to e-book instructional package had the highest post-achievement mean score, followed by those exposed to infographic instructional package, while those exposed to conventional methods had the lowest.

The effect of infographic and e-book instructional packages to actively engage students and stimulate their interest could have been responsible for this improvement in students' achievement after the experiment. This is possibly as a result of excitement demonstrated by the students after viewing the visual contents, which aroused their interest and exhilaration while learning with computer assisted instructional package.

The rationale behind this finding could be the fact that the instruction gave business studies students the opportunity to actively engage in learning activities which increase their motivation, attention, enthusiasm, retention and interest which they had not been experiencing in their conventional classes. This is in accordance with the finding of Abimbade (2014) where the researcher observed that the active engagement of students in the learning activities improves students 'creativity, which enhances

transfer of learning in new situation. The provision of active learning environment by the use of Computer assisted learning for teaching makes the students to engage in higher order thinking task such as analysis, synthesis and evaluation, which in turn improves students'cognitive achievement and also retention of learning.

These findings give further empirical support to other findings on the usefulness of computer assisted instructional package (especially the self-learning mode) over and above the 'conventional method' (Ismaeel and Al Mulhim, 2021; Abimbade 2014; Akinoso, 2018; Baharuddin and Hashin 2020; Odawn, 2018).

4.2.2 Main Effect of Treatment on Secondary School Students' Attitude towards Business Studies

The finding obtained in this study also revealed that there was a significant main effect of treatment on JSS II students' attitude towards business studies. This implied that computer assisted instructional packages (infographic and e-book) had significant influence on students' attitude towards business studies. Finding from this study showed that students in the e-book instructional package particularly had the highest adjusted post-attitude mean score, followed by the infographic instructional package, while students in the control group had the least adjusted post-attitude mean score. This means that infographic and e-book instructional packages had a positive effect on students' attitude to business studies.

The reason for this finding may not be unconnected with the fact that students' interest and participation in business studies have increased because of the interactive activities embedded in the package. Therefore, incorporating class activities within the instructional packages could have encouraged students to pay attention to the content during the instruction and improve their attitude to business studies. The finding may also be due to the fact that the instruction gave students the opportunity to actively engage in learning activities through the display of positive learning attitude as a result of interesting and motivating effects of the varieties of stimuli in form of texts, graphics, animations, reflective questions, immediate knowledge of response as reinforcement and other vicarious experiences embedded in the learning process.

This agrees with the findings of Ononye, Oguejiofor and Ezenwagu, (2021); Oladimeji, Yusuf, Njoku and Owolabi, (2022) that computer assisted instruction raises students' attitude to learning. Additionally, this finding corroborates with the submission of Akpan (2018) submission that business studies should be taught with technology

(such as computer assisted instruction) and reflective thinking in order to improve students' attitude and academic achievement in business studies. In other words, computer assisted instruction gives room for critical thinking, engagement, interactions and reflections among the students, as its creates curiosity that leverages between what learners know and what learners want to know compelling them to take actions and deep reflection on the subject matter.

4.2.3 Main Effect of Treatment on Secondary School Students' Entrepreneurial Intension

The findings from the study indicated that there was a significant main effect of treatment on JSS II students' entrepreneurial intention across the two levels of experimental and control groups. This implied that computer assisted instructional packages (infographic and e-book) had significant effect on students' entrepreneurial intention. In other words, students who were exposed to this package had highest post-entrepreneurial intention than students in the control group. Finding from this study also showed that students in the e-book instructional group particularly had the highest adjusted post-entrepreneurial intention mean score, followed by the infographic instructional group, while students in the control group had the least adjusted post-attitude mean score.

This affirms the study of Asunka (2016) which shows the effectiveness of e-book in terms of stimulating students' entrepreneurial intention. It is apparent that e-book can engage students in a more attractive and interactive manner to develop students entrepreneurial intention. Furthermore, other studies also revealed that students' participation in business studies activities has a positive effect on students' entrepreneurial intentions (Kim-Sun et al., 2016; Amesi and Giami, 2018). This study also reported an increase in students' entrepreneurial intention after the experiment. The inherent potentials of computer assisted instruction (infographic and e-book instructional packages) to actively engage students and stimulate their interest could have been responsible for this improvement in students' entrepreneurial intention after the experiment.

One of the main challenges to the teaching and learning of Business studies as identified in the background to this study is that some students consider business studies as abstract concept that is not connected to real life situation, due to the strategy

employed by Business studies teachers at the secondary school level of education. However, computer assisted instruction combines the natural power of scenario and capabilities of media to stimulate students' entrepreneurial intention and actively engage them in classroom activities. This also corroborate the study of Aja-Okorie and Adali (2013) who found out that using computer assisted instruction with elements of scenario can create the environment that stimulate students 'entrepreneurial intention for business creation. The findings in this study also support the studies of Ternenge and Kashimana (2019) that the inherent features of infographics attract the curiosity of learners and engage them in practical entrepreneurial activities that involve real-life business scenarios and also motivate them to study further.

4.2.4 Main Effect of Computer Skills on Students' Achievement, Attitude and Entrepreneurial Intention.

Finding from the study showed that there were no significant main effects of computer skill on students' achievement, attitude and entrepreneurial intention. In other words, computer skill was found to have no significant effect on students' achievement in business studies instruction, attitude to business studies, and entrepreneurial intention. This might be unconnected with the fact that the treatment provided equal learning condition for students' regardless of their computer skill levels. This finding could also be due to the fact that students of this generation can be considered as digital natives because they are living in media saturated environments and are increasingly adopting the use of technology for different purposes. This result is in line with the finding of Odawn (2018), Clement and Joshua (2019) who examined differences in examination scores between experimental groups, which used template programs, and control groups, which did not use computers. In both studies, no difference was found in examination scores between control and experimental groups, leading them to conclude that the use of computers did not enhance business studies proficiency. This finding corroborates the findings of Fati and Aire (2017); Adetimirin and Abubakar (2015); Ononye, Oguejiofor and Ezenwagu (2021) that revealed no significant difference among the students.

4.2.5 Main Effect of Computer Anxiety on Students' Achievement, Attitude and Entrepreneurial Intention

The findings from the study reported that there were no significant main effects of computer anxiety on JSS II Business studies students' achievement, attitude to

business studies, and entrepreneurial intention. In other words, the level of computer anxiety had no significant influence on students' attitude achievement, and entrepreneurial intention in both experimental and control groups after being exposed to computer assisted instruction. This could be due to the fact that students in this 21st Century are leaving in media saturated environments and are increasingly adopting the use of technology for different purposes. It should be noted that computer anxiety is different from negative attitude toward computers that entails beliefs and feelings about computers rather than one's emotional reaction towards using computers.

Computer anxiety is characterised as an affective response, an emotional fear of potential negative outcomes such as damaging the equipment while using computers. Technology has permeated all areas of human endeavours and both teachers and students need to adjust their approaches and dispositions to function effectively in this modern society. Therefore, their attitude to business studies, achievement in business studies, and entrepreneurial intention might not depend on whether they fear interacting with computers or not. Students could have been left with no other choice than to execute instructional tasks in the classroom, regardless of their dispositions to the use of computers, since technologies like mobile phones, I pads and computers have become parts of their daily lives. Osisanwo, Ehioghae, Abdulsalaam (2019), from their study show that undergraduate students participated in classroom activities regardless of their computer self-efficacy and computer anxiety levels. Oribhabor (2020) finds out that computer anxiety has no significant impact on learning outcomes of Turkish Physical Education teachers. However, this finding negates the result by Akpan (2018) who affirmed that computer anxiety significantly predicted students' learning outcomes in computer utilisation.

4.2.6 Interaction Effect of Treatment and Computer Skill on JSS II Business Studies Students' Achievement, Attitude, and Entrepreneurial Intention

The finding revealed that there was no interaction effect of treatment and computer skill on students' achievement in business studies, attitude to business studies, and entrepreneurial intention. This might be unconnected with the fact that the treatment provided equal learning condition for students, regardless of their computer skill levels. This could be due to the fact that technology is greatly influencing all aspects of human endeavour, and whether students are exposed to computer-based learning or conventional learning strategy, they need to interact with technological devices to

function effectively in this contemporary society. It also could not be unconnected with students' interaction with computers and other technological devices during the experiment.

This corroborates the findings of Oladimeji, Yusuf, Njoku and Owolabi, (2022) which shows that students were aware of technology to support their learning. In their findings, students were able to provide responses to indicate they are familiar and have basic understanding about technology. They were aware that technology can help them fulfil their learning desires and that technology can increase collaboration between teacher and students and students and students. This showed that the improvement in students' achievement, attitude, and entrepreneurial intention is due to the computer assisted instruction used in the business studies instructional delivery.

4.2.7 Interaction Effect of Treatment and Computer Anxiety on Students' Achievement, Attitude, and Entrepreneurial Intention

The Finding revealed that there was no significant two-way interaction effect of treatment and computer anxiety on students' achievement in and attitude to business studies. This could be due to the fact that technology is greatly influencing all aspects of human endeavours and whether students are exposed to computer-based learning or conventional learning strategy, they need to interact with technological devices to function effectively in this modern society. It also could not be unconnected with students' interaction with computers and other technological devices during the experiment. This experience could have greatly reduced students' level of anxiety towards computers or other technological tools. This indicates that the improvement in students' achievement and attitude is basically due to the infographics and e-book instructional packages employed in the Business studies instructional delivery. The finding is an indication that the treatments, that is, the infographic and e-book instructional packages was highly potent that it nullified the effect of other variables that could reduce the depth of its own effect on the achievement of students and attitude to business studies. The implication is that the treatments used in the study were effective on their own, regardless of computer anxiety. This corroborates the findings of Odawn (2018) who reported that computer assisted instruction is more effective in teaching and learning process.

However, there was a significant two-way interaction effect of treatment and computer anxiety on students' entrepreneurial intention in favour of high computer

anxiety students from e-book group. Finding revealed that students in e-book instructional package school have more of high computer anxiety than their counterpart in infographic instructional group and also had better post-treatment mean score than their counterpart in infographic and conventional group. This indicateed that the improvement in students' achievement, attitude and entrepreneurial intention is basically due to the e-book instructional package employed in the business studies instructional delivery. The power of interactive e-book with instructional scenarios embedded in it to actively engage students and stimulate their interest could have been responsible for this improvement in students' achievement, attitude, and entrepreneurial intention after the experiment. This result is in line with the findings of Akinoso (2018) where the scholar observed that students progressed through e-book instruction faster, understood the concept in greater depth and this stimulated their interest through the interactivity in the e-book.

4.2.8 Interaction Effect of Computer Skill and Computer Anxiety on Students' Achievement, Attitude and Entrepreneurial Intention

Finding shows that there was a significant two-way interaction effect of computer skill and computer anxiety on students' achievement in and attitude to business studies in favour of high computer skills and computer anxiety students. This implied that computer skill and computer anxiety of students has effect on their achievement in and attitude to business studies. Although, the effect size was 4.0%, the result indicated that computer skill and computer anxiety could have some levels of impact on students' achievement and attitude. Finding also indicates that students with low computer anxiety and low computer skill had the highest post-achievement mean score in business studies. The power of computer assisted instruction with instructional scenarios embedded in it to actively engage students and stimulate their interest could have been responsible for this improvement in students' achievement and attitude after the experiment regardless of their computer skill.

Finding also shows that high computer anxiety and average computer skills students had the highest post-attitude mean score towards business studies. The finding lends credence to the claims of Ononye, Oguejiofor and Ezenwagu (2021) who assert that 'in this age of all-pervading use of computers in most parts of the world, the issue of computer anxiety and computer use should be made redundant in considering students' learning outcomes in the classroom. Findings from their study show that

undergraduate students participated in classroom activities regardless of their computer self-efficacy and computer anxiety levels.

Oyadeyi (2016) finds out that computer anxiety had no significant impact on learning outcomes of Turkish Physical Education teachers. However, this finding negates the result by Oribhabor (2020) who affirmed that computer anxiety significantly predicted students' learning outcomes in computer utilisation. However, there was no significant two-way interaction effect of computer skill and computer anxiety on students' entrepreneurial intention. This indicates that computer skill and computer anxiety of students has no effect on their entrepreneurial intention. This suggests that the treatment provided equal learning condition for students, when their computer skill is put into consideration. This could be due to the fact that technology is greatly influencing all aspects of human endeavours and whether students are exposed to computer-based learning or conventional learning strategy, they need to interact with technological devices to function effectively in this modern society. It also could not be unconnected with students' interaction with computers and other technological devices during the experiment. This experience could have greatly reduced students' level of anxiety towards computers or other technological tools. This indicates that the improvement in students' entrepreneurial intention is basically due to the computer assisted instructional strategy employed in business studies instructional delivery.

4.2.9 Interaction Effect of Treatment, Computer Skills and Computer Anxiety on Students' Achievement, Attitude and Entrepreneurial Intention

Finding revealed that there was no significant three-way interaction effect of treatment, computer skill and computer anxiety on students' achievement in and attitude toward business studies. In other words, it showed that the treatment, computer skill and computer anxiety had no effect on their achievement in and attitude toward business studies. This finding is an indication that the experiment, that is, the ebook-based instruction was highly potent that it nullified the effect of other variables that could reduce the depth of its own effect on the achievement and attitude of students in business studies. The instruction engaged them in meaningful and active learning activities. The implication is that the experimental treatments used in the study were effective on their own, regardless of computer skill and computer anxiety.

This corroborates the findings of Shelburne (2019) who confirmed the effectiveness of using e-books in increasing the achievement of first-grade students of

secondary school in reading course. Yee and Zainuddin (2018) also confirmed the effectiveness of Individual self- learning simulated by computer and e-books in the development of creative thinking for second-grade science students at the Faculty of Education in Oman. Likewise Odawn (2018) and Chau study (2018) reported the effectiveness of diversity of interface e-book interaction on academic achievement and skill performances of educational technology master students and their attitudes towards it. However, there was a significant three-way interaction effect of treatment, computer skill and computer anxiety on business studies students' entrepreneurial intention.

However, there was a significant three-way interaction effect of treatment, computer skill and computer anxiety on students' entrepreneurial intention in favour of high computer skills and computer anxiety students from e-book group. Finding revealed that students in e-book instructional package group has more of high computer anxiety than their counterpart in infographic instructional and conventional group and also had better post-entrepreneurial intention mean score than their counterparts in infographic and conventional group. This indicates that the improvement in students' entrepreneurial intention is basically due to the e-book instructional package employed in the business studies instructional delivery.

The power of interactive e-book with instructional scenarios embedded in it to actively engage students and stimulate their interest could have been responsible for this improvement in students' entrepreneurial intention after the experiment. This finding is in line with the findings of Baharuddin and Hashin (2020) where the scholar observed that students progressed faster through e-book instruction, understood the concept in greater depth and this stimulated their interest through the interactivity embedded in the e-book. It is therefore apparent that e-book and infographic instructional packages can engage students in a more attractive and interactive manner to develop students entrepreneurial intention as well as improve their attitude and achievement in business studies.

4.3 Summary of Findings

Based on the analysis and interpretation done, the following are the summary of findings:

1. There was a significant main effect of treatment on students' achievement in business studies. The size of the effect was 71.0%. E-book treatment group had

the highest adjusted post-achievement mean score (39.66), followed by infographic treatment group (38.34). This implied that e-book instructional strategy and infographic instructional strategy were the main sources of significant differences in treatment.

2. There was a significant main effect of treatment on students' attitude to business studies. The size of the effect was 37.0%. The post-attitude towards business studies score of students exposed to e-book mode was not significantly different from their counterparts in infographic group. This indicated that e-book package and infographic package were the main sources of significant differences in treatment.
3. There was a significant main effect of treatment on students' entrepreneurial intention. This indicated that infographics and e-book instructional packages were the main sources of significant differences in treatment.
4. There were no significant main effects of computer skill on students' achievement in, attitude to business studies, and entrepreneurial intention.
5. There were no significant main effects of computer anxiety on students' achievement in, attitude to business studies, and entrepreneurial intention.
6. There were no significant two-way interaction effect of treatment and computer skill on students' achievement in, attitude to business studies, and entrepreneurial intention.
7. There were no significant two-way interaction effect of treatment and computer anxiety on students' achievement in and attitude toward business studies. There were significant two-way interaction effect of treatment and computer anxiety on students' entrepreneurial intention.
8. There were significant two-way interaction effect of computer skill and computer anxiety on students' achievement in, and attitude toward business studies. However, there were no significant two-way interaction effect of computer skill and computer anxiety on students' entrepreneurial intention.
9. There were no significant three-way interaction effect of treatment, computer skill and computer anxiety on students' achievement in, and attitude toward business studies. However, there were significant three-way interaction effect of treatment, computer skill and computer anxiety on students' entrepreneurial intention.

CHAPTER FIVE
SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary of Study

This study developed infographic and e-book instructional packages and their efficacy on students' entrepreneurial intention, achievement in, and attitude to business studies in Ibadan, Nigeria. The moderating effect of computer skill and computer anxiety were also considered in the study. The study was anchored to Constructivist theory of learning by Piaget and Cognitive theory of multimedia learning by Mayer. This study adopted the pretest-posttest control group quasi-experimental design. Intact classes of 182 students from the three schools were assigned to Infographic instructional package (50), E-book instructional package (42) and control (90) groups from three purposively selected junior secondary schools in Ibadan metropolis. Nine instruments were used for this study and they were divided into stimulus and response instruments. The data collected from this study were analysed using inferential statistics such as Analysis of Covariance (ANCOVA); Estimated Marginal Means (EMM); and Scheffe post-hoc analysis. All hypotheses were tested at 0.05 level of significance.

5.2 Conclusion

The findings of the study led to the conclusion that the two instructional packages (Infographic and E-book) are effective in the teaching and learning of Business Studies. However, the e-book instructional package was more effective. The reason for this finding may not be unconnected with the fact that the instruction gave business studies students the opportunity to actively engage in learning activities which increased their motivation, entrepreneurial intention, attention, retention and interest which they had not been experiencing in their conventional classes.

Also, the study had provided a better understanding of the strategic roles infographic and e-book instructional packages could play in reducing the level of abstractness in classroom instruction and making Business studies interesting and connected to real life situation. It could, therefore, be concluded that the two packages (Infographic and E-book) especially E-book self- instructional strategy offers students

an opportunity to be actively engaged in the learning process, to receive instruction through a variety of multi-media, to choose when and where they learn, to work at their own pace, and to receive immediate and accurate feedback and also increased student's self-confidence, improve their computer skill, and reduce computer anxiety.

5.3 Educational Implications of Findings

The findings of this study have following implications:

i. Computer assisted instructions (infographic and e-book) have been found to be a viable packages to complement conventional mode of teaching students.
ii. It provides students with the opportunities to demystify business studies concepts and stimulate students' interest and entrepreneurial intention in the instructional content.
iii. The two modes of computer assisted instruction (infographic and e-book) enhanced active engagement with the instructional content which has resulted in concretising the abstractness of business studies concepts.
iv. The study provides empirical evidence that infographic and e-book instructional packages affect both cognitive and affective domains of students thereby, improving the way students interact with the contents and how they learn at their own pace.
v. Also, the interactive e-book mode engendered the interaction due to the quiz embedded in the package and this has resulted into improved achievement, entrepreneurial intention, and positive attitude to business studies.

5.4 Limitations of the Study

Some constraints which were encountered in the process of carrying out this study which may therefore, limit the generalizability of the results are stated as follows:

i. The first limitation experienced was that the study was carried out within Ibadan, Oyo state, thereby limiting its geographical scope. Therefore, there is need to replicate this study to the larger population in Oyo state
ii. The study was limited to junior secondary school students, excluding students from other levels of education.
iii. Commerce is a strategic aspect of business studies, but there are other critical aspects of the subject like shorthand, typewriting, office practice and book-

keeping which the study did not cover.

5.5 Recommendations

The following recommendations are made based on the findings from this study:

i. Business studies teachers should integrate computer assisted instruction (infographic and e-book) into classroom as it has proven to be effective in reducing the level of abstractness associated with the teaching and learning of business studies concept at the junior secondary school level of education.

ii. Business studies teachers should leverage the capabilities of computer assisted instructional packages (infographic and e-book) to improve junior secondary school students' achievement in, attitude to business studies, as well as arouse their entrepreneurial intention at all junior secondary school level of education

iii. Secondary school teachers and students in junior secondary schools should be computer literate in order to use these instructional packages in Business studies instructions.

iv. Business studies teachers should be adequately sensitised through workshops, seminars and conferences on the use of computer assisted instructional packages (infographic and e-book) for instructional delivery at junior secondary school level by Federal Ministry of Education

5.6 Contributions to Knowledge

This study has contributed to knowledge in the following ways:

i. The study has been able to develop infographics and e-book instructional packages which have been found to be viable instructional packages that provide students with the opportunities to demystify business studies concepts and stimulate students' attitude, entrepreneurial intention in the instructional content and achievement in Business studies.

ii. The study has provided a justification for infographics and e-book instructional packages as a viable way to enrich the conventional teaching method employed by Business studies teachers to teach Business studies at the secondary level of education.

iii. The class activities in infographics and e-book instructional packages have afforded junior secondary school students the opportunity to engage and give attention to the details in the instructional contents.

5.7 Suggestions for Further Studies

i. Based on the limitations to the study, the following suggestions are made for further study: Computer assisted instruction (infographic and e-book instruction) has been affirmed as an effective instruction to engage students at all levels of education. Therefore, this study could be replicated at secondary, polytechnic and university levels of education and in other subjects.

ii. The instruction could be used for other aspects of Business studies at the junior secondary levels of education.

iii. Infographic and E-book instructional packages could be developed to cover other topics in Business studies

iv. There could be further investigation on interaction effects of other moderator variables like age, gender and readiness on the students' entrepreneurial intention, achievement and attitude towards business studies.

v. Lastly, the study could be carried out on a longitudinal scale, to check if the instruction would continue to significantly improve the learning outcomes.

REFERENCES

Abimbade, A. 2014. Technology in and of resources in teaching and learning of mathematics. Anti-Dote for math-phobia. An Inaugural lecture, University of Ibadan.

Achor, E. E. and Kalu, R. U. 2014. Incorporating error analysis approach into the teaching of practical Chemistry in senior secondary schools in Makurdi Nigeria: any effect on achievement? *International Journal of Education and Practice,* 2.2: 21-34.

Achuonye, K. A. 2012. A comparative study of computer literacy in urban and rural primary schools in river state of Nigeria. *Journal of Sociological Research, 3. 2: 563-578.*

Adarkwah, M. A. 2021. I'm not against online teaching, but what about us?: ICT in Ghana post Covid-19. *Education and Information Technologies, 26.2: 1665–1669. https://doi.org/10.1007/s10639-020-10331-z [Crossref], [PubMed], [Web of Science ®], [Google Scholar]*

Adebamowo, O. 2011. The use of school library resources in Ogun State secondary schools: A study of selected secondary schools in Ijebu North L. G. A. *Nigeria Journal of Research in Education and Society,* 2.1: 113 – 122.

Adegbite, A.F, 2017. Analysis of the impact of ICT on the performance of students in secondary school, Oyo State. *International Journal of Research in Business Studies and Management, 4.8: 23-29.*

Adeleke, K. 2010. Green building codes. A priority for sustainable development. Paper presented at the Architects Colloquial Organized by the Nigerian Institute of Architects in Abuja, 2nd March. 22-29.

Adeleye, O. J. 2017. Pedagogical challenges on the effectiveness of business studies teachers in junior secondary schools, Oyo state. *International Journal of Advanced Academic Research Arts, Humanities and Education,* 3.3: 32-45.

Ademola, O. R. 2009. Influence of computer anxiety and knowledge on computer utilization of senior secondary school students. *Electronic Journal of Research in Educational Psychology,* 7.19:1269-1287

Adetimirin, A. and Abubakar, D. 2015. Influence of computer literacy on postgraduates' use of e-resources in Nigerian university libraries. *Library Philosophy and Practice (e-journal),* 4.3: 43-56. http://digitalcommons.unl.edu/libphilprac/1207.

Adewole-Odeshi, E. 2014. Attitude of students towards e-learning in South West Nigerian universities: An application of technology acceptance model. *University of Nebraska–Lincoln Digital Commons@University of Nebraska. Lincoln Library Philosophy and Practice (e-journal),* 8.12:44-51

Agarwal, R. and Karahanna, E. 2000. Time flies when you're having fun: Cognitive absorption and beliefsabout information technology usage. *MIS Quarterly,* 24.4: 665-694.

Akinola, C. I. 2011. Information and communication technology: Panacea for entrepreneurship for national development. *Book of Readings in Business Education*, 1.2: 50 – 57.

Akinoso, O. 2018. Effect of the use of multimedia and e-book on students' performance in secondary school mathematics. *Global Media Journal,* 16 30:1–8

Akpojotor, B. E. 2021. Challenges of the exploitation of modern technologies in business education programme in colleges of education in Delta State. *Benue State University Journal of Education (BSUJE),* 21.2:1-10.

Akpojotor, B. E. 2022. Difficulties confronting students in the acquisition of practical skills in business education in tertiary institutions in Delta State. *ABTU Journal of Science, Technology and Education*, 10.1: 99-104.

Al Hosni, J. 2016. The power of image in English language teaching. *The Journal of Teaching English For Specific And Academic Purposes,* 4.1: 229-235.

Allison, S. H., 2005. Computer skills essential to break poverty. Retrieved March 2, 2019 from cycle.*http://pdfserve.golegroup.com/pdfserve/getitem/.*

Alotiabi, W. 20l6. The impact of using instructional infographics on students' achievement in English language grammar of first grade in Riyadh. Unpublished M.Ed Project, Al-Imam Muhammed bin Saud Islamic University, 23-30

Alqudah, D., Bin, B. A., Azizul H. B. and Hussin, M. 2019. The impact of the educational infographic on students' interaction and perception in Jordanian higher education: Experimental study. *International Journal of Instruction,* 12.4:669–688. https://doi.org/10.29333/iji.2019.12443a

Alzaq, E. S. 2018. "The effect of differing interaction interface in the e-book on cognitive achievement and skills performance among students of educational technology and attitudes towards it". *Journal of Psychiatric and Educational Research,* 23.2: 104-141.

Amadi, J.O. and King, K. O. 2018. Challenges of business education students in acquiring information communication technology (ICT) skills for national development, Rivers State. *Nigerian Journal of Business Education (NIGJBED),* 5.1: 195-202.

Amesi, J. and Giami, D.K. 2018. Challenges hindering the availability of instructional resources for entrepreneurial skills acquisition among business education students in tertiary institutions, Rivers State. *International Journal of Education and Evaluation,* 4.1: 22-27.

Amosun, P. A. 2016. Why Nigerian geography teachers scarcely and scantly teach map reading and why students are scared of it. *African Educational Research Journal,* 4.2:42-48.

Antonova, A. 2016. Building sophisticated infographics as effective knowledge visualization and knowledge sharing tools. *Rhetoric and Communication e-Journal,* 13.1:14-26. Retrieved on 25th May, 2019, from http://rhetoric.bg/albena-antonova-building-sophisticated-infographics-as-effective-knowledge-visualization-and-

knowledge-sharing-tool.

Awofala, A. O. A., Olabiyi, O. S., Awofala, A. A., Arigbabu, A. A., Fatade, A. O. and Udeani, U. N. 2019. Attitudes toward computer, computer anxiety and gender as determinants of pre-service science, technology and mathematics teachers' computer self-efficacy. *Digital Education Jounal,* 4.6: 51–67.

Ayeni, A. J. 2011.Teachers professional development and quality assurance in Nigerian Secondary Schools. *World Journal of Education,* 1.2:143-149.

Anyanwu, C. R., Ezenwa, V. I., and Gambari, A.I. 2014. .Bridging the Gap between Low, Medium and High Ability Students through the Use of Computer-Based Multimedia Instruction. *Journal of Information, Education, Science and Technology (JIEST),* 1.1: 105-115. Available at http://www.futminna.edu.ng

Asunka, B. A. 2016. The significance of information and communication technology for SMEs in rural communities*: Journal of Small Business and Entrepreneurship Development,* 4.2: 29-38.

Baddeley, A. 1998. *Human memory*, Allyn and Bacon, Boston. New York: Tunnel Books Company.

Bada, T., Adewole, A. and Olalekan, O. 2009. Use of computer and its relevance to teaching and learning in Nigerian educational system. *Education Research and Review*, 4.10: 443-337. http://www.academic journal. org/ERR.

Baglama, B., Yücesoy, Y., Uzunboylu, H. and Ozcan, D. 2017. Can infographics facilitate the learning of individuals with mathematical learning difficulties? *International Journal of Cognitive Research in Science, Engineering and Education,* 5.118–128.

Baharuddin, N. Q. and Hashin, H. 2020. Using digital reading in ESL Malaysian primary classrooms: The strengths and the shortcomings from the learners' perspectives. *J. Educ. Learn. Stud,1*.3: 7–13. doi: 10.32698/0832

Balanskat, A., Blamire, R. and Kafal, S. 2007. A review of studies of ICT impact on schools in Europe. *European Schoolnet.*

Banidele, B. S. 2018. Students and teacher related variable as determinants of primary school pupils learning outcomes in Social Studies in Lagos State. Education Horizon, 7.1: 131 – 138.

Baxter, C.A., 2014. The effects of computer augmented instruction on achievement in the collegiate principles of accounting course. Working paper, University of Georgia, Athens.

Bicen, H. and Beheshti, M. 2019. The psychological impact of infographics in education. Broad Research in Artificial Intelligence and Neuroscience, 8.4:1-8.

Brigas, J. and Ramos, F. 2015. Infographics as an auxiliary tool for teaching/learning. Revista de Comunicacion de la SEECI, 2.36: 178-184.

Brigg, B.P. 2019. Teaching methods as correlate of student performance in business studies in selected public secondary schools in Port Harcourt. *International Journal of Innovative Social and Science Education Research,* 7.2: 1-12.

Brussevich Z., Dabbla, U. and Khalid, W. 2020. The role of small business in alleviating the activity of unemployment. *International Business Research,* 10.2: 120-122.

Cazan, A., Cocorada, E. and Miacan, C. J. 2016. Computer anxiety and attitudes towards the computer and the internet with Romanian high- school and university students. *Computers in Human Behavior*, 12.55: 258- 26

Chau, M. 2018. "The effects of electronic books designed for children in education", Essays on the design of electronic text (*SCROLL),* l1.1:20-25.

Chen, G., Gong, C., Yang, J., Yang, X. and Huang, R., 2013. The c0ncept of eText books in K-12 classes from the perspective of its stakeholders, in *Human-computer interaction and knowledge discovery in complex, unstructured, big data 11.9: 319–325).* A Holzinger, G Pasi (HCI-DKK, Springer Berlin Heidelberg, Retrieved on 4 May, 20l3 from http://link.springer.c0m/chapter/l0.l007/978-3-642-39146-029 Google Scholar.

Christensen, C. 2010. Disrupting class, expanded edition: how disruptive innovation will change the way the world learns New york: McGraw-hill.

Çifçi, T. 2016. Effects of Infographics on students' achievement and attitude towards geography lessons. *Journal of Education and Learning,* 5.1:154-166. doi:10.5539/jel.v5n1p154.

Clark, R. E. 1994. Media will never influence learning. *Educ. Technol. Res. Dev., 5.*42: 21–30.

Clement, O. I. and Joshua A. A 2019. Internet skills as a measure of digital inclusion among mathematics education students: Implications for sustainable human capital development in Nigeria. *International Journal of Education and Knowledge Management (IJEKM*), 2.1: 1-16. https://rpajournals.com/ijekm

Continental Education Strategy for Africa: 20l6. Continental strategy for technical and vocational education and training (TVET) to foster youth employment in Africa. Report of annual continental activities 20l6. African Union Commission, Department of Human Resources, Science and Technology. 30-42.

Cuevas, S. M., Fiore, A. and Oser, R. L. 2002. Scaffolding cognitive and meta-cognitive processes in low verbal ability learners: Use of diagrams in computer-based training environments, instructional science, *International Journal of Cognitive Research in Science, Engineering and Education,* 30.6:433-464.

Curtine, E. 2019. Instructional styles used by regular classroom teachers while teaching recently main strearned E.S.L students: Six urban middle school teachers in Texas share their experiences perceptions. *Multicultural Education Journal,* 12.4: 36-42.

David, R. 2011. *What are the advantages of e-book readers over print books?* Available

at http://www.itrainharder.com/what-are-thedisadvantages-of-ebook-over-print-b00ks.Retrieved 0n 2 September 20ll.

Darkwa, B. F. and Antwi, S. 2021. From classroom to online: Comparing the effectiveness and student academic performance of classroom learning and online learning. *Open Access Library Journal*, 8.7:5-9. https://doi.org/10.4236/oalib.1107597 [Google Scholar]

D0nnelly, K. l999. An international comparative analysis across education systems: Benchmarking the Victorian CSF. Seminar Series, May, No 83, Melbourne. IARTV.

Dur, B. 2014. Data visualization and infographics in visual communication design education at the age of informati0n. *Journal of Arts and Humanities, 3.5: 39-50.*

Egba, S. P. 2010.The impact of business studies in schools. *A hand book on practical business in schools*. Port Harcourt. Akpos Learning Publishers.

Ekoh, A.C. 2016. Traditional pedagogy to innovative pedagogy in business education. A challenge to business education. *Nigerian Journal of Business Education* 3.2: 126-136.

Elogbo, E.E. and Akek, M.N.G. 2019. Extent of utilization of world wide web and e-mail in instructional delivery of business education in Federal universities in South-South, Nigeria. *Nigerian Journal of Business Education,* 6 .1: 217-228.

Emwanta, M. and Nwalo, K.I.N. 2013. Influence of computer literacy and subject background on use of electronic resources by undergraduate students in universities in South-western Nigeria. *International Journal of Library and Information Science*, 5.2:29-42. http://www.academicj0urnals.org/IJLIS. DOI: 10.5897/IJLIS12.017 [Accessed 15.03.13].

Fadare, J. A. 2014. Analysis of barriers to qualitative business education in Nigeria. Delta *Nigerian Journal of Business Education*. 4.1: 284-291.

Falode, O. C. 2014. A bates' "ACTIONS" evaluation of virtual laboratory package on selected physics concepts for Nigerian secondary schools. An Unpublished Ph.D thesis, University of Ilorin.

Fati, O. I. and Airen, A. 2017. Influence of computer literacy skills on OPAC use by undergraduates in two universities in Nigeria. *Inter. J. Acad. Lib. Info. Sci.*, 5.1: 27-37.

Federal Ministry of Education, 2007. Vision 2020: The role of the Nigerian education sector. Abuja: Federal Ministry of Education.

Federal Republic of Nigeria (FRN), 2013. National policy on education. Lagos: NERDC Press.

Federal Republic of Nigeria, 2009. Child's right act 2003. Official Gazette act No. 26 - 451-679. Lagos: Federal Government Press.

Fowler, K. 2015. For the LOVE of INFOGRAPHICS. *Science scope,* 38.7: 42-48. doi:10.2505/4/ss15_038_07_42.

Furst-B0we, J. and Boger, C. 2006. An analysis of required computer competencies for university students. *Journal of Research on Computing in Education,* 2.1: 56-61.

Futterman, M. 2020. Organizing instruction and study to improve students' learning. Washington DC: National Center for Education Research, 35-38.

Global Business School Network. 20l3. Education, employment and entrepreneurship: A snapshot of the global jobs challenge. Retrieved from www.gsbonline.org/20l3.

Gordon, M., Killey, M., Shevlin, M., McIlroy, D. and Tierney, K. 2003. The factor structure of the computer anxiety rating scale and the computer thoughts survey. *Computers in Human Behavior*, 3.l9: 29l–298.

Harris, J. and Grandgenett, N. 2007. Teachers' authentic learning with e-learning. *Learning and Leading With Technology*, 30.3: 54-58.

Hattwig, D., Bussert, K., Medaille, A. and Burgess, J. 2013. Visual literacy standards in higher education: New opportunities for libraries and student learning. Portal: *Libraries and the Academy,* l3.l: 6l-89. d0i:l0.l353/pla.20l3.0008.

Heinssen, R. K., Glass, C.R. and Knight, L.A. l987.Assessing computer anxiety: Development and validation of the c0mputer anxiety rating scale. *Computers in Human Behavior*, 3.3: 49-59.

Heitin, L. 2015. Teaching the next generation science standards with mysteries. National Science Teachers Association, NSTA. March l3.

Huang, Y., Liang, T., Su, Y. and Chen, N. 2012. Empowering personalized learning with an interactive e-book learning system for elementary school students. *Educational Technology Research and Development, 60*.4: 703-722. doi:l0.l007/sll423-0l2-9237-6.

Huang, Y. M., Jeng, Y. L. and Huang, T. C. 2009. An educational mobile blogging system for supporting collaborative learning. *Educational Technology and Society,* l2**.**2: l63–l75. Google Scholar.

Ibrahim, W. N. A., Bakar, A. R., Asimiran, S., M0hamed, S. and Zakaria, N. S. 20l5. Impact of entrepreneurship education on the entrepreneurial intentions of students in technical and vocational education and training institutions (TVET) in Malaysia. *International Education Studies,* 8.l2: l41-l56. https://doi.org/l0.5539/ies.v8nl2pl41

Ifeagwu, D. 2000. Special methods: Teaching practice for students and professional teachers. Lagos: Dic Publishing Company.

Igbojinwaekwu, P. C. and Nneji, N. L. 2012. Restructured mathematics questions and academic achievement of students in senior school mathematics. African Indices, British University in Egypt (BUE), Etsharonk City, Cairo, 4 .l: l4-23.

Ige, O.A. and Orungbemi, O.O. 20l3. Measured effect of gender and computer literacy on students' academic achievement in social studies and civic education in selected secondary schools in Ondo State. I*nternational Journal of Research and Development,* l.2: l04-1l1.*Retrieved.Dec.5, from* http://www.aauaeducationfac.org.

Isil, A. 20l5. Computer self-efficacy, computer anxiety, performance and personal outcomes of Turkish physical educati0n teachers. *Education Research and Reviews,* l0.3. 14-18.

Ismaeel, D. A. and Al Mulhim, E. N. 2021. The influence of interactive and static infographics on the academic achievement of reflective and impulsive students. *Australasian Journal of Educational Technology*, 37.1: 147-162

Jegede, O. l997. School science and the development of scientific culture: A review of contemporary science education in Africa. *International Journal of Science Education,* l9.3: l–20.

Jeong-Bae, S., Thomas, R. and Indra, C. 2012. Computer literacy and competency: A survey of Indonesian teachers of english as foreign language. *Journal of Computer Assisted Language Learning, 12.2: 26-42.*

Johnson, R. 2017. The role of schools in developing mental ability of students in secondary schools. *Multidisciplinary Journal*, 18.2: 42-49.

Karen, S. 2015. Toward combining programmed instruction and constructivism for tutorial design. Retrieved 3rd March, 2015 from users/username/documents programmed%20instructi0n%20contructivism

Kavoosi, A. and Reza, J. 2015. How to get information better with infographics: Role of Educational Technology. *The Turkish Online Journal of Educational Technology,* 15. 3: 45-44.

Khaloufi, A. E. and Laabidi, H. 2017. An examination of the impact of computer skills on the effective use of ICT in the classroom. *Indonesian Journal of EFL and Linguistics*, 2.1: 53-69. https://doi.org/10.21462/ijefll.v2i1.29

Khan, N. R., Ghouri, A. M., Siddqui, U. A., Shaikh, A. and Alam, I. 2010. Determinants analysis of customer switching behavior in private banking sector of Pakistan. *Interdisciplinary Journal of Contemporary Research in Business, 2*.7: 96-110.

Kibar, P. and Akkoyunlu, B. 2014. A new approach to equip students with visual literacy skills: *The advances in mobile and distance learning (AMDL) book series,* 456-465. Published in the United State of America by IGI Global.

Kim-Sun, N., Ahmad, A. R. and Ibrahim, N. N. 2016. Theory of planned behaviour: Undergraduates' entrepreneurial motivation and entrepreneurship career intention at a Public University. *Journal of Entrepreneurship, Research and Practice,* 2.5:1-14.

Koh, J. H. L. 2011. Computer skills instruction for pre-service teachers: A comparison of three instructional approaches. *Computers in Human Behavior*, 5.27: 2392-2400.

https://doi.org/10.1016/j.chb.2011.08.002.

Kumbhar, R. 2018. Trends in e-book research. *Journal of Library and Information Technology*, 38.3: 162-169. Doi: 10.14429/djlit.38.3.12382

Kuttim, M., Kallaste, M., Venesaar, U. and Kiis, A. 2014. Entrepreneurship education at university level and students entreprenerial intentions. *Journal Procedia - Social and Behavioral Sciences*, 3.110: 658-668. https://doi.org/10.1016/j.sbspro.2013.12.910.

Leong, A. C. H., Abidin, M. J. Z. and Saibon, J. 2019. Learners' perceptions of the impact of using digital storytelling on vocabulary learning. *Teach. Engl. Technol.* 2.19: 3–26. doi: 10.1177/2158244016646148

Lindstrom, R. 1994. The business week guide to multimedia presentations: create dynamic presentations that inspire. New York: McGraw-Hill.

Litke, R. 1995. Maintaining quality in large classes: An exchange of research, resources, strategies, and ideas. Presented at the California State University, Institute for Teaching and Learning Exchange Conference, San J0se, CA. February 1.

Martinez-Estrada, P. and Conaway, R. N. 20l2. Ebook: The next step in educational innovation. *Business Communication Quarterly*, *75*.2:l25-l35. doi:l0.l177/l080569911432628.

Matrix, S. and Hodson, J. 20l4. Teaching with infographics: Practicing new digital competencies and visual literacies. *Journal of Pedagogic Development*, 4.2: l7-27.

Mayer, R. E. l996. Learners as information processors: Legacies and limitations of educational psychology's second metaphor. *Educ. Psychol*., 4.3l: l51–l61.

Mayer, R. E. 2009. Multimedia learning. Second Edition. New York, Cambridge University Press.

Mayer, R. E. 2010b. Seeking a science of instruction. *Instructional Science*, 6.38: l43–l45.

Mayer, W., Bove, A., Bryman, R. and Tapangco L. 1996. "When less is more: Meaningful learning from visual and verbal summaries of science textbook lessons*"*. *Journal of Educational Psychology*, *88*.1:64–73. https://doi.org/10.1037/0022-0663.88.1.64

Mayowa, G. 2017. Promoting teaching and learning among primary school pupils through the use of constructivist learning theory in Kwara State. *Journal of Education, Science and Social Science, 19.2: 132 – 141*.

Meacham, M. 2015. Use infographics to enhance training. *Talent Development*, 69.8: 76-77.

Mustapha, B. 2018. Issues in curriculum of business education. Unpublished seminar paper presented to business education section, vocational and technical education department, Ahmadu Bello University, Zaria, 40-47.

Nidhi, P. and Sunita, D. 2019. Impact of ICT in education: Students' perspective manuscript track: digital technologies in teaching. *Computers in Human Behavior*, 7.21: 23-28.

Nkanata, F. K. 2013. Headteachers administrative challenges that affect academic performance of day secondary schools in Igoji east division of meru county, Kenya. M.Ed project, Kenyatta University, Naronbi.

Obi, C.A. 2013. Resource evaluation in business education in E.A Arornoran (Ed.). *Book of Readings in business education,* 75 – 81, Lagos: NABE publications.

Obidile, J. I. and Onyeagba, J. N. 2019. Business education in the e-world. Challenges and the way forward. *US-China Educational Review,* 9.6: 267-272.

Ogben, F. and Amahi, F.U. 2008. Business education in a globalized society: Issues, challenges and strategies. *Business Education Journal, 1.8: 37- 42.*

Ogonu, O.G. 2019. Challenges of the use of new technologies in the teaching of business education courses in tertiary institutions in Rivers State, Nigeria. *Nigerian Journal of Business Education,* 6.1: 318-330.

Ogunsaju, S. 2004. A guide to school effectiveness in Nigeria. Ibadan, Laville Publications.

Ogwunte, P.C. and Okolocha, C.C. 2016. Strategies considered effective by business teacher in south, Nigeria for teaching new business subjects in secondary schools, *International Journal of Innovative Education Research,* 4.2: 60-70.

Ojiambo, O. 2009. Quality of education and its role in national development: A case study of Kenya's educational reforms." *Kenya Studies Review,* 1.1: 133–149.

Olabode, O. 2016. Impact of electronic resources use on academic performance of undergraduates in Nigeria. *Journal of Information and Knowledge Management,* 7.2: 56-65. https://doi.org/10.4314/ iijikm.v7i2.6

Oladimeji, A. I., Yusuf, H. A., Njoku, C. C. and Owolabi, A. A. 2022. Computer science education in Nigeria secondary schools: Gap between policy pronouncement and implementation (Case Study of Northeast Zone Nigeria). *International Journal of Engineering Research and Technology*, 7.4:463-466.

Olowookere, S. O. and Iyiola, M. A. 2016. Challenges and prospects of the application of ICT in the teaching and learning of business subjects. *Nigerian Journal of Business Education (NIGJBED), 3.2: 187-198.*

Okoye, K. R. E. 2013. Emerging issues in business, vocational and technical education in Nigeria: The challenges and prospects. A keynote address presented at the 3rd annual national conference organized by school of business education, FCE (Technical), Asaba 20th-24th May.

Okundaye, K., Fan, S. K. and Dwyer, R. J. 2019. Impact of information and communication technology in Nigerian small-to-medium-sized enterprises: *Journal of Economics, Finance and Administrative Science*, 24.47: 29-46.

Okurumeh, A. E. 2009. The effect of meaning focus practice and invention, interaction

and discussion strategies on achievement and problems solving skills of senior secondary school students in mathematics. Unpublished Ph.D Thesis, University of Ibadan.

Okwuanaso, S. I. and Nwazor, J. C. 2000. Instructional strategies in business education, Awka: Ikenga Publishing Ltd.

Olabiyi, O. S., Aiyelabowo, O. P. and Keshinro O. T. 2013. Relevance of computer assisted instruction (CAI) for effective skill development among technology education students in Nigeria. *Journal of Education and Practice.* 4. 21:80 – 90.

Oluwalola, F.K. 2019. Business studies and employability skills development in junior secondary schools in Ilorin metropolis, Kwara state. *eJournal of Education Policy (eJEP), 3.8:*11-22.

Oluwalola, F. K. 2018. Students' perceptions of teachers' attitude to teaching of business studies in junior secondary schools in lagelu local government, Oyo state. *Unilorin Journal of Lifelong Education*, 2.2:75-83.

Ononye, F. O., Oguejiofor C. N. and Ezenwagu, S. A. 2021. Challenges in the teaching and learning of computer science in junior secondary schools in Enugu north local government area of Enugu State. *Unizik Journal of Educational Research and Policy Studie, 3.5: 46-70.*

Onwumere, A. A. and Kalu, J. N. 2012. The integration and use of computer-assisted instruction (CAI) to enhance understanding in the learning and competency in the use of English language in primary schools in Nigeria. *NAEMT Internati0nal Conference Proceedings.* 2.l: 46-55.

Oribhabor, C. B. 2020. Investigating the influence of computer anxiety on the academic performance of junior secondary school students in computer studies in Nigeria. *International Journal of Computing Sciences Research, 4.4: 370–382.*

Osisanwo, T., Ehioghae, M. and Abdulsalaam, T. 2019. Computer anxiety as correlate of use of Information technology tools among undergraduates of library and information science in Tai Solarin University of Education. *Information Impact: Journal of Information and Knowledge Management,* 10.2: 36-40.

Otunla, A. O., Sanusi, I. T. and Ekundayo, O. E. 2016. Teachers' perception and level of use of video-based instructional materials (VBIM) for teaching basic technology in Ibadan north LGA of Oyo State, South-Western, Nigeria. Paper presented at 4th Institute international conference, Institute of education, June 20–23, University of Ibadan, Nigeria. 10-15

Oyadeyi, J. B. 2016. Computer efficacy training and cognitive behaviour therapy in the management of computer anxiety among National open university of Nigeria freshmen in southwestern Nigeria. Unpublished Ph.D Thesis, University of Ibadan.

Oyediran, W. O., Omoare, A.M., Owoyemi, M.A., Adejobi, A.O. and Fasasi, R.B. 2020. Prospects and limitations of e-learning application in private tertiary institutions amidst COVID-19 lockdown in Nigeria. *Nigerian Journal of Business*

Education, 6.11:54-57.

Park, B. and Brünken, R. 2015. The rhythm method: A new method for measuring cognitive load: An experimental dual-task study. *Applied Cognitive Psychology*, 5.29: 232-243. doi: 10.1002/acp.3100.

Park, B., Münzer, S., Seufert, T. and Brünken, R. 2016. The role of spatial ability when fostering mental animation in multimedia learning: An ATI-study. *Computers in Human Behavior,* 2.64: 497-506. doi: 10.1016/j.chb.2016.07.022.

Parveen, A. and Husain, N. 2021. Infographics as a promising tool for teaching and learning. *Journal of Emerging Technologies and Innovative Research (JETIR),* 8.6: 554-559.

Pew, R. 2014. E-reading rises as device ownership jumps. Research carried out on 24th July, 2014. (Accessed October 13, 2014).

Philips, J.T. 2001. Embracing the challenges of leadership. *Information Management, Journal,* 35.30: 58-61.

Piaget, J. 2001. The psychology of intelligence (2nd Ed.). London: Routledge.

Popoola, A.A. 2002. Effects of heuristic problem-solving and programmed instructional strategies on senior secondary school studentts' learning outcomes in mathematics in Ekiti State, Nigeria. Upublished Ph.D Thesis, University of Ibadan.

Prensky, M. 2001. Digital natives, digital immigrants. *On the Horizon, 9*.6: 1-6.

Putra, K. M. 2021. The use of infographics to enhance EFL students reading interest. *Journal of Educational Study (JoES),* 1.1: 60-66. https://doi.10.36663/joes.v1i1.154.

Rezaei, N. and Sayadian, S. 2015. The impact of infographics on Iranian EFL learners' grammar learning. *Journal of Applied Linguistics and Language Research*, 2.1: 78-85.

Sadi, A. and Cakiroglu, J. 2011. Effects of hands-on activity enriched instruction on student's achievement and attitudes towards science. *Journal of Baltic Science Educati0n, 10*.2: 87-97. Retrieved from Academic Search Complete database.www.springerlink.com/index/3777274050w6k6275.pdf. 11 November, 2015.

Sadik, A. 2008. Digital storytelling: A meaningful technology-integrated approach for engaged student learning. *Educational Technology Research and Development,* 6.56: 487-506.

Sam, H. K., Othman, A. E. A. and Nordin, Z. S. 2005. Computer self-efficacy, computer anxiety, and attitudes toward the internet: A study among undergraduates in Unimas. *Educational Technology and Society,* 8.4:205-219.

Schnotz, W. 2005. An integrated model of text and picture comprehension. The Cambridge Handbook of Multimedia Learning. New York: Cambridge University

Press.

Schrock, K. 2014. Inf0graphics as a creative assessment. Retrieved December 21, 2014 fr0m: http://www.schr0ckguide.net/inf0graphics-as-an-assessment.html

Shelburne, W.A. 2019. "E-book usage in an academic library: User attitudes and behaviors". Library Collections, Acquisitions and Technical Services, 59-72. https://doi.org/10.1080/14649055.2009.10766234.

Shepperd, J. A., Grace, J. L. and Koch, E.J. 2008. Evaluating the electronic textbook: Is it time to dispense with the paper text? *Teach. Psychology*, 1.35:2–5. CrossRefGoogle Scholar

Shinn, G., 2001. Communicating technology for learning: New tools and proven strategies. *The Agricultural Education Magazine, 73*.4: 4-9.

Sorby, S. A. 2019. Developing 3D spatial visualization skills. *Engineering Design Graphics Journal*, 63.2: 22-28

Sudakov, I., Bellsky, T., Usenyuk, S. and Polyakova, V. V. 2016. Infographics and mathematics: A mechanism for effective learning in the classroom. *PRIMUS*, 26.2:158-167. doi:10.1080/10511970.2015.1072607.

Kanwal, S. F. 2017. Personal attributes contributing to computer anxiety and computer self-efficacy among distance learners. *Bulletin of Education and Research, 39.1: 33–44.*

Sweller, J. 2020. 'Cognitive load theory and educational technology'. *Educational Technology Research and Development*, 5.68:1-16, http://dx.doi.org/10.1007/s11423-019-09701-3

Sweller, J. 2017. Without an understanding of human cognitive architecture, instruction is blind. The ACE conference. Retrieved from https://youtu.be/gOLPfi9Ls-w..3rd June, 2020.

Tambuwal, H. M. and Yusuf, G. B. 2020. Relevance and prospect of information and communication technology (ICT) to business education program. *Nigerian Journal of Business Education, 7.1: 240-248.*

Taner, C. 2016. Effects of infographics on students' achievement and attitude towards geography lesson. *Journal of Education and Learning, 5.1:21-25. ISSN 1927-5250 E-ISSN 1927-5269. Published by Canadian Center of Science and Education.*

Tees, T. 2010. E-readers in academic libraries: A literature review. *Aust. Libr. J.* 59.4: 180–186. CrossRefGoogle Scholar.

Tella, J., Indoshi, F. C. and Othuon, L. A. 2010. "Relationship between students' perspectives on the secondary school english curriculum and their academic achievement in Kenya". *Journal of Educational Research,* 1.9:382-389.

Tema, B. 0. 2007. Strategies to revitalize technical and vocational training in Africa. Conference of Ministers of Education of the African Union. Addis Ababa, Ethiopia.

The Institution for the Advancement of Research in Education, 2013. Graphics organizers: A review of scientifically based research. Retrieved October 25, 2014 from: http://www.inspiration .com/sites/default/files/documents/detailed-summary.pdf

Thomas, M., Martins, S., Paul, B. and Jonnah, Z. 2016. Using relevant theories in teaching and learning of Social Studies in secondary schools. Retrieved from http://www.esdtoolkit.org/discussion9940.on 14th of April 2019.

Trading Economics, 2021. National Bureau of Statistics, Nigeria. tradingeconomics.com

Turkish National Primary Science Programme, 2005. *Turkish Ministry of Education Bulletin Board Journal. {Online}http://ttkb.meb.gov.trindex1024.htm.*

Umezulike, A.N. and Okoye, A.C. 2013. Promoting the stability of the Nigerian economy through quality assurance in business education. *ABEN Book of Readings*. 3.1: 181-187.

Umumadi, K.E. 2009. Teacher utilization of instructional equipment and materials in teaching basic electricity in urban and rural technical colleges. *International Journal of Scientific Research in Education,* 2.2: 88-95.

Uzoamaka, O., Ayolugbe, C. and Igwe, J. 2019. Entrepreneurship education: A viable tool in enhancing post-basic in Awka, Education Zone, Anambra State, Nigeria. *Library Philosophy and Practice (e-journal) 2.7:1-3.*

Uzodi, C.O. 20l2. Strategies considered effective for teaching Job skills By Anambra state sec0ndary school Business Teachers. Unpublished M.Ed project, Nnamdi Azikiwe University, Awka. 22-30.

WAEC, 2000. Examination report in science subjects. Lagos.

Wells, C. L. 2018. Do students using electronic books display different reading comprehension and motivation levels than students using traditional print books? Unpublished Ph.D Thesis, Liberty University, Lynchburg, VA, 12-20.

Wexelbaum, R., Miltenoff, P. and Parault, S. 2010. E-Books and reading comprehension: Perspectives of librarians and educators. Bibliosphera. *Library Faculty Publications*. Retrieved from http://repository.stcl0udstate.edu/lrsfacpubs/2. 12th July, 2014.

Wilkes, F. and J. Hodson, 2013. Using social media aggregation and curation techniques in the classroom to identify discourse trends and support brand operations. International Professional Communication Conference (lPCC), 15th July, l-7.

Yee, B. C. and Zainuddin, N. S. 2018. The use of e-book to improve reading comprehension among year four pupils. *J. Engl. Educ.* 4.3:23–32. doi: 10.31327/jee.v3i1.477.

Zhang-Kennedy, L., Chiasson, S. and Biddle, R. 20l3. Password advice shouldn't be boring: Visualizing password guessing attacks. APWG e-Crime Researchers Summit, 2013, 1-11.

APPENDIX I

University of Ibadan, Ibadan

Faculty of Education

Department of Science and Technology Education

LESSON NOTES ON INSTRUCTIONAL GUIDE FOR INFOGRAPHICS INSTRUCTIONAL PACKAGE ON COMMERCE

MODULE I

CLASS: JSS 2

SUBJECT: BUSINESS STUDIES

TOPIC: COMMERCE

SUB-TOPIC: TRADE

DURATION: 40 MINUTES

INSTRUCTIONAL AIDS: Computer System, CD infographic learning package, Projector, and flash drive.

The instrument was developed by the researcher to guide the use of Infographics Package (IP) in the teaching of Commerce. It was prepared according to the behavioural objectives of the Commerce concept in Business studies curriculum for junior secondary school. The teachers will be trained to be able to guide the students during the treatment using the instructional guide provided by the researcher.

Steps to follow in using Infographics Package are

Preparation Phase:

1. The teacher orients the students on the objectives and expected performance in each phase
2. Students are allowed to put theoretical knowledge already gained into action – mount the disc on the system already connected to the projector.

Teacher introduces the topic – Commerce to the students and states the behavioural objectives:-

At the end of the lesson, the students should be able to:

i. put in plain words the meaning of trade;
ii. differentiate between home trade and foreign trade;
iii. Identify the services that make trade easy;
iv. Explain the process of identifying the role of customs and Excise in foreign trade.

Students listen and answer questions posed at them to test their prior knowledge on the concept

1. What is Business studies?
2. What are the key components of Business studies?

Presentation Phase:

The students continue to interact with the package by visualizing, and reading the content in the CD. Students are allowed to ask questions to clarify their doubts on each module.

Reflection Phase

1. The teacher explains, models, illustrates, clarifies, supplies missing information
2. Students generate important notes

Modification Phase

3. Students give insights, feedback and comments gained during the teaching, when the teacher was answering the questions and supplying the missing information.
4. Students make modifies information.

Evaluation:

Teacher project a series of questions to assess the assimilation rate of the students on what they have leant.

MODULE 2

CLASS: JSS 2

SUBJECT: BUSINESS STUDIES

TOPIC: COMMERCE

SUB-TOPIC: MARKET

DURATION: 40 MINUTES

INSTRUCTIONAL AIDS: Computer System, CD infographic learning package, Projector, and flash drive.

Steps to follow in using Infographics Package are

Preparation Phase:

1 The teacher orients the students 0nthe, objectives and expected performance in each phase
2 Students are allowed to put theoretical knowledge already gained into action – mount the disc on the system already connected to the projector.

Teacher introduces the sub-topic – Market to the students and states the behavioural objectives:-

At the end of the lesson, the students should be able to:

I. Explain the meaning of market and identify features of market;
II. Distinguish between various types of market;
III. Classified operations in the commodity market;
IV. Explain the process involve in the methods of buying and selling;

Students listen and answer questions posed at them to test their prior knowledge on the concept

1 What is Trade?
2 What are the forms of trade with examples?

Presentation Phase:

The students continue to interact with the package by visualizing, and reading the content in the CD. Students are allowed to ask questions to clarify their doubts on each module.

Reflection Phase

1 The teacher explains, models, illustrates, clarifies, supplies missing information

2 Students generate important notes

Modification Phase

1 Students give insights, feedback and comments gained during the teaching, when the teacher was answering the questions and supplying the missing information.

2. Students modify knowledge on the topic

Evaluation:

Teacher project a series of questions to assess the assimilation rate of the students on what they have leant.

MODULE 3

CLASS: JSS 2

SUBJECT: BUSINESS STUDIES

TOPIC: COMMERCE

SUB-TOPIC: DISTRIBUTION

DURATION: 40 MINUTES

INSTRUCTIONAL AIDS: Computer System, CD infographic learning package, Projector, and flash drive.

Steps to follow in using Infographics Package are

Preparation Phase:

1 The teacher orients the students on the, objectives and expected performance in each phase
2 Students are allowed to put theoretical knowledge already gained into action – mount the disc on the system already connected to the projector.

Teacher introduces the sub topic – Distribution to the students and states the behavioural objectives:-

At the end of the lesson, the students should be able to:

I. identify the agents involved in the channel of distribution;
II. describe the direction of flow in the Distribution of chain,
III. illustrate the functions of each agent in the channel of distribution.

Students listen and answer questions posed at them to test their prior knowledge on the concept

I. Classified operations in the commodity market;

II Explain the methods of buying and selling

Presentation Phase:

The students continue to interact with the package by visualizing, and reading the content in the CD. Students are allowed to ask questions to clarify their doubts on each infographics.

Reflection Phase

1 The teacher explains, models, illustrates, clarifies, supplies missing information

2 Students generate important notes

Modification Phase

1 Students give insights, feedback and comments gained during the teaching, when the teacher was answering the questions and supplying the missing information.

2 Students modify knowledge on the topic

Evaluation:

Teacher project a series of questions to assess the assimilation rate of the students on what they have leant.

APPENDIX II

TEACHERS' INSTRUCTIONAL GUIDE ON E-BOOK INSTRUCTIONAL PACKAGE

Introduction: This Instrument was developed by the researcher to guide the use of E-book instructional package in the teaching of Commerce. It was prepared according to the behavioural objectives of the Commerce concept in Business studies curriculum for junior secondary school. The teachers will be trained to be able to guide the students during the treatment using the instructional guide provided by the researcher.

Topic	Time	Teachers' activities	Students' activities	Materials
Introduction	10mins	Teacher will introduce the students to the Computer system and Compact disk on interactive e-book learning.	Students will sit in front of computer system. They will switch on the computer system and insert the CD on interactive e-book learning package.	Computer system, Compact Disk on interactive e-book learning package
Meaning and importance of trade	20mins	The interactive learning package CD will lead the students through the: Meaning of trade. Importance of trade.	Students will click the mouse, and pause to read the text shown. They will also observe how interactive e-book is being formed and move to the next stage by clicking the mouse.	CD on Interactive e-book learning package and computer system.
Forms of trade	20mins	The interactive e-book learning package will show the students the forms of trade which are Home and Foreign trade	Students will click and pause to listen to the text. They will listen and ask questions when and where necessary.	CD on Interactive e-book learning package and computer system.
Aids to trades and role of customs and excise in foreign trade	20mins	The interactive e-book learning package will explain aids to trades and role of customs and excise in foreign trade	Students will click the mouse, and pause to listen and interact with the text shown and move to the next stage by clicking the mouse.	CD on Interactive e-book learning package and computer system.
	10mins	Teacher will listen to students' questions and discussion	Students will ask questions from teacher and discuss the topic with each other	CD on Interactive e-book learning package and computer system.

LESSON I

TOPIC: COMMERCE

SUB-TOPIC: TRADE

INSTRUCTIONAL AIDS: Computer System, CD on interactive e-book learning package, flash drive.

Behavioural Objectives: At the end of the lesson, the students should be able to:

i. put in plain words the meaning of trade;
ii. differentiate between home trade and foreign trade;
iii. Identify the services that make trade easy;
iv. Explain the process of identifying the role of customs and Excise in foreign trade.

LESSON II

TOPIC: COMMERCE

SUB-TOPIC: MARKET

Behavioural Objectives: At the end of the lesson, the students should be able to:

i. Explain the meaning of market and identify features of market;
ii. Distinguish between various types of market;
iii. Classified operations in the commodity market;
iv. Explain the process involve in the methods of buying and selling;

Procedure/Activities

Topic	Time	Teachers' activities	Students' activities	Materials
Meaning and features of market	10mins	The interactive e-book learning package will lead the students through the meaning and features of market.	Students will click and interact with the package	Computer system and Compact Disk on interactive e-book learning package
Types of market	20mins	The interactive e-book learning package will show the students the different types of market.	Students will click and listen to explanation on different types of market. They will listen and ask questions when and where necessary	CD on Interactive e-book learning package and computer system.
Classification of operations in the commodity markets	20mins	The interactive e-book learning package will lead the students through the classification with the aid of e-text.	Students will click and listen to the explanation on classification of operations in the commodity markets and interact with the package.	computer system and compact disk on interactive e-book learning package
Methods and procedures for buying and selling	20mins	The interactive e-book learning package will list and discuss the methods and procedures for buying and selling.	Students will click the mouse to read the text shown and ask questions when and where necessary before they move to the next stage by clicking the mouse.	CD on Interactive e-book learning package and computer system.
Discussion	10mins	Teacher will listen to students' questions and discussion	Students will ask questions from teacher and discuss the topic with each other	CD on Interactive e-book learning package and computer system.

LESSON III

TOPIC: COMMERCE

SUB-TOPIC: DISTRIBUTION

Behavioural Objectives: At the end of the lesson, the students should be able to:

I. identify the agents involved in the channel of distribution;
II. describe the direction of flow in the Distribution of chain,
III. illustrate the functions of each agent in the channel of distribution.

Procedure/Activities

Topic	Time	Teachers' activities	Students' activities	Materials
Distribution	10mins	The teacher will introduce the students to what distribution is all about through the aid of e-text	Students will click the mouse, and pause to read the text shown and move to the next stage by clicking the mouse	Computer system, Compact Disk on interactive e-book learning package on Commerce
Channel of distribution	20mins	The e-book learning package CD will be inserted to introduce the students to the channel of distribution; Producer, Wholesaler, Retailer, Consumer	Students will click and listen to the explanation of channel of distribution	CD on Interactive e-book learning package and computer system.
Functions of agents in the channel of distribution	20mins	The interactive e-book learning package will introduce the students to the functions of each agent with the aid of e-text.	Students will click and pause to listen to the e-texts. They will also ask questions when and where necessary.	CD on Interactive e-book learning package and computer system.
Discussion	20mins	Teacher will listen to students' questions and discussion	Students will ask questions from teacher and discuss the topic with each other	CD on Interactive e-book learning package and computer system.

APPENDIX III

TEACHERS' INSTRUCTIONAL GUIDE ON CONVENTIONAL TEACHING METHOD

LESSON I

CLASS: JSS 2

TOPIC: COMMERCE

SUB-TOPIC: TRADE

DURATION: 40 MINUTES

Behavioural Objectives: At the end of the lesson, the students should be able to:

i. Explain the meaning of trade;
ii. List the importance of trade;
iii. Describe forms of trade;
iv. Explain the services that make trade easy;
v. Explain the role of customs and Excise in foreign trade.

Reference Books:

a. Macmillan JSS Business Studies. Book 2, by Awoyokun A. A., Akangbe Folaranmi A. O., Arukwe O. N. and Abdullahi I. M.
b. Spectrum Business studies for Junior Secondary Schools Book 2 by Eno L. Inanga, Ebun C. Ojo, Adiole S. Okey and Ibrahim Aliyu.
c. The Basic Concepts of Business Studies for Upper Levels (7-9) Junior Secondary Schools by Offor, F. E. and Asunde P. N. U.

Previous Knowledge:

Students should have been taught the introduction to business studies and be able to identify the components of business studies.

Introduction:

1. What is Business Studies?
2. Identify the four components of Business Studies.

3. Briefly explain the four components of Business Studies.

Presentation:

Step I: Teacher will explain trade and it important with students.

Step II: Teacher will lead the students through the discussion on different forms of trade.

Step III: Teacher will explain the aids to trades and role of customs and excise in foreign trade.

Evaluation: Teacher asks the following questions from students.

a. What is trade?
b. What are the two forms of trade?
c. List five importance of trade.
d. Explain the role of customs and excise in foreign trade.
e. Who supervises the activities of the custom and excise department?

Assignment:

i. Explain the aids to trade
ii. What is Market?

TEACHERS' INSTRUCTIONAL GUIDE ON CONVENTIONAL TEACHING METHOD

LESSON II

CLASS: JSS 2

TOPIC: COMMERCE

SUB-TOPIC: MARKET

DURATION: 40 MINUTES

Behavioural Objectives: At the end of the lesson, the students should be able to:

i. Explain the meaning and features of market;
ii. Mention the difference types of market;
iii. Classified operations in the commodity market;
iv. Explain the methods of buying and selling;
v. Classified the procedure for buying and selling.

Reference Books:

a. Macmillan JSS Business Studies. Book 2, by Awoyokun A. A., Akangbe Folaranmi A. O., Arukwe O. N. and Abdullahi I. M.
b. Spectrum Business studies for Junior Secondary Schools Book 2 by Eno L. Inanga, Ebun C. Ojo, Adiole S. Okey and Ibrahim Aliyu.
c. The Basic Concepts of Business Studies for Upper Levels (7-9) Junior Secondary Schools by Offor, F. E. and Asunde P. N. U.

Previous Knowledge:

Students should have been introduced to trade and aids to trade.

Introduction:

1. What is trade?
2. List three aids to trade.

Presentation:

Step I: Teacher will explain the meaning and features of market with the students.

Step II: Teacher will lead the students through a diagram showing the difference types of market.

Step III: Teacher will lead students to classified operations in the commodity market.

Step IV: Teacher will explain the methods and procedures for buying and selling.

Evaluation: Teacher asks the following questions from students.

1. What is market?
2. Mention the different types of market
3. What are the features of market?
4. Classify operations in the commodity market.
5. With examples, describe the various methods for buying in the market.
6. Explain the use of the following documents in transacting business
   (i) Enquiry (ii) quotation (iii) price list (iv) delivery note (v) invoice (vi) statement of account (vii) order

Assignment:

i. What are the procedures for buying and selling?

TEACHERS' INSTRUCTIONAL GUIDE ON CONVENTIONAL TEACHING METHOD

LESSON III

CLASS: JSS 2

TOPIC: COMMERCE

SUB-TOPIC: DISTRIBUTION

DURATION: 40 MINUTES

Behavioural Objectives: At the end of the lesson, the students should be able to:

I. Define Distribution,
II. List the agents involved in the channel of distribution;
III. Explain the functions of each agent in the channel of distribution.

Reference Books:

a. Macmillan JSS Business Studies. Book 2, by Awoyokun A. A., Akangbe Folaranmi A. O., Arukwe O. N. and Abdullahi I. M.
b. Spectrum Business studies for Junior Secondary Schools Book 2 by Eno L. Inanga, Ebun C. Ojo, Adiole S. Okey and Ibrahim Aliyu.

Previous Knowledge:

Students should have been taught marketing and procedure for buying and selling in marketing.

Introduction:

1. explain marketing?
2. What are the procedure for buying and selling in marketing?

Presentation:

Step I: Teacher will explain with the students the meaning of distribution.

Step II: Teacher will list the agents involved in the channel of distribution.

Step II: Teacher will lead discussion on the functions of each agent in the channel of

distribution.

Evaluation: Teacher asks the following questions from students.

a. Define distribution.
b. Identify the agents involved in the channel of distribution.
c. State five functions of each agent in the channel of distribution.
d. Distinguish between a wholesaler and a retailer.
e. What does a retailer do for the wholesaler and his customers?

Assignment: Describe with the aid of a diagram the retail outlets. Give examples of each outlet**.**

APPENDIX IV

University of Ibadan, Ibadan

Faculty of Education

Department of Science and Technology Education

Business Studies Achievement Test (BAT)

Instruction: Kindly complete the informati0n required in section A, tick the correct answer in section B from options A-D.

Section A

School: …… Class: ……

Gender: Male [ ] Female [ ]

Secti0n B

1. The knowledge of book keeping is essential to find out the following, except
   (a) expenses of the competitors ☐ (b) value of goods purchased ☐
   (c) expenses of the business ☐ (d) financial position of the business ☐
2. When a buyer pays for the goods purchased from a seller, he is usually given
   (a) receipt ☐ (b) balance ☐ (c) credit note ☐ (d) invoice ☐
3. Mr. Yemi bought 15 cartons of biscuits at #500 per carton and paid #50 to transport the goods to his shop. He later sold the 15 cartons of biscuits at #600 per carton how much was his profit? (a) #1150 ☐ (b) #1250 ☐ (c) #1450 ☐
   (d) #1350 ☐
4. Olalude sets aside a sum of #50,000 for business purposes, this amount is referredt0 as (a) capital ☐ (b) loan ☐ (c) expenditure ☐ (d) profit ☐
5. When thinking of setting up a small business, attention must be paid to the following except (a) nearness to bank and post office ☐ (b) convenience to customers ☐
   (c) future expansion ☐ (d) location of business ☐
6. When goods are produced but not needed for immediate consumption, such goods are stored where? (a) Space bar ☐ (b) room ☐ (c) bank-house ☐
   (d) warehouse ☐
7. Which of the following is not true? (a) the consumer is the last stage of distribution ☐
   (b) the manufacturer produces goods ☐ (c) the wholesaler packages goods and labels them ☐ (d) the retailer also produces goods ☐

8. In the process whereby goods and services produced are made to reach the customers is (a) Contribution ☐ (b) Privatization ☐ (c) Distribution ☐ (d) Distillation ☐
9. The purpose of establishing a business is (a) make loss ☐ (b) break-even ☐ (c) make profit ☐ (d) for business-sake ☐
10. Land is torent as capital isto (a) Rent age ☐ (b) interest ☐ (c) wages ☐ (d) states in Nigeria ☐
11. The two types of trade according to Commerce are: (a) Home trade and Local trade ☐ (b) foreign trade and International trade ☐ (c) Home trade and Foreign Trade ☐ (d) Trade and Foreign trade ☐
12. All these are agents involved in distribution except (a) Producers ☐ (b) wholesaler ☐ (c) retailer ☐ (d) hawker ☐
13. Which of this is an important link between production and consumption (a) Distribution ☐ (b) Production ☐ (c) Consumption ☐ (d) hawker ☐
14. What does a service of doctors to patients indicate? (a) General services ☐ (b) Good services ☐ (c) Personal services ☐ (d) Commercial services ☐
15. The aspect of commerce that deals with the storing of goods for further distribution is (a) Warehousing ☐ (b) Transportation ☐ (c) Communication ☐ (d) Advertising ☐
16. In the Manufacturing industry, raw materials are acquired and processed into (a) Semi- finished goods ☐ (b) Finishedgoods ☐ (c) Capitalgoods ☐ (d) Perishable goods ☐
17. Which of this is an example of Coal mining (a) Constructive industry ☐ (b) extractive industry ☐ (c) direct service ☐ (d) tertiary production ☐
18. The protection made against loss or damage to property or life which may arise from death, accident, theft, fire, etc is called (a) production ☐ (b) Insurance ☐ (c) fire insurance ☐ (d) security ☐
19. Goods produced for use in the production of other goods and services are known as (a) Purchase goods ☐ (b) Consumer goods ☐ (c) Retail goods ☐ (d) Capital goods ☐
20. Whichof the followingaids totrade is utilized when peopleleave their places of residence to another place or country for recreation or holiday? (a) Advertising ☐ (b) Communication ☐ (c) Tourism ☐ (d) Transportation ☐
21. Anytime a new product is out and it's made known to the entire public, what have

taking place? (a) Advertising ☐ (b) Transportation ☐ (c) commerce ☐ (d) Business ☐

22. All human efforts that contribute or are directed towards production. Is known as (a) Labour ☐ (b) Capital ☐ (c) Entrepreneur ☐ (d) Land ☐

23. Whichof thefollowing is not feature of capital (a) Capital is made by man ☐ (b) It can change form ☐ (c) It is a free gift of nature ☐ (d) The reward of capital is interest ☐

24. Whichof thefollowing isnot true about entrepreneur? (a) Provision of capital ☐ (b) Risk bearing ☐ (c) Decision making ☐ (d) hawking ☐

25. The production that entails the conversion of raw materials or semi-completed products to their final forms that consumer will accept is (a) Tertiary production ☐ (b) Secondary production ☐ (c) Primary production ☐ (d) Semi-production ☐

26. The two aspects of distribution are (a) Production and Consumption ☐ (b) Storage and transportation ☐ (c) Distribution and storage ☐ (d) Transportation and consumption ☐

27. …… and …… are used to produce other goods and services (a) Capital goods and services ☐ (b) Consumer goods and services ☐ (c) Retailer goods and services ☐ (d) Producer goods and services ☐

28. Systematicrecording of business transaction in manner that financial position will be known at any given time is known as (a) Accounting ☐ (b) Book transaction ☐ (c) Book keeping ☐ (d) Booking ☐

29. Seun go into a store and buy a coke from Tope. If this is an example of trade, so what are they trading? (a) Money for the Coke ☐ (b) Money for the Car ☐ (c) Coke for the Cake ☐ (d) Money for the Cake ☐

30. Which of these is not true about labour (a) It is supplied by man ☐ (b) It is variable in supply ☐ (c) It is mobile ☐ (d) The reward of labour is profit ☐

ANSWERS TO BUSINESS STUDIES ACHIEVEMENT TEST (BAT)

1. A
2. A
3. C
4. A
5. A
6. D
7. D
8. C
9. C
10. B
11. C
12. D
13. A
14. C
15. A
16. B
17. B
18. B
19. D
20 D
21. A
22. A
23. C
24. D
25. A
26. B
27. A
28. B
29. A
30. D

APPENDIX V

UNIVERSITY OF IBADAN

Department of Science and Technology Education

C0mputer Skills Observation Rating Scale (CSORS)

This is a competency assessment tool to measure students' computer skills in using Infographics and E-book instructional packages.

Observer's Name: …… Date: ……

Criteria	**Excellent = 4**	**Good = 3**	**Developing = 2**	**Minimal = 1**	**Score**
Computer Operations	Switches on the computer / shuts down without help or support.	Switches on the computer / shuts down with minimal support.	Switches on the computer / shuts down with a lot of support.	Participants is unable to switch on / shut down the computer	
Use the mouse to Right or Left click and Double Click	Able to use the mouse to Right or Left click and Double Click without instruction.	Able to use the mouse to Right or Left click and Double click with minimal instruction.	Able to use the mouse to Right or Left click and Double Click with a lot of instruction.	Unable to use the mouse.	
Identify and use computer peripherals: USB ports CD-ROM/DVD Player and other ports	Able to identify and use computer peripherals without instruction.	Able to identify and use computer peripherals with minimal instruction.	Able to identify and use computer peripherals with a lot of instruction.	Unable to identify and use computer peripherals.	
Use the mouse to open the package file.	Able to open the package file without instruction	Able to open the package file with minimal instruction.	Able to open the package file with a lot of instruction.	Unable to open the package file.	
Use the mouse to select the section of the package to be interacted with.	Able to select the section of the package to be interacted with without instruction	Able to select the section of the package with minimal instruction.	Able to select the section of the package with a lot of instruction.	Unable to select the section of the package.	
Use the mouse to click on the question	Able to click on the question button and interact with the	Able to click on the question button and interact with the activities	Able to click on the question button and interact with the	Unable to click on the question button and	

button and interact with the activities.	activities without instruction.	with minimal instruction.	activities with a lot of instruction.	interact with the activities	
Use the mouse to click the restart button to review again or click the end button to quit the package.	Able to click the restart button to re-view again or click the end button to quit the package without instruction.	Able to click the restart button to re-view again or click the end button to quit the package with minimal instruction.	Able to click the restart button to re-view again or click the end button to quit the package with a lot of instruction.	Unable to click the restart button to re-view again or click the end button to quit the package.	

APPENDIX VI

University of Ibadan, Ibadan

Faculty of Education

Department of Science and Education Technology

Computer Anxiety Questionnaire (CAQ)

Kindly complete this questionnaire with all sense of sincerity, as this is needed for the success of the study on students' computer anxiety. All information provided will be kept confidentially. Thank you.

_____

Signature and Date

Instruction: Please read the following statements and indicate your opinion by ticking (√) only one option that best represents your opinion. Please note that SA= Strongly Agree, A= Agree, D=Disagree and SD= Strongly Disagree

Note: The response category is as follows: SA: Strongly Agree (4), A: Agree (3), D: Disagree (2), SD: Strongly Disagree (1)

S/N	ITEMS	SA	A	D	SD
1	I feel insecure about my ability to print documents using a computer				
2	Every student has some level of computer anxiety				
3	The challenge of learning about computers is exciting				
4	Students feel uncomfortable at the sight of computer.				
5	Learning to operate computers is like learning any new skill, the more students practice, the better they bec0me				
6	Students feel computers are not necessary in both educational and work settings.				
7	If given the opportunity, students would like to learn how to use computers to carry				

	out classroom activities.				
8	Only brilliant students can understand all the special keys contained on most computer keyboards.				
9	I feel at ease when it comes to inserting tables in documents.				
10	I have difficulty in understanding some technical aspects of computers.				
11	I am worried that if I begin to use computer to learn, I will become dependent upon it and lose some of my reasoning skills				
12	I hesitate to use a computer for fear of making mistakes I cannot correct				
13	Any student can learn to use a computer if he/she is patient.				
14	Computers are some what intimidating to students.				
15	It scares me whenever I think that I could cause the computer to destroy a large amount of information by hitting the wrong key.				
16	Student feel that understanding computers will make them a m0re pr0ductive individual				

Adapted from Heinssen, R.K., Glass, C.R., and Knight, L.A. (1987).Assessing Computer Anxiety: Development and Validati0n of the Computer Anxiety Rating Scale. Computers in Human Behavior

APPENDIX VII

University of Ibadan, Ibadan

Faculty of Educati0n

Department of Science and Technology Education

STUDENTS' ATTITUDE TOWARDS BUSINESS STUDIES (SATB)

Dear Respondent,

This study is sought to determine how multimedia based instructional strategies such as infographic and e-book presentation mode can enhance students' learning outcomes and influence students' attitude towards business studies The purpose of this inventory is to let students' tell us what they feel about business studies and this questionnaire is necessary to obtain data from JSS2 students on their Attitude to Business studies; your cooperation is there for erequired to assist the researcher in achieving success in this study. Kindly complete this questionnaire with every sense of honesty

All information provided will be kept confidentially.

Thank you.

Section A

(Kindly complete section A as appropriate)

School: ……..…… Class: ……

Gender: Male [ ] Female [ ]

Section B

Instruction: *Please read the following statements and indicate your opinion by ticking (√) only <u>one</u> option that best represents your opinion*. Please note that SA= Str0ngly Agree, A= Agree, D=Disagree and SD= Strongly Disagree

S/ N	ITEM	S A	A	D	S D
1.	Students are always eager to attend Business studies class				
2.	Students are n0t always sactive and they d0 n0t usually participate in Business studies class				
3.	Business studies class can never be b0ring t0 students				
4.	I 0ffer business studies because I have n0 ch0ice				

5.	Students response to Business studies class is high because it deals with how to start and operate a business				
6.	Students interestis low in Business studies because itinvolves too much writing and reading				
7.	Students like Business studies becauseit is easyto read and pass with littleor noteaching				
8	I like my Business studies class so much that I look forward to studying more Business related courses in the future.				
9	Students study Business studies just to pass examination.				
10	I am satisfied with my performance in the Business studies subject.				
11	Textbooks on Business studies are easy to understand				
12	Our Business studies teacher teaches very well				
13	Our Business studies teacher is too strict				
14	I gain nothing in studying Business studies				
15	Students do not get anxious when they have to answer a question in their Business studies class.				
16	I did not develop interest in Business studies because of the methods my teacher do use to teach Business studies subject.				
17	Studying Business studies gives students good feelings.				
18	Students do not like studying Business studies.				
19	Students choice of Business studies as a subject was based on the influence of their parents				
20.	I have little interest in studying Business studies.				

APPENDIX VIII

University of Ibadan, Ibadan

Faculty of Education

Department of Science and Technology Education

STUDENTS' ENTREPRENEURIAL INTENTION QUESTIONNAIRE

Dear Respondent,

This study is sought to determine how multimedia based instructional packages such as infographic and e-book can enhance students' learning outcomes and stimulate students' entrepreneurial intention. The purpose of this inventory is to let students' tell us their likelihood of starting a business and this questionnaire is necessary to obtain data from JSS2 students on their entrepreneurial intention; your cooperation is therefore required to assist the researcher in achieving success in this study. Kindly complete this questionnaire with every sense of honesty

All information provided will be kept confidentially.

Thank you.

_____

Signature and Date

Section A

(Kindly complete section A as appropriate)

School: ……..…… Class: ……

Gender: Male [ ] Female [ ]

Section B

Instruction: *Please read the following statements and indicate your opinion by ticking (√) only <u>one</u> option that best represents your opinion*. Please note that SA= StronglyAgree, A= Agree, D=Disagree and SD= Strongly Disagree

S/ N	I TEMS	S A	A	D	S D
1	I knowall aboutthe practical details needed to start a business				
2	I have a very low intention of ever starting a				

	business				
3	Being an entrepreneur implies more advantages than disadvantages to me				
4	It would be very difficult for me to develop a business idea.				
5	Being an entrepreneur would give me great satisfaction				
6	If I tried to start a business, I would have a high chance of being successful				
7	I am determined to create a business venture in the future.				
8	Amongst various options, I would rather be anything but an entrepreneur				
9	If I had the opportunity and resources, I would love to start a business				
10	I have serious doubts about ever starting my own business				
11	The conventional method of teaching adopted by my teacher has hindered my entrepreneurial dreams.				
12	I am able to control the creation process of a new business				
13	I will make every effort to start and run my own business				
14	I know I would be completely unable to start a business				
15	A career as an entrepreneur is totally unattractive to me				
16	Starting a firm and keeping it viable would be easy forme				

APPENDIX IX

University of Ibadan, Ibadan

Faculty of Education

Department of Science and Technology Education

Multimedia Package Evaluation Checklist (MPEC)

Dear Respondents,

This evaluation questionnaire is to help in improving the delivery of this subject. Please kindly tick (✓) and make your candid opinion/suggestions about the package in order to make it better.

The questions would be rated on the following scale:

4= Strongly Agreed (SA)

3= Agreed (A)

2= Disagreed (D)

1= Strongly Disagreed

SECTION A.

PACKAGE FUNTIONALITY AND NAVIGATION

S/No	Questions	Strongly Agreed	Agreed	Disagreed	Strongly Disagreed
1.	The multimedia package operates flawlessly				
2.	The pace of the package is appropriate				
3.	The navigation bars makes me locate and access any particular information easily				
4.	The navigation bars help me establish my current position within the programme				
5.	The programme helps me to purposely move between related information.				
6.	I can easily exit, go forward				

	and backward in the programme.				
7.	The multimedia package makes it easier to go to the "main menu" or "glossary" if required.				
8.	The graphics in the package comes up easily at the click of the icons.				

INTERFACE AND GRAPHIC DESIGN REVIEW

S/No	Questions	Strongly Agreed	Agreed	Disagreed	Strongly Disagreed
1.	The screen display design is appropriate				
2.	Color is appropriately used in the package				
3.	The use of colors in the package makes it unattractive				
4.	The screen displays are easy to understand				
5.	The amount of information in each frame is appropriate.				
6.	The front size of text is legible and readable.				
7.	The animation is appropriate for the content.				
8.	The animation are well produced, clear and meaningful.				
9.	The screen displays makes the programme confusing.				
10.	Graphics makes the text contents understandable				
11.	The interface makes the multimedia easy to use.				
12.	There is consistency in the display of icons of the multimedia package				

13.	The size and spacing of texts are well structured.				
14.	The graphics are relevant to the content				
15.	The animations provide relevant explanation of the content				
16.	The screen layout, graphics, frames and navigation bars are well coordinated				

INTERACTIVICTY AND EASE OF USE

S/No	Questions	Strongly Agreed	Agreed	Disagreed	Strongly Disagreed
1.	Feedback questions of the multimedia limits the chance of students not concentrating.				
2.	The multimedia package provides adequate feedback to responses				
3.	The interactivity helps me to retain knowledge easily.				
4.	The interaction helps remediation of incorrect knowledge to be addressed.				
5.	The use of feedback questions allow for individualized instruction.				
6.	The interaction in the multimedia encourages deeper processing of learning materials.				
7.	The interaction helps me to reflect on the content of instruction.				
8.	The ease of use and interactivity of the multimedia motivate me.				

9.	The interactivity of the multimedia is not well structured.				
10.	The interactivity in the multimedia is complex.				

INFOGRAPHICS EVALUATION CHECKLIST

Aspect	S/N	Principles	Yes	No
Information	1	The title is clear		
	2	The title is meaningful and fits the content		
	3	The information is accurate		
	4	The information is clear		
	5	The information is concise		
	6	The information is presented using correct grammar and spelling		
Organization and Aesthetics	7	The information flows in a coherent and organized manner		
	8	The amount of space is appropriate		
	9	The text contrasts with the background and could be easily read		
	10	Graphics and images are related and clear		
	11	Lines,colors, fonts,and shapes are used effectively		
	12	Elements of the infographics are consistent and appropriate throughout		
	13	The infographic shows simplicity		
	14	The infographic shows creativity		
Utility	15	The infographic is informative and teaches something		

SECTION B

TEACHER'S COMMENTS OF THE PACKAGE

Please kindly write, comment and make suggestions on each aspect of the multimedia packages to improve the package. An additional paper for comments is attached to this questionnaire for comments.

PROGRAMME FUNCTIONALITY REVIEW:

INTERFACE AND GRAPHIC DESIGN REVIEW:

PROGRAMME INTERACTIVITY AND EASE OF USE:

E-BOOK WORKSHEET

Scenario Title: …….

Instruction: Please respond to the class activities within the scenario in this worksheet. It is important that every students participates in these activities as it will help you to be properly engaged in the learning content.

Class Activity 1 A:

……

……

……..**Cl**

ass Activity 1 B:

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Class Activity 2 A:

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Class Activity 2 B:

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Class Activity 3 A:

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Class Activity 3 B:

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Class Activity 4 A:

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Class Activity 4 B:

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Class Activity 5 A:

…… …

Class Activity 5 B:

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SCREENSHOTS OF THE E-BOOK INSTRUCTIONAL PACKAGE

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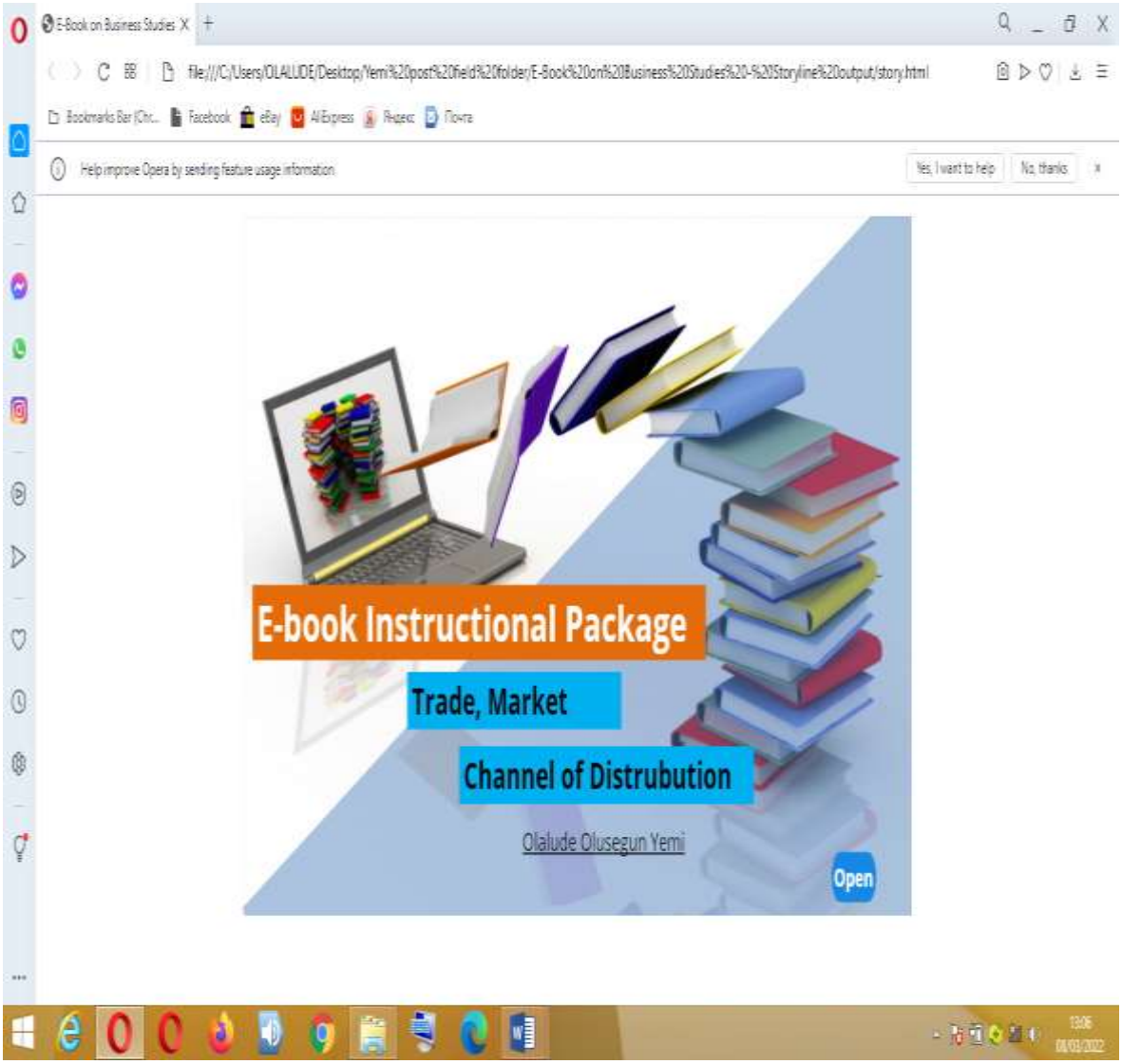
LOYOLA COLLEGE, IBADAN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Trade, Market
Channel of Distrubution
Olalude Olusegun Yemi
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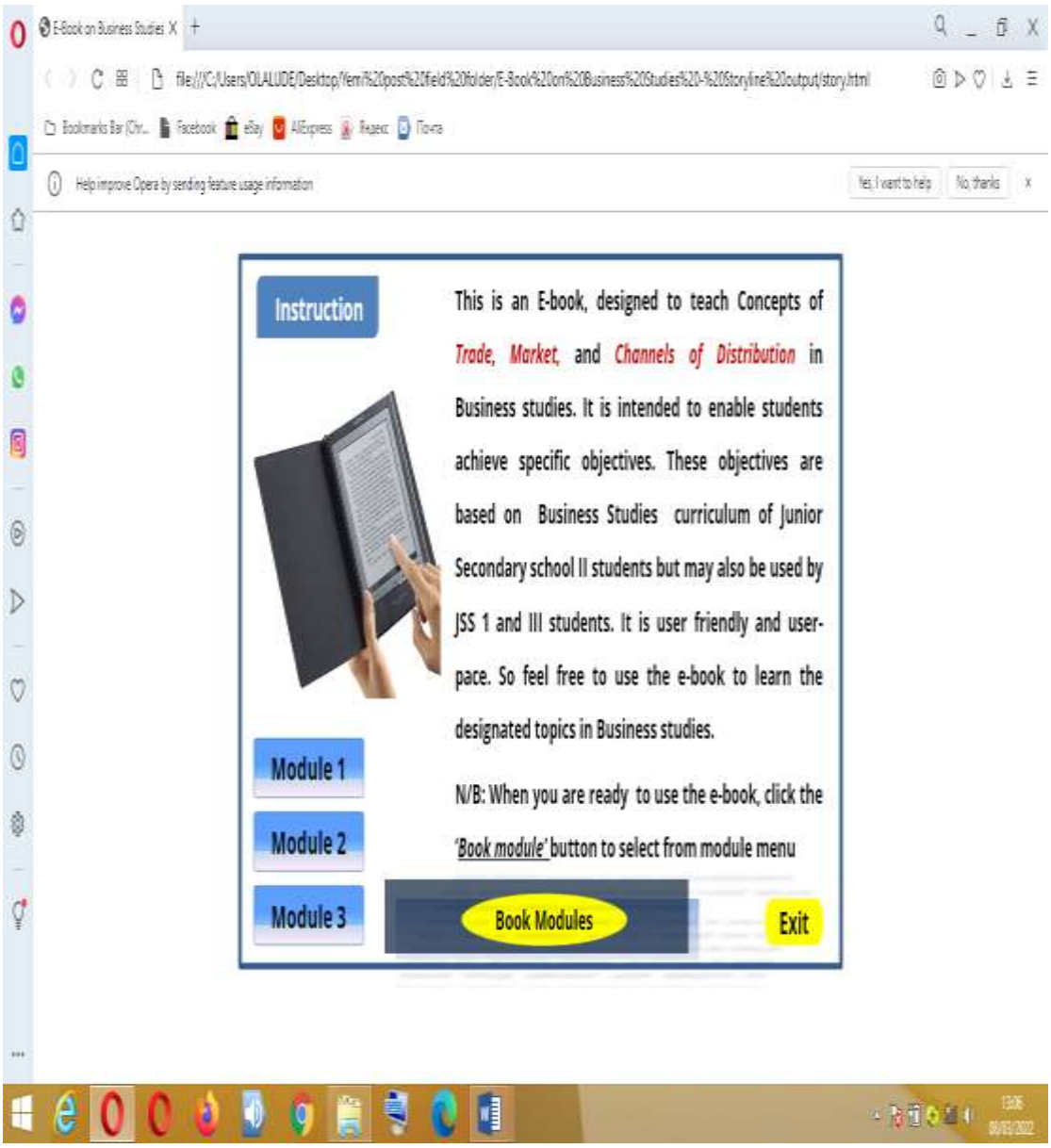
E-Book on Business Studies
Instruction
This is an E-book, designed to teach Concepts of Trade, Market, and Channels of Distribution in Business studies. It is intended to enable students achieve specific objectives. These objectives are based on Business Studies curriculum of Junior Secondary school II students but may also be used by JSS 1 and III students. It is user friendly and user-pace. So feel free to use the e-book to learn the designated topics in Business studies.
Module 1
Module 2
Module 3
N/B: When you are ready to use the e-book, click the 'Book module' button to select from module menu
Book Modules
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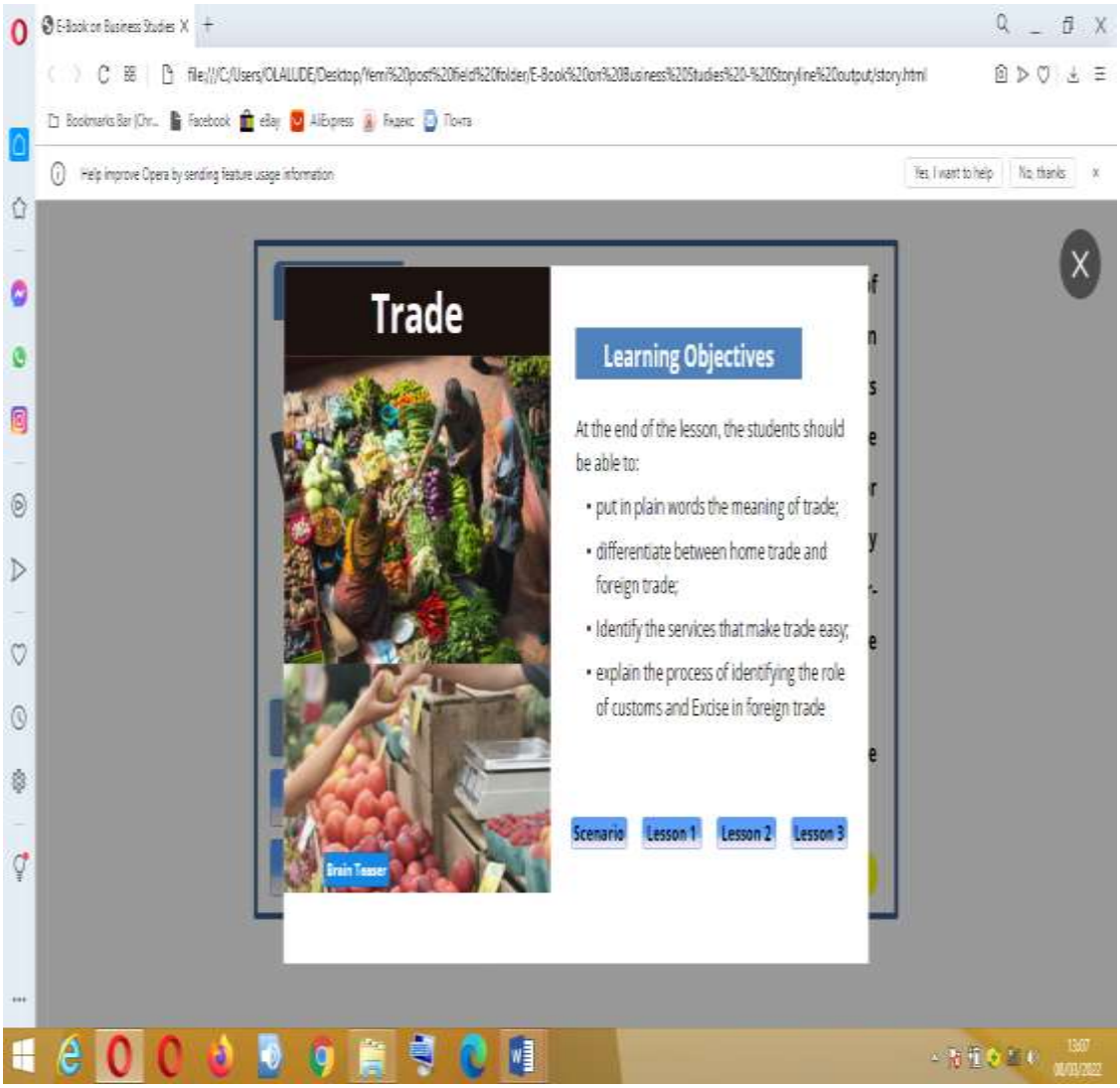
E-Book on Business Studies X
Trade
Learning Objectives
At the end of the lesson, the students should be able to:
• put in plain words the meaning of trade;
• differentiate between home trade and foreign trade;
• Identify the services that make trade easy;
• explain the process of identifying the role of customs and Excise in foreign trade
Scenario
Lesson 1
Lesson 2
Lesson 3
Brain Teaser

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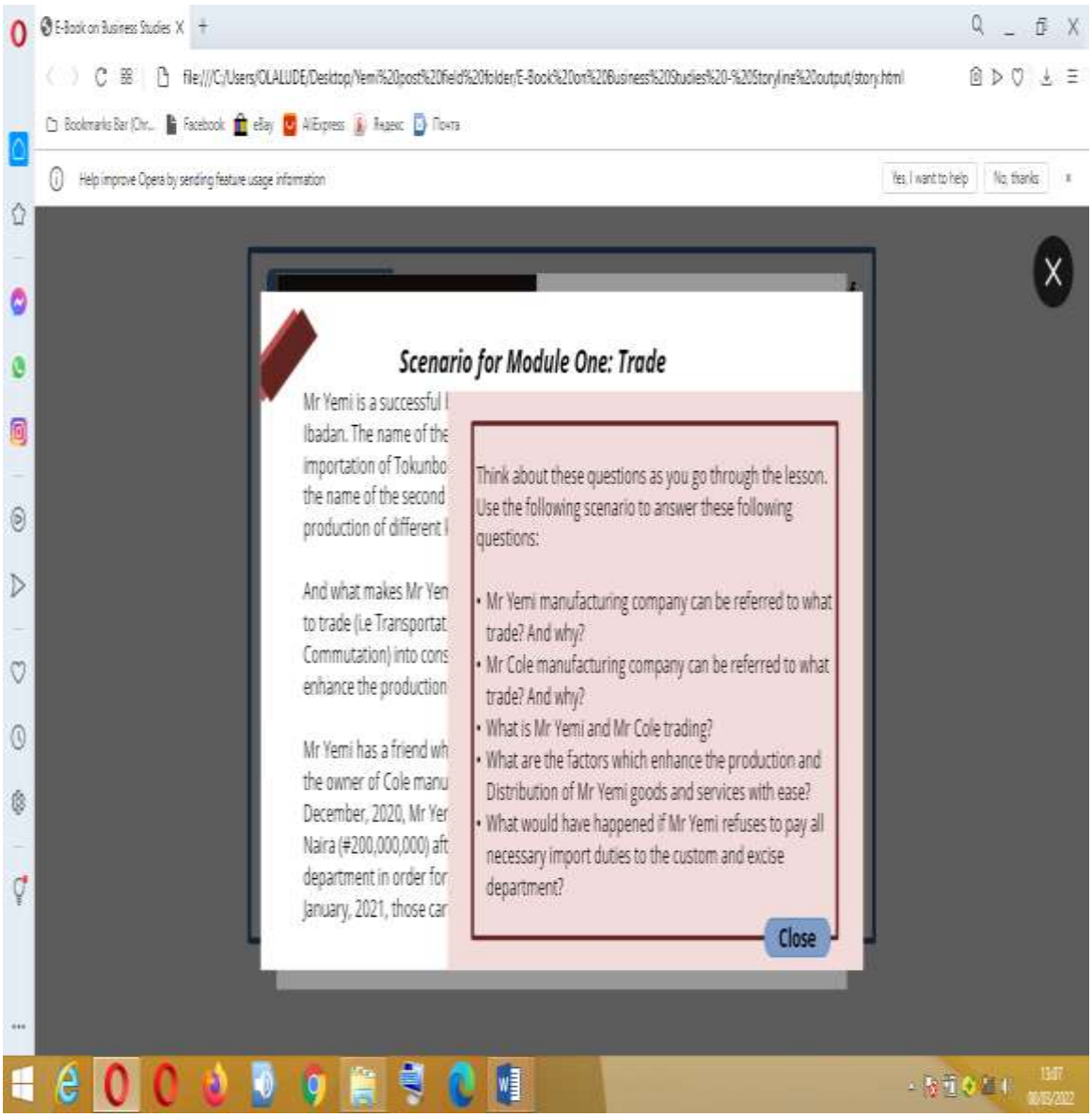
Scenario for Module One: Trade
Mr Yemi is a successful businessman who lives in Ibadan. He owns two companies in Ibadan. The name of the first company is Yemi Motors Limited which deals with the importation of Tokunbo cars from the United State of America for sales in Nigeria while the name of the second company is Yemi Manufacturing Company which deals with the production of different kinds of furniture within the country (Nigeria).
And what makes Mr Yemi a successful businessman was the fact that he put all the aids to trade (i.e Transportation, Banking, Insurance, Warehousing, Advertising, and Commutation) into consideration before setting up his businesses and these helped enhance the production and distribution of his goods and services with ease.
Mr Yemi has a friend whose name is Mr Cole from the United State, a car dealer and also the owner of Cole manufacturing company based in the United State. On the 21st of December, 2020, Mr Yemi ordered ten cars from Mr Cole worth Two Hundred Million Naira (₦200,000,000) after paying all necessary import duties to the custom and excise department in order for them not to impound those cars on arrival. On the 20th of January, 2021, those cars arrived Nigeria and was handed over to Mr Yemi.
Continue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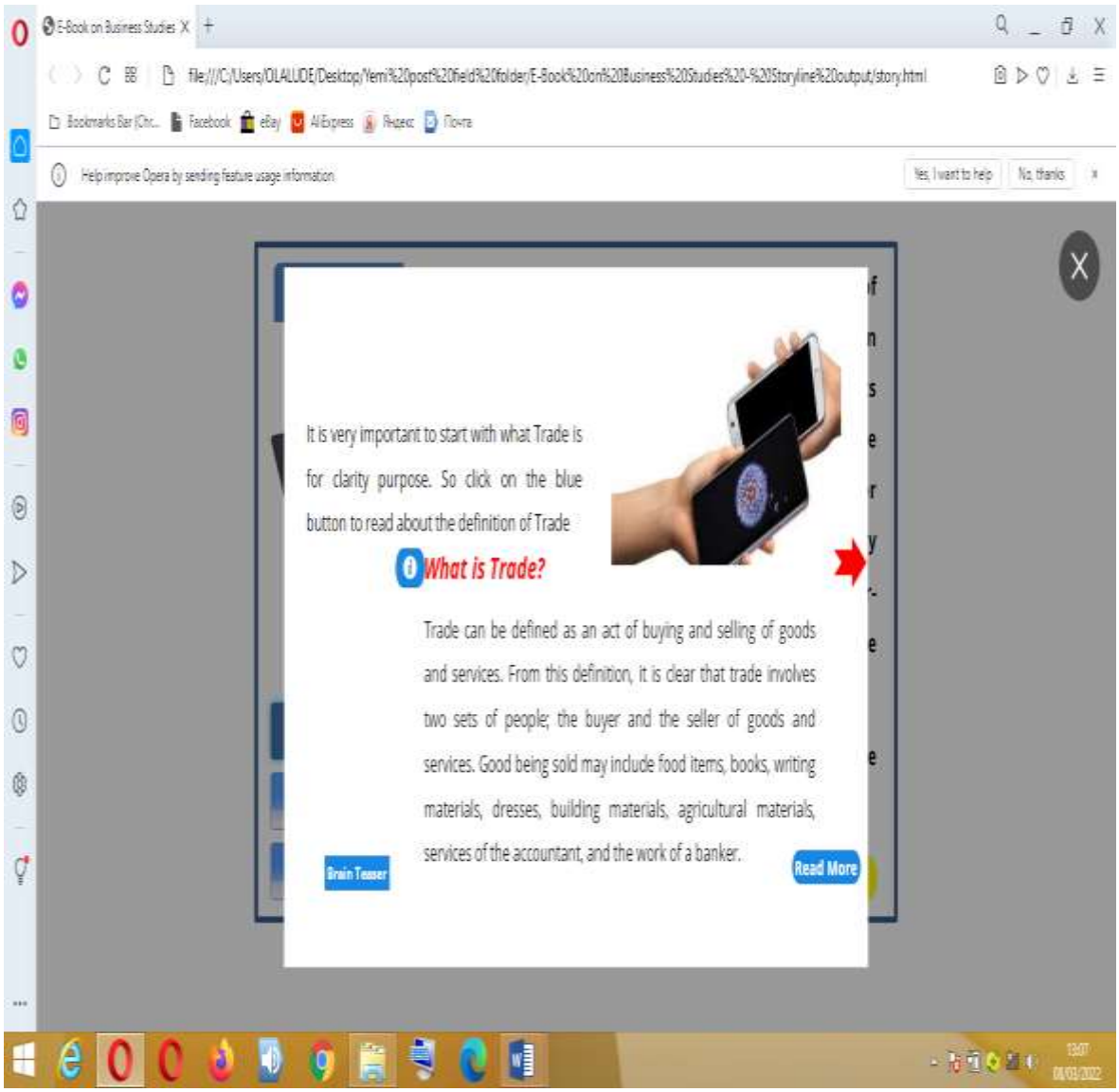
Scenario for Module One: Trade
Mr Yemi is a successful
Ibadan. The name of the
importation of Tokunbo
the name of the second
production of different
And what makes Mr Yem
to trade (Le Transportat
Commutation) into cons
enhance the production
Mr Yemi has a friend wh
the owner of Cole manu
December, 2020, Mr Yer
Naira (₦200,000,000) aft
department in order for
January, 2021, those car
Think about these questions as you go through the lesson. Use the following scenario to answer these following questions:
• Mr Yemi manufacturing company can be referred to what trade? And why?
• Mr Cole manufacturing company can be referred to what trade? And why?
• What is Mr Yemi and Mr Cole trading?
• What are the factors which enhance the production and Distribution of Mr Yemi goods and services with ease?
• What would have happened if Mr Yemi refuses to pay all necessary import duties to the custom and excise department?
Close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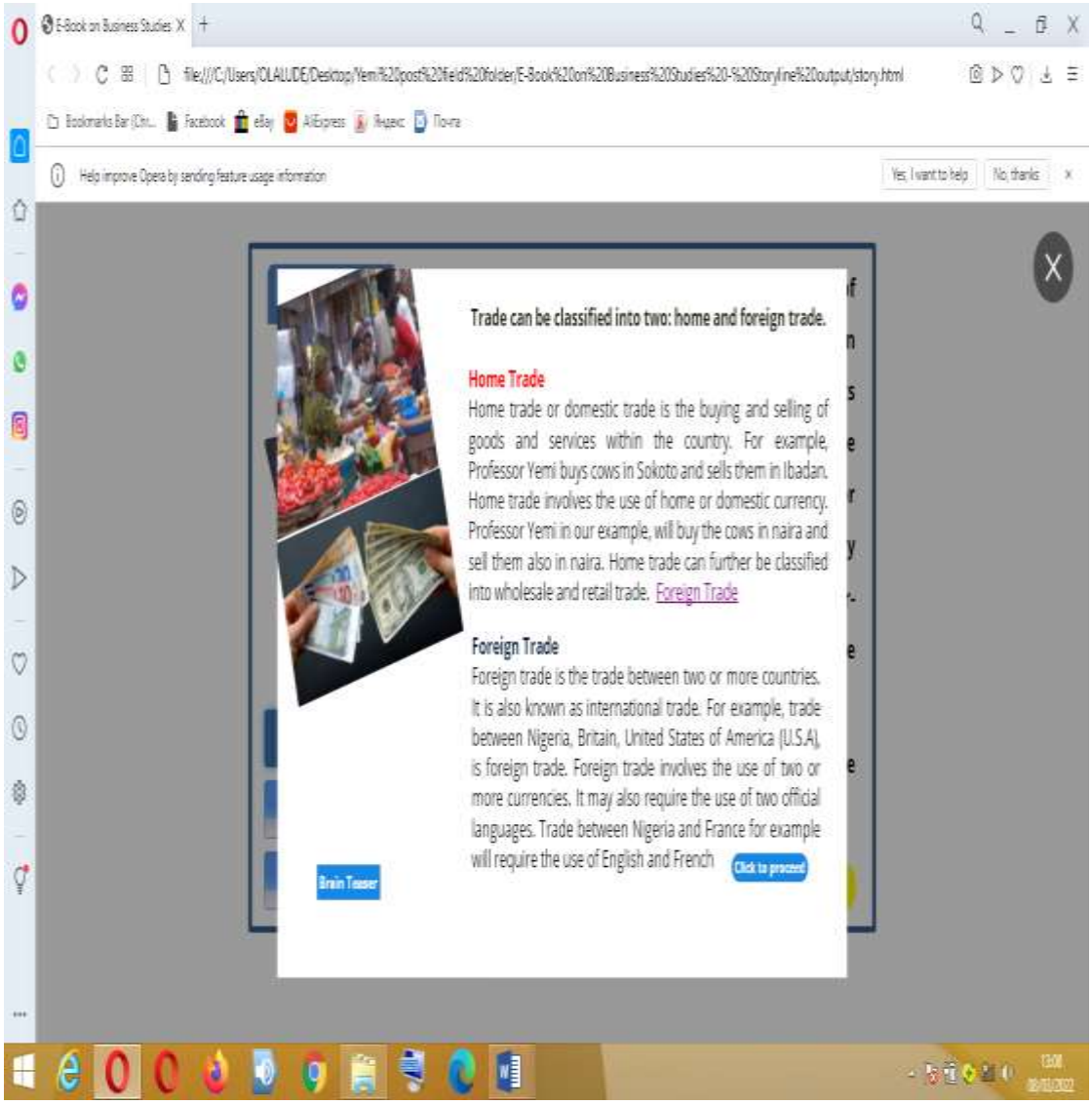
It is very important to start with what Trade is for clarity purpose. So click on the blue button to read about the definition of Trade
What is Trade?
Trade can be defined as an act of buying and selling of goods and services. From this definition, it is clear that trade involves two sets of people; the buyer and the seller of goods and services. Good being sold may include food items, books, writing materials, dresses, building materials, agricultural materials, services of the accountant, and the work of a banker.
Brain Teaser
Read More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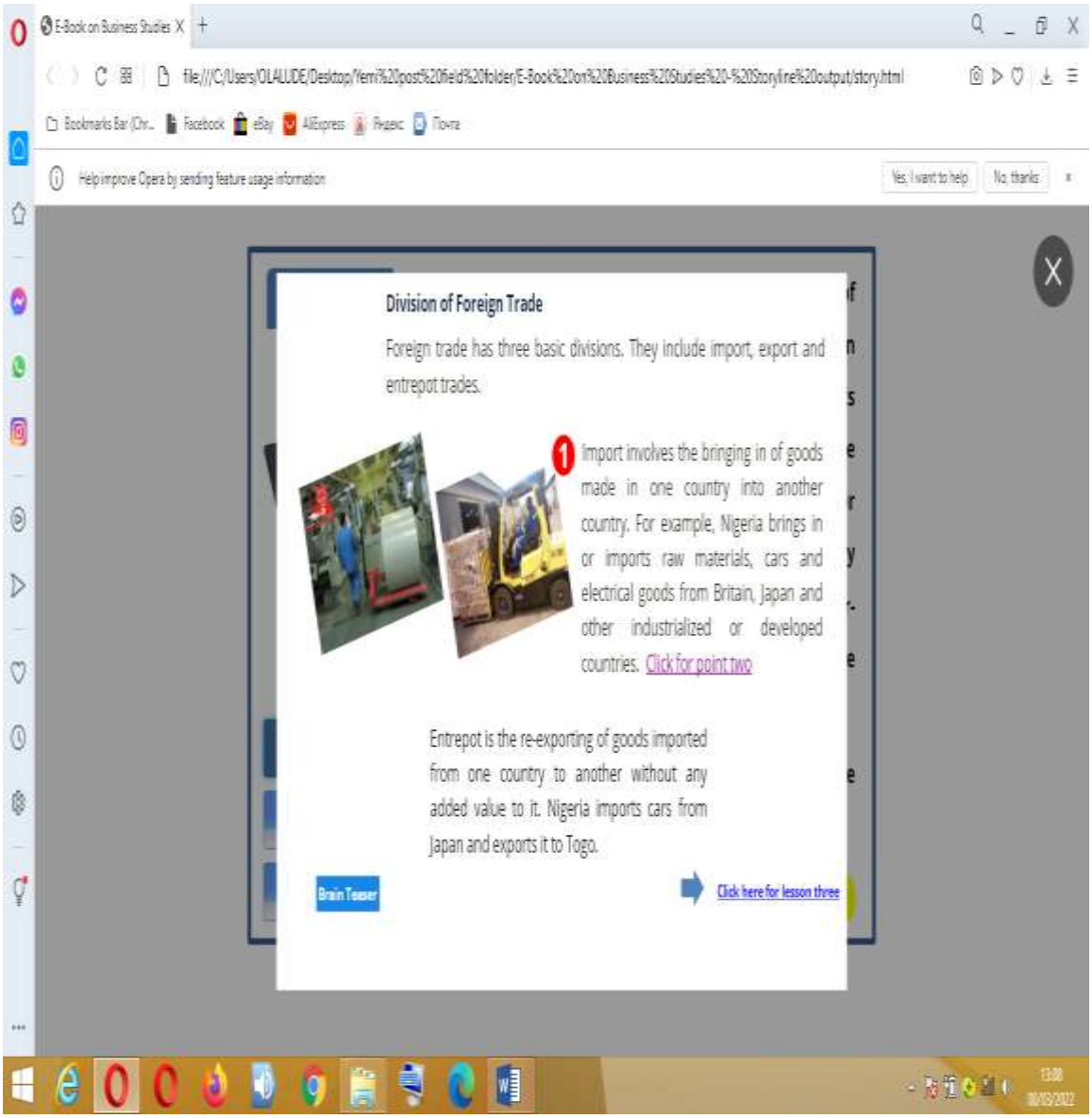
Trade can be classified into two: home and foreign trade.
Home Trade
Home trade or domestic trade is the buying and selling of goods and services within the country. For example, Professor Yemi buys cows in Sokoto and sells them in Ibadan. Home trade involves the use of home or domestic currency. Professor Yemi in our example, will buy the cows in naira and sell them also in naira. Home trade can further be classified into wholesale and retail trade. Foreign Trade
Foreign Trade
Foreign trade is the trade between two or more countries. It is also known as international trade. For example, trade between Nigeria, Britain, United States of America (U.S.A), is foreign trade. Foreign trade involves the use of two or more currencies. It may also require the use of two official languages. Trade between Nigeria and France for example will require the use of English and French
Click to proceed
Brain Teaser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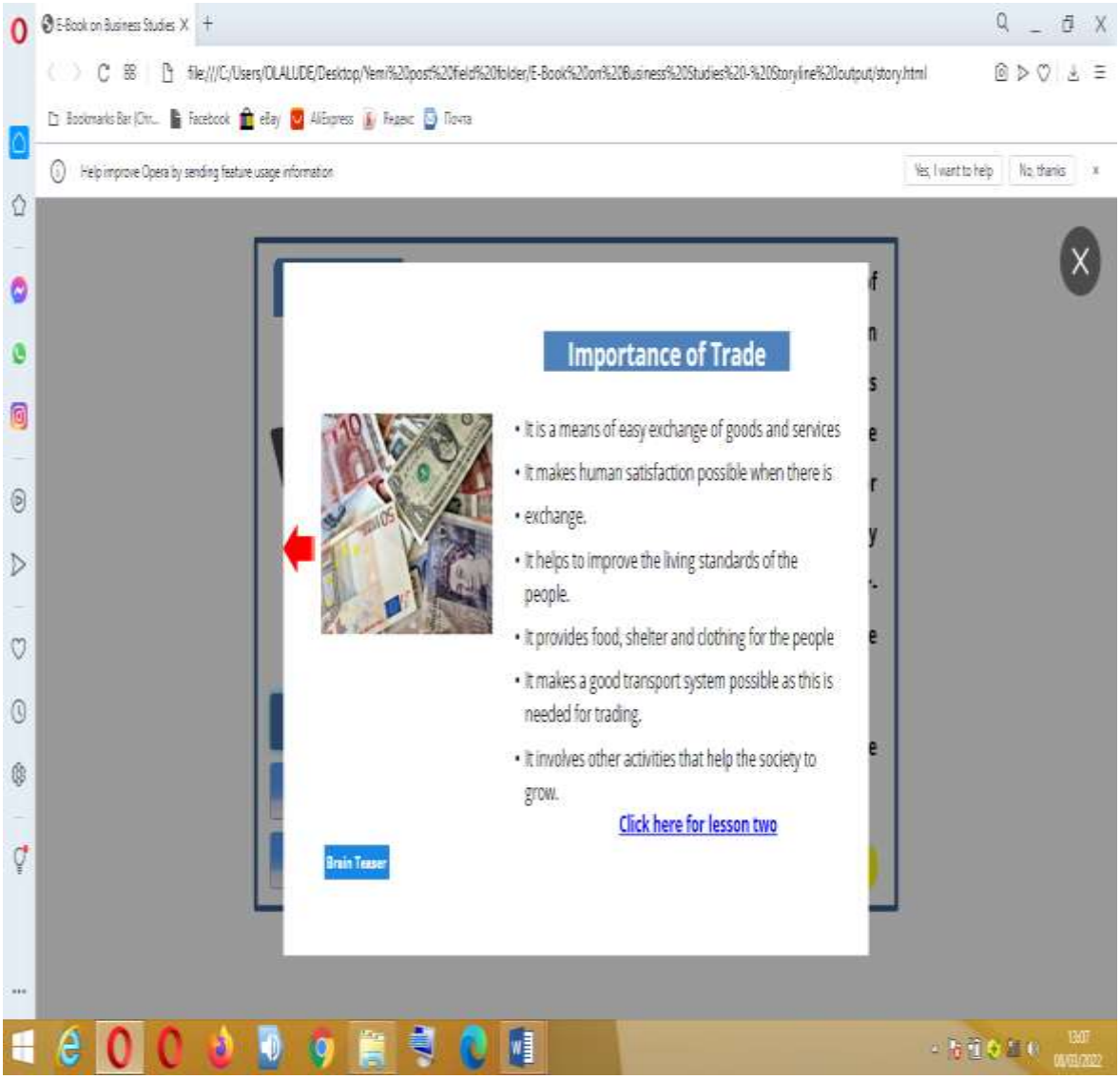
Division of Foreign Trade
Foreign trade has three basic divisions. They include import, export and entrepot trades.
1
Import involves the bringing in of goods made in one country into another country. For example, Nigeria brings in or imports raw materials, cars and electrical goods from Britain, Japan and other industrialized or developed countries. Click for point two
Entrepot is the re-exporting of goods imported from one country to another without any added value to it. Nigeria imports cars from Japan and exports it to Togo.
Brain Teaser
Click here for lesson three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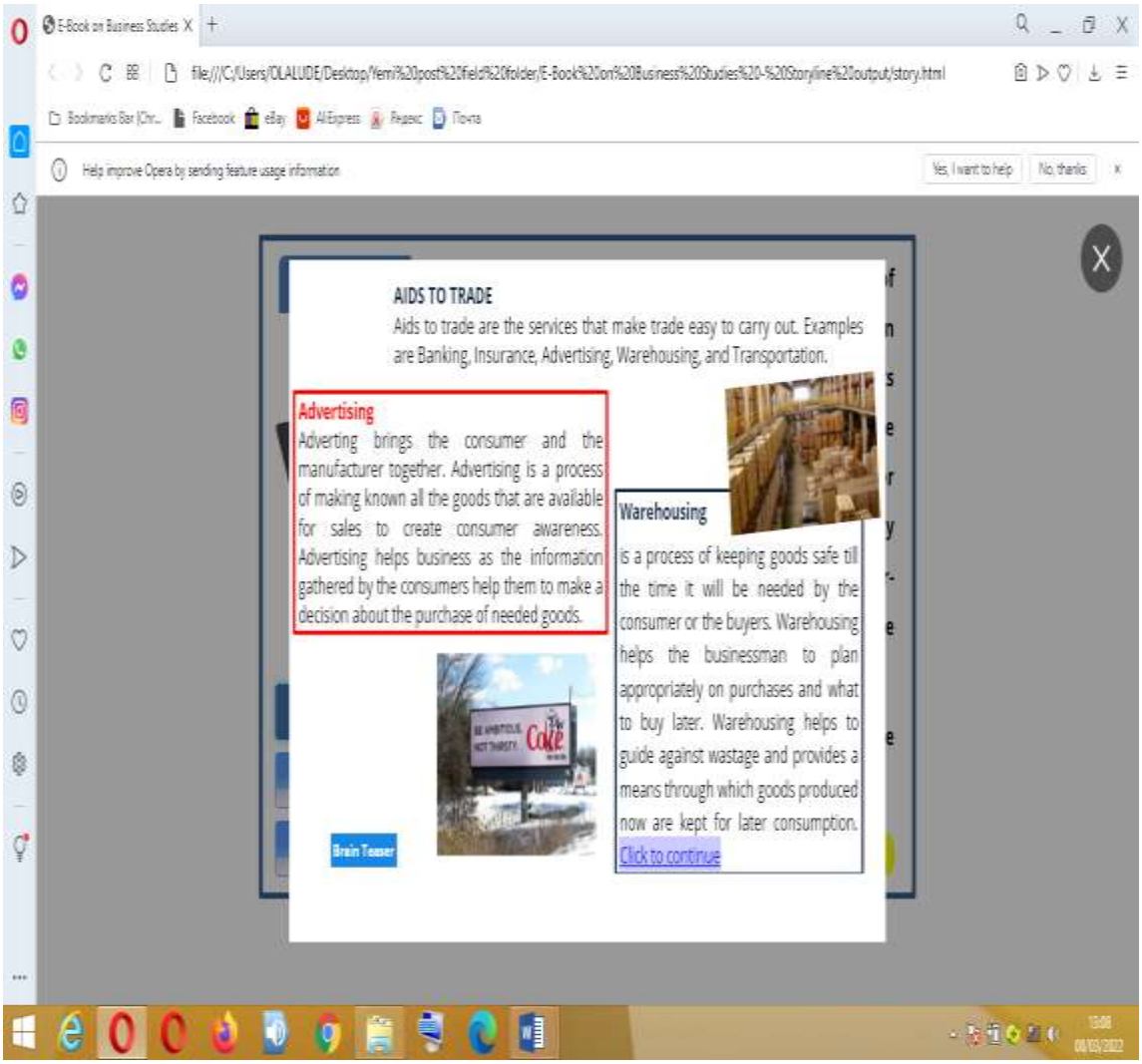
Importance of Trade
• It is a means of easy exchange of goods and services
• It makes human satisfaction possible when there is
• exchange.
• It helps to improve the living standards of the people.
• It provides food, shelter and clothing for the people
• It makes a good transport system possible as this is needed for trading.
• It involves other activities that help the society to grow.
Click here for lesson two
Brain Teaser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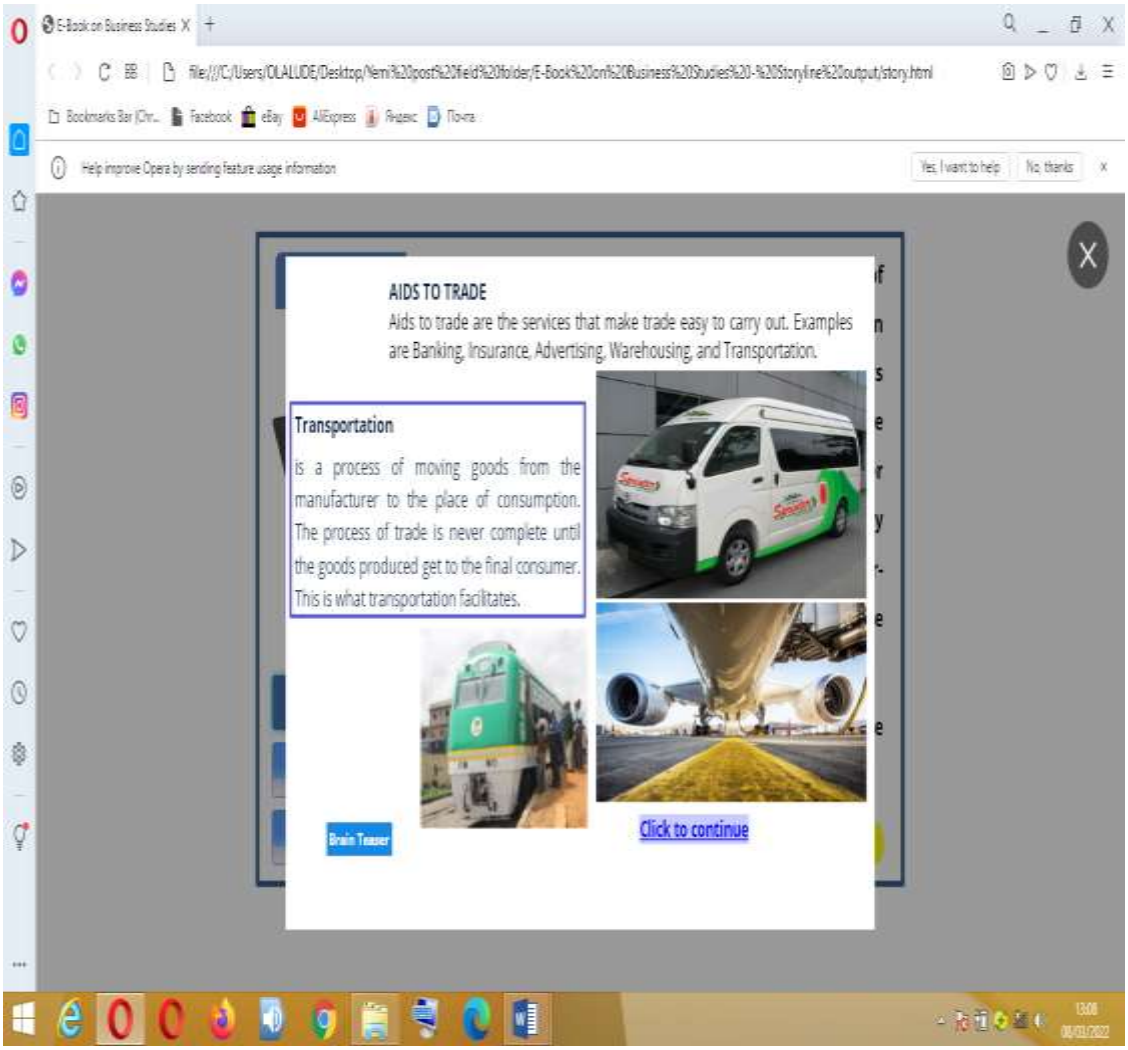
AIDS TO TRADE
Aids to trade are the services that make trade easy to carry out. Examples are Banking, Insurance, Advertising, Warehousing, and Transportation.
Advertising
Adverting brings the consumer and the manufacturer together. Advertising is a process of making known all the goods that are available for sales to create consumer awareness. Advertising helps business as the information gathered by the consumers help them to make a decision about the purchase of needed goods.
Warehousing
is a process of keeping goods safe till the time it will be needed by the consumer or the buyers. Warehousing helps the businessman to plan appropriately on purchases and what to buy later. Warehousing helps to guide against wastage and provides a means through which goods produced now are kept for later consumption.
Click to continue
Brain Teaser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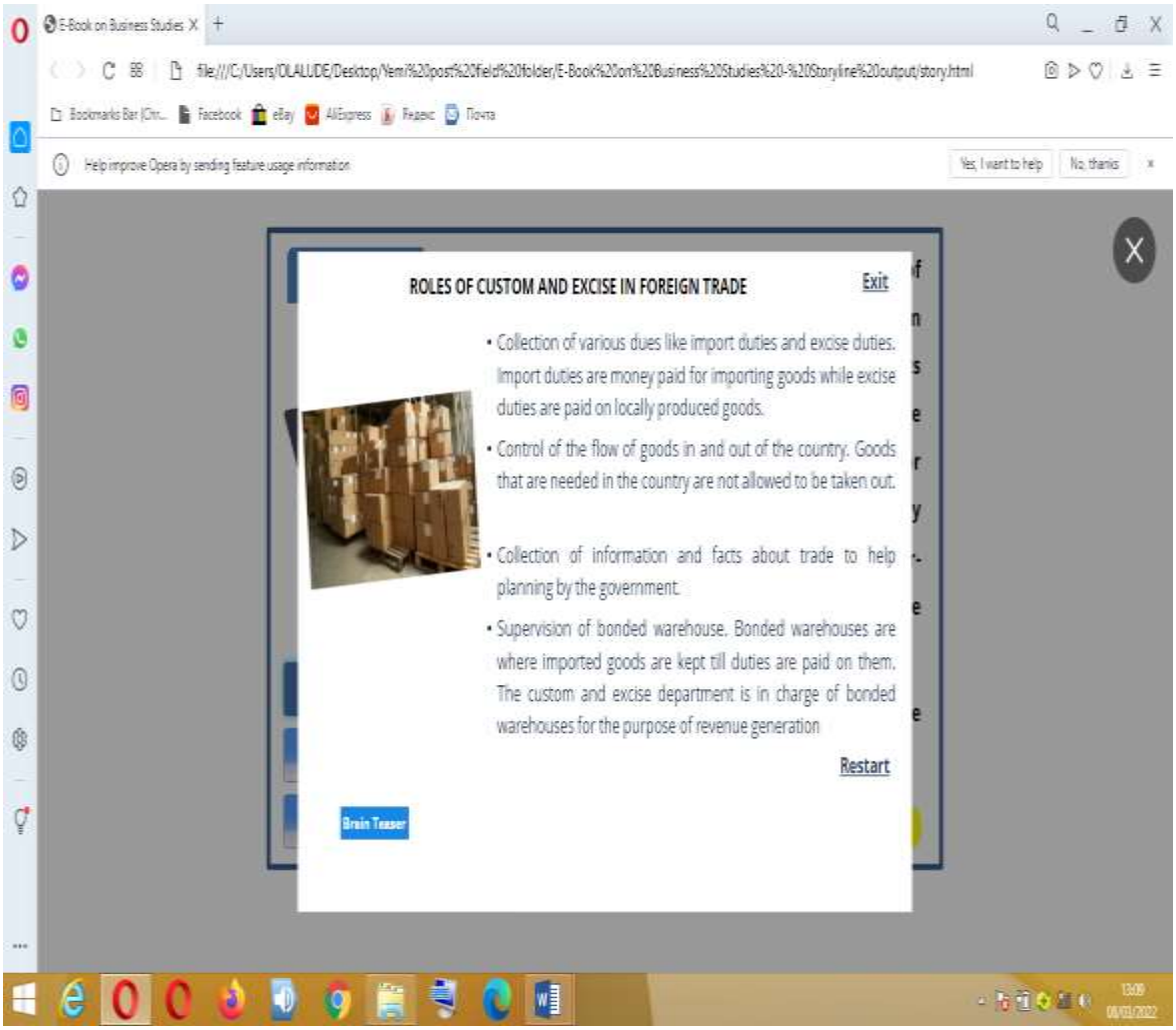
AIDS TO TRADE
Aids to trade are the services that make trade easy to carry out. Examples are Banking, Insurance, Advertising, Warehousing, and Transportation.
Transportation
is a process of moving goods from the manufacturer to the place of consumption. The process of trade is never complete until the goods produced get to the final consumer. This is what transportation facilitates.
Brain Teaser
Click to continue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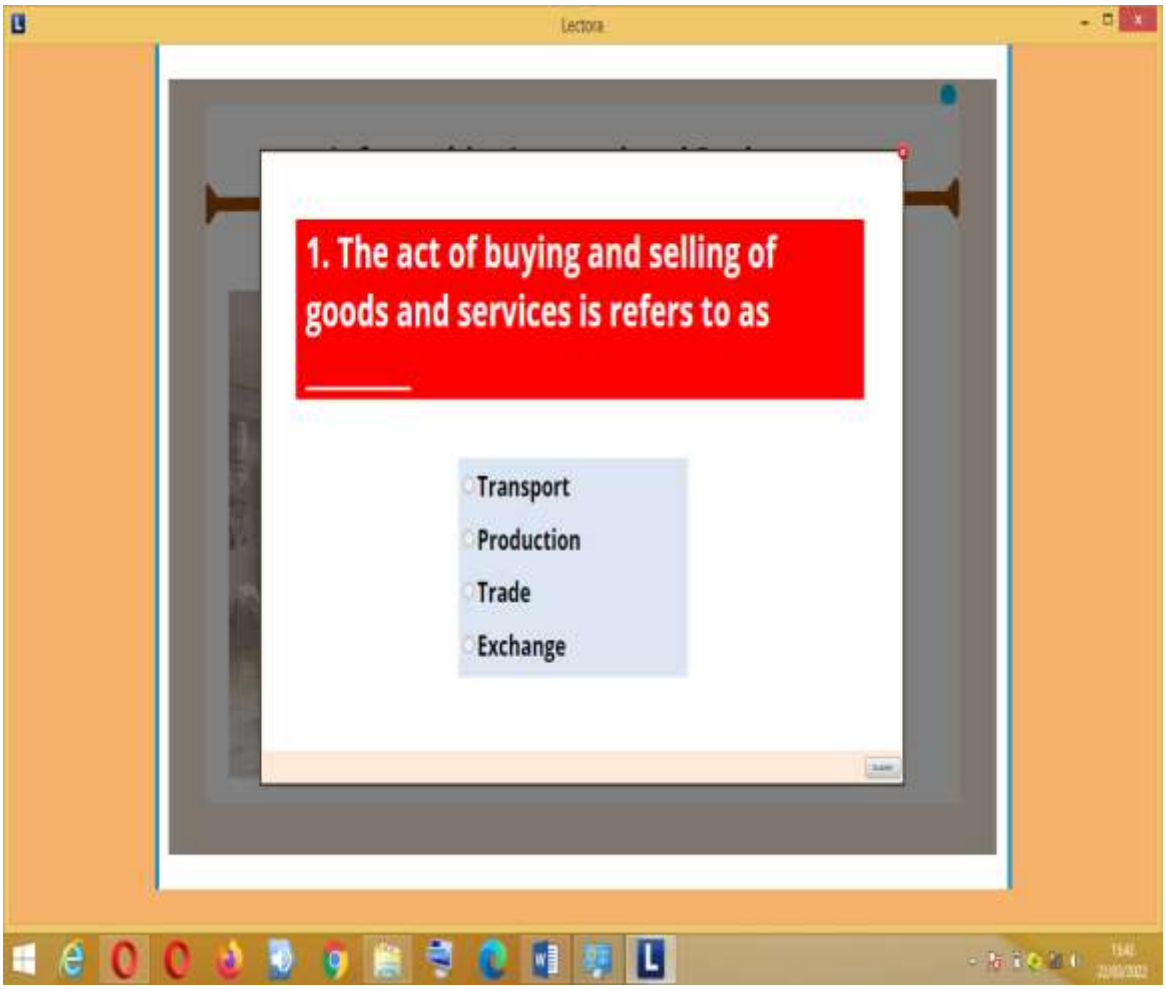
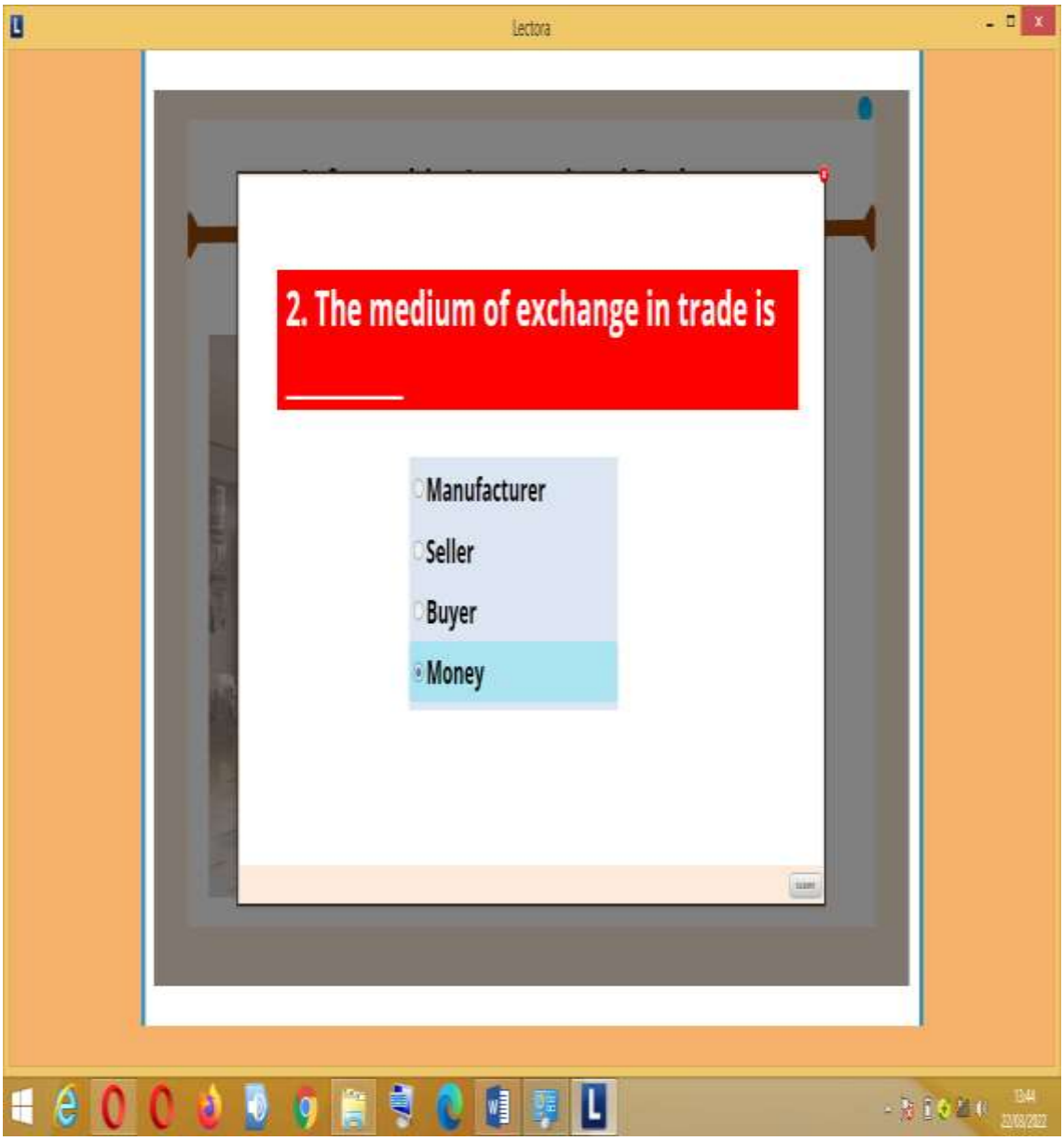
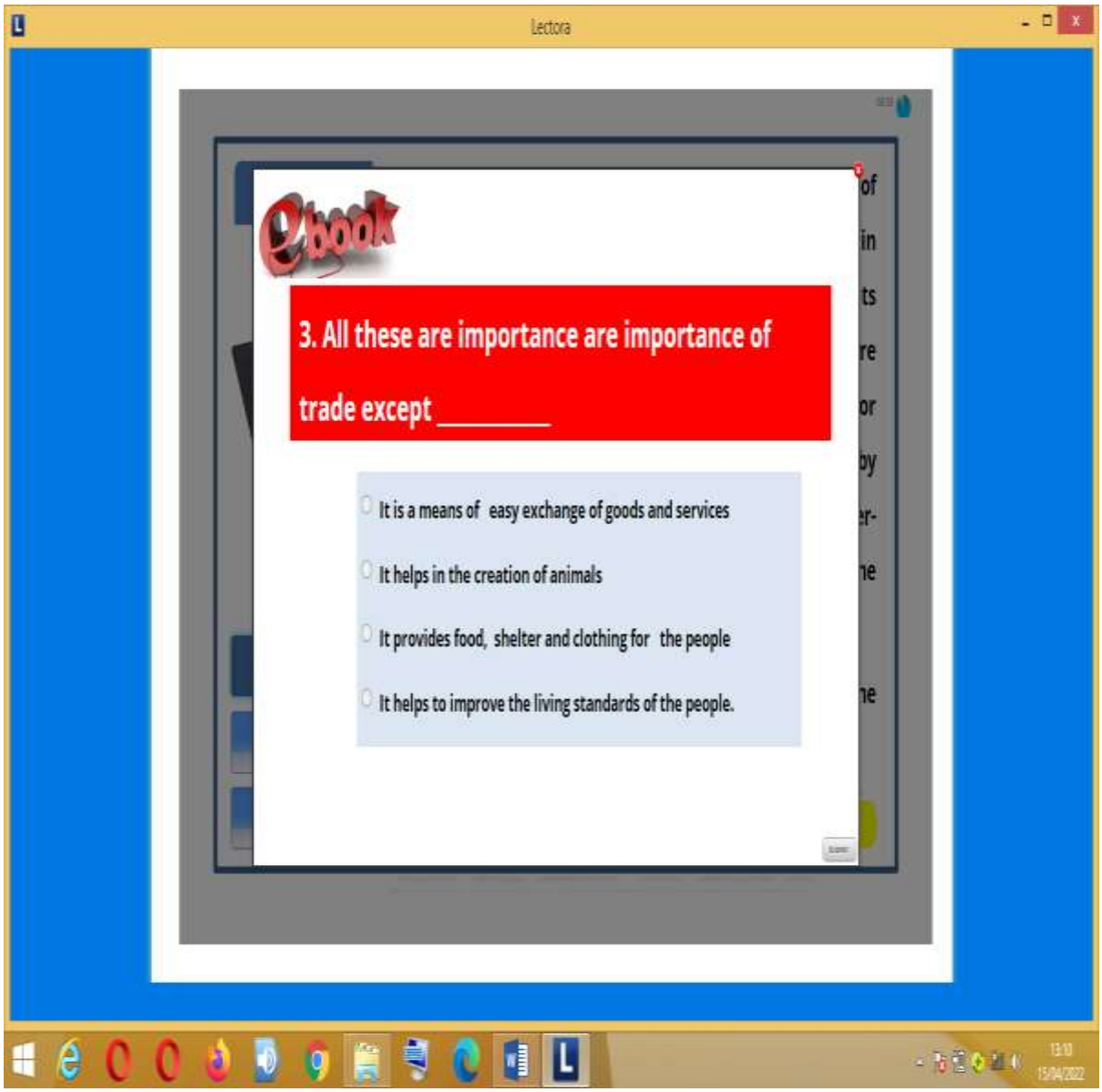
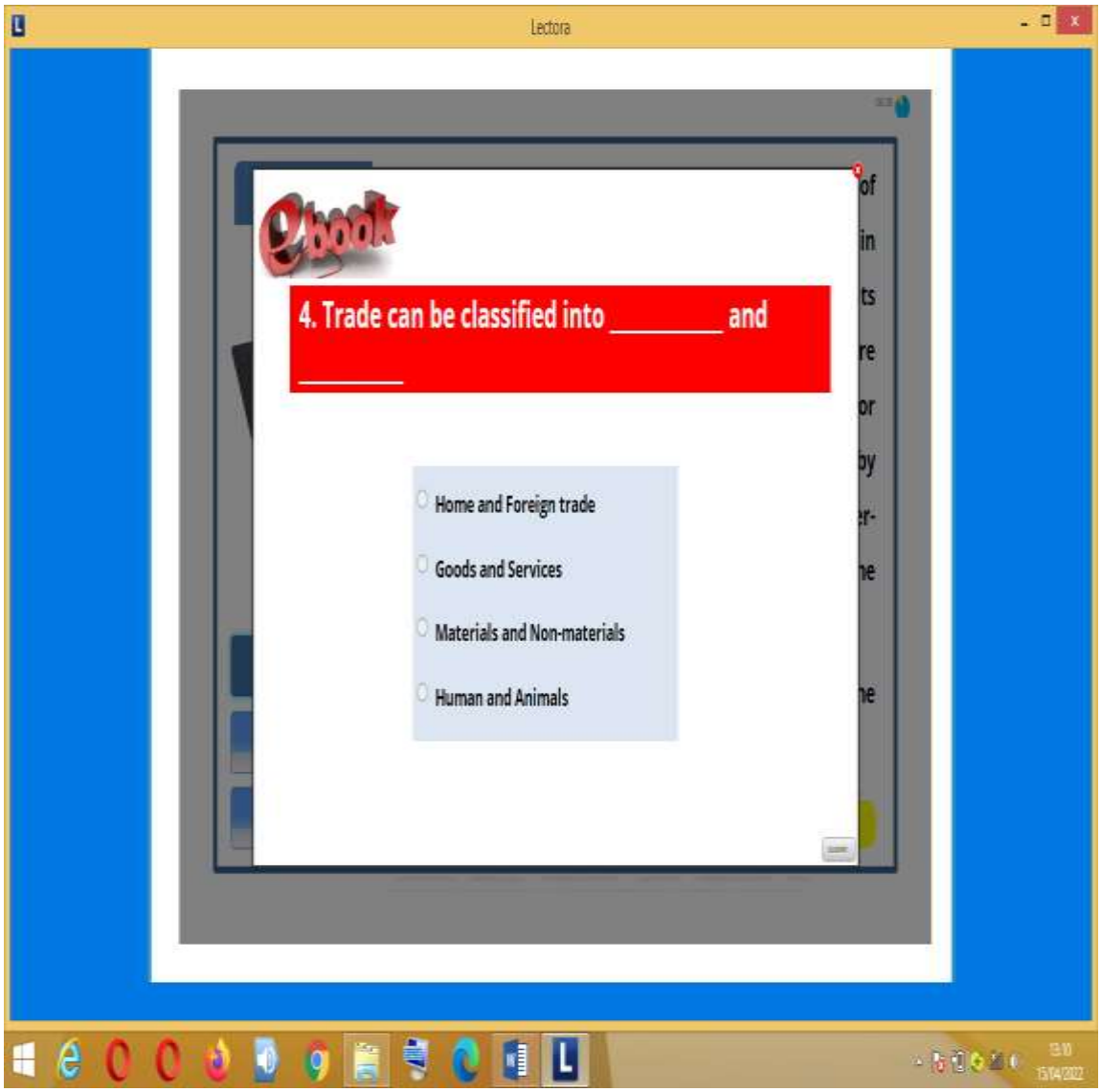
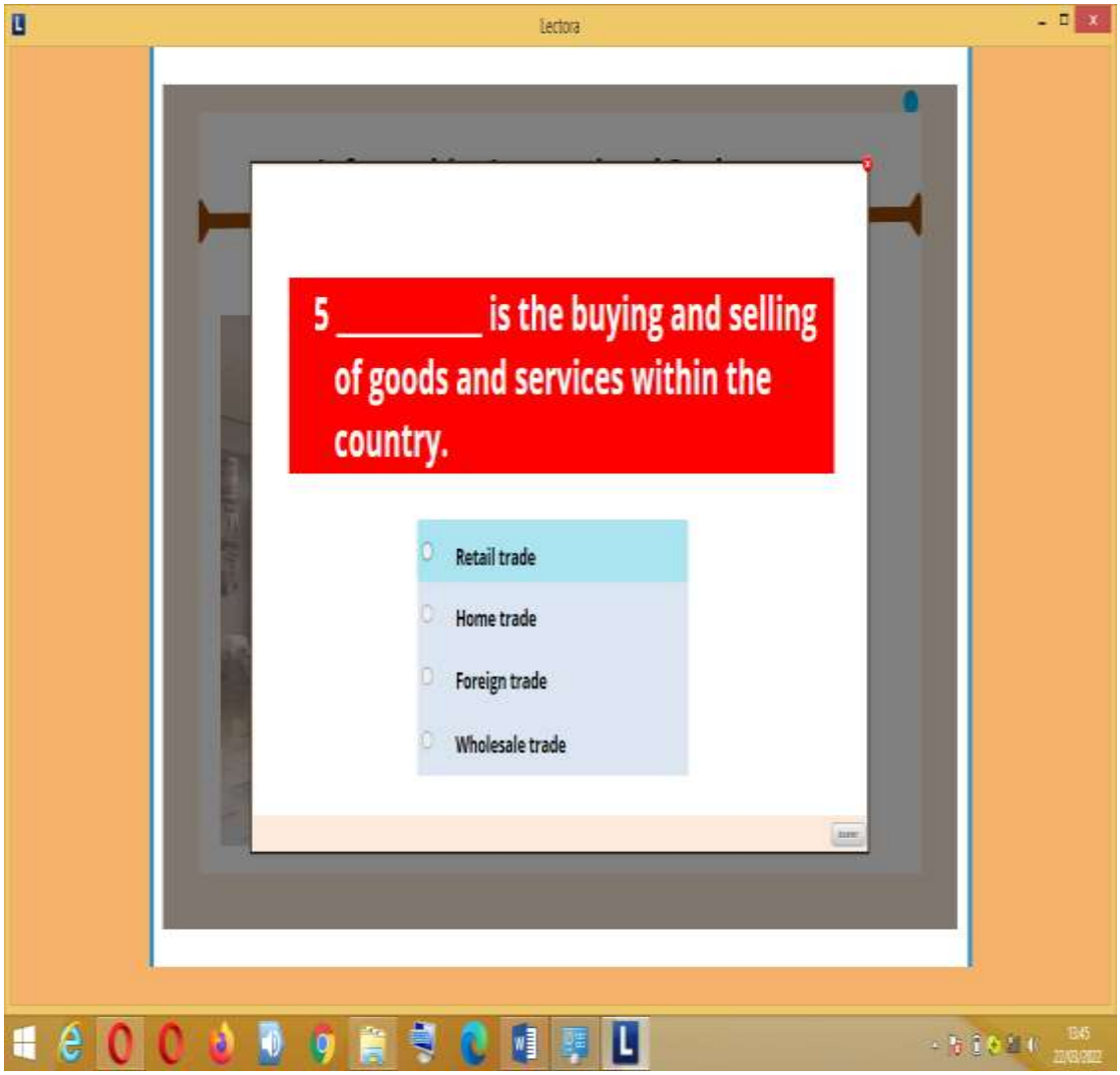
ROLES OF CUSTOM AND EXCISE IN FOREIGN TRADE
Exit
• Collection of various dues like import duties and excise duties. Import duties are money paid for importing goods while excise duties are paid on locally produced goods.
• Control of the flow of goods in and out of the country. Goods that are needed in the country are not allowed to be taken out.
• Collection of information and facts about trade to help planning by the government.
• Supervision of bonded warehouse. Bonded warehouses are where imported goods are kept till duties are paid on them. The custom and excise department is in charge of bonded warehouses for the purpose of revenue generation
Restart
Brain Teaser

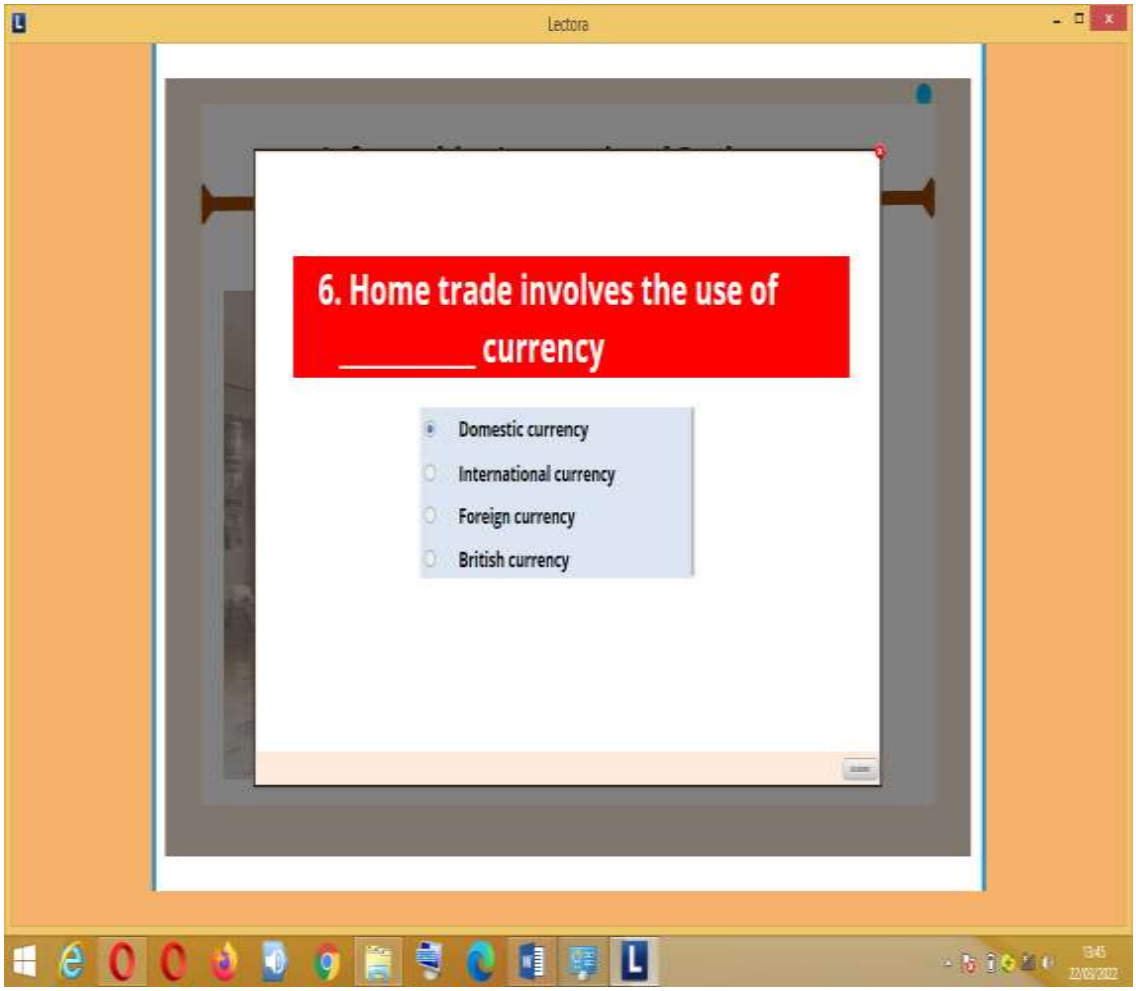

Lectora
1. The act of buying and selling of goods and services is refers to as
Transport
Production
Trade
Exchange


Lectora
2. The medium of exchange in trade is
Manufacturer
Seller
Buyer
Money


Lectora
Ebook
3. All these are importance are importance of trade except _____
It is a means of easy exchange of goods and services
It helps in the creation of animals
It provides food, shelter and clothing for the people
It helps to improve the living standards of the people.


Lectora
4. Trade can be classified into _____ and _____
Home and Foreign trade
Goods and Services
Materials and Non-materials
Human and Animals


Lectora
5 _____ is the buying and selling of goods and services within the country.
Retail trade
Home trade
Foreign trade
Wholesale trade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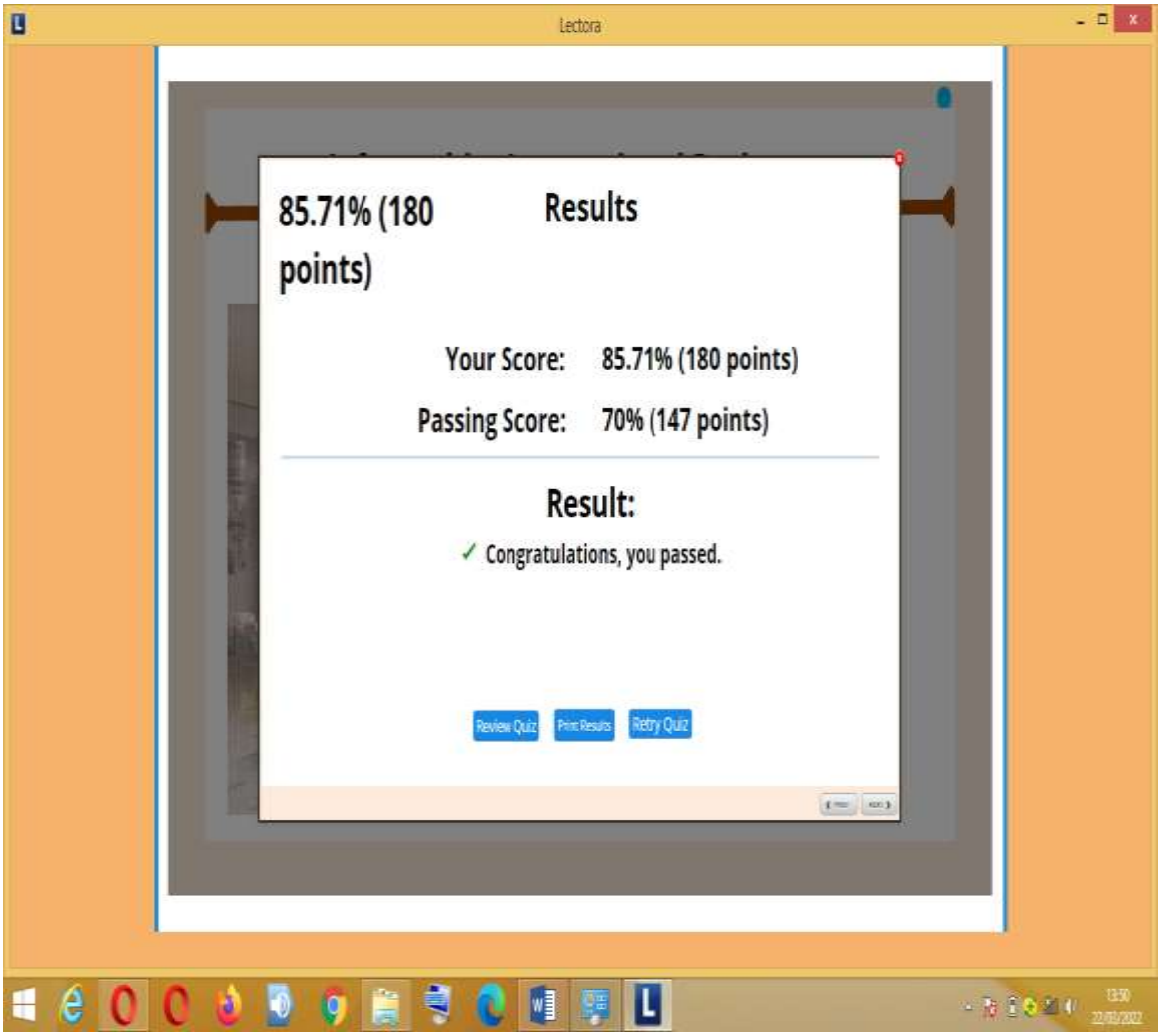
6. Home trade involves the use of _____ currency
Domestic currency
International currency
Foreign currency
British currency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85.71% (180 points)
Results
Your Score: 85.71% (180 points)
Passing Score: 70% (147 points)
Result:
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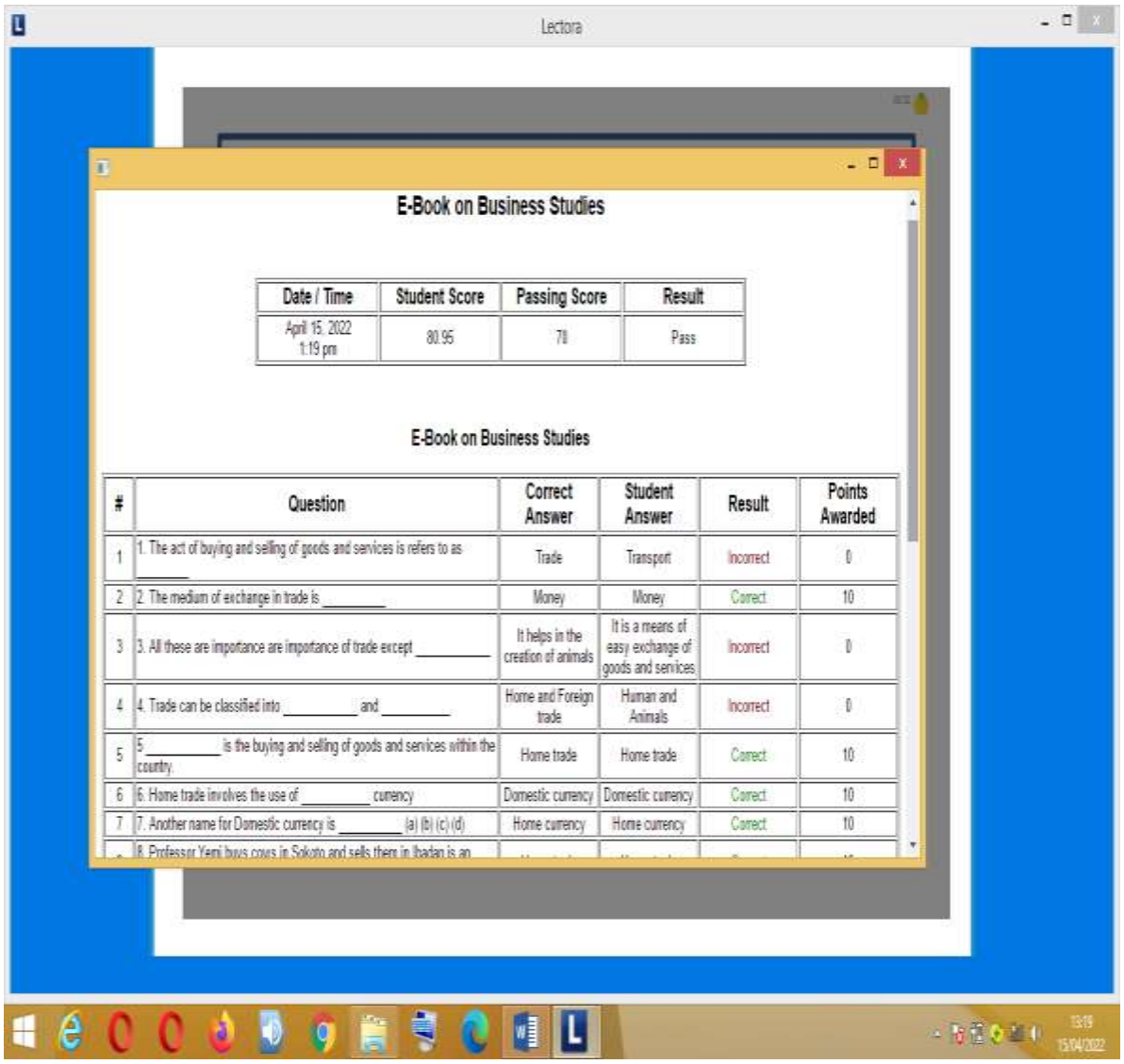
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Question Correct Answer Student Answer Result Points Awarded
1 1. The act of buying and selling of goods and services is refers to as _____ Trade Transport Incorrect 0
2 2. The medium of exchange in trade is _____ Money Money Correct 10
3 3. All these are importance are importance of trade except _____ It helps in the creation of animals It is a means of easy exchange of goods and services Incorrect 0
4 4. Trade can be classified into _____ and _____ Home and Foreign trade Human and Animals Incorrect 0
5 5 _____ is the buying and selling of goods and services within the country. Home trade Home trade Correct 10
6 6. Home trade involves the use of _____ currency Domestic currency Domestic currency Correct 10
7 7. Another name for Domestic currency is _____ (a) (b) (c) (d) Home currency Home currency Correct 10
8. Professor Yemi buys cows in Sokoto and sells them in Ibadan is an

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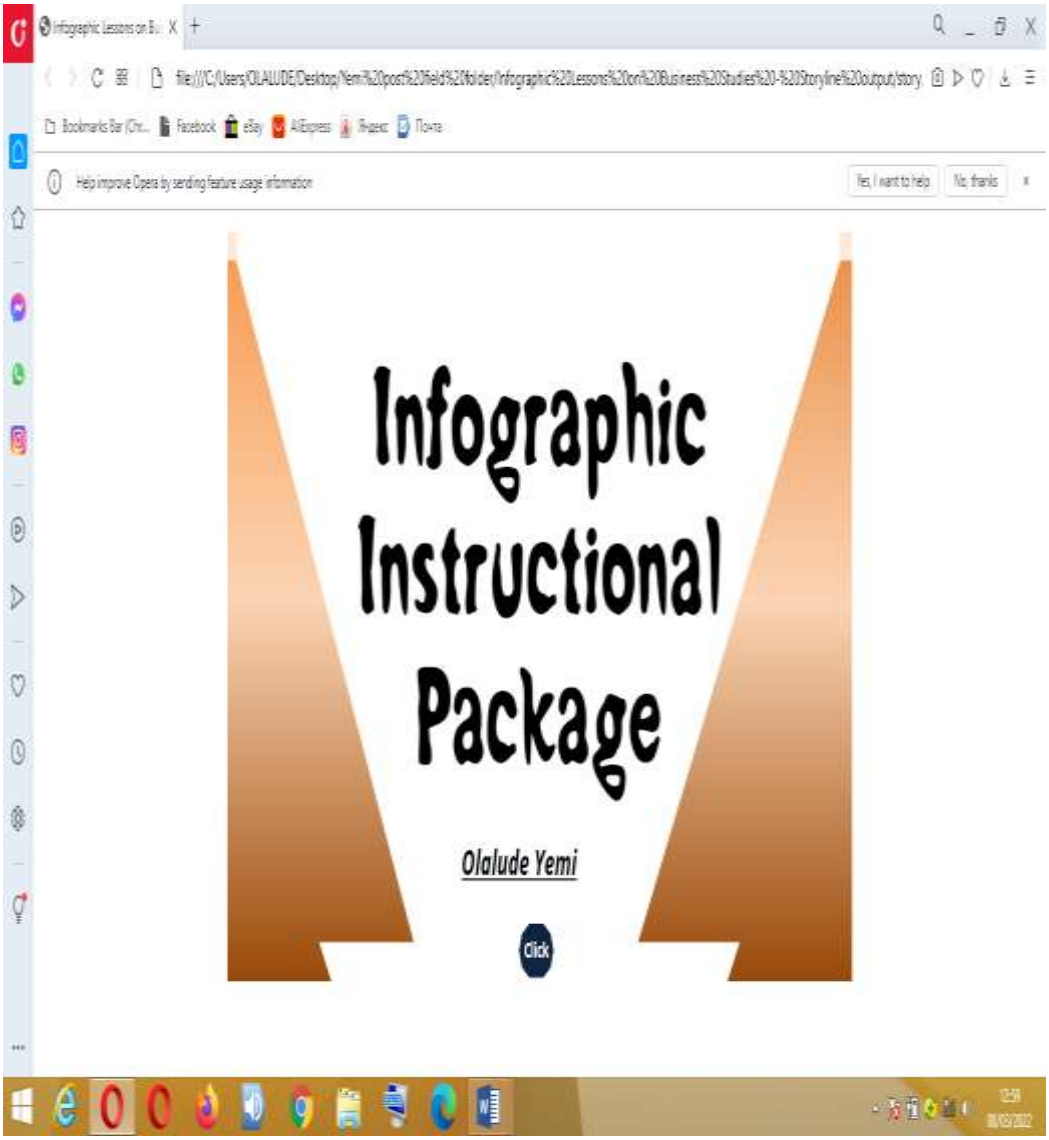
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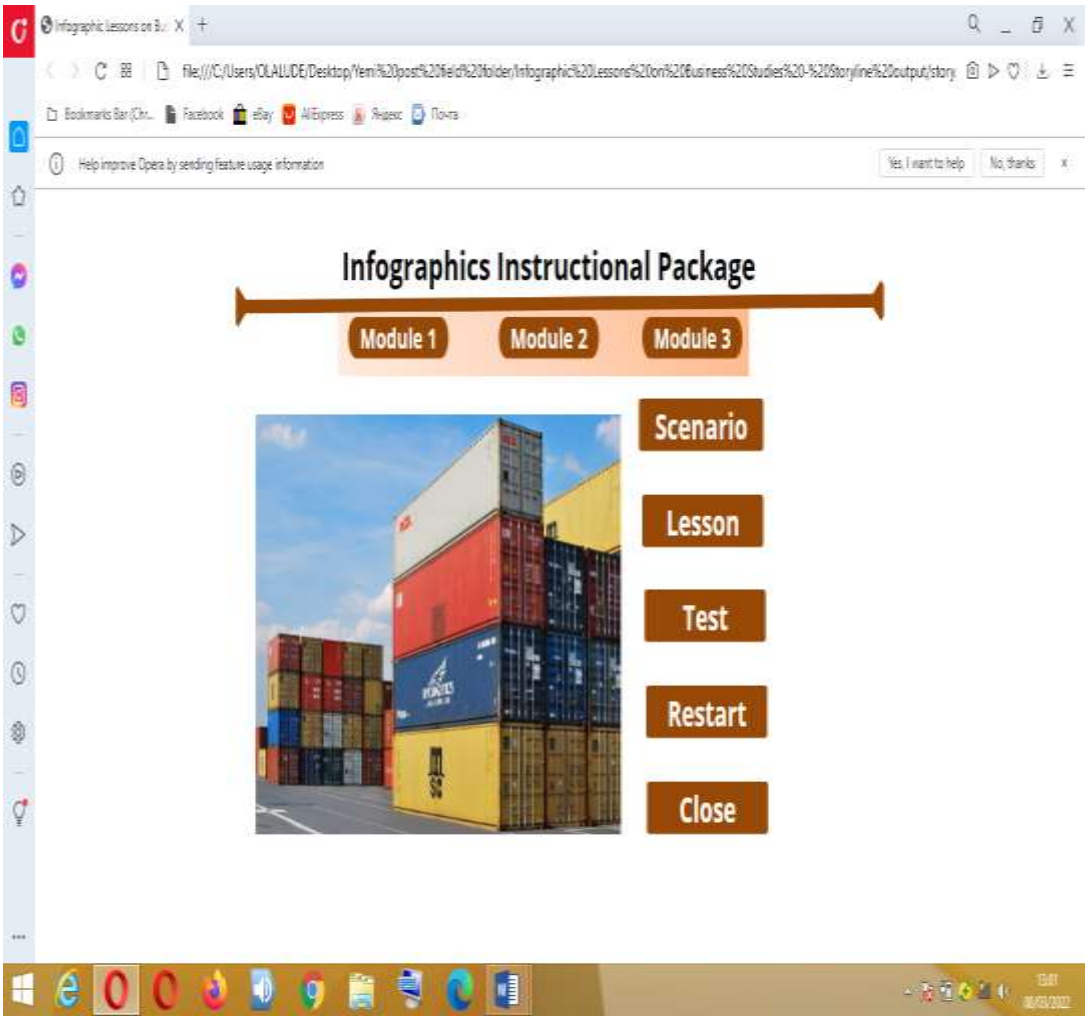
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Module 2
Module 3
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Lesson
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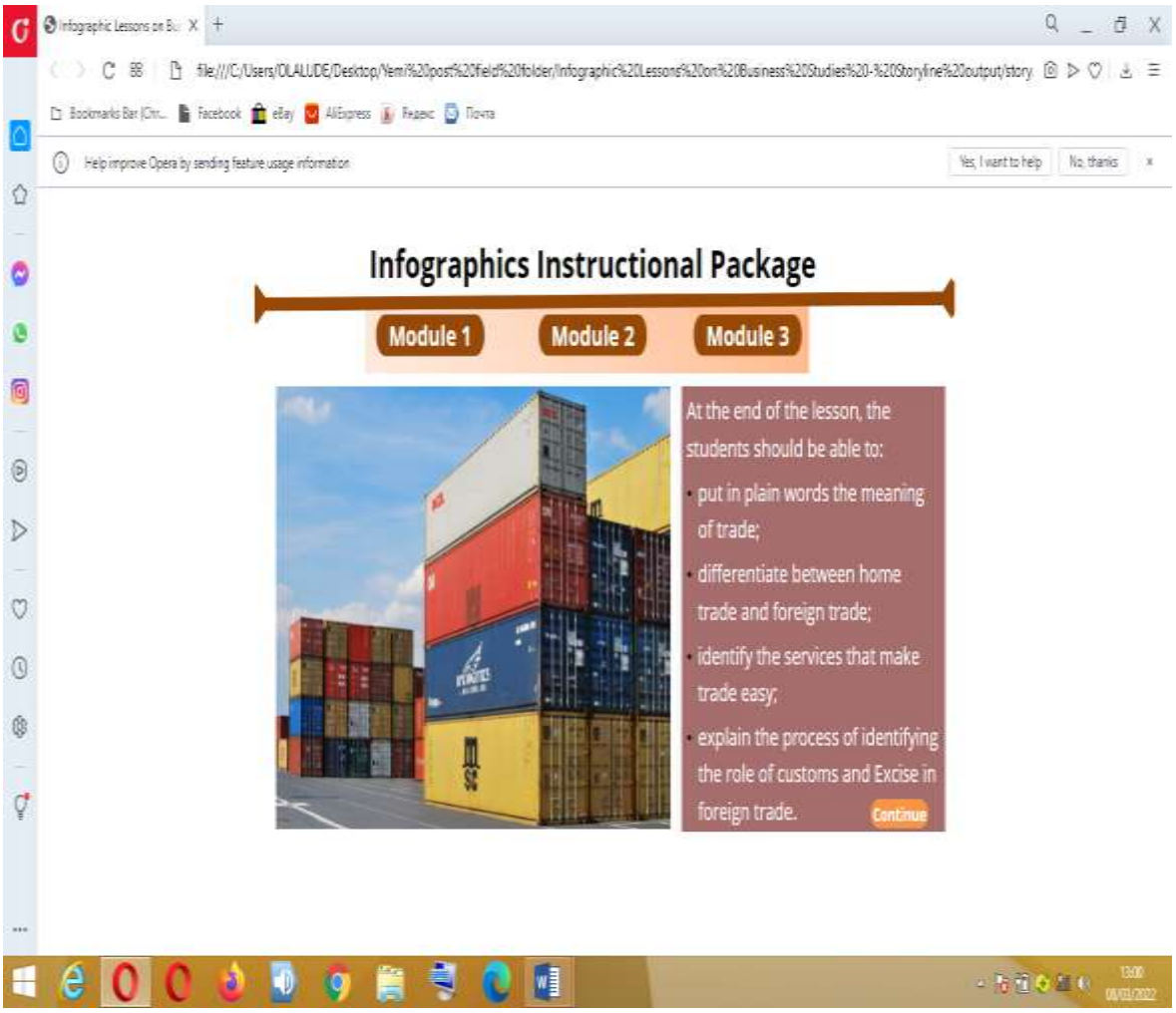
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Module 1
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Module 3
At the end of the lesson, the students should be able to:
• put in plain words the meaning of trade;
• differentiate between home trade and foreign trade;
• identify the services that make trade easy;
• explain the process of identifying the role of customs and Excise in foreign trade.
Continue

Infographics Instructional Package
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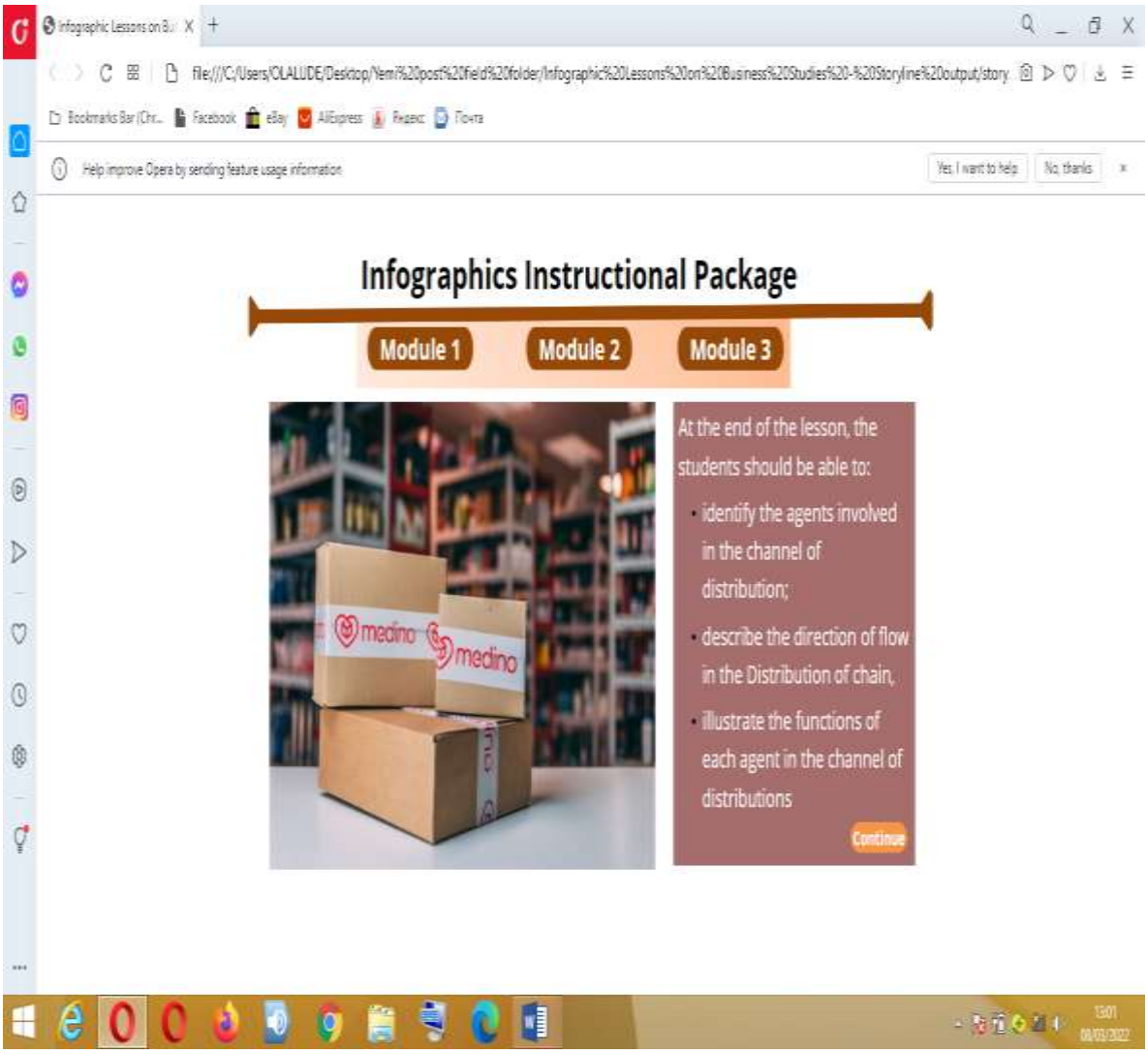
Module 2
Module 3
ADVERTISING
MARKETING
PUBLIC
COMMERCIAL
RADIO
MEDIA
PRODUCT
TELEVISION
ADVERTISEMENTS
At the end of the lesson, the students should be able to:
• explain the meaning of market and identify features of market;
• distinguish between various types of market;
• classified operations in the commodity market;
• explain the process involve in the methods of buying and selling;
Continue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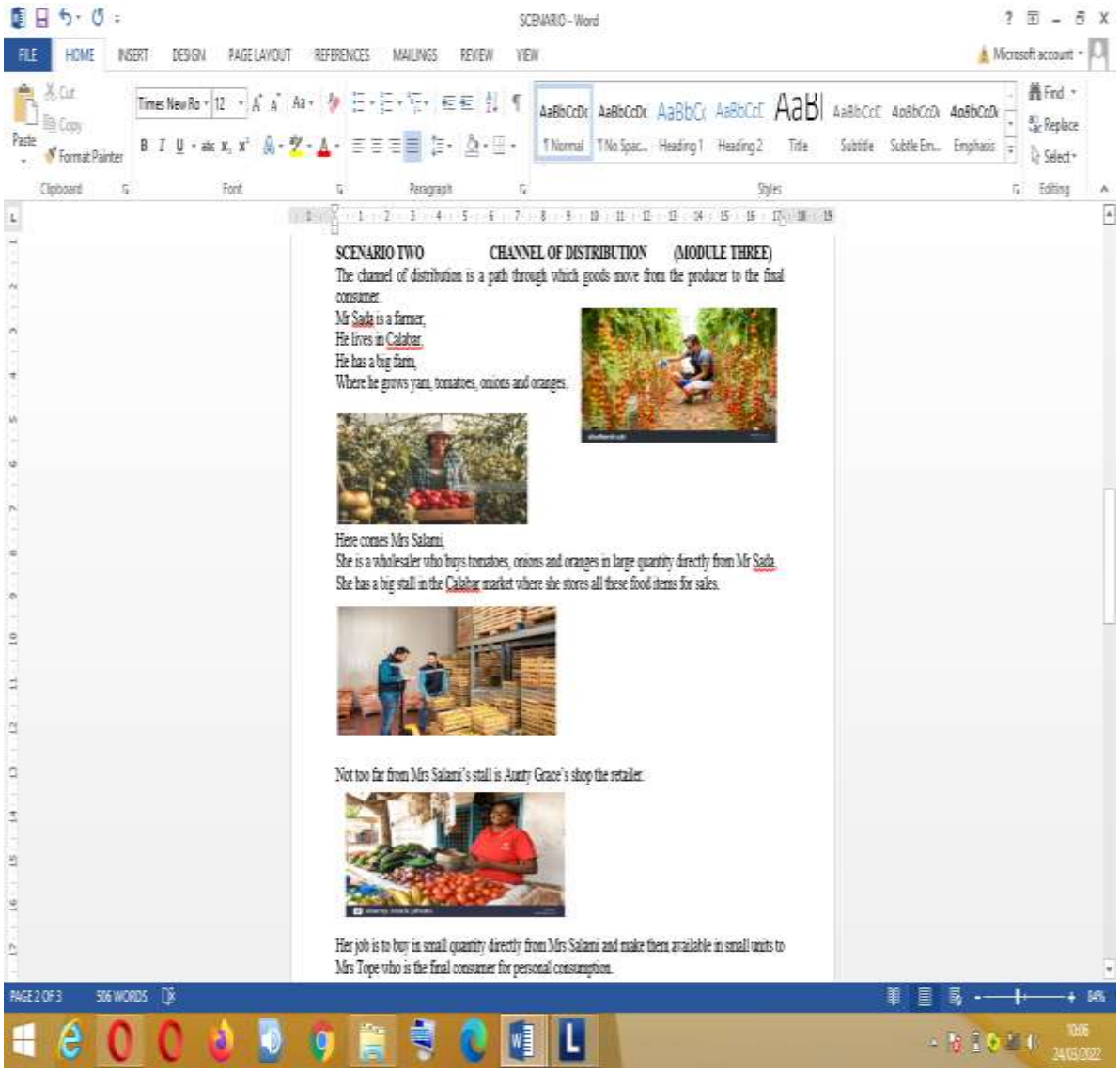
At the end of the lesson, the students should be able to:
• identify the agents involved in the channel of distribution;
• describe the direction of flow in the Distribution of chain,
• illustrate the functions of each agent in the channel of distributions
Continue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SCENARIO TWO CHANNEL OF DISTRIBUTION (MODULE THREE)
The channel of distribution is a path through which goods move from the producer to the final consumer.
Mr Sada is a farmer,
He lives in Calabar.
He has a big farm,
Where he grows yam, tomatoes, onions and oranges.
Here comes Mrs Salami.
She is a wholesaler who buys tomatoes, onions and oranges in large quantity directly from Mr Sada.
She has a big stall in the Calabar market where she stores all these food items for sales.
Not too far from Mrs Salami's stall is Aunty Grace's shop the retailer.
Her job is to buy in small quantity directly from Mrs Salami and make them available in small units to Mrs Tope who is the final consumer for personal consumption.
PAGE 2 OF 3
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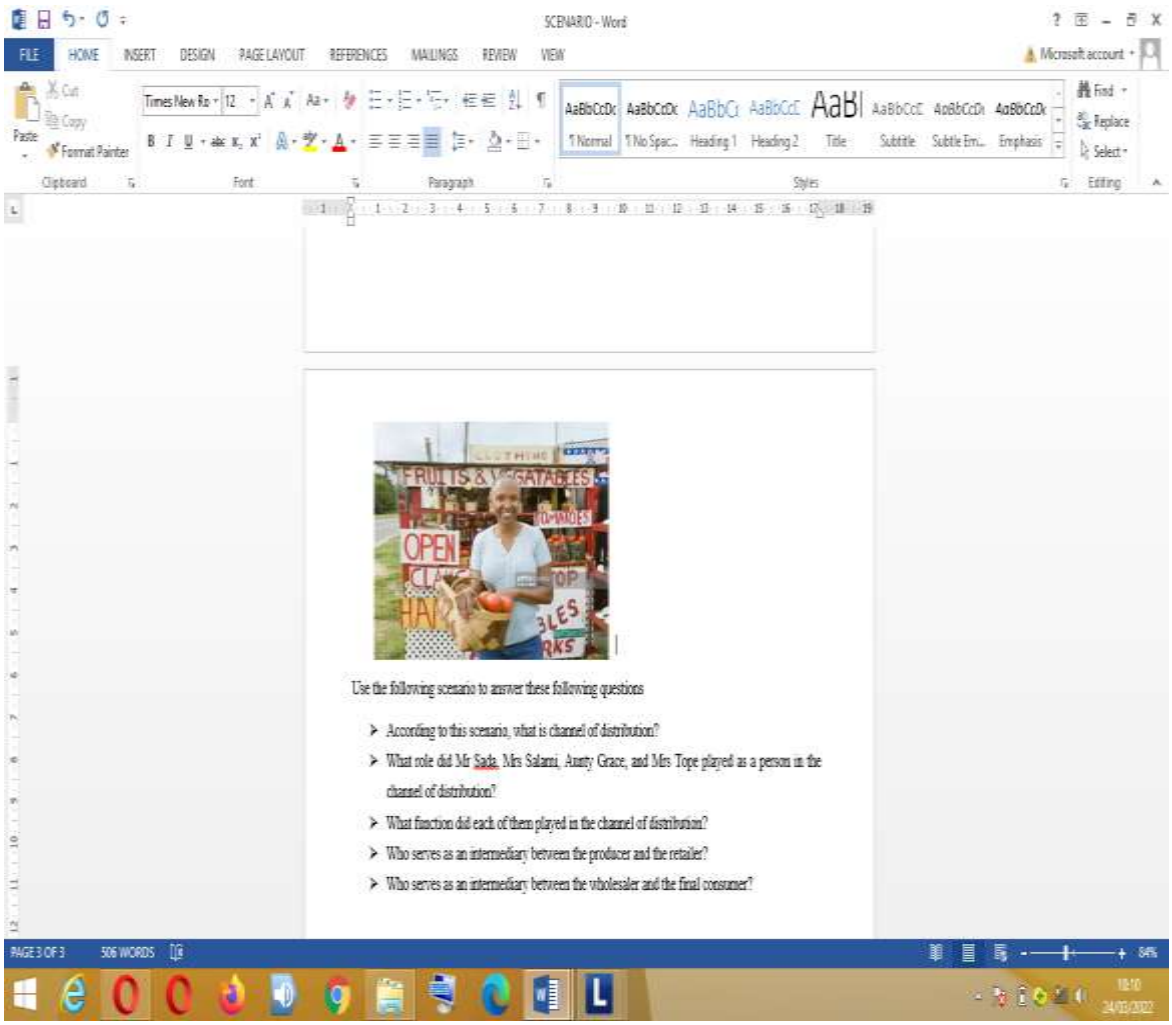
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Use the following scenario to answer these following questions
According to this scenario, what is channel of distribution?
What role did Mr Sada, Mrs Salami, Aunty Grace, and Mrs Tope played as a person in the channel of distribution?
What function did each of them played in the channel of distribution?
Who serves as an intermediary between the producer and the retailer?
Who serves as an intermediary between the wholesaler and the final consumer?
PAGE 3 OF 3
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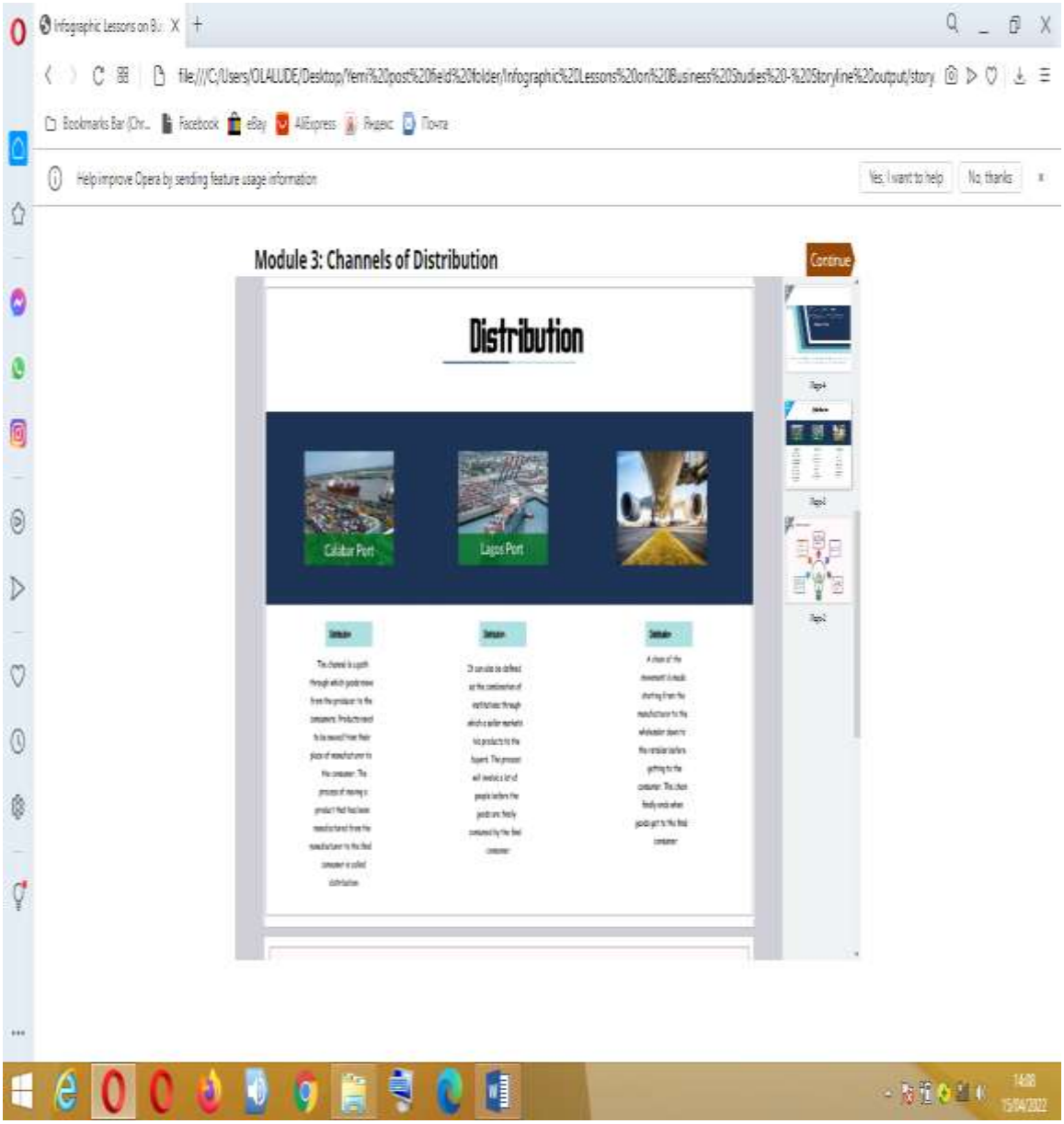
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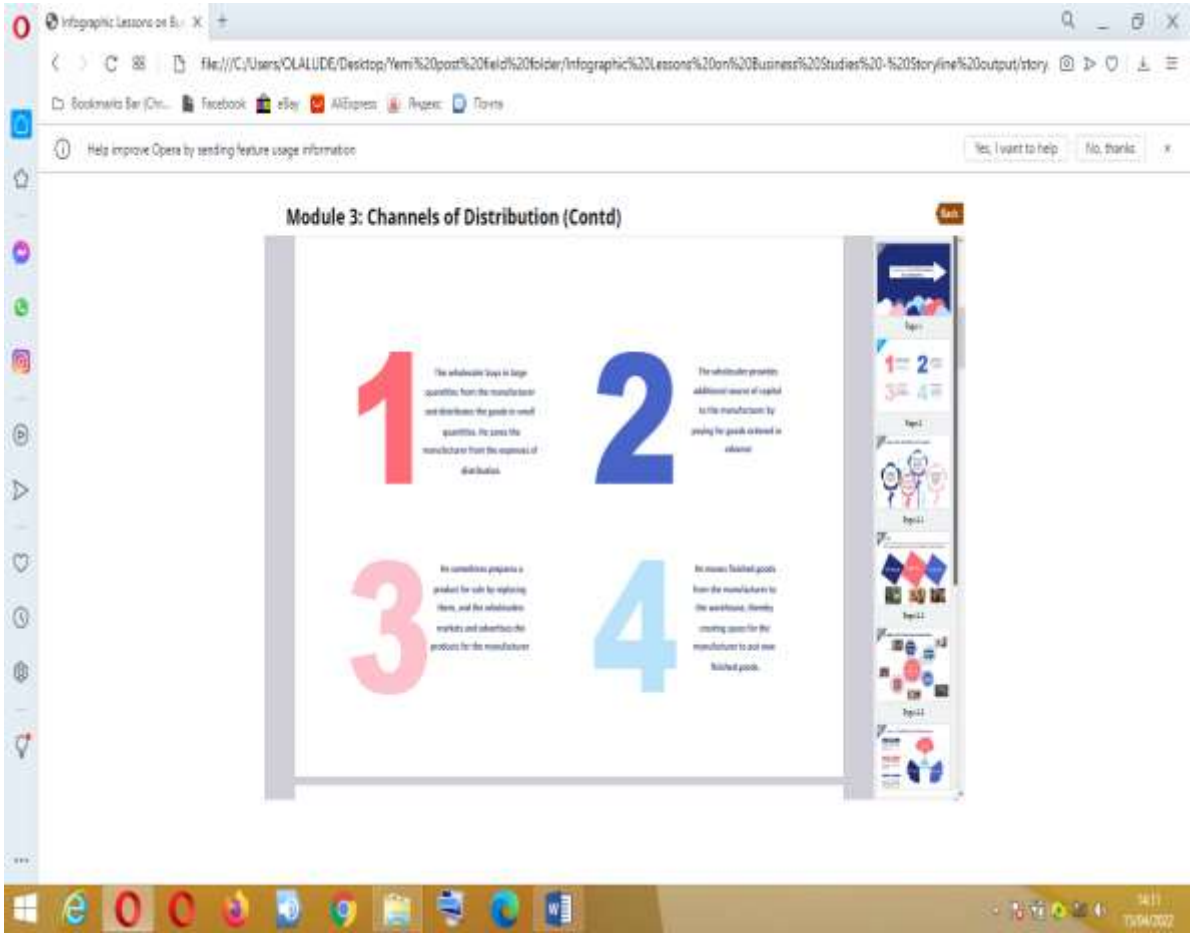
Calabar Port
Lagos Port


Module 3: Channels of Distribution (Contd)
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2
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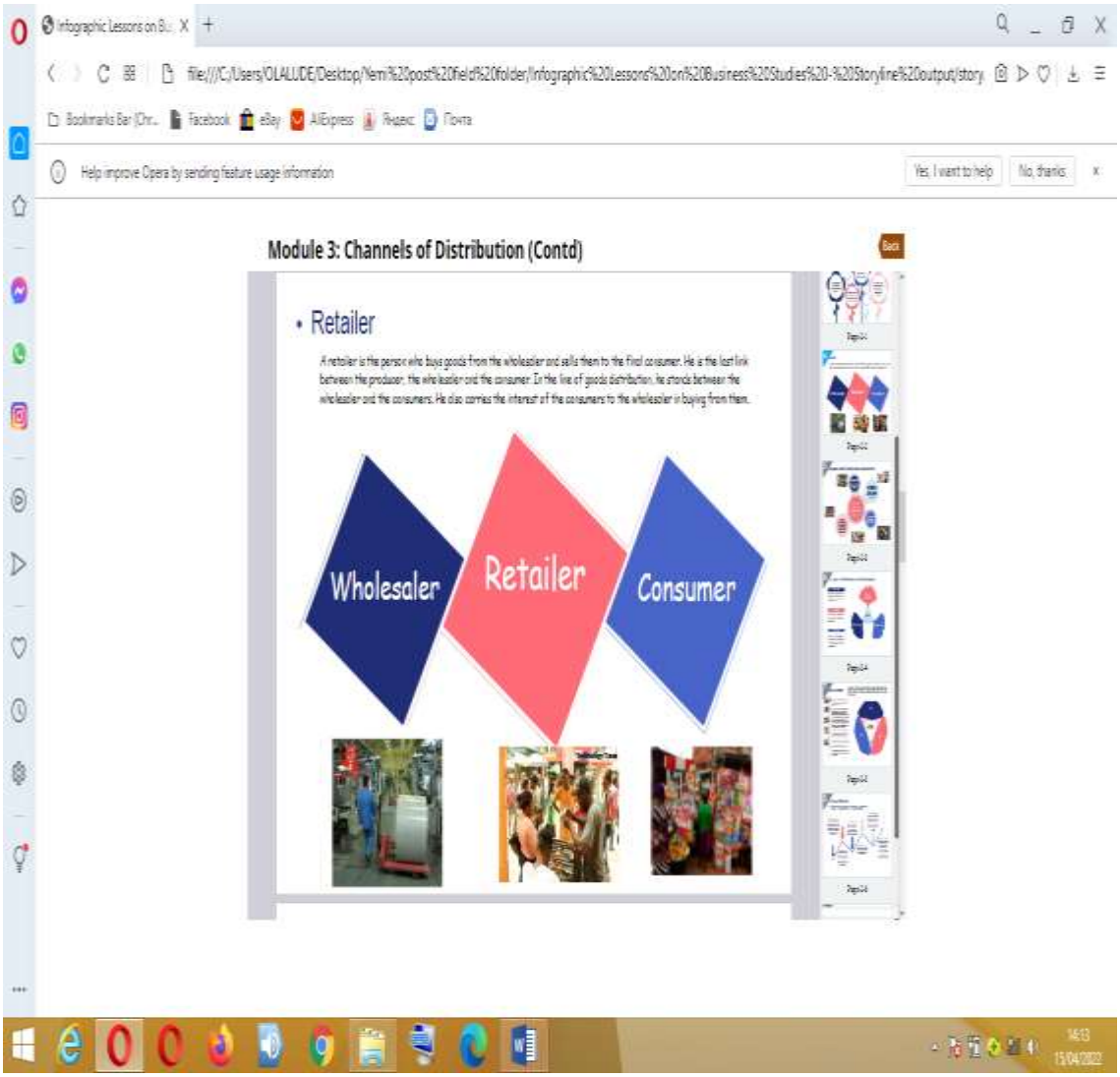
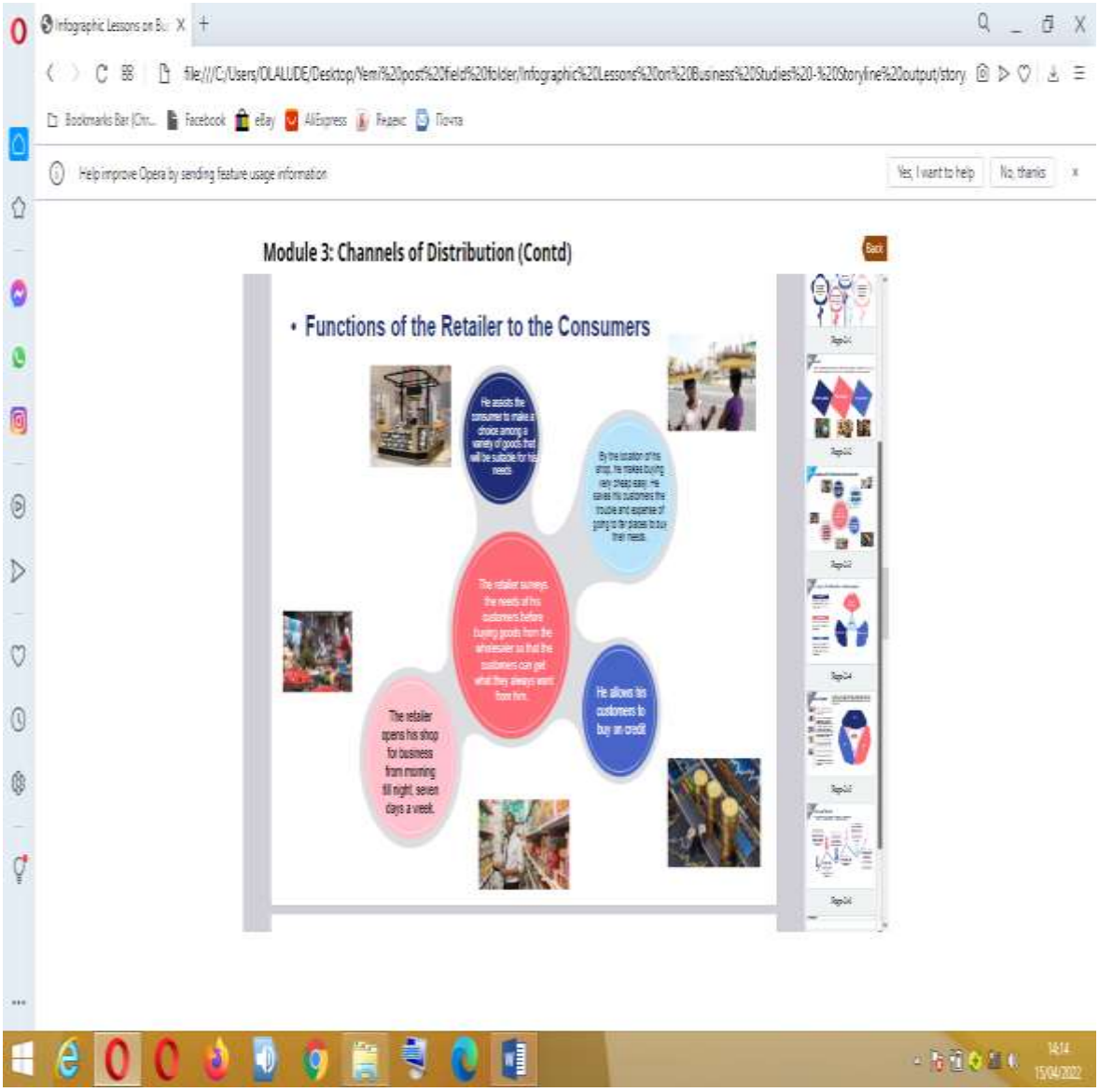

Module 3: Channels of Distribution (Contd)
Retailer
A retailer is the person who buys goods from the wholesaler and sells them to the final consumer. He is the last link between the producer, the wholesaler and the consumer. In the line of goods distribution, he stands between the wholesaler and the consumers. He also carries the interest of the consumers to the wholesaler in buying from them.
Wholesaler
Retailer
Consumer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Module 3: Channels of Distribution (Contd)
Back
• Functions of the Retailer to the Consumers
He assists the consumer to make a choice among a variety of goods that will be suitable for his needs
By the location of his shop, he makes buying very cheap easy. He saves his customers the trouble and expense of going to far places to buy their needs
The retailer surveys the needs of his customers before buying goods from the wholesaler so that the customers can get what they always want from him.
He allows his customers to buy on credit
The retailer opens his shop for business from morning till night, seven days a week.
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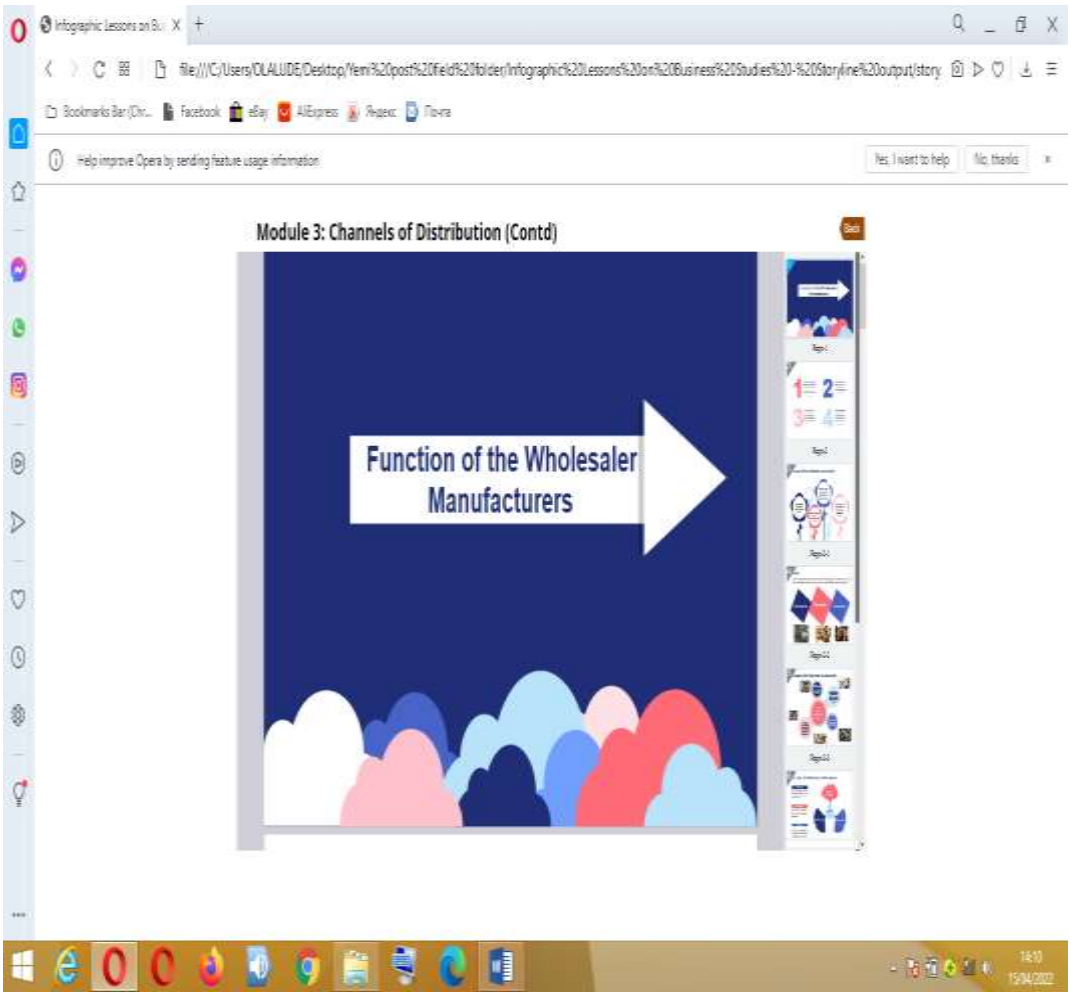
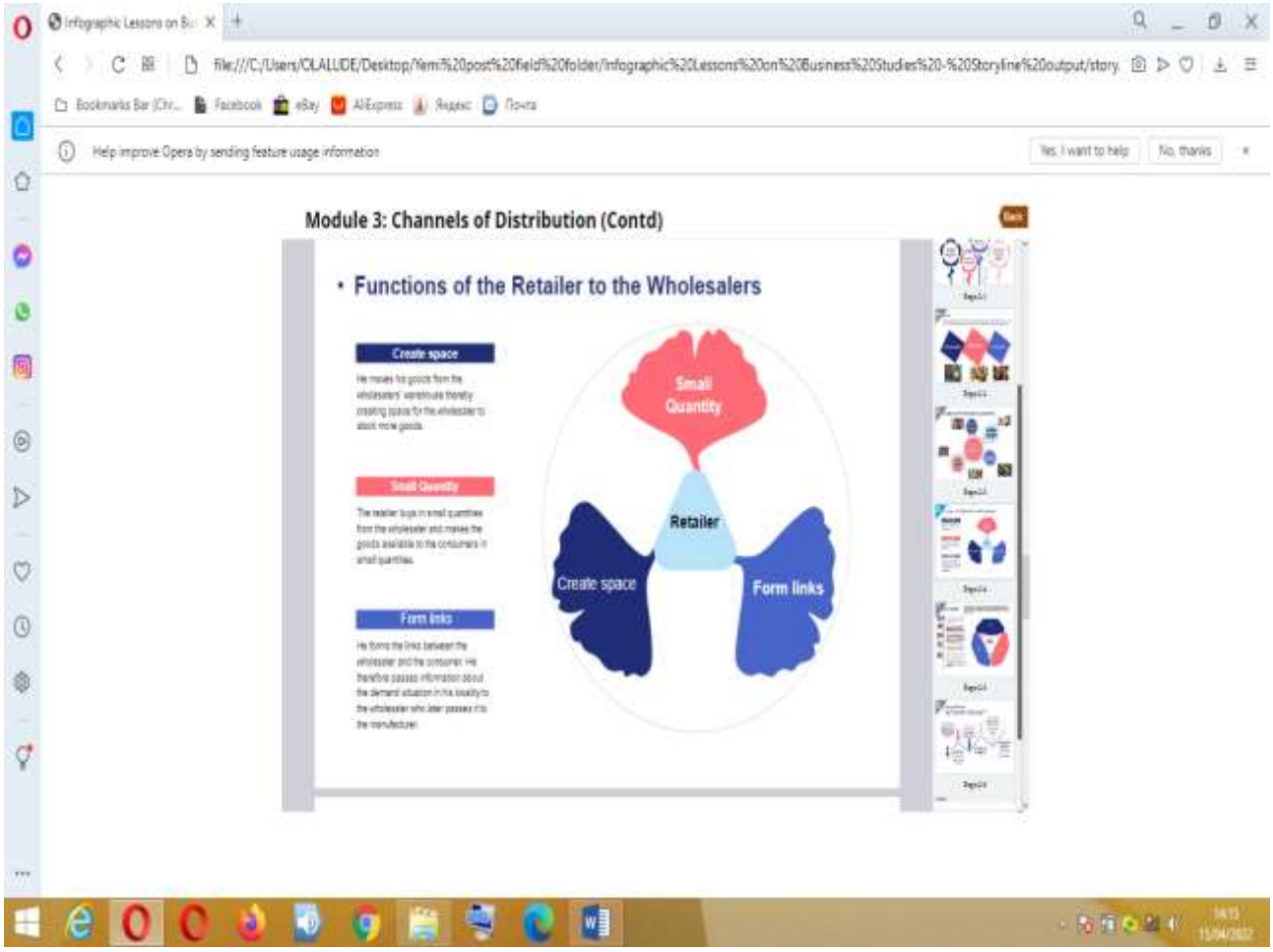
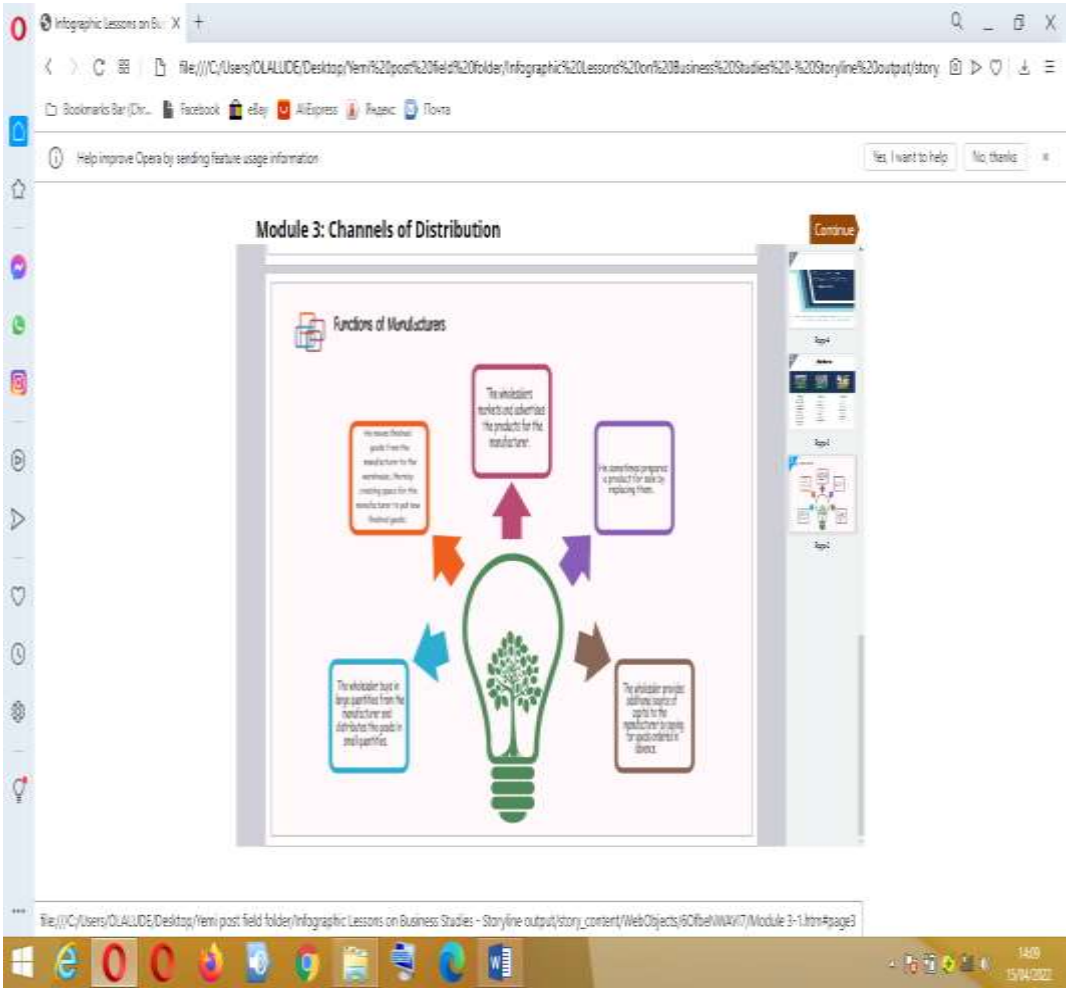
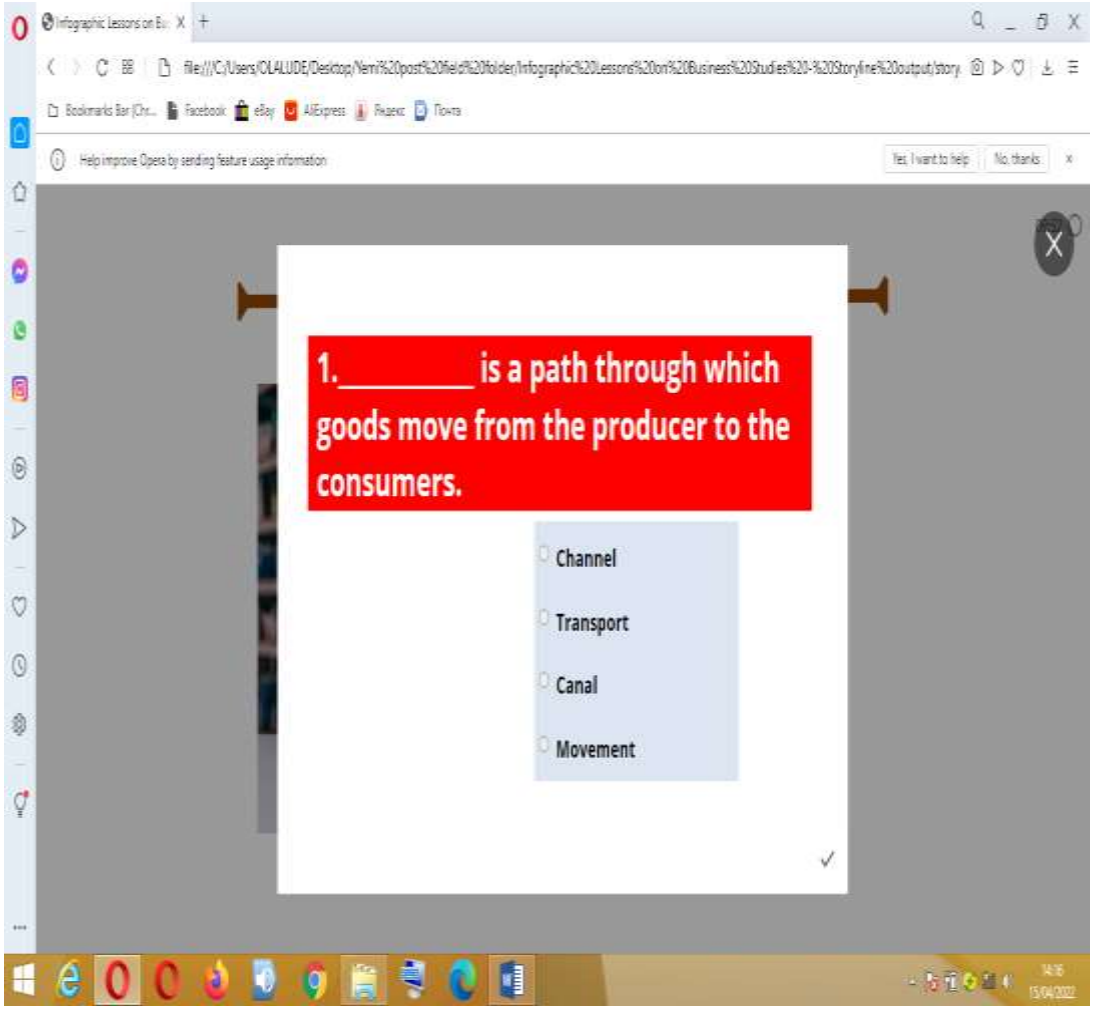
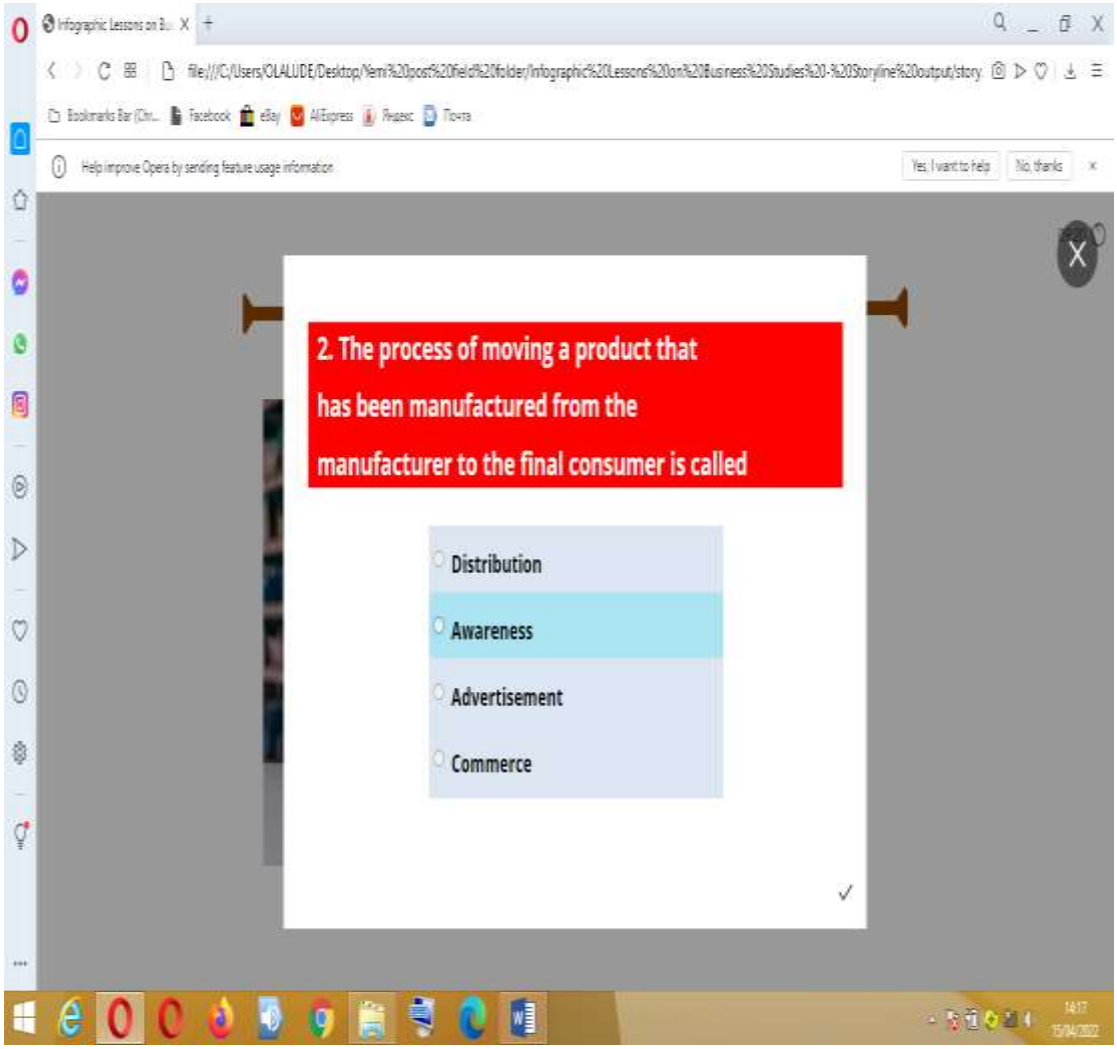
15/04/2022

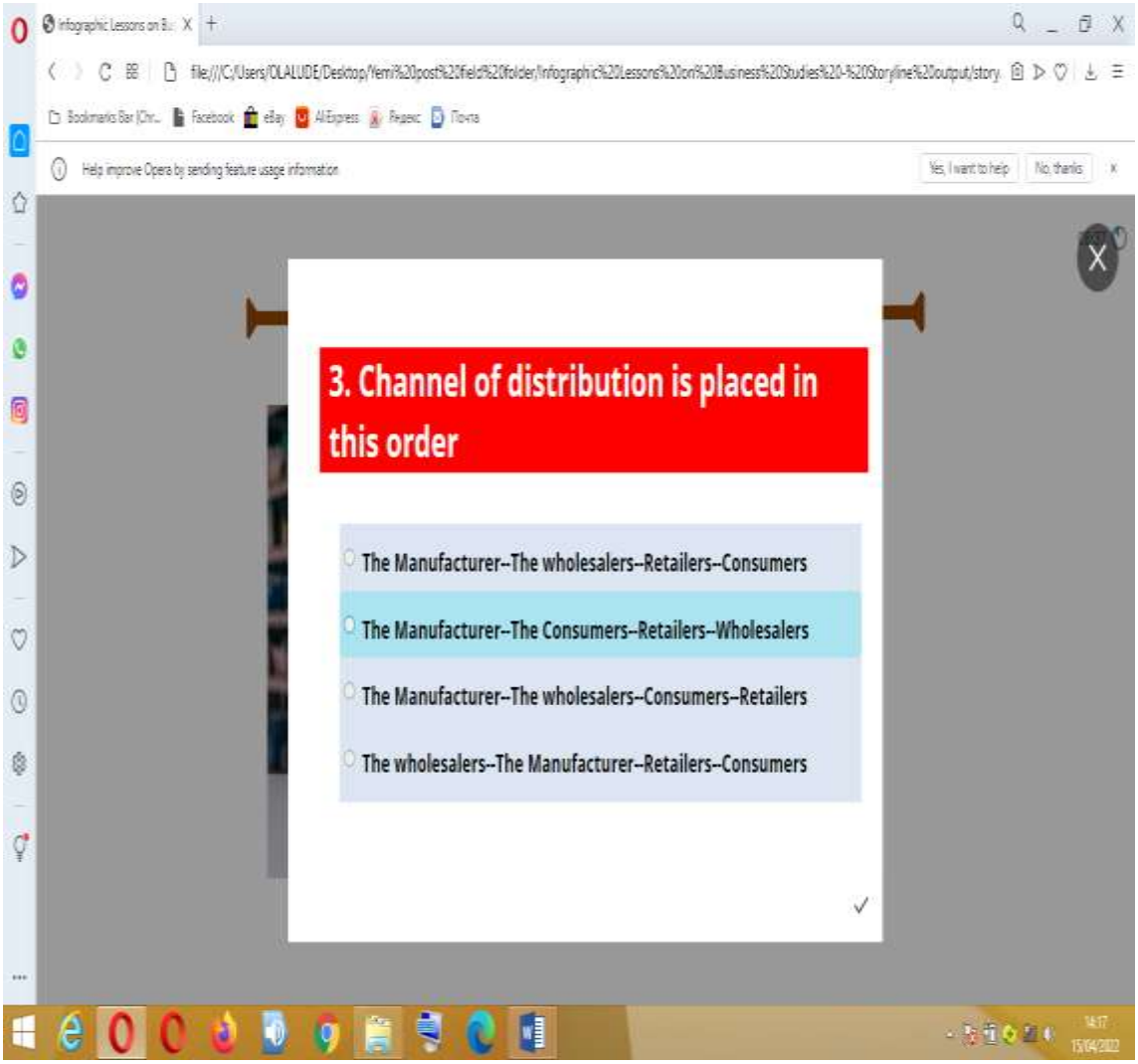

Module 3: Channels of Distribution (Contd)
Function of the Wholesaler
Manufacturers

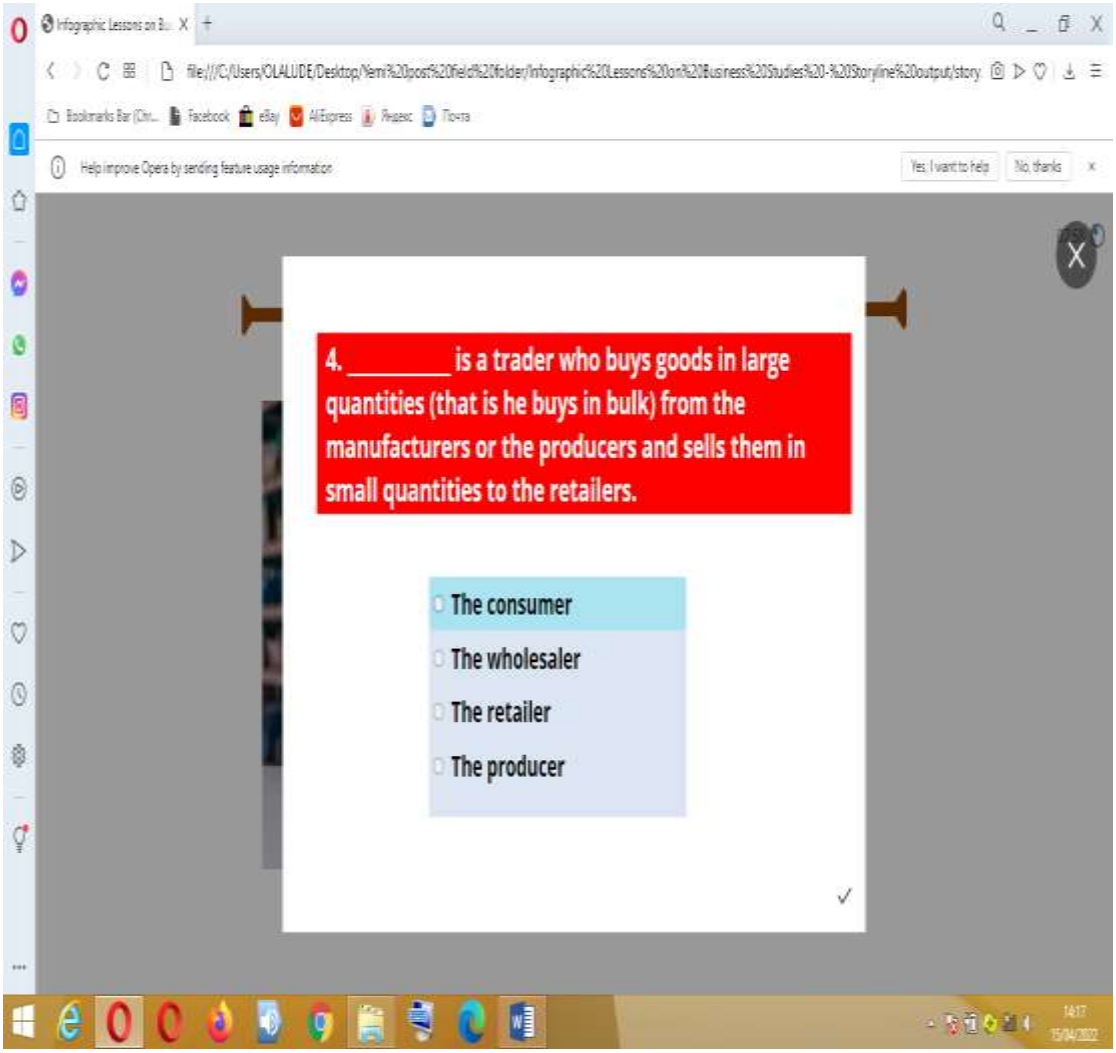

Module 3: Channels of Distribution (Contd)
• Functions of the Retailer to the Wholesalers
Create space
Small Quantity
Form links
Retailer
Create space
Form links

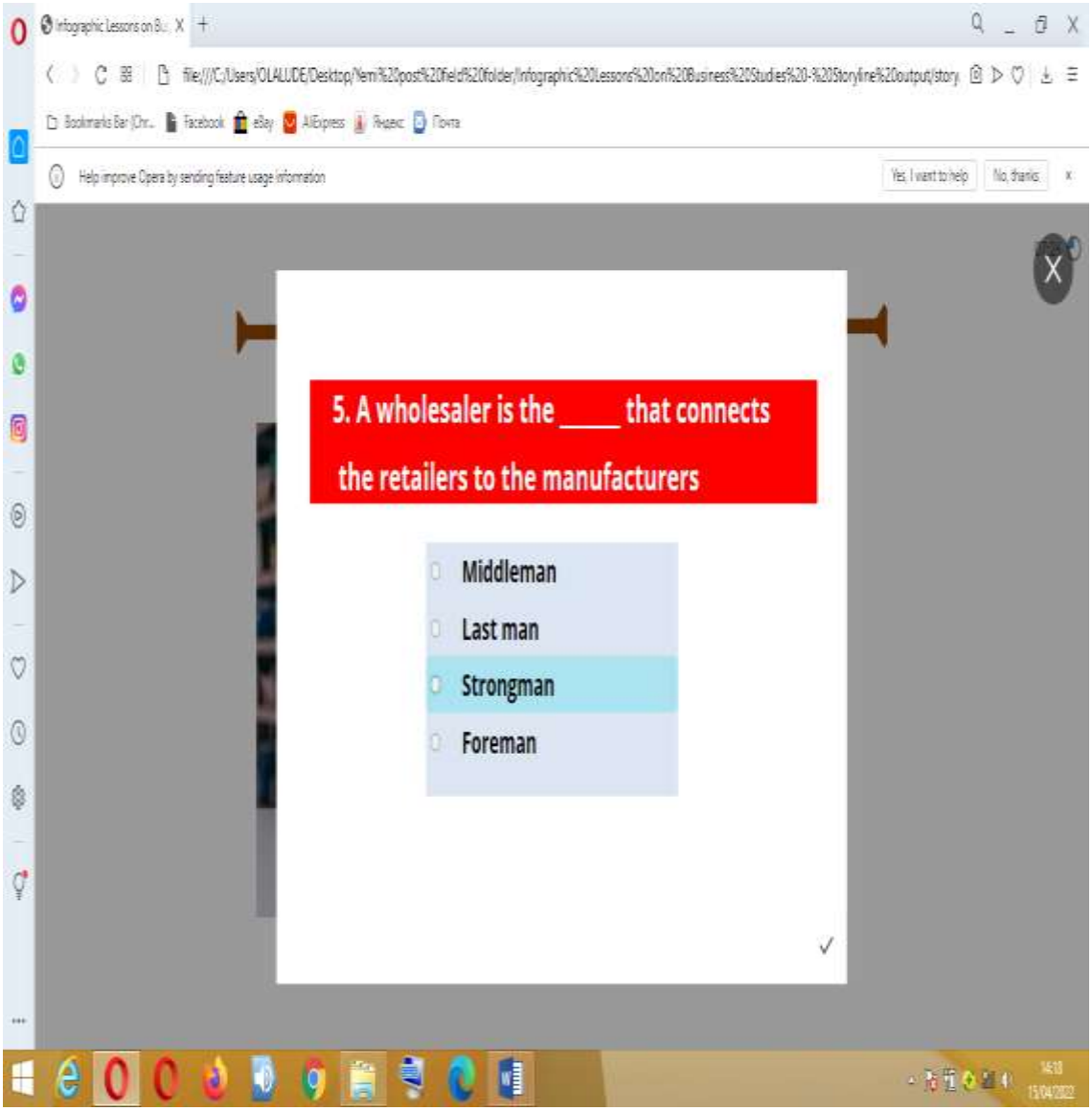

Module 3: Channels of Distribution
Continue
Functions of Manufacturers


1._____ is a path through which goods move from the producer to the consumers.
Channel
Transport
Canal
Movement


2. The process of moving a product that has been manufactured from the manufacturer to the final consumer is called
Distribution
Awareness
Advertisement
Commerce


3. Channel of distribution is placed in this order
The Manufacturer--The wholesalers--Retailers--Consumers
The Manufacturer--The Consumers--Retailers--Wholesalers
The Manufacturer--The wholesalers--Consumers--Retailers
The wholesalers--The Manufacturer--Retailers--Consumers


4. _____ is a trader who buys goods in large quantities (that is he buys in bulk) from the manufacturers or the producers and sells them in small quantities to the retailers.
The consumer
The wholesaler
The retailer
The producer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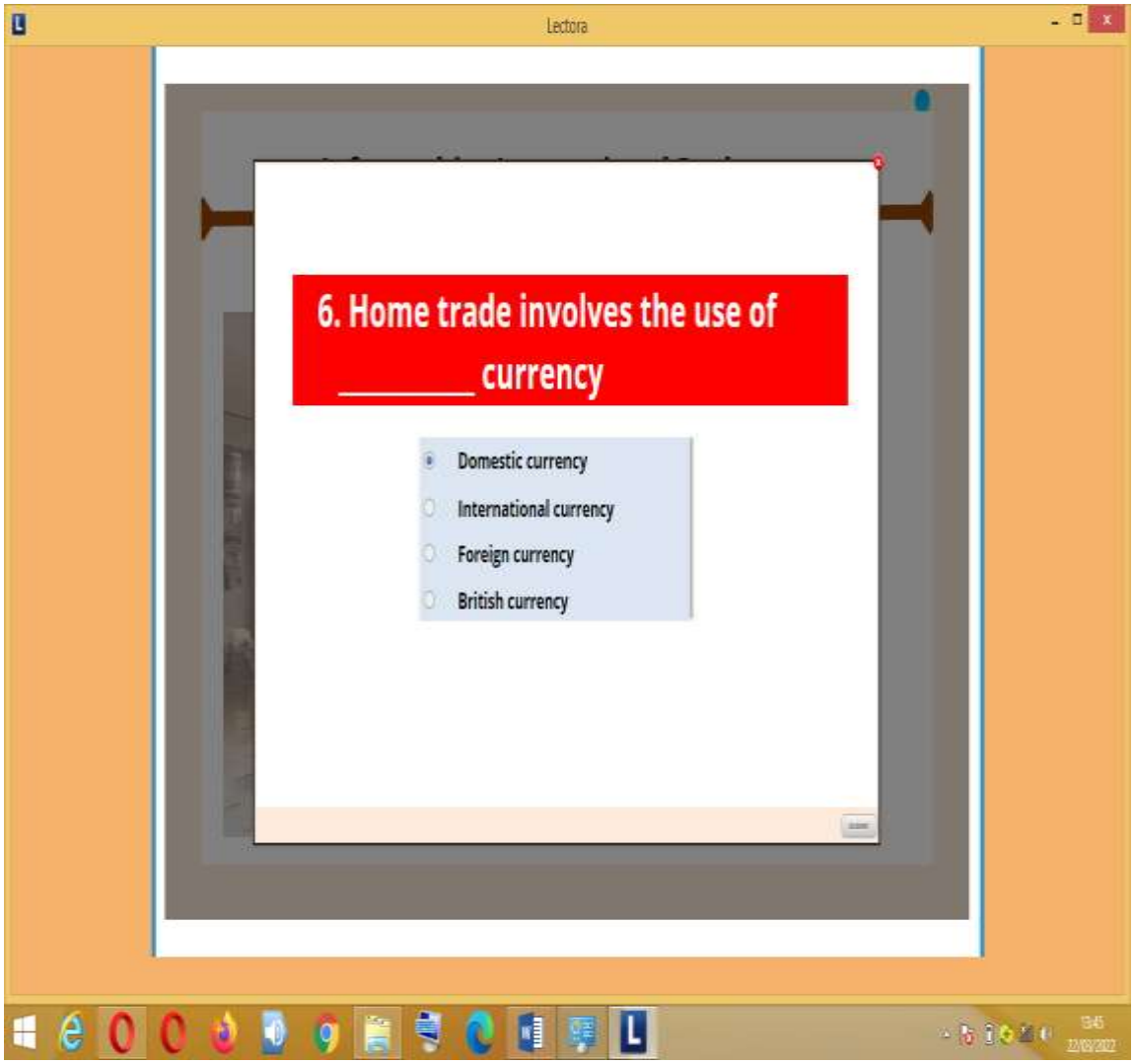
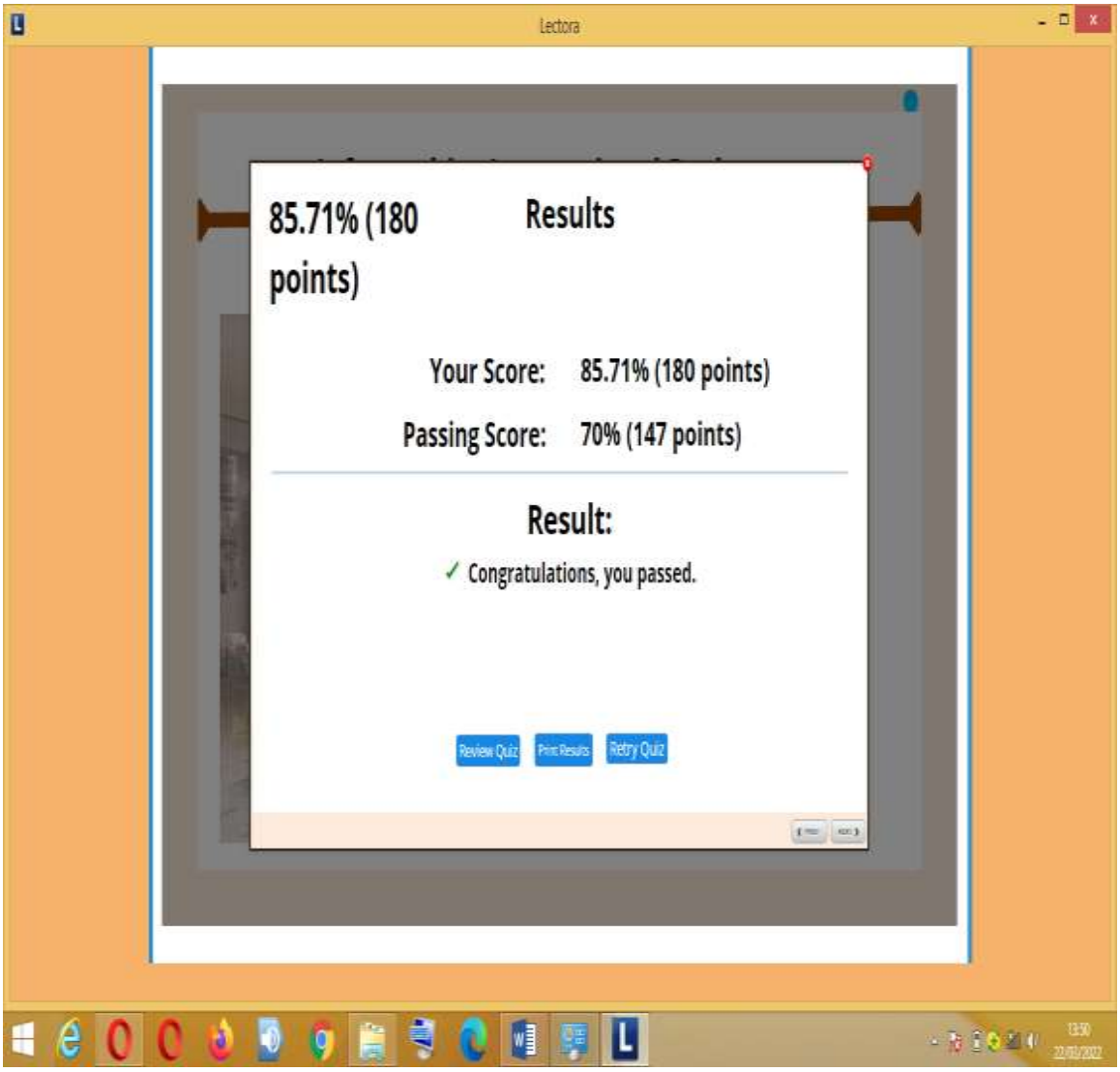
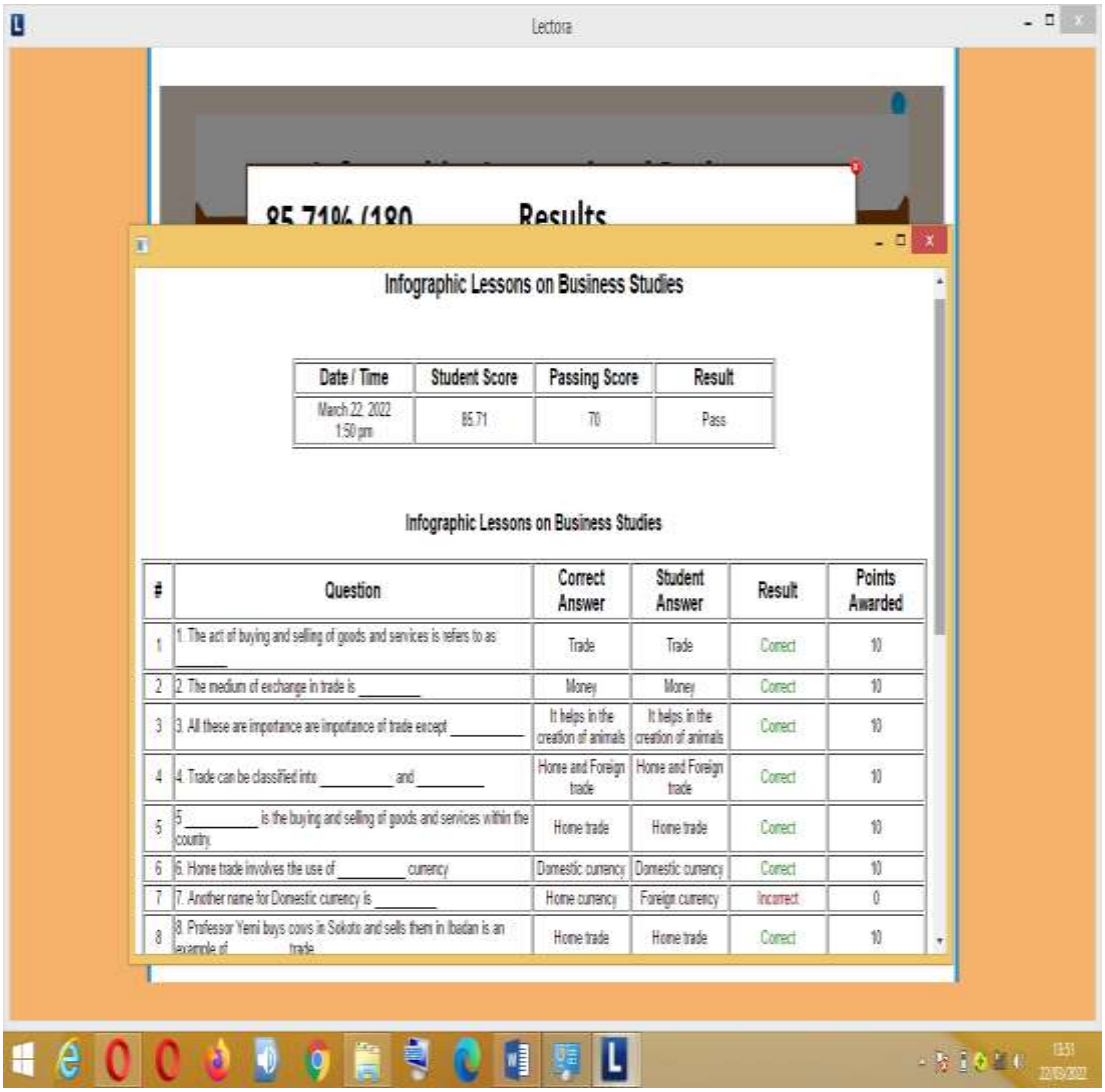
Yes, I want to help
No, thanks
5. A wholesaler is the _____ that connects the retailers to the manufacturers
Middleman
Last man
Strongman
Foreman


Lectora
6. Home trade involves the use of _____ currency
Domestic currency
International currency
Foreign currency
British currency


Lectora
85.71% (180 points)
Results
Your Score: 85.71% (180 points)
Passing Score: 70% (147 points)
Result:
✓ Congratulations, you passed.
Review Quiz
Print Results
Retry Quiz


Lectora
85.71% (180
Results
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Date / Time
Student Score
Passing Score
Result
March 22, 2022 1:50 pm
85.71
70
Pass
Infographic Lessons on Business Studies
#
Question
Correct Answer
Student Answer
Result
Points Awarded
1 1. The act of buying and selling of goods and services is refers to as _____ Trade Trade Correct 10
2 2. The medium of exchange in trade is _____ Money Money Correct 10
3 3. All these are importance are importance of trade except _____ It helps in the creation of animals It helps in the creation of animals Correct 10
4 4. Trade can be classified into _____ and _____ Home and Foreign trade Home and Foreign trade Correct 10
5 5 _____ is the buying and selling of goods and services within the country. Home trade Home trade Correct 10
6 6. Home trade involves the use of _____ currency Domestic currency Domestic currency Correct 10
7 7. Another name for Domestic currency is _____ Home currency Foreign currency Incorrect 0
8 8. Professor Yemi buys cows in Sokoto and sells them in Ibadan is an example of _____ trade Home trade Home trade Correct 10