

# **Human and Institutional Factors as Challenges to Use of Mobile Technologies for Team Based Learning: Case Study of Three Tertiary Institutions in Ede, Osun state**

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**Being a research project carried out in partial requirement for the award of Bachelor in Library and Information Science (BLIS), in the Department of Library and Information Science, Faculty of Business and Social Sciences, Adeleke University, Ede, Osun State, Nigeria.**

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## **ABSTRACT**

The study was motivated by the need to find out the factors that determined team based learning in tertiary institutions in Ede, Osun State, Nigeria. The researcher observed that the rate in which students in tertiary institutions get involved in team based learning is considerably high. It was also observed that very little has been done to assess the factors that determine the use of mobile technologies and academic and research libraries for team based learning by undergraduate students. The case study research method was adopted to carry out the study in three tertiary institutions in Ede, Osun State, Nigeria. Purposive sampling technique was used to select the one thousand one hundred undergraduate students that constituted the study's sample population. The questionnaire was adopted as the study's data collection instrument. The simple percentage score was used as the study's data analysis technique. The study revealed three indicators of human factors namely, trust, sense of competition and willingness to share knowledge as the human factors that impact the extent to which mobile technologies are used to facilitate communication among members of team based learning groups. The study also revealed three indicators namely, space, rules outlawing group discussion and rules outlawing use of mobile technologies as factors prevalent in academic and research libraries that determine the use of academic and research library by members of team based learning groups. The study concludes that human factors are instrumental to the extent to which mobile technologies can support team based learning and that academic and research libraries must reassess their rules and regulations from the point of view the requirements of team based learning needs. Recommendations were made to students on how to manage human factors and academic and research libraries on how to implement rules that will not hamper team based learning. The study is useful to students, lecturers, librarians and administrators of tertiary institutions.

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## **CERTIFICATION**

I certify that this research study was carried out by Sallau Mohammed, in the Department of Library and Information Science, Faculty of Business and Social Sciences, Adeleke University, Ede, Osun State, Nigeria.

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## **DEDICATION**

This research work is dedicated to the Almighty God, the Unmoved mover.

It is also dedicated to all young people willing to pursue a career in Library and Information Science.

I also dedicate it to my parents, Engr. Suleiman Sallau, Ph.D and Hajia Qudirat Sallau for not giving up on me. You are my source of inspiration and I will always love you both.

I also specially dedicate this work to my friend, Late Vivian Okagbue. May her gentle soul continue to rest in the bosom of the Lord (Amen).

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# CHAPTER ONE

## INTRODUCTION

### **Overview**

In this chapter, the study is introduced. The researcher spells out why the study is important and how the ideas leading to the study was derived. The chapter provides insights to the reasons why the study is considered a worthwhile study. The scope and limitations of the study were also discussed. The key terms used while reporting the study were also identified and defined.

### **Background to the Study**

Learning is a general human phenomenon. Every society has developed its own kind of learning system which are developed and implemented to help the societies to achieve human, social and economic development. In most cases, societies develop formal learning techniques and make the techniques available to all levels of their educational systems in order to ensure that student are able to imbibe every information and knowledge that they need to meet human, social and economic development needs. In Nigeria for example, the educational system is divided into formal, informal and traditional educational systems (Abdullahi & Abdullahi, 2014; Omolewa, 2007; Bhola, 2006). While the country pays close attention to all the three educational systems, prime attention is paid on the formal educational system (Livsey, 2016). The formal educational system comprise of pre-primary and primary schools, secondary schools and tertiary institutions. Tertiary institutions include post-secondary school institutions such as colleges of education, polytechnics and universities (Livsey, 2016; Abdullahi & Abdullahi, 2014). Each form of tertiary institution is designed and established both by governments and private individuals and organizations to train students on the skills and behaviors they require to excel in human, social and economic aspects of life.



Consequently, governments and other regulatory organizations make sure that adequate and appropriate learning techniques are developed and implemented in Nigerian tertiary institutions. This made Omolewa (2007) to argue that the philosophy of education in Nigeria has been carefully drafted and implemented to enhance the training of Nigerians to be able to adapt to lifelong learning circumstances everywhere around the world.

In the literature learning techniques can be defined as strategies put in place to coordinate the ways teachers are to best respond to the learning needs of students. Learning techniques are approaches formally put in place to ensure that learning takes place. Learning techniques vary and are applied in varying learning conditions and at different levels of learning. Learning techniques include machine learning, unsupervised learning, online machine learning, reinforced learning, federated learning, cooperative learning, experiential learning, among others (Suskie, 2018; Wlodkowski & Ginsberg, 2017; Barkley, et al., 2014). Consequently, several hybrid learning techniques have been developed and adopted in tertiary institutions. One of the most popular of the learning technique is the team based learning technique. Burgess, et al. (2018) defined the team based learning technique as a technique that is “designed to facilitate a learner-centered approach, where students in interactive small groups, use peer assisted learning to solve authentic, professionally relevant problem (p. 74).” Eladi & Jarrahi (2020) also argued that team based learning technique is a learning technique that is “student-centered and instructor’s role should not be confined to an information provider, but should be rather like a facilitator who creates an interactive and collaborative environment...to enhance active learning in small groups (p. 58).” The main thing about team based learning technique is that it brings different students together to form a group that aims to reach specified learning goals. Although, in most cases, students are in the same class or level of study, they are

also separated by their residences. This makes frequent communication and meeting together at designated meeting points important requirements in the successful implementation of team based learning. The challenges that arise because of the importance of frequent communication and physical meeting among students involved in team based learning have been identified in the literature by different scholars. Burgess, et al. (2018) for example, argued that without frequent and constructive communication that students involved in team based learning are likely not able to reach the set learning goals. They argued that team based learning requires coordinated communication if students are to achieve peer assisted learning, one of the primary reasons why team based learning is considered important.

Observation of current realities with regards to the need to communicate and meet frequently indicates that mobile technologies and academic and research libraries have the potential to provide ways out of the challenges that hamper team based learning due to limited opportunity to communicate and meet in atmosphere where discussion and learning can take place. In the recent past, mobile technologies have been identified as the major drivers of the information society, that is, a society where the creation of information and access to, and use of information strive. According to Taylor et al. (2017) mobile technologies can be defined as specific types of information technologies that are designed to be hand-held and as a result, carried around from place to place by users. The main characteristic that distinguishes mobile technologies is the use of wireless networks and connections. Mobile technologies have also been defined as combining “communication and computing capabilities with mobility and personality (Jarvenpaa& Lang, 2005, p. 7).Because of the nature and characteristics of mobile technologies, stakeholders normally think that it is sufficient for eradicating the problems students who are involved in team based learning face with regards to the

need to communicate with one another. This is particularly so when statistics of the number of students that own mobile technologies are put into consideration. As revealed through observation, most tertiary institution students own different types of mobile technologies, particularly mobile phones. This can be confirmed by the number of studies that have been carried out on the use of mobile phones by tertiary institution students for various reasons (Abidin & Tho, 2018; Batra, 2017; Utulu & Alonge, 2012).

Like it is expected that mobile technologies are able to sufficiently eradicate the challenges of communication that students that are involved in team based learning face, stakeholders also feel that academic and research libraries in tertiary institutions should help to eradicate the problem of meeting venues that students involved in team based learning normally encounter. There are various studies that have enumerated library and information services that academic and research libraries provide to students (Utulu & Ngwenyama, 2019). Majority of these studies identified that academic and research libraries provide different spaces for both general and specific purposes (Parvin et al., 2019; Soria, et al., 2017). Some researchers identify the provision of private reading carrels, seminar rooms meeting rooms, etc. new forms of library and information service delivery rendered by academic and research libraries. For instance, Curzon & Quinonez-Skinner (2009) defined academic and research libraries as libraries that are established and attached to higher education institutions. They serve two main purposes, to support curriculum and to support research. They went further to argue that academic and research libraries are funded and positioned to meet different forms of informational and educational needs of all categories of users, particularly students, that they are established to meet. Soria et al. (2017) also defined academic and research libraries as those set up in tertiary institutions to support students, staff, academic and administration. They claimed that these types of libraries are

normally big and provide an array of library and information services that cover provisions of meeting rooms and seminar venues where users can interact as a result of learning or research.

The argument so far is that there are intersections among team based learning, mobile technologies and academic and research libraries. These interactions seem to provide the grounds for stakeholders to assume that students involved in team based learning have very little to worry about. This is because the need for frequent communication during team based learning is expected to be met by mobile technologies. It is also expected that academic and research libraries will provide conducive venues where members of team based learning groups can meet. Despite these expectations, team based learning groups still suffer from challenges related to communication and meeting venues. These two challenges limit the extent to which students derive the learning goals set for team based learning exercises. This therefore requires that an empirical study be carried out to determine the factors that are responsible for the challenges that hamper team based learning in situations where group members own and use mobile technologies and the tertiary institutions where they study own academic and research libraries that are expected to support learning with library information services.

### **Statement of the Problem**

The problem addressed in this research study is how human factors and library rules impede team based learning in tertiary institutions in Ede, Osun State, Nigeria. This is to say that the situations in which team based learning is hampered by defective knowledge sharing and meeting venue related challenges despite that the students involved own and use mobile technologies and have access to academic and research libraries is considered problematic. This problem is critical because the study will expose the human factors that are necessary for using mobile technologies to facilitate effective knowledge sharing during team based learning.

It is also important because the study will expose how unintended consequences of library rules used to regulate users actions in the library negative impact team based learning. The researcher considers this study crucial because of the assumption among stakeholders that problems related to knowledge sharing among groups are easily solved if such groups adopt mobile technologies. There is also the assumption that academic and research libraries provide adequate accommodation required by users for productive learning. The problem identified and addressed in the study poses both practical and theoretical challenges to the adoption of team based learning in tertiary institutions.

### **Objectives of the Study**

The broad objective of the study is to determine how factors related to knowledge sharing and conducive meeting venues hamper team based learning in tertiary institutions in Ede, Osun State, Nigeria. Three tertiary institutions were used as case studies. The specific objectives of the study include the following:

- To ascertain the human factors that hamper the use of mobile technologies to facilitate knowledge sharing among members of team based learning groups.
- To determine the library rules that hamper the use of academic and research libraries as meeting venues by members of team based learning groups.

### **Research Questions**

The study's broad research question is: what are the factors that hamper team based learning in tertiary institutions in Osun State, Nigeria? Two specific research questions were coined to answer the broad research question, they are:

- What are the human factors that hamper the use of mobile technologies to facilitate knowledge sharing among members of team based learning groups?

- What are the library rules that hamper the use of academic and research libraries as meeting venues by members of team based learning groups?

### **Significance of the Study**

The study is significant for two main reasons. First is that it will provide practical insights that will be derived from an empirical study on how human factors and library rules constitute barriers to team based learning in tertiary institutions in Nigeria. Although there are a number of studies that have been carried out on how to improve on team based learning, most of the studies were carried out outside Nigeria and more importantly, none was carried out to assess the situation in Ede, Osun State. The study is therefore significant because it will evaluate and provide empirically derived insights that mirror situations in Ede, Osun State, Nigeria, using three tertiary institutions in Ede, Osun State as case studies. This is to say that the study provides practical insights that are useful to stakeholders in the tertiary institutions studied and by extension, tertiary institutions in Nigeria. A stakeholder group that will benefit from insights that will be derived from the study are librarians. Because the study will assess how library rules may hamper team based learning, libraries are likely to assess how library rules may have unintended consequences when they are applied without care.

Lecturers and students in tertiary institutions that will be involved in group based learning in the future will also benefit from the study. Insights that will be derived from the study are likely to provide them with new information about how human factors may limit the extent to which mobile technologies can promote effective communication among members of team based learning. Consequently, the study provides lecturers and students with insights that will enable them to understand how to manage human factors that determine how mobile technologies can be used to facilitate effective communication among members of team based learning groups. In the past, stakeholders have taken it for granted that human

factors determine to a large extent the effectiveness of mobile technologies. The study provides avenue for stakeholders to know the relationship between human factors and mobile technology effectiveness during project based learning. The second significance of the proposed study is its intended contribution to the literature. Primarily, the study adds to the body of literature on team based learning. It also adds to the body of literature that looked into the role of academic and research libraries in the achievement of team based learning goals. Another significance of the study to literature is that it brings together three distinct subjects namely, team based learning, academic and research libraries, and mobile technologies. Academic disciplines that are concerned with these subjects will benefit from its theoretical insights.

### **Limitations of the Study**

The primary limitation of the proposed study is that it cannot be generalized. The sample institutions and population of the study are within Ede, Osun State. This limitation is peculiar to studies that adopt the case study research method. This is because the case study research method allows researchers to aim to use small sample sizes and to draw attention to new insights that may otherwise elude studies carried out using other forms of research methods that attempt large scale studies. This however, does not rob studies that adopted the case study research method their scientific validity and reliability. There are many study that have been carried out over the years and in the recent past that adopted the case study research method to evaluated issues relating to learning, information technology and academic and research libraries (e.g. Utulu & Ngwenyama, 2019). The time allotted to the study is another limitation of the study. The study is a requirement for the award of Bachelor of Library and Information Science, hence, it was be carried out within a specified timeline when the researcher was also involved in other course works. Another limitation of the study is the funds available to the research. The study

involves activities that require funds, such as, travelling for data collection. Because the research is totally funded by the researcher, opportunities for real-time observations of the case tertiary institutions that required that the researcher visit the case institutions multiple times were jettisoned due to cost. The Corona Virus pandemic and the lockdown also affected the time available for the study and the opportunity to move around the case institutions.

### **Definition of Key Terms**

The under listed terms were used in the study in the ways they were defined below:

**Human factors:** This is taken to be both cognitive and behavioral. In other words, human factors are ways of thinking about the usefulness of mobile technologies and library rules and the behavior (ways mobile technologies are used and ways library rules are applied) that ways of thinking promote.

**Library Rules:** These are both formal and informal cues that are used to determine the appropriate ways for using library resources and facilities. They include ad-hoc rules implemented by library staff when deciding on what constitute appropriate use of the library. Library rules as used in the study also include directives pasted on walls and shelves about appropriate library user behavior.

**Tertiary Institutions:** In the study, tertiary institutions are taken to be post-secondary school institutions such as colleges of education, polytechnics and universities.

**Team Based Learning:** This include all officially sanctioned take home assignments given by lecturers to students grouped into different groups that are made up of at least three students.

**Mobile Technologies:** These are information technologies that are produced in such as ways that they can be moved along when in use or taken to different destinations to be used.



**Ede:** Ede is an ancient town in the South Western Nigeria. It is currently a major town in Osun State, Nigeria. It is a Yoruba speaking town and hosts two privately owned universities, one federal government owned polytechnic and one privately owned college of education.

**Osun State:** Osun State is one of the six states that comprise the south Western Geo-Political Region in Nigeria. The state is home to several socio-cultural and historical sites such as the Osun Osogbo, Oranmiyan Staff, etc.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.0 Introduction to Literature review**

In this chapter, the researcher presents a review of literature relevant to the problem identified in the study. In other words, the researcher carries out a review of relevant literature to assess existing studies that looked into the factors that determine the extent to which team based learning is used to reach desirable learning goals. The literature review is structured into conceptual review and empirical review.

#### **2.1 Conceptual Review**

Conceptual literature review is carried out to trace and understand how identified concepts, for instance, academic and research libraries, mobile technologies and team based learning have been defined and the different meaning attached to them over different periods of time (Torraco, 2016; Baglione, 2012). Conceptual literature review synthesizes and provides avenue for synergizing existing knowledge concerning identified concepts (Shields & Nandhini, 2013). In the literature, conceptual definitions are normally different. Such differences are dictated by disciplinary differences, conceptual issues, differences in time frames and personal sentiments. In most cases, however, personal sentiments arises because of the need to produce new knowledge. It may also arise due to the need to extend existing knowledge (Torraco, 2016; Shield & Nandhini, 2013).

In this study, there are basically three broad concepts namely, team based learning, mobile technologies and academic and research libraries. The importance of conceptual literature review to this study is vast. First, it allows the researcher to trace how identified concepts have been defined and studied over the years. It also allows the researcher to trace how the different meanings given to each of the concepts is determined by disciplinary differences and personal sentiments. The concept, mobile technologies is a concept that has been used by many disciplines

ranging from humanities, social sciences, basic medical sciences, natural sciences, technology and multidisciplinary disciplines such as library and information science, development science and information systems. The concept, team based learning has its roots in the discipline of education and psychology. However, it is being studied in other disciplines that are interested in learning as a research phenomenon.

Some professional disciplines including, medicine, software development and library and information science have used theories in learning techniques to evaluate the effectiveness and efficiency of professionals during practice (Abidin & Tho, 2018; Burgess, et al., 2018; Virkus & Uukkivi, 2017; Song, et al., 2016). Given that there are many disciplines that study learning techniques, particularly team based learning, it is expected that the ways the concept is defined and used in the literature is diverse and determined by disciplinary affiliation. The concept, academic and research libraries may not pose much problems with regards to variations in the ways it is used and defined in the literature. However, the researcher suspects that there may be variations in the conceptualization of the term academic and research library that may arise due to contextual differences and differences that may have arose over time (Koltay, 2017; Chiware & Beeker, 2018). The segments that follow this segment present how these three concepts have been used over the years.

### **2.1.1 Team Based Learning**

There are many definitions of the term, team based learning in the literatue. According Michaelson, Davidson & Major (2014)

team based learning transforms our classrooms into a more enjoyable experience for teachers and students alike...[it] shifts the focus of instruction away from the teacher as dispenser of information

and instead places the focus on students actively engaging in activities that require from them to use the concept of solving problems...to foster the development of self-managed learning teams (p. 58).

The nature of the term, team based learning and the ways it has been conceptualized above indicate that its focus is shifted from traditional leaning technique which is primarily classroom based. It also shifts attention from the belief that students can only learn when taught by teachers in the classroom.

Najdanovic-Visak (2017) argued that team based learning first appeared in the literature in 1982, “as a way to promote the benefits of small-group teaching in a large group setting, considerably enhancing students’ engagement and their knowledge retention (p. 5).” Najdanovic-Visak (2017) further noted that team based learning comprised of four implementation elements namely, strategically forming permanent teams of five to seven members (to guarantee sufficient intellectual resources); reading assurance process; developing students critical thinking by using in-class activities and assignments; and creating and administering a peer assessment and feedback system. Greetham & Ippolito (2018) also argued that team based learning is a

teaching strategy that offers the benefits of small group learning with large classes by creating opportunities for students to apply their conceptual knowledge through a systemic process of preparatory work, individual assessment, teamwork and immediate feedback (p.512).

They argued that the predominant benefit of team based learning is enhanced assessment outcomes. The conceptual definitions presented in the literature and as

shown in the work quoted above indicate that scholars see team based learning as a learning technique or strategy that is only useful to large classes. In other words, insights in the literature seem to indicate that team based learning may not be applicable or useful to small classes. There is also an important observation in the literature about the academic discipline that seem to show strong interest in team based learning. Scholars showing strong interest in studying team based learning seem to be those in the medical sciences, engineering and basic science education disciplines. There seem to be a dearth of studies in disciplines of business science, social sciences and library and information science. Scholars in these later disciplines are not engaged in research studies that are devoted to assessing how team based learning is adopted in their disciplines and what their disciplines stand to gain from team based learning.

Further on the definitions of team based learning as reported in the literature, Dharmasaroja (2020) defined team based learning “as an innovative teacher-driven teaching method that uses a specific sequence of activities to foster individual and group responsibility in small groups of students that have been formed in order to answer questions and solve problems (p. 54).” Dharmasaroja (2020) also posited that team based learning is an “active learning strategy that encourages individual and group responsibility by having small groups of students work together for the purpose of responding to questions and solving problems (p. 55).” He went ahead to provide six principles as against the existing four principles proposed by Najdanovic-Visak (2017) as the principles required for designing and facilitating team based learning. The principles include, prepare backward and carry out forward; use mutually reinforcing tasks in particular sequence; use the majority of class time for higher level thinking with knowledge application activities; use exercises and assignments to facilitate learning and build team relationships; provide regular and immediate feedback on individual and team

performance; and use a grading/reward system to encourage individual and team responsibility for high-level of the work (p. 55).

Of interest in the positions put forward by Dharmasoroja (2020) is his recognition of the individual in his conception of team based learning. He also brought into his concept of team based learning the role of the teacher. These two elements are not factored into the concepts of team based learning as presented by other scholars mentioned above. This inclination must have resulted to the six principles of team based learning that he presented in place of the four elements that dominated the literature before his study. It is important to note that identifying the ‘individual’ and ‘teacher’ by Dharmasoroja (2020) is important. This is because the main purpose of team based learning, like other learning techniques, is the extent to which an individual learner is able to learn. It is also important that the role of the teacher be factored into team based learning technique because of the leadership and control roles that he/she plays. He/she manages the team, sets objectives and intended outcome(s) and also assesses and provides rewards. Consequently, it is important to assess how his/her role either enhance or impede team based learning.

Further to the arguments above, several terms have been used in the literature to designate learning techniques that have to do with forming small groups and making the group to learn together collaboratively. Although this study used the term, team based learning to designate the learning technique that is based on segmenting large classes into small groups for effective and efficient learning, other similar terms that were used in the literature include team based learning and project based learning. Utulu & Alonge (2012) for instance, use the term project based learning to designate a learning situation in which students are grouped in order to learn collaboratively together. They cited Milentijevic’s (2008) definition of project based learning thus: “a constructivist pedagogy that intends to bring

about deep learning by allowing learners to use an inquiry based approach to engage with issues and questions that are rich, real and relevant to topics being studied...students are expected to use technology in meaningful ways to help them investigate or present knowledge (quoted in Utulu & Alonge, 2012, p. 5).

More recent studies like Chan & Yang (2019), Bas & Beyhab (2017) and Sumarni (2015) defined project base learning as a learning technique that shifts attention to students in order to understand how best they can learn. Project based learning therefore enable students to approach the completion of a learning project based on their own experiences and ideas of how best such projects can be completed. This is the reason why scholars argue that project based learning is inquiry based. A critical look at the definitions used to conceptualize project based learning shows that it has similarities with team based learning. This is in the sense that both concepts promote the kind of learning that is achieved by grouping students into small groups with the intention of making them to collaborative and share knowledge. Although project completion is at the heart of project based learning, like with team based learning it relies primarily on using small groups as bates for achieving learning project goals.

Another similar term that has been used to designate a learning technique that is similar to group based learning is team based learning. Unlike with team based learning and project based learning that are characterized by forming small groups that are given specific learning tasks to complete, group based learning lay emphasis on measuring the ability of students to learn in group situations. According to Strijbos et al. (2004) group based learning can be defined as a learning technique that assesses corporative learning and collaborative learning capabilities of learners. Strijbos (2004) presented five elements of group based learning: learning objective; task type; level of pre-structuring, group size, and computer support. An important development in the literature that deals with group based

learning is that between the years 2000 and 2005 scholars focus was more on computer based team based learning. Example of studies devoted to computer based team based learning include, Resta & Lafferriere (2007); Balsco-Arcas et al. (2013); and Eid & Al-Jabri (2016). The implication of the review done so far is that team based learning is positioned to be a learning technique that has to do with students learning in small groups where they are expected to communicate, share knowledge and collaborate and use alternative venues that are other than classrooms. This makes the question regarding the relevance of academic and research libraries and mobile technologies to team based learning very important.

### **2.1.2 Academic and Research Library**

The term library has been defined as information center whose statutory responsibility is to acquire information, process the information, disseminate the information to users and preserve and preserve and conserve the information for future use (Ifidon, 2007; Ogunidipe, 2005). The major concepts underlying the term library is its information management responsibilities. In most cases, scholars present the information management responsibilities of library in umbrella terms such information acquisition, information processing, information dissemination, and information preservation and conservation. There are other similar definitions put forward by scholars such as Jordan (2017) and AlAwadhi & Al-Daihani (2019) which deconstructed and explained more specifically these umbrella terms. For instance, Jordan (2017) argued that libraries are responsible for managing the acquisition of library information materials by engaging in selection activities that involve every category of users. Accordingly, Best (2017) defined the selection as the process that involves selecting appropriate information resources that meet users' needs and expectations.



Similarly, Posigha, et al. (2019) identified cataloguing and classification and indexing and abstracting as those information management activities that constitute the processing of library information resources. In the library and information science discipline there are a deluge of scholars that have researched on indexing and abstracting and cataloguing and classification. This indicates how important these tasks are to libraries and library and information science scholars. They argued that without cataloguing and classification and indexing and abstracting that it will be impossible for libraries to process and organize library resources in ways that facilitate their uses. There are therefore many studies that have been carried out to assess the extent to which libraries and library users' benefit from cataloguing and classification and indexing and abstracting. It follows that the core responsibilities identified above are normally use to conceptualize library and to identify the different types of libraries, for instance, types of information resources a library is likely to acquire, the types of users that use a library and type classification scheme it is likely to use.

According to Rajan (2017) there are four types of libraries that are distinguished by their collection, parent bodies and users. They include public libraries, academic and research libraries, school libraries and special libraries. The library and information science literature is characterized by the themes scholars in the field study. The themes are explicitly determined by the four types of libraries identified above. Consequently, Rubin (2010) defined public libraries as libraries established by government to provide for the information needs of the general public using tax payers' money. Ejikeme & Okpala (2017) defined school libraries as libraries set up to provide for the information needs of pupils and staff in pre-primary schools, primary schools and secondary schools. From the perspective shown above every library established in schools-nursery, primary and secondary schools are categorized as school libraries. With regard to special libraries,

Khamouna (2017) posited that special libraries are information resource centers established for special purposes and to meet the information needs of those involved in actualizing the special purposes. Khamouna (2017) argued that special libraries are established in corporations, private businesses, government agencies, museums, hospitals and related organizations to support the statutory responsibilities of members of the organizations with relevant information resources. The fourth type of library identified by Rajan (2017) is the academic and research library. This particular type of libraries is at the center of this study.

According to Choy & Goh (2016) academic and research libraries are established in post-secondary educational institutions including, college of education, polytechnics and universities. They opine that academic and research libraries are “changing from being a provider of information resources to ... facilitators and activists in the business of knowledge acquisition and provision for learning, teaching and research activities (pp. 1-2).” The literature seems to indicate that academic and research libraries are the most sophisticated of all the types of libraries identified. This is because of their staff requirements the kind of institutions they are situated in, and the various types of information they make available to their users. Most academic and research libraries are staffed by academic librarians. According to Rubin (2010) academic librarians work in academic libraries, that is, libraries that are established in tertiary education institutions. The implication of this is that academic and research libraries are staffed by librarians, who apart from performing professional duties related to library services, also play academic role that require that they do research and publish the outcomes of their research studies in learned journals.

Academic library users have also enjoyed much attention from scholars. This is because of the nature of their needs and the transforming information landscape in academic and research environments. The invention and proliferation

of information technology (IT) and its eventual deployment by academic and research libraries resulted to the growth in the number of studies carried out on academic and research libraries users and IT. There are therefore studies such as those carried out by Rognoni & Pastorini (2017) and Mandal & Dasgupta (2019) to assess how academic and research library users are impacted by IT and particularly those that are categorized as mobile technologies.

### **2.1.3 Mobile Technologies**

The concept of mobile technologies has been used in two different ways in the literature. This is to say that the term mobile technologies is used to conceptualize both wireless connections and devices such as laptops, palmtops, mobile phones, etc., that use them to gain access to electronic and communication networks. A practical example of wireless connection is what has come to be known as Wi-Fi (Bas & Beyhab, 2017). Wi-Fi evolved after electrical and communication engineers work to improve on the limitations of wire-based connections in the wake of computer networking (Briz-Ponce, et al. 2017). The literature shows obvious discipline based interests and sentiments in the studies carried out and reported in learned journals. For instance, disciplines in the science and technology and engineering focus more on studying mobile technologies that are connected to networking and wireless communication of data and information (e.g. Bas & Beyhab, 2017). Consequently, the definitions used to conceptualize the term mobile technologies present them only in the form of wireless network technologies for communicating data and information. See for instance the way Goggin (2006) defined mobile technologies: as the technology used for cellular communication. It follows that, concepts such as networking, network topologies, data communication and wired and wireless connections fit into the scope of studies that are carried out in the science and technology and engineering academic fields when it comes to studying mobile technologies.

It is generally believed that mobile technologies are mainly of four types. They include:

- Radio-based two-way radio communication (professional or public mobile radio) or broadcast.
- Mobile phone service based on cellular phone, short message service, wireless application protocol and general pocket radio service and UMTS.
- Mobile based gadgets such as laptops, tablets, personal digital assistants, pager, Bluetooth technology, and global position system.
- Network based WiFi.

These types of mobile technologies give room for the evolution of mobile technologies as social tools. Laptops, mobile phones, iPads, and other hand-held devices have been studied in the LIS discipline and other social science disciplines. These gadgets have also been studied as tools for facilitating the creation and use of information for educational purposes. For instance, in the library and information science discipline there are many studies that have been carried out on how mobile technologies support information management and utilization by library users (Chaputula, et al., 2020). A good number of studies focus on how academic and research libraries and their users use mobile technologies to harness information management and utilization (Fung, et al., 2016). However, there is a dearth of studies that look at the relationship among academic and research libraries, their users and team based learning. This reality necessitated this study.

## **2.2 Empirical Review**

### **2.2.0 Introduction**

This segment treats themes that have been empirically assessed by scholars with regards to team based learning, academic and research libraries and mobile

technologies. This is to say that the researcher reviewed the literature on team based learning, academic and research libraries and mobile technologies to underscore the different themes that scholars focused on over the years. The importance of this is that the researcher was able to reveal the extent to which scholars have looked into issues concerning how the adoption of the team based learning has been impacted by mobile technologies and how academic and research libraries are positioned to support team based learning.

### **2.2.1 Team Based Learning**

Much of the studies done on team based learning was carried out to provide frameworks that spells out how to appropriately implement team based learning. In fact, at the turn of the year 2000 most of the studies done to assess team based learning focused on the provision of frameworks for implementing team based learning. Effort geared towards providing insights into how to appropriately implement team based learning continues to dominate the themes of studies carried out by scholars in the field till present day. A good example among the studies carried to provide framework for implementing team based learning is Strijbos, et al. (2004). The study provided a six-step framework to actualize computer supported team based learning. Strijbos, et al. (2004) focused their framework on how those implementing team based learning can improve the interaction among members of team based learning groups.

They argued that existing framework that focuses on tasks, pedagogy and technology is not sufficient to provide insights into how to achieve productive interaction among members of team based learning groups. The six-step framework include, pre-learning, learning objectives, task type, level of pre-structuring, group size and computer support. A critical look at the framework proposed by Strijbos et al. (2004) show that they appreciated that teachers/lecturers are very important to the successful implementation of team based learning. This is

because their role ensures productive interaction among team based learning group members. Strijbos et al. (2004) framework also showed the importance of IT in facilitating team of based learning. Although their focus was on computers, their study, in a way, highlighted how important mobile technologies could be to facilitating interaction during team based learning situation.

More recent studies such as the one carried out by Bas & Beyhan (2010) took a part of the six-step framework proposed by Strijbo et al. (2004) to carry out an empirical investigation of team based learning. Bays & Beyhan (2010) assessed how learning objectives and types of tasks to be completed by team based learning groups impact its success. The study focused on two learning groups learning the English language. Their objective was to do an assessment of how team based learning technique impact learning attitudes and learning outcomes of the two groups involved in learning the English language. They tried to achieve this by assessing how well communicated learning objectives and task types facilitated the learning of the English language by the two groups that the studies. The study showed that proper interactions and communication impacted on the extent to which learning objectives and tasks types were communicated among team members. The limitation of Bays & Beyhan's (2010) study, particularly from the perspective of this particular study, is that the study did not assess how mobile technology could be used to facilitate interaction and communication among members of team based learning groups. Secondly, the study like most other studies on team based learning, did not look into how academic and research libraries could support learning during team based learning. Although there is no study that shows how academic and research libraries can support team based learning, Utulu & Alonge (2012) however, exposed how mobile phones impact the effectiveness and efficiency of team based learning. Utulu & Alonge (2012)

revealed how students involved in team based learning used mobile phones to interact, communicate, get information and browse the Internet.

In a more recent study, Greetham & Ippolito (2018) laid more importance on the role of mobile technologies, and in fact, all forms of IT, on team based learning. Unlike with Bay & Beyhan (2010) that studies only two variables namely, learning objectives and task types, Greetham & Ippolito (2018) assessed pre-reading or what Strijbos et al. (2004) identified as pre-learning. Pre-reading is taken to be the preparation teams involved in team based learning receive before they proceed to learning and working in groups (Greetham & Ippolito, 2018). Apart from pre-reading, Greetham & Ippolito (2018) argued that mobile technologies are very important to team based learning. Although they strongly argued that mobile technologies facilitate interaction and communication, they also put forward that mobile technologies use during team based learning can help students to acquire skills required to work in virtual teams in the future. The relationship between the adoption of mobile technologies and acquisition of skills to work in virtual teams is very important in contemporary time. This is because most, if not all multinational organizations where students are likely to take up jobs when they graduate adopt virtual team technologies to facilitate their operations and business across multiple international boundaries (Eisenberg, et al. 2019; Hosseini, et al. 2018; Gruman & Saks, 2018). However, like in most other studies that assessed factors that determine successful team based learning, Greetham & Ippolito (2018) did not assess the role academic and research libraries play in the facilitation of team based learning.

Another interesting study that looked at the phenomenon of team based learning is the one done by Dharmasruga (2020). Apart from complaining that enough research into team based learning has not been done by scholars, Dharmasruga (2020) also lamented that scholars have not done enough to estimate

the effectiveness of team based learning. He complained that most of the framework available for use in the literature are proposed to only facilitate the proper implementation of team based learning with none dedicated to assessing the effectiveness of team based learning. To cover this knowledge gap, Dharmasaroga (2020) proposed a framework that include inadequate preparation of resources and questions, dysfunctional group, inadequate roles of the instructor, erroneously treating team based learning as just as ordinary small group activities and inappropriate modification of team based learning to suit local needs. Quite surprisingly, issues relating to the adoption of mobile technologies did not appear in the list of factors Dharmasaroga (2020) enlisted as those that hamper the extent to which members of team based learning groups benefit from the technique. In relationship to this particularly study, the factors enlisted by Dharmasaroga (2020) can be categorized as human factors. However, there is no mentioning of how the non-use of academic and research libraries impact team based learning. Dharmasaroga (2020) study is similar to earlier study carried out by Michaelson et al. (2014).

### **2.2.2 Academic and Research Libraries**

The importance of academic and research libraries to the development of scholarship cannot be overemphasized. This has resulted to many research studies carried out by scholars to assess different factors that impact the performances of academic and research libraries. Most studies reported in the literature show that the changing academic landscape and the changing IT landscape influenced the ways academic and research libraries operate across the globe. Much of the study done between year 2000 and 2015 revealed the transformations in academic and IT landscapes. The researcher's assessment of recent research done between 2016 and 2020 also showed that changing academic and IT landscape have strong impact on the ways academic and research libraries are managed. For instance, Rader (2002)



did a study that assessed how to manage partnership among different academic and research libraries. The study was motivated by the growing cooperation among academic and research libraries which leads to cooperation that results to interlibrary loans. This phenomenon can be traced to the growing needs of users which were occasioned by changing academic and IT landscapes. It follows that available studies seem to indicate that academic and research library users' needs have become complex and difficult to meet. This complexity reflected in this study when it was explicitly revealed that students would have loved to use academic and research libraries for team based learning but are however, deprived as a result of some library rules.

Rao (2001) studied the challenges academic and research libraries face with regards to acquiring and managing scholarly publications and electronic journals. He also pointed out the prospects and advantages academic and research libraries stand to gain if they properly manage scholarly publications and electronic journals. Tella et al. (2007) on the other hand, looked at work motivation, job satisfaction and organizational commitment of personnel who work in academic and libraries. Their study was motivated by the growing complexity of managing personnel who work in academic and research libraries. The studies referenced above show the diversity of subjects that was treated by scholars that studied phenomena surrounding academic and research libraries at the turn of the 21<sup>st</sup> Century.

Between 2010 and 2015, themes of studies done to access academic and research libraries shifted to issues such as a value of academic and research libraries, e-books, social media, and ethnic and racial diversity, among others. Oakleaf (2010) focused on the value accorded to academic and research libraries as a result of the use of IT for managing information sources. Ahmad et al. (2014) studied e-books using the technology acceptance model. Their concern was the fact that scholars have not done enough studies to explain the factors that determine

why academic and research library users may accept or not accept e-books. Using data derived from e-book transaction logs of selected academic libraries, they found out that different categories of academic and research libraries user exhibited different information use behavior toward e-book. Another study that was motivated due to diversity of the nature of academic libraries and their users is Chang (2013). Chang (2013) looked at how ethnic and racial diversity have impacted academic and research libraries over the years in the US. The study assessed ethnic representation of academic and research library personnel and those of the students that use academic and research libraries in the US. Chang (2013) concluded that the ethnic and diversity that reflect in students' enrollment and users of academic and research libraries should be reflected in the ethnic and diversity of personnel that work in academic and research libraries.

In addition, there was a growing interest among library and information science scholars around 2010 and 2015 on the connections between social media and the management of information services by academic and research libraries. These studies were preceded by studies carried out by Burkhardt (2010) and other scholars. These initial studies were followed by Chu & Du's (2013) study which assessed social media networking tools available to academic and research libraries. There are also studies that assessed specific social media platforms that are available and relevant to academic and research libraries. They include Palmer (2014) who assessed how academic and research libraries use Twitter and Facebook to meet users' information needs. Witte (2014) also falls into this categorization. Witte (2014) assessed how academic and research libraries use Facebook to share resources and communicate with users. He concluded that Facebook amounts to a reliable platform that academic and research libraries can use to achieve their objectives of providing information services to different categories of users.

Between 2016 and 2020, the invention of data science and the transformation in the ways data were managed in universities and research institutes also impacted themes of research studies done by scholars studying academic and research libraries. Studies such as the one carried out by Ohoji, et al. (2019) on the role of data librarians started to appear in the literature. Chiwere's (2020) which also looked at how academic librarians have started to incorporate data management into their statutory responsibilities is another study. The concept of research 2.0 was introduced into academic and research library literature as a result of the changing research and IT landscapes across the globe. Koltay's (2016) study was devoted to assessing academic and research libraries' readiness to assume the role of data managers for researchers in the wake of the research 2.0. Despite all the studies done on academic and research library users, there is more to be done on their diversity and demography and the strong impact this has on academic and research libraries (e.g. Chang, 2013).

Research studies carried out in Nigeria on academic and research libraries were also influenced by the changing academic and IT landscape. For instance, Objemu, et al. (2004) assessed CD-ROM usage in Nigerian academic and research libraries. The study was motivated by the adoption of CD-ROM by academic and research libraries due to the upsurge in the number of electronic information resources that were too expensive for libraries in Nigeria. Uganneya, et al. (2012) studied information service provision and user satisfaction in research libraries in Nigeria. Their study was motivated by the proliferation of information services as a result of IT and how users are reacting to the use of information services that were IT based. Similar study was carried out by Dire, et al. (2016) to assess awareness of the use of IT by agricultural extension agents in North-Eastern Nigeria. The study was considered inevitable because of the increase in the number of IT deployed in agricultural research institutes in the region studied.

There are also a couple of studies done to assess academic and research libraries from the point of view of users. A good example is Anunobi & Ogbonna's (2014) study that evaluated the factors that determine the extent to which academic and research libraries provide information services that meet users' exact expectations. The study focused on factors that determine the extent to which academic and research libraries meet users' expectations. Another study that assessed needs and expectations of users of academic and research libraries was carried out by Obasuyi & Okwilagwe (2018). The study evaluated institutional factors that determined the use of Research4Life in Nigerian academic and research institutions. The study shows how institutional issues such as accessibility, access to password, Internet connectivity, among others determined the use of Research4Life. This study adds to these studies by looking at the factors that come play when undergraduate students in tertiary institutions use mobile technologies and academic and research libraries during team based learning.

### **2.2.3 Mobile Technologies**

There are many studies that have been carried out on the subject, mobile technologies. As noted earlier, many disciplines ranging from science and technology, medicine, social sciences, engineering, education and library and information science have all studied phenomena surrounding mobile technologies from different perspectives. Mavromonstakis', et al. (2016) studied for instance, was based on assessing the importance of 5G mobile networks to the performances of mobile technologies. Their work is a typical example of research carried out in the science and technology and engineering fields on mobile technologies. Azari& Miao (2017) is another study in the science and technology and engineering fields that assessed mobile technologies. They focused their study on how users of mobile technologies can maximize network life time on cellular networks. Phillip, et al. (2018) is another study that falls within the science and technology and engineering

fields. They studied microservices scheduling model over heterogeneous cloud-edge environments. Manogaran, et al. (2017) assessed mobile technology based security intelligence for the healthcare industry. The popularity of big data in the healthcare industry and adjoining issues concerning how to ensure security of data in the healthcare was the focus of their study. Similar studies that focused on Internet of Things, cloud computing and big data in the healthcare industry include Elhoseny, et al. (2018) and Thota, et al. (2018).

In the field of education, there are also a deluge of studies that have been done in connection to mobile technologies and education. Much of the studies focused on how mobile technologies enhance educational practices at all levels of education. There are also discipline based studies that look at, for instance, how medical education is provided with the aid of mobile technologies. Shyshkanova, et al. (2017) devoted their study to argue how mobile technologies help to make the education process an everyday life phenomenon. They explained how the advantages derived from mobile technologies, due to the possibility to move them from place to place, help learners to develop constant everyday life learning attitude. A study by Briz-Ponce, et al. (2017) assessed students' behavior towards mobile technologies. The study focused on assessing new behavior that may be identified among students. Specifically, the study looked at new behavior that may be attributed to the invention and use of mobile technologies for education. Similar to this is Marques', et al. (2017) study that looked at how the use of mobile technologies is promoting the invention and adoption of new pedagogy in education. They focused their study specifically on assessing how mobile technologies are used to promote new pedagogy directed at impacting reading techniques. Aside these themes, there are also studies that focused on discipline specific adoption of mobile technologies for education.

The field of medicine seems to have scholars that show more concern for how mobile technologies impact medical education and how this impact the quality of education given in medical schools than other disciplines. Masters et al. (2016) provide a very good example of one the studies that assessed the relationship between mobile technologies and medical education. Masters et al. (2016) were concerned with evaluating socio-theoretical concepts that influence the use of mobile technologies for medical education. They also looked pre-clinical and clinical educational environments in which educational activities occur. The third area they looked at in their study are the practical possibilities and limitations of the adoption of mobile technologies for medical education. Similar to the studies mentioned so far, are Larkin & Calder (2016) and Kalogiannakis & Papadokis (2017). While Larkin & Calder (2016) focused on how mobile technologies impact mathematics education, Kalogiannakis & Papadokis (2017) focused on how mobile impact education in the environmental sciences. Larkin & Calder (2016) were interested in assessing how possibilities and advantages of mobile technologies such as easy transfer between learning situations and collaborative learning promote mathematics education. Kalogiannakis & Papadokis (2017) on the other hand, assessed the advantages learners derive from mobile technologies because of mobile technologies' ability to support learning and access to information without temporal-spacial restrictions.

In the library and information science field, there is a scarcity of studies done to assess how the proliferation of mobile technologies has affected the education of library and information professionals. Much of the studies done in the field of library and information science focus on how library and information professionals use mobile technologies to achieve their professional and statutory goals. A good example is Bowler, et al. (2018) study of the impact of mobile technologies on information seeking behavior of youths. Bowler et al. (2018) were

motivated by the possibility that mobile technologies have the ability to change the ways youths seek information. Similar study was carried out by Chang & Zimmermaman (2019). Chang & Zimmermaman (2019) were interested in assessing the exact ways mobile technologies are impacting and changing information behavior of information users. Shouhe & Jain (2017) did a study on how mobile technologies impact information dissemination in the 21<sup>st</sup> Century. Typically, the major focus of library and information science scholars when it comes to studying mobile technologies is to see how it impacts the ways libraries and information centers disseminate information in the 21<sup>st</sup> Century. Many authors in the library and information science field have looked into this subject from varying perspectives.

While there are a variety of studies on mobile technologies, ranging from those that focused on technical issues to those that focused on social issues and everyday life issues, there is no study that looked at the connections among academic libraries, team based learning and mobile technologies. This is despite that the study was motivated by the researcher's observation that there are likely to be connections among academic libraries, team based learning and mobile technologies, given that undergraduate students frequently engage in team based learning and as a result. The gap in the literature shows that this study is timely and provides new and relevant information that are useful to understanding how to improve on team based learning through the support of academic and research libraries and the productive use of mobile devices.

## 2.3 Conceptual Framework

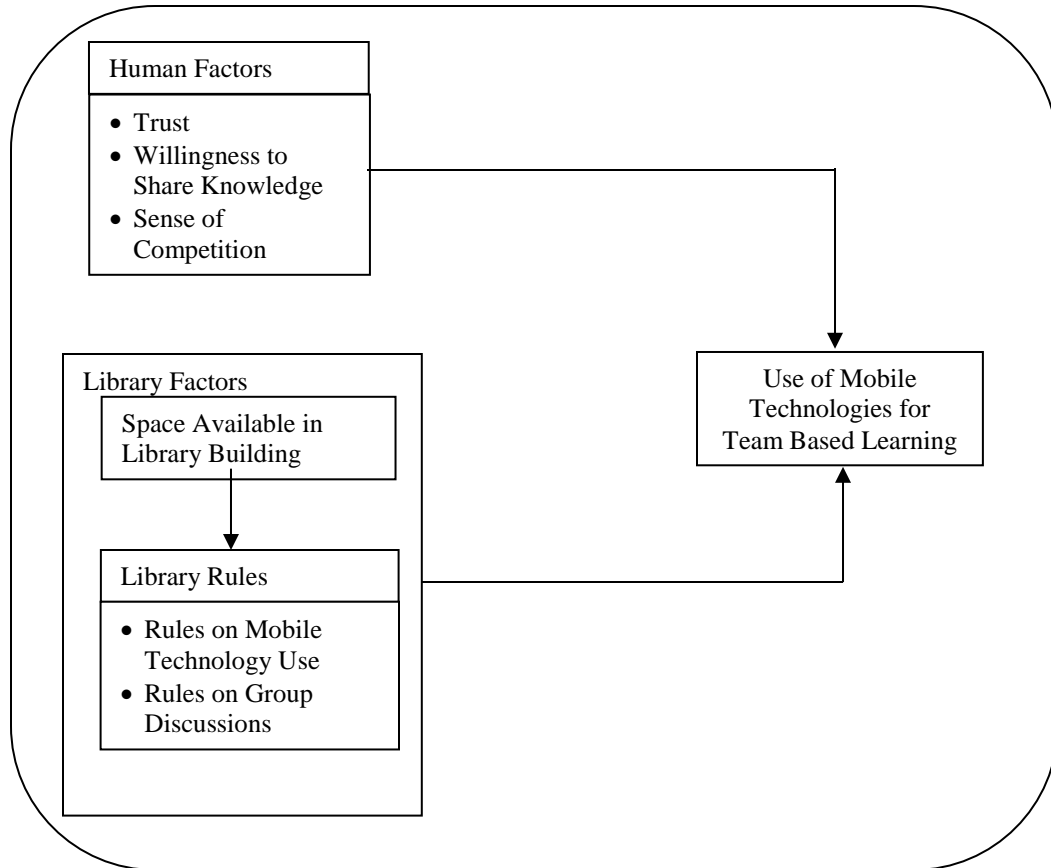


Figure 1: Conceptual Framework

The idea behind the study is to reveal how human factors such as trust, willingness to share knowledge and sense of competition impact team based learning. The idea also includes studying how space in libraries and library rules on use of mobile phone and group discussion impact team based learning. Team based learning is the study' dependent variable, while human factors and space available in library building and library rules are independent variables.



## CHAPTER THREE

### RESEARCH METHODOLOGY

#### **3.0 Introduction**

In this chapter, the design method and techniques that were used for operationalizing the study were spelt out. The data collection instrument used and the method of data analysis used in the study were also spelt out in the chapter.

#### **3.1 Research Design**

According to Creswell (2014) research design represents the way(s) a scholar structures his/her research work. Creswell argues that it is a set of methods and procedures scholars adopt to determine and measure the variables identified in their studies. Ridder (2017) also argues that research design has to do with researchers determining the type of study, for example descriptive, experimental, correlational, review, etc. that they deem fit to address the question(s) that form the basis of their studies. Ridder (2017) argued that research design allows researchers to identify and define the types of variables that are relevant to their studies. This study was designed to adopt the descriptive research design. Descriptive research design has to do with a research that is interested in describing scenarios and variables that are connected to the phenomena and the problem(s) or situation(s) under study. Creswell (2014) identified case study, naturalistic observation, survey, etc. as sub-types of descriptive research designs. Two variables identified in the study namely, dependent and independent variables. The dependent variable identified in the study team based learning. The two independent variables that were identified in the study were human factors and library rules. The study is designed to assess the extent to which human factors and library rules determine team based learning in conditions where the students involved own and use mobile technologies and have access to academic and research libraries.

### 3.2 Research Method

The research method adopted in the study is the case study research method. Yin (2013) opined that the case study research method involves in-depth, up-close and detailed examination of research phenomena within a situation or context, or in some situations two or three situations and contexts. Rolls (2005) put forward that the case study research method can be done on individuals, organizations, events, or actions. Welch et al. (2011) suggest that case study research method is a research strategy. Ridder (2017) however, identified four common case study approaches: (a) no theory first case study; (b) gap and holes case study; (c) social construction of reality case study; and (d) anomalies. Consequently, the study will adopt the gap and holecase study research method. It situates its evaluation of the role of human factors and library rules in team based learning in tertiary institutions in three tertiary institutions in Ede, Osun State, Nigeria. The three tertiary institutions that were studied in the study include, Redeemer's University, Ede, Federal Polytechnic, Ede, and Ilori College of Education, Ede. Like other types of case study research studies that were reported in the literature, the study used the case study institutions as points of first call to evaluate the impact of human factors and library rules on team based learning in conditions where the students that are participating in the team based learning own and use mobile technologies and have access to academic and research libraries.

### Study Population

Scientific research, particularly as done in the social sciences, revolve around identified study population. According to Mbokane (2015) study population is the “aggregate of the totality of all the objects, subjects, or members that conforms to a set of specifications (p. 85).” In identifying study population, researchers ensure that the study population comprise of a group of people, organizations, events, etc. that share similar characteristics and have connections with the variables identified in the study (Ridder, 2017). Study populations are studied for different reasons that

are spelt out in the study's objectives. In the study, the study population comprise of all tertiary institution students in Ede, Osun State, Nigeria and undergraduate students. This however, excludes new students who were in their first year in the institutions studied. Welch, et al. (2011) posited that identifying study population enables both the researcher and those that will eventually use the study to know the group that was studied and to reach critical conclusions on the scope and coverage of the study.

### Sampling Technique and Sample Population Size

Based on the kind of subject, that is, team based learning that was addressed in the study, the sampling technique that will be adopted to determine the sample population of the study is purposive sampling technique. According Yin (2013), sampling has to do with using a sub-set of an identified population to represent the entire population. Yin (2013) went further to argue that sampling technique has to do with the procedures used to determine the quota of the population that best represents the entire population. Bowers et al. (2011) put forward that there are two broad types of sampling techniques namely, probabilistic and non-probabilistic sampling technique. They argues that while probabilistic sampling technique requires statistical checks and principles, that non-probabilistic sampling technique do not require statistical checks and principles. Consequently, the purposive sampling technique was adopted in the study. The purposive sampling technique is a good example of non-probabilistic sampling technique. This is because it does not require any statistical principles when deciding the adequacy and appropriateness of selected study sample.

Consequently, Welch, et al. (2011) defined purposive sampling technique as a subjective sampling in which the researcher uses his/her personal judgment to determine member of the study sample population. Tongco (2007) argued that the major determinant of the validity of purposive sampling technique is that the

sampled population are adjudged to have experienced the subject under investigation. This according to him ensures both sample validity and data validity. In this study therefore, the members of the sampled population were chosen because they were tertiary institution students in Ede and because they had been involved in team based learning at least once. Etikan, et al. (2016) noted that purposive sampling technique allows researchers to subjectively determine the relevance of members of their sampled population to their studies. They went further to state that such relevance are based on the experiences of the sample population with the subject under study. The sample population size was ten percent of the total numbers of full-time students enrolled in the sampled tertiary institutions. The sample size taken from Redeemer's University therefore is three hundred undergraduate students. This is given that the number of undergraduate students in the university was estimated to be around three thousand. Six hundred students were sampled from the Federal Polytechnic, Ede, given that the number of full-time NS and HNS students in the institution was estimated to be around six thousand. It is estimated that Ilori College of Education had an estimated two thousand full-time students. Consequently, two hundred students were sampled from the institution.

#### [Research Data and Instrument of Data Collection](#)

Research studies that are based on quantitative designs mainly adopt four types of data. These include nominal, ordinal, interval and ratio data (Heumann, et al., 2016). Two types of data were collected for the study namely, ordinal and normal data. The instrument of data collection that was used in the study was the questionnaire. Heumann, et al. (2016) argued that the questionnaire is a data collection instrument mainly used to collect data from respondents who are made to respond to selected questions. They argued that questionnaires consist of series of questions that prompt respondents to provide required responses that are later analyzed and used as information for reaching conclusions with regards to research

questions and hypotheses raised in course of the study. The questionnaire was designed by the researcher. The questionnaire copies were administered by the researcher and three other research assistant. The questionnaire was validated by the research supervisor and members of the academic staff of the Department of Library and Information Science, Adeleke University. The questionnaire is made up of six different sections. Section A comprises of questions for collecting demographic data; Section B comprises of questions for collecting data on ownership of mobile technologies. Section C comprises of questions for collecting data on accessibility of academic and research libraries. Section D comprises of questions that assessed respondents' familiarity with team based learning. Section E comprises questions on human factors and mobile technologies and team based learning. Section F comprised questions on library rules and team based learning.

#### **Rate of Return of Questionnaire Copies and Technique for Data Analysis**

One thousand one hundred questionnaire copies were administered. Six hundred and eighty questionnaire copies were found to be useful and were used for study. This amounted to 61.3% return rate. However, according to Heumann, et al. (2016) there are various techniques available to researchers for analyzing quantitative data for descriptive purposes. Prominent among them are the simple percentage score data analysis technique. The study adopted the simple percentage score data analysis techniques. The Statistical Package for Social Sciences (SPSS) statistical software package was used to carry out the simple percentage score analysis. The results of the analysis were presented in tables.

## CHAPTER FOUR

### DATA PRESENTATION AND ANALYSES

#### 4.0 Introduction

In this chapter, the researcher presents the results of the data analysis which was carried out using the SPSS software. The segment is divided into two parts. The first part deals with data presentation, while the second segment deals with analyses of research data. This is done by relating research data with previous studies and providing answers to the research questions raised in the course of the study.

#### 4.1 Data Presentation

**Table 1: Institutions where Respondents Study**

	Frequency	Percent	Valid Percent	Cumulative Percent
RUN	130	19.1	19.1	19.1
Fed Poly	390	57.4	57.4	76.5
Ilori	160	23.5	23.5	100.0
Total	680	100.0	100.0	

Three tertiary institutions were studied to assess how humanfactors and library issues impact the use of mobile technologies and academic and research libraries for team based learning. Three categories of tertiary institutions were studied. This includes a university, a polytechnic and a college of education. While Redeemer’s University (RUN) and Ilori College of Education (Ilori) are privately owned tertiary institutions, Federal Polytechnic (Fed Poly) is publicly owned tertiary institution. The respondents comprise of 390 students of the Fed Poly, 160 students of Ilori and 130 students of RUN. In all, 680 tertiary institution students comprised the study respondents.

**Table 2: Respondents Academic Disciplines**

	<b>Frequency</b>	<b>Percent</b>	<b>Valid Percent</b>	<b>Cumulative Percent</b>
Education	91	13.4	12.8	12.8
Sciences	191	28.1	28.1	40.9
Information Technology	191	28.1	28.1	69.6
Technology	197	29.0	29.0	98.5
No Response	10	1.5	1.5	100.0
Total	680	100.0	100.0	

The distribution of the academic disciplines of the respondents as shown in Table 2 indicates that most of them were students in education, sciences, information technology and technology.

**Table 3: Respondents' Gender**

	<b>Frequency</b>	<b>Percent</b>	<b>Valid Percent</b>	<b>Cumulative Percent</b>
Male	268	39.4	39.4	39.4
Female	345	50.7	50.7	90.1
No Response	67	9.9	9.9	100.0
Total	680	100.0	100.0	

Table 3 shows the gender distribution of the respondents. Male were 268 (39.4%), while female respondents were 345 (50.7%). Some of the respondents 67 (9.9) did not indicate their gender.

**Table 4: Respondents' Age Ranges**

	<b>Frequency</b>	<b>Percent</b>	<b>Valid Percent</b>	<b>Cumulative Percent</b>
Below 17 years	2	.3	.3	.3
17-20 years	81	11.9	11.9	12.2
21-24 years	411	60.4	60.4	72.6
25-28 years	173	25.4	25.4	98.1
29-32 years	2	.3	.3	98.4
No Response	11	1.6	1.6	100.0
Total	680	100.0	100.0	

As shown in Table 4, most of the respondents were within the age range of 21 years and 28 years. A total of 411 (60.4%) were within the age range of 21 years and 24 years, while 173 (25.4%) were within age range of 25 years and 28 years. These two age ranges constitute 85.4% of the age range distribution of the study's respondents.

**Table 5: Respondents' Level of Education**

	<b>Frequency</b>	<b>Percent</b>	<b>Valid Percent</b>	<b>Cumulative Percent</b>
ND2	107	15.7	15.7	12.8
HND 1	156	22.9	22.9	35.2
HND 2	123	18.1	18.1	50.3
200 Level	120	17.7	17.7	68.0
300 Level	104	15.3	15.3	83.3
400 Level	66	9.7	16.1	99.4
No Response	4	0.6	0.6	100.0
Total	680	100.0	100.0	

Given that stratified sampling technique was used to omit first year students from the groups sampled, the distribution of respondents' level of education began with National Diploma (ND) 2 and ended with Higher National Diploma (HND) 2 students. In the case of college of education and university students sampled, it began with 200 level students and ended with 400 hundred level.



**Table 6: Mobile Technologies Owned by Respondents (Android Phone)**

Mobile Technologies	Frequency	Percent	Valid Percent
Laptop	228	33.5	33.5
Palmtop	74	10.9	10.9
Android Phone	436	64.1	64.1
Non-Android Phone	376	55.3	55.3
Apple Phone	16	2.4	2.4
Electronic Note Book	12	1.8	1.8
iPad	92	13.5	13.5

Table 8 presents a list of different types of mobile technologies that respondents owned as at the time of the study. The Table shows that most of the respondents owned mobile phones, both android and non-android mobile phones, more than other types of mobile technologies.

**Table 7: Existence of Functional Library**

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	668	98.2	98.2	98.2
No	12	1.8	1.8	100.0
Total	680	100.0	100.0	

Table 7 indicates respondents' perception about the existence of functional libraries in their institutions. Only 10 (1.5%) indicated that they do not have functional libraries in their institutions.

**Table 8: Library Location and Accessibility**

	<b>Frequency</b>	<b>Percent</b>	<b>Valid Percent</b>	<b>Cumulative Percent</b>
Yes	620	91.2	91.2	91.2
No	50	7.4	7.4	98.6
No Response	10	6.4	6.4	100.0
Total	680	100.0	100.0	

Table 8 shows that respondents are of the opinion that the libraries in their institutions are located in locations that are accessible to them. Only 50 (7.4%) of them are of the opinion that the locations of the libraries in their institutions are not accessible to them.

**Table 9: Respondents' Library Use Frequency**

	<b>Frequency</b>	<b>Percent</b>	<b>Valid Percent</b>	<b>Cumulative Percent</b>
Very Often	333	49.0	49.0	49.0
Often	273	40.1	40.4	89.4
Not Sure	16	2.4	2.4	91.4
Not Often	46	6.8	6.8	98.2
No Response	12	1.8	1.8	100.0
Total	680	100.0	100.0	

Data presented in Table 9 show that almost 90% of the respondents used the libraries in their institutions often. This number is high and indicate the respondents are familiar with their libraries.

**Table 10: Respondents' Understanding of the Concept of Team Based Learning**

Definitions	Frequency	Percent	Valid Percent
Definition 1: Group based learning is a learning situation in which students are grouped together in groups of about three or more students to work together on some issues that are stated as the learning objective(s).	582	85.6	85.6
Definition 2: Group based learning is a learning situation in which students are put into groups of at least three each in order to learning together.	44	6.5	6.5
Definition 3: Group based learning is a learning situation in which students are grouped together in groups.	56	8.2	8.3

Three definitions of team based learning was provided to respondent in order for them to choose the one that they consider more appropriate. Table 10 shows that 85% of the respondents considered Definition 1 most appropriate conceptualization of the concept of team based learning.

**Table 11: Respondents' Frequency of Involvement in Team Based Learning**

	Frequency	Percent	Valid Percent	Cumulative Percent
Very Often	167	24.6	24.6	24.6
Often	371	54.6	54.7	79.4
Moderate	52	7.6	7.7	87.0
Not Very Often	72	10.6	10.6	97.6
Not at All	12	1.8	1.8	99.4
No Response	6	0.6	0.6	100.0
Total	680	100.0	100.0	
Total	680	100.0		

Table 11 shows that the respondents got involved frequently in team based learning exercises in their institutions. The cumulative percentage of respondents that 'often' and 'very often' involved in team based learning is 79.4%. Only 1.8 % of the respondents did not get involved in team based learning.

**Table 12: Respondents' that like Team Based Learning**

	<b>Frequency</b>	<b>Percent</b>	<b>Valid Percent</b>	<b>Cumulative Percent</b>
I Like it Very Much	200	29.4	29.4	29.4
I Like it Moderately	74	10.9	10.9	40.3
I like it to some extent	380	55.9	55.9	96.2
I don't like it at all	12	1.8	1.8	97.9
No Response	14	2.1	2.1	100.0

Table 12 shows that only 1.8% of the respondents claimed that they do not like team based learning at all. This in essence means that majority of the respondents likes team based learning. This however, is in different degrees as shown in Table 12.

**Table 13: Trust Variables**

Statements on Variables	Strongly Agree		Agree		Not Sure		Strongly Disagree		Disagree		No Response	
Respondents that find it difficult to trust members of group based learning groups	201	29.6	205	30.1	18	2.6	116	17.1	140	20.6	0	0
Respondents that believe that Members of Team Based Learning Groups do not always Trust One Another	164	24.1	217	31.9	24	3.5	111	16.3	148	21.8	16	2.4
Respondents Perception about their Trust for Leaders of Team Based Learning Groups	198	29.1	174	25.6	41	6.0	148	21.8	119	17.5	0	0
Respondents that do their Best to Earn the Trust of Members of their Team Based Learning Groups	187	27.5	337	49.6	41	6.0	59	8.7	56	8.2	0	0
Respondents Who Feel that Trust Should not be an Issue to Team Based Learning Groups	194	28.5	380	55.9	69	10.1	24	3.5	13	1.9	0	0

Table 13 shows that 59.7% of the respondents claimed that they find it difficult to trust members of their team based learning groups. On the other hand, 37.8% claimed that they do not find it difficult to trust member of the team based learning groups they have worked with. Table 13 also shows that more than half of the respondents believe that members of team based learning groups do not always trust one another. However, 38.1% believe that members of team based learning groups always trust one another. With regards to trusting leaders of their team based learning groups, respondents indicated that they do not have trust for leaders of team based learning groups they have worked with. Only 39.3% of the respondents indicated that they normally trust leaders of the team based learning groups they

have worked with. Table 13 showed that as much as 77.1% cumulative percentage of the respondents do their best to earn the trust of other members. Whereas, only 16.9% claimed that they do not do their best to earn other members' trust. As much as 84.4% cumulative percentage of the respondents feel that trust should not be an issue to team based learning groups. However, 10.1% of the respondents claimed that they were not sure of their perception about this.

**Table 14: Sense of Competition Variables**

Statements on Variables	Strongly Agree		Agree		Not Sure		Strongly Disagree		Disagree		No Response	
Respondents with the Opinion that there was always Unhealthy Competition among Member of Team Based Learning Groups	151	22.2	223	32.8	26	3.8	141	20.7	139	20.4	0	0
Awarding the same Score to every member of a group based learning group, do not eradicate the sense of competition among members	208	30.6	233	34.3	16	2.4	47	6.9	176	25.9	0	0
The Thinking that Everything about Tertiary Education is Competitive influences the unhealthy sense of competition among members of group based learning groups	87	12.8	170	25.0	110	16.2	184	27.1	129	19.0	0	0
Members of group based learning groups are better described as unserious not as being unhealthily competitive	173	25.4	196	28.8	38	5.6	142	20.9	131	19.3	0	0
Sense of Competition in Team Based Learning Groups helps them to reach Learning Objectives	323	47.5	260	38.2	20	2.9	49	7.2	26	3.8	2	0.3

Research datashow that 41.1% of the respondents are of the opinion that there was always a sense of unhealthy competition among members of team based learning groups. Table 14 shows that awarding the same score to each member of team based learning groups do not serve as motivation for eradicating sense of competition among members. As much as 67.3% of the respondents indicated this. Only 32.8% indicated that awarding the same score to every member of team based learning groups helped to eradicate the sense of competition among them. About 46.1% cumulative percentage of respondents claimed that the thinking that everything about tertiary education is competitive did not influence the unhealthy sense of competition among member of group based learning groups. This is more than 37.8% cumulative percentage of respondents that claimed that the thinking did influence the sense of competition among members of team based learning groups. Table 14 also shows that 54.3 cumulative percentage of respondents were of the opinion that lack of seriousness and not unhealthy competition that impede cooperative work among members of team based learning groups. Majority of the respondents agreed that sense of competition in team based learning groups has positive effects on the extent to which they easily reach their learning goals. Only 11.0 cumulative percentage of the respondents claimed that sense of competitive among team based learning groups have negative effects on the ease with which they reach their learning objectives.

**Table 15: Willingness to Share Knowledge**

Statements on Variables	Strongly Agree		Agree		Not Sure		Strongly Disagree		Disagree		No Response	
I did not experience Situation where Members of the Team Based Learning Group I Worked with were Unwilling to Share Knowledge	193	28.4	309	45.4	20	2.9	86	12.6	70	10.3	2	0.3
Members of Team Based Learning Groups always Reserve some Knowledge from Group Members as Bate to Perform Better in Examinations	220	32.4	199	29.3	24	3.5	42	6.2	195	28.7	0	0
Willingness to share knowledge limits the effectiveness of Team Based Learning	238	35.0	240	35.3	26	3.8	90	13.2	86	12.6	0	0
Lecturers do not do to Educate and Enforce Rules that Promote Knowledge Sharing during Team Based Learning	47	6.9	183	26.9	24	3.5	219	32.2	207	30.4	0	0
I do not Share all My Knowledge to Members of Team Based Learning Groups	66	9.7	58	8.5	17	2.5	204	30.0	335	49.3	0	0

Data available in Table 15 shows that respondents are of the opinion that members of team based learning groups were willing to share knowledge. As much as 73.8 cumulative percent of them strongly agree and agree that members of team based learning groups share knowledge. Respondents also indicated that members of team based learning groups hide some knowledge as bate to perform better than their colleagues in examinations. This is reflected in the cumulative percentage (34.9%) that disagree with the notion that members of team based learning groups hide some knowledge as bate to perform better during examinations. Table 15also



shows that respondents know the implication of not sharing knowledge during team based learning exercises. As much as 70.3 cumulative percentage of the respondents strongly agreed and agreed that willingness to share knowledge is a major factor that determine the effectiveness of team base learning technique. As shown in Table 15, respondents are not of the opinion that lecturers are responsible for unwillingness to share knowledge by members of team based learning groups. A cumulative percentage (62.6%) of the respondents indicated that they strongly disagree and disagree that lecturers are not doing enough to educate and enforce rules that promote knowledge sharing among members of team based learning groups. Data presented in Table 15 show that respondents actually share knowledge anytime they are involved in team based learning. This was indicated by the cumulative percentage (79.3%) of the respondents that indicated that strongly disagree and disagree with the notion that they do not share knowledge with members of the team base learning groups they have worked with.

**Table 16: Variables on Lack of Space in Libraries and Team Based Learning**

Statements on Variables	Strongly Agree		Agree		Not Sure		Strongly Disagree		Disagree		No Response	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
The building used as library in my school was not originally built to serve as a library	48	7.1	90	13.2	20	2.9	280	41.2	238	35.0	4	0.6
Modern libraries are expected to have general and private reading areas and also provide meeting places to members of group based learning members	292	42.9	167	24.6	119	17.5	64	9.4	36	5.3	2	0.3
The library in my school has private meeting rooms where students can meet and do group based learning assignments	77	11.3	105	15.4	234	34.4	76	11.2	186	27.4	2	0.3
The number of students waiting to use private meeting rooms in my school's library makes it difficult for members of group based learning groups to opt for using library private meeting rooms.	63	9.3	112	16.5	160	23.5	119	17.5	224	32.9	2	0.3
The nature of assignments given during group based learning assignments does not makes using library private reading areas appropriate.	134	19.7	92	13.5	30	4.4	185	27.2	231	34.0	8	1.2

Table 16 shows variables that deal with how lack of space in academic and research libraries in respondents' institutions impact team based learning. Consequently, respondents indicated that the libraries in their institutions where

constructed primarily to accommodate the library. Only 22.2 cumulative percentage of the respondents indicated that the building housing their institutions library was not originally meant for the purpose of the housing libraries. 67.5 cumulative percentage of the respondents also indicated that modern library buildings are supposed to provide private reading areas and meeting rooms for users. However, only 26.7 cumulative percentage of the respondents strongly agree and agree that the library in their institutions has private reading rooms and meeting areas students could use for team based learning. 50.4 cumulative percentage of the respondents also indicated that they strongly disagree and disagree with the notion that the number of students waiting to use private reading areas and meeting rooms affected the use of libraries for team based learning. Table 16 also shows that the kind of assignments given during team based learning assignments did not constitute a factor that determined if students were going to use the library for team based learning or not.

**Table 17: Variables on Outlawing Group Discussion in Library and Team Based Learning**

Statements on Variables	Strongly Agree		Agree		Not Sure		Strongly Disagree		Disagree		No Response	
The rules in my school's library does not give room for group meetings in the library.	325	47.8	256	37.6	18	2.6	29	4.3	48	7.1	4	0.6
Although there are private reading areas in my school's library, students are not allowed to use them due to new rules banning group discussions in the library.	130	19.1	249	36.6	108	15.9	56	8.2	135	19.9	2	0.3
'No talking' in the library, negatively affect students involved in group based learning by making them not to see the library as appropriate meeting place.	347	51.0	174	25.6	120	17.6	21	3.1	16	2.4	2	0.3
The ways library staff implement 'no talk in the library' rules put off students for considering using the library.	281	41.3	300	44.1	52	7.6	21	3.1	24	3.5	2	0.3
There is a lot of dissensions in the ways library staff implement library rules on the use of private reading areas in the library.	367	54.0	246	36.2	18	2.6	33	4.9	12	1.8	4	0.6

Table 17 presents data on respondents' opinion on how library rules and regulations impact the use of libraries for team based learning. Consequently, 85.4 cumulative percentage of the respondents strongly agree and agree that the rules in the libraries in their institutions do not give room for them to use their libraries during team based learning. Also, 54.7 cumulative percentage of the respondents indicated that they are unable to use the private reading areas in their institution's

libraries because of rules that ban group discussion in the libraries. So, 76.6 cumulative percentage of the respondents claimed that 'no talking' rules discouraged students from considering the libraries in their institutions as viable venues for team based learning group meetings. Data presented in Table 17 also indicated that aside the rules banning group meetings and discussions, that the ways library staff implement 'no talking', 'no discussion' and 'no meeting' rules negative impact the extent to which students consider libraries as viable venue for team based learning meetings. With regards to this, as much as 85.4 cumulative percent of the respondents strongly agree and agree that the ways staff implement rules in their libraries negatively affect their perception about the library being a viable venue for team based learning. Also, 90.2 cumulative percentage of the respondents also claimed that there were dissensions in the ways library staff in their institutions implement rules regarding the use of library for team based learning activities.

**Table 18: Variables on Laws Regulating Mobile Technology Use in Libraries and Team Base Learning**

Statements on Variables	Strongly Agree		Agree		Not Sure		Strongly Disagree		Disagree		No Response	
There are conflicts about if students should use mobile technologies in my school's library.	264	38.8	201	29.6	24	3.5	59	8.7	126	18.5	6	0.9
Students that use mobile technologies in the library normally distract other library users in the library.	313	46.0	292	42.9	21	3.1	38	5.6	10	1.5	4	0.6
Students misuse mobile technologies in the library.	388	57.1	194	28.5	52	7.6	24	3.5	20	2.9	2	0.3
You are not allowed to use mobile technologies in my school's library.	339	49.9	265	39.0	32	4.7	32	4.7	8	1.2	4	0.6
The rules on use of mobile technologies make it difficult for students to use the library for group based learning assignments.	298	43.8	287	42.2	10	1.5	25	3.7	56	8.2	2	0.6

Table 18 specifically deals with library rules and regulations that have to do with the use of mobile technologies in the library. Respondents claimed that there are conflicts about the use of mobile technologies in the libraries. In other words, 68.4 cumulative percentage of the respondents strongly agree and agree that there are conflicts on if students should use mobile technologies in the library or not. However, as much as 88.9 cumulative percentage of the respondents claimed that students who use mobile technologies in their institutions' libraries distract other library users with the mobile technologies. Another 85.6 cumulative percentage of the respondents claimed that students misuse mobile technologies in their institutions. Consequently, 88.9 cumulative percentage of the respondents indicated that students are not allowed to use mobile technologies in their institutions' libraries. As a result of this, the respondents indicated that rules used to regulate the

use of mobile technologies in their institutions make it difficult for students to use their libraries for team based learning.

## **4.2 Data Interpretation and Answers to Research Questions**

### **4.2.1 Interpretation of Respondents' Demographic Data**

Research data was collected from three tertiary institutions in Ede, Osun State, Nigeria. This is in line with the requirements of a valid and reliable scientific inquiry that adopts case study research method. Yin (2013) argues that the case study research method is appropriate scientific inquiries that do not seek to generalize their findings but are set with the objective of provide useful insights that lead to future generalizable inquiries. Consequently, Redeemer's University, Federal Polytechnic and Ilori College of Education served as the case study tertiary institutions. Respondents were drawn from four general academic disciplines namely, education, sciences, information technology and technology. Aside education, which had 91 (13.4%) respondents, sciences had 191 (28.1%), information technology had 191 (28.1 %) and technology had 197 (29.0%) respondents respectively. This indicates that the respondents are evenly distributed and that the research data is not skewed by disciplinary affiliation of respondents. The gender distribution of respondents shows that female respondents are more than male respondents. The difference between male and female respondents' distribution is 11.3%. This notwithstanding, the distribution did not represent a significant difference in respondents' gender.

Data on respondents' age ranges show that majority of the respondents falls within the age bracket of 21 years and 24 years. This age range is expected given that it represents the ages when young people are expected to be in tertiary institutions. Another age range that matches the period when young people are expected to be in tertiary institutions is the age range of 17 year to 20 years. 11.9% of the respondents claimed that they were within this age range. This bring the total

percentage of respondents within the age range of 17 years and 24 years to 72.6% of the total respondents. The implication of this is that the study's respondents are within the age range of tertiary institution students. This is also important because it indicates that respondents are old enough to provide valid research data. However, given that respondents that participated in the study were selected using stratified sampling technique, first year students were not included the study's sampled population. This is important because of the need to ensure that respondents have had adequate experiences of team based learning and the learning conditions and experiences required to provide valid and reliable research data. Consequently, respondents that participated were in ND2, HND1 and HND 2 for Federal Polytechnic and 200 Level to 400 level in Ilori College of Education and Redeemer's University. This indicates that the respondents have had adequate educational experiences that are required for them to provide valid and reliable research data.

Research data also shows that respondents have mobile technologies that are the focal point of inquiry in the study. Respondents reported that they own mobile technologies namely, laptop (33.5%), android phone (64.1%), non-android phone (55.3%) and iPad (13.5%). All these mobile technologies can be used for communication and other tasks that are connected to team based learning. This in other words, means that respondents have required mobile technologies that enabled them to provide valid and reliable research data for the study. Related to this is the percentage of respondents that indicated that their institutions had functional libraries. As much as 98.2% of them claimed that their institutions had functional libraries. This claim is corroborated by 89.6% of the respondents that claimed that they very often and often use the libraries in their institutions. Also, 91.4% of them claimed that the location of the libraries in their institutions is accessible to them. Existence of functional libraries, usage rate and accessibility of



libraries are important to the study. Hence, data derived about these variables indicated that respondents have adequate experiences required to provide valid and reliable data for studying impact of human factors and library rules on team based learning.

#### 4.2.2 Respondents' Perception of Team Based Learning

Apart from the importance of demographic data to assessing the validity and reliability of research data, testing the level of respondents' understanding of the subject they are dealing with is also an appropriate ways to ensure research data validity and reliability (Ginanjar, 2020). Three definitions of team based learning was presented to respondents for them to choose the one they consider more appropriate. Of the three definitions, definition 1 was the most appropriate and as much as 85.6% of the respondents indicated that it is the most appropriate of the three definitions provided. This indicate that respondents have a good level of understanding of what team based learning is all about. This claim is corroborated with 79.4% that claimed that they often participate in team based learning. This means that data on appropriateness of definition of team based learning was derived from the frequency of respondents' participation in team based learning. Apart from participating frequently in team based learning, 96.2% of the respondents also claimed that they like team based learning. Data derived from this three variables further points to the appropriateness of the sampled respondents, the adequacy of their experiences and the validity and reliability of the data they provided for the study.

#### 4.2.3 Human Factors, Team Based Learning and Mobile Technologies

Three variables that constitute human factors including, trust, sense of competition and willingness to share knowledge were used to test how human factors impact communication among team based learning despite that students own and use mobile technologies. This is to say that, the expectation that mobile

technologies can help facilitate communication among members of team based learning groups is believed to be likely impacted by these variables. Trust has been defined as having confidence or faith in something or someone or group. The concept of trust is popular in management literature and has also appeared in information and communication related disciplines (Singh & Srivastava, 2016). Sense of competition denotes situations in which people who work in a group for a common goal start to compete instead of cooperating with one another. It results in situations in which individual goals and aspirations are put ahead of group and common goals. Vicker cited in Graafland (2020) define sense of competition as when the reward for getting at a goal which is aimed at by a group is increasingly sought after by individual without consideration for other people's wants. Sense of competition can triggered by lack of trust within a group and leads to issues such as lack of cooperation and refusal to share knowledge. Consequently, the third variable that was accessed as attribute of human factor is willing to share knowledge. Willingness to share knowledge denotes a condition in which group members are willing to let one another have access to their personal knowledge. Many discipline including LIS, management and education study knowledge sharing (Charband & Navimipour, 2018; Ouakouak & Quedraogo, 2019).

The study reveals that trust was an issue among members of team based learning groups. This is exemplified by 59.7% of the respondents that claimed that they find it difficult to trust members of their team based learning groups and 56.0% of respondents that claimed that members of team based learning groups do not always trust one another. This finding is consistent with revelations in the extant literature on the role of trust in knowledge sharing (Christensen & Pedersen, 2018). Scholars who study team based learning seem to have the premonition that trust is likely to be an issues. Hence, studies such as those done by Strijbos, et al. (2004), Bays & Beyhan (2010) and Greetham & Ippolito (2018) outlined how team based learning technique can be handled by both teachers and students to avert lack

of trust among team members. Given that trust constituted an issue among respondents, the study reveals that team based learning groups also have issues with sense of competition among members. This revelation is consistent with Dharmasaroga's (2020) claim that there is need for scholars to come up with a framework that will spell out how team based learning technique can be implemented in ways that will facilitate cooperative learning. The fact that there are empirical evidences that show that the likelihood to have sense of competition among team based learning groups seems to put into questioning the claim that it easily facilitate experiential learning and project based learning as claimed by Chan & Yang (2019), Bas & Beyhah (2017) and Sumarni (2015).

The consequence of lack of trust and sense of competition among members of team based learning groups is lack of motivation to share knowledge. The importance of knowledge sharing to team work cannot be overemphasized. Beginning from the 1990s when studies devoted to assessing knowledge management in organizations started, till the present day, most scholars in the field have argued that knowledge sharing is important to achieving organizational goals (Obeidat, et al., 2016; Nonaka & Takeuchi, 1995). So, the consistency in the observation that knowledge sharing constitute a problem to team based learning is a problem that should not be taken with levity. Findings in this study seems to be a little bit contradictory. This is because 73.8% of the respondents claimed that they did not experiences situations in which members of the team based learning groups they belonged to were unwilling to share knowledge, while 61.7% of them also claimed that members of team based learning groups hid some knowledge from one another as a bate to perform better in examinations. There is also the revelation in this study where 70.3% respondents claimed that willingness to share knowledge limits the effectiveness of team based learning groups. In other words, the respondents are of the opinion that a situation in which members easily share knowledge may make some members not to contribute their knowledge to the team.

This empirical evidence is consistent with claims in the literature that knowledge sharing among group members is a complex practice and requires concerted effort for it to be achieved (Obeidat, et al., 2016).

The answer to the research question: “What are the human factors that constitute barriers to members of team based learning groups despite that they own and use mobile technologies?” is trust, sense of competition and willingness to share knowledge are the human factors that constitute barriers to members of team based learning groups despite that they own and use mobile technologies.

#### 4.2.4 Library Rules, Team Based Learning and Functional Libraries Institutions

The second variable that was assessed in the study is library rules and how they impact team based learning. The variable was considered important to the study because academic and research libraries are established to facilitate learning (Jordan, 2017). Because team based learning is one of the most prominent learning technique used to teach undergraduates, it was considered important to assess it vis-à-vis academic and research libraries. The factors including library space, laws regarding group discussion in libraries and laws regarding the use of mobile technologies in libraries were identified and assessed. With regards to library space, 76.2% of the respondents claimed that the libraries in the institutions are housed in buildings originally designed to house libraries. The implication of this, is that the library building was designed specifically for library purposes and hence, provide enough space for library information services. There are positions postulated in the literature about the importance of adequately and appropriately designed library buildings to library information services delivery (Choy &Goh, 2016). The implication of respondents’ claim is that the libraries in their institutions would have adequate spaces for all kind of information service delivery, including facilities to accommodate students involved in team based learning. This scenario is well understood by the respondents. As much as 67.5% of them claimed that their

expectation is that modern libraries should provide for both general and private reading areas and meeting places for team based learning groups. This revelation corroborates positions available in the literature on the role academic libraries are expected to play with regards to ensuring that the needs of every category of library users are met (Utulu & Ngwenyama, 2019; Choy & Goh, 2016). Despite this expectation, revelations deduced from the research data show that the academic and research libraries in respondents' institutions do not have private meeting rooms that can be used by members of team based learning groups. This is because only 36.7% of the respondents claimed that the libraries in their institutions have private reading rooms that can be used for team based learning purposes. The inclination for academic and research libraries not to have expected facilities have been reported in the literature (Clarke, 2016). Scholars have argued that libraries needs to work harder on providing necessary facilities to their users.

The second indicator of how libraries constitute barriers to team based learning that was assessed in the study is outlawing of group discussions in libraries. Silence is one of the ways academic and research libraries ensure that library environments are conducive for learning and research. In most libraries, laws are enforced to ensure that this is achieved. The issue of enforcing laws to regulate discussions in the library have been discussed in the literature (e.g. Lange, et al., 2016). Revelation derived from the study shows that situations in the tertiary institutions studies is similar to situations that have been identified in the literature. This is deduced from the percentage of respondents 85.4% that claimed that the libraries in their institutions do not give room for group meetings. This scenario is coupled with 'no talking' rules. Generally libraries run with 'no talking' rules. In this study however, 76.6% of the respondents indicated that it has added influence on the rules implemented regarding allowing group meetings. The literature also provide insights on how library use 'no talking' rules to regulate library

environments (Pierard & Baca, 2019; Lange, et al., 2016). A unique revelation in this study is the role library staff play in the type of effect ‘no talking’ rules have on the contribution of academic and research libraries to team based learning. Respondents, that is, 85.4% of them, indicated that the ways library staff implement ‘no talking’ rules have negative effects on team based learning. This corroborates insights in the literature on how crucial library staff are to the achievement information service delivery objectives of academic and research libraries (Utulu & Ngwenyama, 2019).

The third indicator of how libraries constitute barrier to team based learning is through laws regulating the use of mobile technologies in libraries. Scholars have heralded the importance of mobile technologies to education (Googin, 2006). This notwithstanding, revelations derived in this study show that the libraries studied have conflicts about if students should be allowed to use mobile technologies in the library. This was as a result students that use mobile technologies distract other users in the library. In fact, 86.9% of the respondents indicated that students that use mobile technologies in the library normally distract other library users and students misuse mobile technologies in the library. This claim was made by 85.6% of the respondents. It is important to note that in LIS literature that is dearth of studies that have been done to assess unintended impact of mobile technologies on library users. This study makes a new revelation that mobile phone could constitute barrier to effective use of the libraries. Due to this unintended consequences of mobile phone use in the libraries, 88.9% of the respondents indicated that they are not allowed to use mobile technologies in the institutions libraries. This has dare consequences on team based learning in the case institutions because mobile technologies such as laptops and mobile phones which are used for important learning task are banned from being used in the library. Given that team based learning requires document preparation, laws regulating use of mobile technologies

makes it difficult for team based learning groups to meet in libraries when working on preparing reports on their team based assignments. Consequently, as much as 86.0% of the respondents revealed that rule banning use of mobile technologies in libraries make it difficult for them to use their institutions' library for group based learning tasks.

Therefore, answer to the question: what are the conditions peculiar to academic and research libraries that constitute barriers to team based learning groups? Is space, laws banning group discussion and laws regulating use of mobile technologies in academic and research libraries constitute barriers to team based learning.

## CHAPTER FIVE

### SUMMARY, CONCLUSION AND RECOMMENDATIONS

#### 5.1 Summary

The study started with the question, what are the factors that hamper team based learning in tertiary institutions in Osun State, Nigeria? Team based learning occur when students are grouped into teams made up of three and more students. In most cases, it is referred to as group assignment. This question became necessary because of the increase in the rate at which tertiary institution students get involved in team based learning and the need to know the factors that determine successful team based learning. Consequently, the motivation of the study was to see how current state of mobile technologies ownership among students was able to facilitate their productive participation in group based learning tasks. Another motivational factor that led to the study is the need to see how academic and research libraries facilitate group based learning through library information services. Surprisingly, there is a dearth of scholarly studies that were devoted to assessing group based learning in the library and information science field. This made this study timely and relevant to the need to develop but theoretical and practical insights into group based learning phenomena. However, in operationalizing the study, the case study research method was adopted.

The case study research method is useful in scientific inquiry situations where the motivation of the researcher is not to generalize his or her findings, but to lay a solid foundation for future generalizable scientific inquiries. Three tertiary institutions located in Ede, Osun State, Nigeria were selected using the convenient sampling technique as the case study tertiary institutions. About one thousand one hundred undergraduate level students were selected from the three tertiary institutions using non-probability sampling technique. The number of sampled



undergraduate level students were ten percent of the undergraduate population of each of the tertiary institutions. Consequently, six hundred students were sampled from the Federal Polytechnic, Ede, three hundred students were sample from the Redeemer's University, Ede and two hundred from Ilori College of Education, Ede. In the end, six hundred and eighty questionnaire were used for the study which represents about eleven percent of the total number of questionnaire copies used. The questionnaire were analyzed using simple percentage score. Attempt was made to adopt cross tabulation in order to see how some demographic variables impacted respondents opinion about the variables assessed in the study. Cross tabulation was however, not reported because results did not any influences arising due to differences in demography.

Study findings show that mobile technologies such as laptops, android mobile phones and non-android mobiles were the mobile technologies owned the respondents. It was also revealed that the respondents have had very considerable amount of experience with group based learning tasks. The study also reveals that respondents had the opinion that they like to participate in group based learning tasks. With regards to human factors that influenced group based learning the study shows that they include trust, sense of competition among members of team based learning groups and willing to share knowledge by members. With regard to the impact of academic and research libraries on team based learning, the study shows that space, library rules and regulations banning group discussion and library rules and regulations on use of mobile technologies constitute barriers to the use of academic and research libraries for team based learning.

## 5.2 Conclusion

The study provide rich revelations on the two important factors that impact team based learning in tertiary institutions in Ede, Osun State, Nigeria. These are namely, human factors and factors connected to academic and research libraries. It

follows that these factors need to be well managed if team based learning tasks are to be used to achieve educational objectives set for tertiary institutions. The implication of these is that the achievement of educational objectives set for tertiary institutions is not only achievable based on what goes on in the four walls of the classroom. The study shows the importance and role students play in the achievement of educational goals. It also shows the importance of academic and research libraries in the cycle of activities required to achieve educational goals. The fact that there is an obvious dearth in the number of students done in the library and information science field on team based learning indicates that both practicing librarians and scholars in the fields are taking the importance of academic and research libraries in the achievement of educational goals for granted. This is exposed by the role library staff place in the ways they implemented rules regarding group discussion and use of mobile technologies in the case tertiary institutions libraries. The study concludes that more is needed to be done by library and information science practitioners and scholars on how to best position academic and research libraries in ways that will make them able to facilitate team based learning. It is also concluded that students in tertiary institutions need to get more education on the importance and how to implement team based learning in ways that will facilitate productive learning.

### 5.3 Recommendations

The following are the study's recommendations:

1. Lecturers that adopt team based learning technique should endeavor to educate students on the importance of the technique to achieving educational goals.
2. Lecturers should also try to make students to see the need not to be involved in activities that will lead to sense of competition among team members during team based learning.

3. Lecturers should also make students to see the need to share necessary and required knowledge that will be beneficial to team members during team based learning.
4. Librarians should endeavor to ensure that they participate in the design of academic and libraries in order to explain to designers the importance of including adequate spaces, particular spaces required for private reading areas and meeting rooms.
5. Librarians should re-assess the ways rules regarding group discussion and use of mobile technologies are affecting the use of academic and research libraries for team based learning.
6. Library and information science scholars should develop interest in studying phenomena connected to team based learning how to ensure that both researchers and practitioners contribute to ongoing efforts being made to improve the adoption of team based learning techniques in tertiary institutions.

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## APPENDIX I

Adeleke University

Faculty of Business and Social Sciences,

Department of Library and Information Science

Human and Library Factors as Challenges to Use of Mobile Technologies for Group Based Learning: Case Study of Tertiary Institutions in Ede, Osun State

Dear Respondent,

I am conducting a research study on the subject stated above. I implore you to please participate in the study by filling out responses to the questions outlined in this questionnaire. Please be assured that all the information you provide in the study will be used only for the purpose of the study and will be treated confidentially.

Thank you.

Sallau Mohamed.

**Section A: Demographic Questions**

1. Which of the following tertiary institution are you attended: Redeemer’s University Federal Polytechnic, Ede Ilori College of Education
2. Which of these broad categories of subject areas/academic discipline does your department fall into: Education Sciences Social SciencesMedicine Humanities Technology Information Technology
3. Indicate your gender: Male Female
4. Age Range: below 17 years 17-20 years 21-24  
25-28 29-32 Above 32
5. What level or year of education are you: ND Two HND One  
HND Two 200 Level 300 Level 400 Level  
500 Level 600 Level

**Section B: Ownership of Mobile Technologies**

1. Which of the following mobile technologies do you own:

S/N	Mobile Technologies	Tick (√)
a.	Laptop	
b.	Palmtop	
c.	Android Mobile Phone	
d.	Torch Light Mobile Phone	
e.	Apple Mobile Phone	





	to work together on some issues that are stated as the learning objective(s).		
2.	Group based learning is a learning situation in which students are put into groups of at least three each in order to learning together.		
3.	Group based learning is a learning situation in which students are grouped together in groups of about three or more students to work together on some issues that are stated as the learning objective(s) and are expected to submit a written report at the end of the assignment.		

2. To what extent do the definition you chose above align with your conception of the term: Very High Extent   High Extent   Moderate   Very   Low Extent                      Low Extent

3. How often do you get involved in group based learning in your institution? Very Often                      Often                      Moderate                      Not                      Very Often   Not at all

4. Would you say that you like participating in group based learning? I Like it very much                      I Like it                      Moderate                      I like it to some extent                      I don't like it at all

Section E: Human Factors Challenging Group Based Learning

The statements provided in the Tables below are meant for eliciting your opinion on the issues being studied with regards to group based learning. Read them carefully and indicate your level of agreement with them. Please note that

SA=Strongly Agree; A=Agree; NS= Not Sure; SD= Strongly Disagree; and D= Disagree.

S/N	Statements on Variables	SA	A	NS	SD	D
<b>Trust</b>						
1.	I find it difficult to trust members of group based learning groups anytime I am involved in group based learning assignments					
2.	Members of group based learning groups do not always trust one another.					
3.	Even though that most times I got involved in group based learning that the group chose a leader, I find it difficult to trust that the leader is not using others to his/her advantage.					
4.	I always try to do my best to earn the trust of members of the group based learning group that I belong to, but I see that this is normally more difficult than envisaged.					
5.	I see no reason why members of group based learning should not trust one another, the problem of trust still persist notwithstanding.					
<b>Sense of Competition</b>						
1.	There is always a sense of unhealthy competition among members of group based learning groups.					

2.	Although in most cases every member of group based learning groups are awarded the same score, this seems not to eradicate the sense of competition among members.					
3.	Everything in tertiary education is competitive, so this thinking always influence the unhealthy sense of competition among members of group based learning groups.					
4.	Members of group based learning groups are better described as unserious not as being unhealthily competitive.					
5.	The sense of competition in the group based learning groups I have belonged to helps the group positively to reach learning objectives.					
<b>Willingness to Share Knowledge</b>						
1.	I have not experienced the situation in which members of group based learning that I have belong to were unwilling to share their knowledge.					
2.	I feel that members of group based learning groups always reserve some knowledge from group members as a bate to perform better in examinations.					

3.	Willingness to share knowledge by members of group based learning group is a major factor that limits its effectiveness.					
4.	I feel that lecturers are not doing enough to educate and enforce rules that will promote the sharing of knowledge during group based learning assignments.					
5.	I am not disposed to the idea of sharing all that I know with regards to a course during group based learning assignments.					

Section F: Library Rules Challenging Group Based Learning

S/N	Statements on Variables	SA	A	NS	SD	D
<b>Lack of space in the library</b>						
1.	The building used as library in my school is not appropriate because it was not originally built to serve as a library.					
2.	Modern libraries are expected to have general and private reading areas and also provide meeting places to members of group based learning members.					

3.	The library in my school has private meeting rooms where students can meet and do group based learning assignments.					
4.	The number of students waiting to use private meeting rooms in my school's library makes it difficult for members of group based learning groups to opt for using library private meeting rooms.					
5.	The nature of assignments given during group based learning assignments does not makes using library private reading areas appropriate.					
<b>Outlawing group discussions</b>						
1.	The rules in my school's library does not give room for group meetings in the library.					
2.	Although there are private reading areas in my school's library, students are not allowed to use them due to new rules banning group discussions in the library.					
3.	There are too many rules about 'no talking' in the library, hence, students involved in group based learning do not see the library as an option for a meeting place.					
4.	Although the library seems to provide opportunities for students involved in group based					

	learning to use library meeting rooms, the ways library staff implement ‘no talk in the library’ rules put off students for considering using the library.					
5.	There is a lot of dissensions in the ways library staff implement library rules about the ways private reading areas in libraries should be used by students.					
<b>Outlawing use of mobile technologies</b>						
1.	There are conflicts about if students should use mobile technologies in my school’s library.					
2.	Students that use mobile technologies in the library normally distract other library users in the library.					
3.	You are not allowed to use mobile technologies in my school’s library.					
4.	Students misuse mobile technologies in the library.					
5.	The rules regarding the use of mobile technologies in my school library make it difficult for students to use the library for group based learning assignments.					