THE IMPACT OF INTELLECTUAL PROPERTY ON THE USE OF COMPUTER SOFTWARE IN TEACHING IN SIERRA LEONE

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Abstract

Although the discipline of Intellectual Property is significantly institutionalised and contributes immensely to the development of western democracies, it is relatively novel in countries struggling with the harsh realities of socio-economic growth as evident in Sub-Saharan Africa, especially within the West Africa Sub Region. This report lengthily deliberates on the level of awareness of students and teachers of intellectual property law and its relation with computer software in higher institutions of learning. The report therefore investigates the impact that intellectual property has on the use of computer software in teaching in colleges and technical institutions in Sierra Leone. It specifically focuses on the careful use of computer software tools such as power point, computer aided instructions, and simulation, among others, by teachers to make learning simple and qualitative for the improvement in students' understanding. A further motive behind this report is the need to explore the extent of the knowledge that college lecturers and students have about intellectual property as it relates to computer software in Sierra Leone. According to the results obtained from field research in the various sites, majority of the respondents (53.7%), mostly male, are in their early twenties. However, they are also found out to be married. The outcome of the report further reaffirms the view that computer software is a very useful instrument in aiding the process of teaching and learning in higher educational institutions, as revealed by 93.7% of the respondents, with 37.5% students admitting that they now assume a leading role in the learning process. Although, as revealed in the report, a large number of the respondents, 87.5%, admitted of their knowledge about intellectual property law, half of the respondents, 50%, became aware of it only during the close of 2011 when Parliament finally moved to repeal the Copyright Act. Whatever the nuance may be, it is clear that intellectual proper law does have impact on the use of computer software. This impact is dispensed through the learning experience of the students and the teachers' instructional dispensation. It was also revealed by 93.5% of the respondents that computer software is more protected under copyright than patent laws. Despite the fact that computer software seriously affects the teaching and learning process of users in higher institutions in Sierra Leone, there have been a number of bottlenecks which tend to derail such experience. As revealed in the report, the problems involve threat from power failure, and lack of easy understanding of the software, among others. At any rate, however, the report shows that intellectual property law and computer software are two sides of the same coin.

Copyright

DECLARATION

This research project is my original work except where sources have been acknowledged. The work has never been submitted, nor will it ever be, to another university in the awarding of the degree.

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STUDENT **DATE**

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Dedication

This research is dedicated to all those who have great passion for intellectual property in our dear country.

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CHAPTER ONE

1.1 Background

The use of computer software as an aid in teaching is crucial in today's world where technology seems to dominate every aspect of human activities. In many parts of the world, computer has been adopted as significant tool in facilitating and fast tracking the many activities that human beings conducted. In educational institutions people who were trained in the use of computers were employed to conduct administrative tasks involving the computation of students' grades or establishing standardised database of students through the application of software that were installed into the computer hardware. The inbuilt characteristics of the computer system, such as its high speed and large storage capability, achieved through the invention of the integrated circuitry component called chips, accuracy and consistency in executing commands, and its unique ability to store and retrieve information, made its relevance highly enviable.

Considering the significance of the computer, its use was then extended to the classroom where it was intended to aid teaching process. Since the functioning of the computer is made possible through the interaction between the physical components called hardware and the non physical components called software, efforts were stepped up in inventing a range of software. These softwares were then divided into two main categories, viz; system software and application

software. The system software is a set of programmes that is used to control the hardware and software resources. It is the main bridge between the hardware, software and the user. The operating system is a major type of system software without which the computer system can never function. It is the nerve center of the computer. The other type of system software is the utility software which is referred to as antivirus used primarily to track down and clean virus in the computer. The application software, on the other hand, are programmes made for performing specific tasks. They include Microsoft Word used to process documents, Microsoft Excel used to produce spread sheet, Microsoft Access for the designing of data base, Microsoft Power point used to carry out presentations, and Microsoft Publisher used to carry out desktop publishing. The Personal Computer (PC), which is used by only one person at a time, is an integrated and compact system that features all of the elements discussed above and which is widely used today. The personal computer uses the processor and memory as two intertwined components, with the processor likened only to the brain of human being since, as Norton explained, 'it organizes and carries out instructions that come from either the user or the software'. [1]

Computer software then makes teaching very illustrative and practical and enhances the increased understanding of the individual. However, the effective

[1] Norton, P. (2001). "Essential Concepts (Fourth Edition)". Quoted in 'Essentials of Computer Graphics In Educational Technology' by Alhaji Usseif Sesay. Diploma Cultural Studies, B.A., Dip. Ed. (USL), October, 2008.

use of computer software, like all products resulting from human creation, is determined to a greater extent by the crucial role of intellectual property law. Although varying views exist regarding the nature and dimension of intellectual property law especially when it involves computer software, it nevertheless serves as an important kind of property with irresistible reward. [2]

Until recently, Intellectual Property was a subject that was limited to the western countries. For instance, Allan Story noted that initially intellectual property was mainly dominated by specialists and those who produced intellectual property rights [3]. However, a significant shift away from this trend was made when the subject was subsequently integrated into multilateral trading system while at the same time creating impact on a number of key policy issues. Hence, this significant development made intellectual property gain wide recognition and importance in the lives of people in society. Today, it covers both OECD and developing countries. Intellectual Property includes patents, trademarks, copyright, industrial designs, utility models, geographical indications, and trade secrets. The importance of intellectual property, especially its rights and aspects such as patents and copyright, influenced most intellectuals to discuss it in gatherings or through volumes of pages. It then subsequently became an

[2] Story, A. (April, 2004). *Intellectual Property and Computer Software. A Battle of Competing Use and Access Visions for Countries of the South*. ITCSD and UNCTAD, Geneva, Switzerland.
[3] Ibid

important concern for policy makers in both developed and developing countries.

As discussed by Graham Dutfield, and other intellectual property scholars, intellectual property law at the international level began in earnest around the late 19th century with the formation in the 1880s of the Paris Convention. [4]

Subsequently, the increasing realization of the significance of IP in the different fields of human endeavour resulted in its expansion to cover other domains such as computer software. It became necessary to amend the laws to cover these new areas, and to make them more useful and affordable to the vast number of people in various national and transnational societies. The use of computer software in aiding teaching then became a necessity although in Sierra Leone this is limited mostly to universities and few tertiary institutions. Presumably, IP should form a protective framework of software that is used in the teaching field. It is for this reason that developing countries, under the TRIPS, are required to protect software under copyright law and semiconductor designs "under the sui generis system in accordance with articles 35-37.

[4] Dutfield, G. (Sept. 2010). "Intellectual Property Rights and Development Policy Discussion Paper", UNCTAD/ICTSD.

The field of computer software is obviously elastic and prolific. Allan Story[5] has argued that on almost a weekly basis, new technologies are being created that provide potentially transformative and more inclusive ways to communicate, to teach and to learn. However, these possibilities are permitted more essentially within the framework of intellectual property. And fortunately, such possibilities have been granted under the TRIPS agreement. It opens a new window of opportunity for adopting computer software in the service of humanity with specific significance generated through a synergy with IP protocols. This marriage is made possible through the official recognition of IP law as a major outlet for ensuring that computer software is not only used to teach but also makes it possible for its secured guarantee and protection from undue alteration by unauthorised experts.

From the literature, it has been observed that there is ongoing discussion concerning the protection of computer software. For instance, the issue of code ownership and the software itself that enhances the computer's functionality seems to serve as focal point of scholastic inquiry.

Computer software is a set of rules and instructions that enhance the functionality of the computer's operating system. It is the actual instructions that

[5] Supra note 2.

the user gives the computer which in turn gives out the required result[6]. This basic understanding of computer software underscores its significance in providing leverage for man's utility. Hence, computer software is seen as a necessary interface between the teacher and the student in the learning environment. With the use of computer software, the student's creative and innovative intuition is clearly enhanced through his or her detachment from the traditional method of instructional abstraction. He or she indulges in the pleasure of visual and artistic experience, controlling his own learning process with the use of basic hardware tools such as the mouse and key board. In between this possibility, intellectual property law offers adequate guarantee for the use of variety of softwares that are legally protected.

Hence, computer software and Intellectual Property are important in ensuring that human activities and development are systematically realized especially in developing countries. Unfortunately though, while Intellectual Property has taken root in some countries in Africa, the situation of Sierra Leone is quite different. The first attempt to exploit the use of intellectual property law in Sierra Leone was the enactment of the Copyright Law at the period of independence which became a significant part of the 1961 constitution. Since then however, the copyright law which was supposed to guarantee the rights of inventors and

[6] Bitter G. G. (1986). *Computer Literacy. Awareness. Applications. Programming*. Addison-Wesley Publishing Company, Canada.

creators against piracy, was not taken seriously. It only remained on paper, and could not benefit from the possibility of effective implementation and popularisation. The grand effect was that most creative works of individuals were not protected against undue exploitation by non owners, a situation that continued for about fifty years, from 1961-2011. Throughout those periods, individuals almost lost ownership of their creative materials or products, and for most of the time they suffered from severe cutbacks in terms of the financial reward that they should supposedly realise. As a result of the remotely backward state of the country at the time, and the fact that Sierra Leoneans demonstrated high sense of inward disposition and conceit, caring little about development in the external world, great and notable local artists were more interested in the pleasure that they derived from their arts than financial reward. Their creative ideas were primordially tuned to the sacred traditions and culture which conspicuously held them to ransom. This status quo squeezed them of the essence of seeking any legal means or framework, such as those provided by intellectual property law, which will increase their chance of being maximally rewarded with financial fortune.

With the glorification of black market system, a seemingly negative commercial outlet described by Cox-George as a “Shadow State” which shook the national economy especially in the 70s and 80s, local creators of ideas and inventions

were at the center of those who suffered most.[7] In those periods too, the act of piracy was so glaringly conducted that it almost became institutionalised, resonating with the prevailing hiking corruption rate that wrecked unchecked havoc on the state. The situation became more serious and utterly critical when the music industry grew and was popularized in the early 2000 through the efforts of notable Sierra Leoneans like Jimmy B and Steady Bongo. More and more local musicians emerged with a number of local albums appearing in the market. But the musicians could not realize the financial reward from the sale of their albums. Unlike in the distant past when musicians considered their art as end in itself, this crop of musicians was highly critical and sensitive to the emerging economic trend dictating the existence of the common man. And haven experienced their brothers in the Diaspora making great fortunes from their albums; they wasted no time in expressing a fulmination for a legal means to protect their interest in the music world.

The reason for this was high levels of piracy which still prevailed in the face of the outdated national laws. This situation, heightened by the unprecedented pressure from the public especially the music industry and writers, forced Parliament to get down to business. They closely examined the law and made amendments. Hence, by the end of 2011, the Copyright Act was passed in

[7] Cox-George, N. A. (1961). *Finance and Development in West Africa: The Sierra Leone Experience*. London: D. Dobson.

Parliament to 'provide for the protection of copyright in Sierra Leone and for other related matters'[8]. Thereafter, it was then officially and legally proved that the local music industry and writers are now protected against undue pirating of their materials with high economic reward. It also created a formal platform for addressing disputes relating to copyright violations in a range of activities that were hitherto vulnerable to pirates.

Significantly, the Copyright Act covers computer software especially with regards its unauthorised use irrespective of the fact that the technology came into Sierra Leone quite recently, and very little effort is made to exploit its use in teaching.

Intellectual Property Law as it relates to computer software, is therefore a very young and almost virgin tool in Sierra Leone. Most users especially within the educational institutions have little knowledge of the relevance of intellectual property law and its crucial role in protecting computer software.

1.2 Problem Statement

Since the attainment of independence, the Copyright Act was recognised and enshrined in the 1961 constitution. But from that period onwards, little or no

[8] The Copyright Act, October, 2011. "Supplement to the Sierra Leone Gazette", vol.CXLII, No. 64. Government Printing Department, Sierra Leone.

attempt was made to ensure that it is fully implemented. This position was obviously precipitated by the fact that IP as a separate field of discipline was not fully recognised by those who were in the academic and leadership circles. Most users especially within the educational institutions do not know much about intellectual property which may be attributed to the late appearance and use of computer software in Sierra Leone. Ironically though, and as evident in the state constitution, intellectual property was recognised as early as the period of the attainment of independence, way before the experience of the use of computers in the service of man; but today the use of computer seems to be more popularised than the knowledge of intellectual property law. This disparity has had a downward effect that undercuts the very use of computers in the world of academia.

The situation is made worse by the dearth of empirical data addressing intellectual property and the teaching of students through computer software. Generally, the literature pays very little attention to the impact that IP has on the use of computer software. For instance, Arthur Vandi et.al exclude IP in their writings on information technology, while Alhaji Usseif Sesay only considered graphics under the terminology of educational technology and how it can be used in teaching process to facilitate learning in Sierra Leone generally. He failed to recognise the crucial role of intellectual property law in determining the significance of graphics software especially for instructional purposes.

Furthermore, these works mainly used qualitative research strategy as a basis of analysis. This research tries to deviate from this approach and attempts to fill this gap by using both quantitative and qualitative research strategies and designs. Through this approach it is hoped that the key variables underlying Intellectual Property and the use of computer software are captured.

1.3 Research Questions

- What is the level of IP awareness among the lecturers and students at University and technical institutions in Sierra Leone?
- How often computer software or computer aided program is used as a tool of teaching by lecturers?
- What are the implications of using computer software that is protected by intellectual property law?
- How effective is computer software in teaching in Sierra Leone?

1.4 Objective

The main objective is to examine the impact of intellectual property on the use of computer software in teaching in Sierra Leone.

1.4.1 Specific Objectives

Specifically, the research intends to achieve the following objectives:

- ❖ To investigate the use of computer software in teaching in colleges/universities and technical institutions in Sierra Leone;
- ❖ To investigate the awareness of intellectual property law in Sierra Leone; and,
- ❖ To give recommendations.

1.5 Significance of the Study

A study on Intellectual Property Law and Computer Software is important in several ways, especially in a society like Sierra Leone where the subject matter is relatively novel. The study will create the requisite awareness and in depth understanding of the subject in the context of Sierra Leone.

Considering the move that has been taken by the government of Sierra Leone in legislating IP laws, especially the repeal of the Copyright Act of 2011, this study and its timing is very crucial in serving as a window of information that will guide the process in the future. This is very important when one considers the fact that there is limited literature on IP and computer software in the Sierra Leone context.

Furthermore, the study is expected to serve as important material for policy makers in Sierra Leone and elsewhere in providing a clear understanding of the

issues and synergy between intellectual property law and the use of computer software in teaching.

Significantly, since this is the first attempt for a research to be conducted by a student in Sierra Leone on intellectual property, it will possibly create the awareness for the introduction of the subject in schools and universities. By conducting interviews with lecturers, students and seeking the opinion of the public, much interest will be cultivated in IP and computer software.

It will further create the awareness for providing the legal framework for products that are now being locally produced. Although, as an instance, computer and other relevant software are not being created in Sierra Leone, the lead role of Musicians and Writers may soon be replicated in the arena of technology which will make the exploitation of intellectual property law very impelling.

The study will add to the body of knowledge available on IP and computer software. It will showcase a Sierra Leonean perspective on IP and its impact on the use of computer software in teaching, and also reveal the position of the country in the light of the growing importance and adoption of IP in developed and some developing countries in the West Africa Sub Region.

Finally, the production of this material will mean that the country is gradually joining the other countries in exploiting the values of IP for the development of their nations. This is very crucial when one considers the fact that IP aids in the process of ensuring that development takes place especially for developing countries. It is therefore expected that this work will be among the early works that project into the need for IP in the development drive of the country which emerged from one of the brutal wars ever recorded in the world.

1.6 Scope (Delimitations)

This study is delimited in diverse ways as discussed below:

1. The study is designed to be conducted in selected colleges and technical institutions in Freetown Municipality. It specifically draws samples from a population of students and teachers at Fourah Bay College and the Institute of Public Administration and Management on the one hand, and IAMTEC and AITH which represent technical institutions on the other. The uniqueness of the study within a specific context makes it difficult to be replicated exactly in another context (Creswell, 2003). [9]
2. It is also important to note that an investigation of the use of computer software at higher level of the educational system biases the research in favour of students and lecturers excluding the wider crop of educationists at

[9] Creswell, J. W. (2003). *Research design: Qualitative, quantitative, and mixed methods approaches* (2nd ed.). Thousand Oaks, CA: Sage Publications.

the lower rung of academia such as the secondary schools. It is this genre of educationists, that is children in Sierra Leone, that are missing a lot in information technology and communication. [10]

3. The responses that participants' give will be reflections of, and confined to their personal experiences in the use of computer software in teaching and learning in Sierra Leone. It exclusively reflects a confined knowledge of computer software in colleges and technical institutions.
4. The fact also exists that only students and lecturers' viewpoints are considered in investigating the link between computer software and intellectual property law. It clearly excludes the wider and more critical views of policy makers and officials in government institutions such as the Ministry of Youths, Education and Sports which is responsible for coordinating and implementing all educational programs in the country. These potential group of people are not only external to the current study, but would have done great service to the information gathering process by providing relevant and state of the earth issues that would help answer the research questions so far indentified.
5. Given the mixed method it is presumed that more qualitative techniques would be explored in order to allow for a subjective analysis of the issue in question.

[10] Jones, D. E. (1965). *Othellos Countrymen*. Oxford University Press.

1.5 Limitation of the Study

Although the study is significant in many ways, it has been limited considerably both in the course of the work and the focus of the subject matter. As a case study, the research focuses exclusively on intellectual property and computer software in the context of Sierra Leone. This focus accounts for a narrow treatment of the subject of intellectual property as an independent and broad discipline that cuts at the heart of development in Sierra Leone.

The lack of adequate empirical study in Sierra Leone on the subject of intellectual property law makes it very difficult for an extensive examination of the subject matter. In addition, there is also serious difficulty in gathering data from the respondents who seem to have little or no knowledge of intellectual property law as significant tool that protects computer software used in teaching process. The delimitation of the respondents, in view of the number and constituents, also poses serious problem to the development of the research instrument to be used.

Again, the study is limited by the fact that much time and resources are not available for the conduction and completion of the research process. Considering the disadvantaged society with very little exposure to educational facilities, a broader examination of the subject would only worsen situation.

The difficulty emanating from the lack of adequate empirical works on intellectual property and computer software in Sierra Leone poses serious problems to the research process, resulting in near incompletion of the project.

1.6 Organisation of Work

The study is divided into five main chapters. The first chapter gives a background to the work, presents the problem being investigated, the research questions and objectives, significance, delimitation and limitations of the study.

Chapter two presents a survey of existing Literature on intellectual property and the use of computer software. It looks at both the theoretical aspects and empirical research conducted generally.

The third chapter is dedicated to the research design used. It examines the study population, the research design used, the sample framework, sampling, research instrument, data collection method and analysis.

Chapter four focuses on the presentation, analysis and discussion of the data collected. The data is analysed through instruments such as bar chart, pie chart, and tables. This is supplemented with snow ball analysis.

Chapter five is the last chapter. It gives a summary of the entire work, conclusion, and recommendations for further research.

1.7 Conclusion

So far, this report has shown that intellectual property has gone through a long period of development. In those countries where the discipline has been fully established, it provides huge economic benefits to those who have ownership of the creative works. However, there are still serious problems associated with the use of intellectual property in protecting ideas or products especially when it relates to computer software. In this regard, this report has endeavoured to look at the key issue of the impact that intellectual property has on the use of computer software in teaching in colleges and technical institutions in Sierra Leone.

The next chapter proceeds with a survey of the literature on Intellectual Property and computer software. This is done with close attention to the extent to which both concepts are used in the service of man in the classroom.

CHAPTER TWO

Literature Review

2.1 Introduction

Intellectual Property as a specialist discipline, throughout its long historical lineage, was affected by a wide range of discussions and shifting debates as to its nature and relevance in light of socioeconomic development of the state. Over time, evidence found in the literature shows that sustained scholastic efforts were stepped up to explore the nature and accurate changes of the discipline, and the theoretical basis in which it is grounded. This presupposes that special attention is required by the researcher to conduct an in-depth investigation of the subject of Intellectual Property and its synergy with computer software. This is especially relevant in the context of Sierra Leone where both concepts are relatively new experiences with their benefits steadily influencing human interest.

Thus, this chapter sets out to explore the literature with the aim of providing fresh perspective on both the main and dependent variables, while weaving out, perhaps on a very thin veneer, the link between them. This approach is very crucial in the determination of the relevance of intellectual property and computer software to Sierra Leone. In this respect, the basic assumptions on which the study is based, such as the development potential that intellectual property carries, the crucial protection that it provides for computer software, among others, are brought out.

Generally, two strands of scholastic enquiry; theoretical and empirical frameworks can be discerned from the literature. The issues relating to the variables in question are examined. By using this approach, the current study contributes to the literature by not only adding fresh perspective to the debate that dominates the field of Intellectual Property, but transcends to a point of providing strong justification as to the extent of the impact that it has on computer software in light of the latter's use in teaching, anchoring it on the objectives set out in the preceding chapter.

Considering the growing potential of the domain of intellectual property, it is expected that universal theories that provide rational explanation of the nuance that offsets a comprehensive balance between conceptualisation and practice, are readily available. But as the literature suggests, revealing evidence indicates the difficulty involved in borrowing theories from other disciplines in the social sciences, simply because of the fact that the threshold of Intellectual Property is froth with diverging views and conceptions as to the dividing line between what to protect, and at what point should such protection take effect.[11] While recognizing the fact that theories of such nature do not provide a clear bridge between Intellectual Property law and computer software, this study is squeezed along the path of placing the latter in the domain of laws of the former. It is the intention of this study that this approach will aid in simplifying the confusion

[11] Fisher, W.W. (2007): Theories of Intellectual Property. In When Should We Permit Differential Pricing of Information?

and perhaps unreliability of conceptualisations proffered in the literature, by establishing a link between the economic value of the impact that intellectual property law has on computer software and the technical considerations therein.

In view of the ambitious nature of this research, and the fact that the relation between intellectual property law and computer software is relatively novel in Sierra Leone, considerable attention is placed on the theoretical investigation influenced by the end economic reward that it has.

As much empirical research has not been conducted in the Sierra Leone context, especially with regards the impact of intellectual property on computer software, the review will be tilted heavily towards exploring experiences in countries where such awareness had long torched.

2.2 Theoretical Framework

The increase of human interest in intellectual property has influenced the emergence of theories focusing on the subject matter and its role in protecting ideas and products. The theoretical literature demonstrates series of opposing conceptualisations determined by the emergence of distinct ideological schools of thought. William Fisher, exploring recent theories addressing intellectual property, noted that they are influenced by the struggles within four distinct

approaches.[12] These approaches he traced to the writings of notable philosophers such as John Locke, Kant and Hegel, Karl Marx, William Landes and Richard Posner, Jefferson and other political and legal theorists. One of the approaches, as widely pursued by William Landes and Richard Posner, and rooted in utilitarian tradition, strikes a balance between the recognition of the originator's right to produce or increase invention and the public's right to its maximum utility. They nevertheless emphasise the need for establishing a principle for the creator's recovery of his service and financial expenses incurred in the course of production as a way of circumventing widespread piracy through the granting of exclusive right to make copies of their creation for a limited period, and in the case of trade mark, be given the opportunity to explore and use wider range of vocabulary creating choice of trademark description that may attract consumers. While the utilitarian tradition generously makes provision for the inventor and consumer of products, the Lockean based theorization, as illustrated by Nozick, defends to a greater extent the right of the inventor with the concomitant effect of not harming the users or consumers of facts and concepts, which are held in common. Here, emphasis is placed on the inventor rather than that of the user. The same argument, fostered on similar premise that the owner of creative works should be entitled to some property rights that guarantee financial and other rewards as motivation to stir the creator's prolificacy, is influenced by Kant and

[12] Supra notes 3.

Hegelian philosophy, although it recognizes the fact that labour is not involved especially in novel writings.[13]

Generally, the complexity and sheer confusion that emanate from the application of the Lockean theory, especially those concerning his labour theory and the "common" property ownership create serious difficulty in its accurate application to the field of intellectual property. Although almost all of the theoretical projections highlighted so far are economic in nature, they nevertheless fail to provide universal framework for the straightforward understanding of intellectual property law in relation to authors' inventions. The same problem grips us when an attempt is made to evaluate the impact of intellectual property on using computer software in teaching, especially in light of the volatile nature of the weak theoretical basis as evident in utilitarianism, Lockean teleology, Hegel and Marx. However, an attempt is made to provide a rationale for resolving such fluid theoretical projections by evolving three basic approaches used in the applicability of those theories to intellectual property law and the improvement in social welfare. These include incentive theory, optimizing patterns of productivity, and rivalrous invention. But even these approaches do not provide universal remedy, as they in themselves reflect similar shortfalls.

[13] Supra notes 4.

Contrary to the utilitarian concept of intellectual property is the view held by the school of romanticism which lays emphasis on the authorship and invention enforcing the notion of the natural right of the author over his creative product. It was Daniel Defoe who in 1770 evolved this romantic notion of the author's right of intellectual property when he noted that "A book is the Author's Property, 'tis the child of his Inventions, the Brat of his Brain.[14] This defense of the author created a dichotomy between utilitarianism's incentive notion and the romantic's authorship defense, an ideological cleavage that continued to fan the flames of tension in the acceptability or rejection of intellectual property law for longer period.

A notable scholar who is influenced by romantic notion, Brad Templeton, in his essay, "radical theory of intellectual property", argues that intellectual property is really not about "possession", but about "control", and that intellectual property should be seen as the "real property" as opposed to natural property which he considers as the illusion.[3] Brad's radical and straightforward proposition is relevant in the understanding of the relation between intellectual property and computer software. If intellectual property law is made to enable control over its use, especially with regards its patentability and copyright status, the better will it offer the opportunity for quality teaching of Intellectual Property itself. The reason is that the incidence of computer software pirating is

[14] Quoted in May C. (September, 2006). *Forgetting History is Not an Option! Intellectual Property, Public Policy and Economic Development in Context*. Lancaster University, UK, USA.

higher today than any kind of property, especially in Sierra Leone where the law is best experienced on paper rather than in practice; but its wide use is often determined by the status it does carry under intellectual property law than otherwise.[15]

While the literature landscape of intellectual property is inherently dominated by conflicting notions, and indeed counteracting scholastic responses, the central issue of the impact that Intellectual Property has on computer software and its use in teaching Intellectual Property is almost glossed over. Neither the utilitarian academics, or Hegelians and Marxists, nor the romantics have been able to proffer satisfactory and all inclusive remedy to the problem.

Perhaps the realists' perception, for their direct handling of the issue, may have readily offered the domain of intellectual property and computer software with the right theoretical basis that will aid to underscore the IP-computer software linkage. But as Christopher noted, realism's state-centric disposition provides its shortcoming as private actors, who have often forced changes in intellectual property protections, are overlooked thereby making it less relevant.[16] On the other hand, functionalism at a face value provides justification for intellectual property law on the grounds that it enlivens efficient socio-economic relations

[15] Templeton, B. (2010). *A Radical Theory of Intellectual Property*. S.F. Publishing.

[16] May, C. (September, 2006). *Forgetting History is Not an Option! Intellectual Property, Public Policy and Economic Development in Context*. Lancaster University.

especially in the context of the state. [17] It provides explanation from contesting forces and interests as having provided rational settlements for the growth of the national economy. However, despite such macro perspective offered by functionalism, and the realists, it does not make adequate room for micro or non state private role in the intellectual property philosophy.

The negative effect of all these conceptual shortfalls is that it leaves us in a state of suspended dilemma with an exposition to another difficulty which readily awaits us. The most obvious of this difficulty is the question as to what intellectual property is intended to achieve. Considering the scarce account of intellectuals on the impact that intellectual property has on computer software use in teaching, a further difficulty arises, which may not be remedied by merely relying on the available literature. This involves the efficiency side of computer software use taking into cognizance the prevailing situation in developing countries especially the study area. But before wrestling with this point, it is obvious that the question of the purpose of intellectual property in the light of its impact on computer software is addressed through the consequentialist justification which lays claim on the right that the inventor should have to reproduce and widely distribute his work. In this way, the inventor's ability to reproduce and sell his work en masse consequently benefits the public through

[17] Ibid.

cultural enrichment and improved quality of life. [18] Thus in either way, both the creator and consumer benefit in the process, while the former is enticed to further his productive spirit. However, the primary rationale for intellectual property is to protect inventions which include computer software in no small measure. By establishing such protection, intellectual property helps in ensuring that computer software, like all creations, is placed within the appropriate legal framework for its reliable use in the teaching process.

The complexity arises however in the qualitative nature of the impact that intellectual property creates. For a long period, this question of efficiency has been contemplated as a way of providing more technical and qualitative approach in teaching intellectual property as a specialist discipline through sophisticated software. It borders on the research question as to how often computer software or computer aided program is used as a tool of teaching by teachers and lecturers?

It is important to note that computer software is very crucial in the teaching process. Its protection through patent and copyright creates a lot of possibilities and opportunities for the beneficiaries. Bitter has provided very significant uses to which computer software can be put in enabling teachers to effectively and

[18] May, C. (September, 2006). *Forgetting History is Not an Option! Intellectual Property, Public Policy and Economic Development in Context.* Lancaster University.

frequently teach intellectual property to students[19]. While noting that three basic softwares are often used in teaching, such as drill-and-practice software, tutorial, and simulation software, he maintained that their increasing usefulness makes teachers and students to use them frequently. For instance, he observed that computer software makes teaching very interesting and increases the learner's comprehension especially through simulation, and in helping the teacher with the many paper works such as marking of exam scripts. It also increases library use. Thus, Bitter is able to show the essence and rationale for using computer software in teaching. However, the author does not explain any existence of the impact that intellectual property has on using computer for teaching. This crucial aspect of the link between intellectual property and computer software is only, but often latently, addressed through the theoretical discourse as evident in the literature. For instance, and as noted inter alia, the existing theories only labour on the point that computer software, like all other creations, needs to be protected by intellectual property law.

2.3 The use of Computer Software in Teaching in Sierra Leone

While the theoretical literature provides wider basis for the understanding of the impact that intellectual property has on computer software, it does not clearly

[19] Bitter, G. G. (1986). *Computer Literacy, Awareness. Applications. Programming*. Addison-Wesley Publishing Company, Inc., U.S.A.

indicate the extent of the use of computer software especially in Sierra Leone, nor does it provide holistic answer to the research questions raised. This task is taken up to some extent by exploring the empirical literature, which discusses the scope of research works and the findings and results derived within specific cases of study.

It is worth noting that research in this domain draws extensively from the existing theoretical frameworks that underscore intellectual property scholarship and its need to be used in protecting computer software. From this angle, then, the empirical research tries to provide answers to the questions as to the extent to which computer software is used in teaching in Sierra Leone. However, it is pertinent to begin this aspect of the enquiry by drawing from the focus of course work designed by the Inter University Center for Intellectual Property Rights Study delivered by N. S. Gopalakrishnan. [20] The program highlights several strong cases for the impact that intellectual property has on computer software. The most obvious of them is the protection that it offers for the interest of the public, that is the primary users, which prompts the development of more effective software including alternative types and affordability in terms of its use. In this vein too, computer software protection is not only limited to copyright law, but also that of patent law which, as argued through the course work, makes it more efficient and adequate. One will not pause even for a

[20] Gopalakrishnan, N. S. Course work on IPR and Computer Programme, Inter University Center for Intellectual Property Rights Study, India.

moment to try to address the issue of the impact of intellectual property on computer software without examining those issues that are contingent upon it. Hence, several empirical or research questions deserve attention here. For instance, what is the level of IP awareness among the lecturers and students at university in Sierra Leone? How effective is computer software in teaching in Sierra Leone? And, what are the implications for using computer software that is protected by intellectual property law?

While these questions form the basis from which the present research proceeds, they nevertheless expose it to the realization of its most obvious deficit; that very little, if any, research work is available which addresses intellectual property and computer software in Sierra Leone. However, the work of Alhaji Usseif Sesay captioned "Essentials of Computer Graphics in Educational Technology" explores the significant role that computer graphics plays in the delivery of quality education to students in colleges. Specifically, Sesay addresses the most significant question which torches on the central theme of his work, that concerning the factor that makes computer to be an effective teaching/learning tool, and the reason that makes computers to become teachers. Drawing from the works of Seymour Papert, Sesay advanced four major reasons for the effectiveness of computers in education. These reasons include learning satisfaction, support for both teachers and learners, support for all content areas, and support for all age, grades, and all skill levels. Along these reasons, a striking element comes out glaringly, that the computer is capable of providing

expert knowledge in anything and everything as long as the right kind of software is chosen and loaded into the user's computer system aided by an effective world-wide web access. The writer then highlights four major categories of software graphics commonly used by designers. These include Paint Software/Programs, Photo-Manipulation Software, Computer-Aided Design (CAD) Software, and 3D Modeling and Animation Software. To this list however, the use of Power point program as part of office software can be added, as it is specifically used by teachers especially in the CISCO Networking course offered at the Institute of Public Administration and Management. Thus, these softwares are the very tools used by the teacher/lecturer in teaching in the classroom. They make teaching very interesting to the students who experience the learning process as an artistic exercise. Through the use of graphics, such as images or pictures, as well as simulation techniques, the teacher allows the computer to do the actions while the students directly participate in the process. In this way, the environment within which the lecturers and students operate in the classroom appears more friendly and familiar.

Perhaps the use of charts such as pie charts, bar charts, scatter diagrams, histograms, line and area graphs and a host of similar tools by a variety of softwares, give the computer the power to instruct in a way that makes learning a simple task. Not only is it that computer softwares enhance teaching through images and writings, most even have in-built speech features although, as Sesay noted, they are mostly delivered on a one-to-one basis with an effect not

rivalling that of the teacher. Considering the wide and complex nature of computer software especially as an instructional tool, it should be given due protection in a way that its effectiveness can be further enhanced.

The repealed Copy Right Act, 2011, provides adequate ground for the understanding of intellectual property especially with regards the protection of software and other inventions. [21] However, a foundational white paper, which is based on four case study researches, arguably noted that computer software is found to be widely appealing to the teachers especially in providing the opportunity for dramatizing history, which may also include history of intellectual property and its evolving theories. [22] Thus, it is noted that computer software is widely used in such situation. The study noted however that valuable works that incorporate copyrighted works may hamper the use of the material for teaching. This issue is resolved in case study research work conducted among students in India. [23] The research results show the views of the respondents with majority in support of copyright law for software which will improve effective teaching.

[21] The Copyright Act (October, 2011). "Supplement to the Sierra Leone Gazette". VOL. CXLII No. 64. The Government Printing Department, Sierra Leone.

[22] *Digital Media Project: The Digital Media Challenge: Obstacles to Educational Uses of Copyrighted Material in the Digital Age*. A Foundational White Paper.

[23] Samaddar, S. G. (2011). *Teaching Quality Intellectual Property Management Using Information Technology in India Pedagogy,* International Conference on Social Science and Humanity, IPEDR Vol. 5. IACIT Press, Singapore.

Although these empirical researches reflect bring out key features of the subjects, that is they specifically and in-depthly address the cases in question, they provide relevant information regarding the use of computer software in a country like Sierra Leone. This does not overrule the scarcity of case study research on intellectual property and computer software, using qualitative or quantitative strategies.

2.4 Research Findings and Conclusion

On the basis of the forgone review of the literature, key research findings can be identified. In the first place, the literature provides divergent views regarding the protection of computer software by intellectual property law. However, there is high tendency of a consensus regarding such protection which with relative advantage for both the creator and consumers.

Two. There is very little research work regarding the use of computer software in teaching intellectual property especially in Sierra Leone. This situation is contingent on the fact that very little awareness exists concerning intellectual property and computer software.

Three. Most of the empirical researches use qualitative research strategies in investigating the relevance and use of intellectual property by teachers as teaching tool

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This study uses mixed method research design [24] to collect data on intellectual property and the use of computer software in teaching. This methodological approach creates a wide range of opportunity in the collection of the required data since it enables one to mix both quantified information and descriptive analysis. It also makes it possible to address key quantitative questions such as "how many" or "where" as well as the qualitative question of "how". These questions are crucial in the understanding of intellectual property and the use of computer software.

This chapter therefore brings together a number of variables and activities that underpinned the data collection process, which are carefully woven together in a cog with the purpose of increasing ones understanding of the research problem more completely. [25] Hence, the specific variables that are examined in this study include the research design or plan, the research sample and sampling, sample frame, sample size, research instruments, sources of data, and data presentation and analysis. These variables are contingent on each other in a flexible

[24] Tashakkori, A., & Teddlie, C. (2003). Hand book on Mixed Methods in the behavioural ad social sciences. Thousands Oaks. CA: Sage Publications.

[25] Creswell, J.W. (2002). Quoted in Ivankova, Nataliya V. Students' Persistence in the University of Nebraska- Lincoln Distributed Doctoral Program in Educational Administration: A Mixed Methods Study, December 2002.

continuum which makes it possible for the coordinated and sequential collection and analysis of the data with a degree of precision. The next section examines the variables in a rational manner.

3.2 Research Design / plan

The key research design used in conducting this work is case study which covers Sierra Leone, with specific reference to Freetown, the capital city. This research design is deliberately selected in order to thoroughly address the issue of the use of computer software in Sierra Leone. It also creates the opportunity to examine the relationship between computer software and intellectual property. A descriptive research strategy examines the study population and facilitates the use of both qualitative and quantitative data in describing and quantifying the impact that intellectual property has on computer software and its use in teaching.

Both teachers and students found in colleges and technical institutions in Freetown are the main focus of the research especially those who are exposed to the use of computer software as an instrument of teaching and learning. They are examined within the period 2000 and 2012, from the close of the rebel war on to the repeal of the Copyright Act.

3.3 Study Setting

This study is conducted in Sierra Leone with particular emphasis in Freetown which is noted for its population density and a centre of national administration. As a capital city, the use of computer by people for various purposes was first experience here than in any part of the country. Also, the impact of the idea of intellectual property, especially the recently repealed Copyright Law, is clearly felt in Freetown than in the provinces.

Although the use of computer by Sierra Leoneans may appear to be widespread, its introduction in the country is relatively recent when one considers the experience in other countries in Africa and perhaps Europe. The use of computer was popularized especially after the end of the ten-year civil war which engulfed the entire country with a devastating effect. Before this period, computer system was considered as a sacred and highly delicate object that could easily be fragmented if not properly handled like an egg. Its possession was exclusively limited to the wealthy class of people who did not have much time for its use.

The idea of intellectual property was even novel than computer itself. Although the laws governing the ownership and rights of the inventor's ideas was codified in the country's constitution, an event that was effected in 1961 immediately after the country got her independence from the British, its true essence was never realized by the Sierra Leone population. For a long period of time, about fourty and more years, the laws dealing with intellectual property, especially the

Copyright Act, only decorated a small portion of the national constitution. In those ugly years, then, computer software use in teaching was placed outside of the thoughts of teachers and stakeholders, especially the Ministry of Education at the time.

The early use of computer system by a small number of Sierra Leoneans was highly limited, intended for mere storage of the owner's personal documents. Hence throughout those periods, the state officials clued to the archaic use of filing system as a convenient, though crude, means of record keeping.

If computers were scarcely placed at the service of man in almost every sphere of state and public life, the idea of the use of specific software for teaching purpose was even too remote. The country was not advanced to catch up with the developed nations in taking full advantage of the technological evolution. Sierra Leone was almost cut off from the rest of the world in terms of technological engineering. The traditional blackboard teaching method was the only means of transmitting knowledge from the tutor to the student.

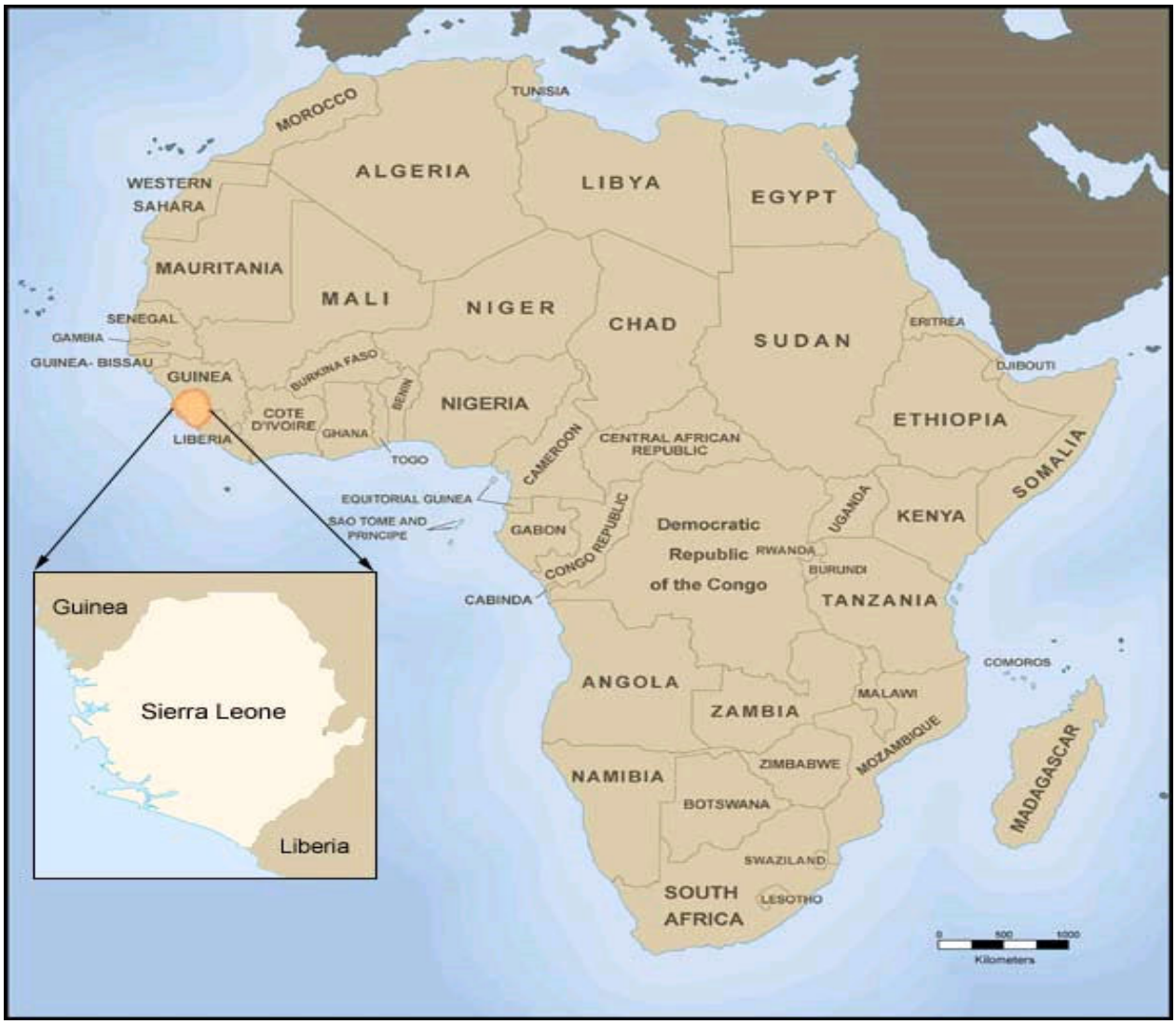
Given this circumstance, it was clear then that significance of intellectual property was not being realized. Worse still, the consideration that computer software, and perhaps all forms of inventions, can be safely protected by intellectual property law was even untenable. As a result, the benefits emanating

from the use of intellectual property laws to both the inventors and the users, as advocated by the utilitarian theorists, were not realized.

While this situation continued for as long as possible, a radical shift started taking place after the experience of the Sierra Leone brutish civil war. In the aftermath of the war, an intensive focus was placed on the need for Sierra Leoneans to acquire skills in computing as a means of becoming self reliant. The initiative was packaged in the Disarmament, Demobilisation and Reintegration programme which targeted especially those people who had played active role in the civil war, and had become completely traumatised, and war weary. Through series of centers across the country they were thought in the use of computer software packages, and other skill.

This situation clearly laid the foundation for the use of computer software in teaching and the essence of intellectual property in facilitating the process. Hence, it was at the close of 2011 that the Copyright law was passed as a result of public pressure especially from the music industry in their fight against piracy. It made pirating of copyright works by unauthorized persons illegal and criminal and therefore punishable by law.

Map of Africa Showing Sierra Leone.



Map of Sierra Leone Showing Freetown (in bold print) as the study area.

3.4 Population and Sample

Generally, the teachers and students in key institutions of learning constitute the population for this study. Although the use of computer software is not restricted to only teachers and students, they are however presumed to be the primary users especially in the field of academia in light of the significance that it provides for them. As Gary (1986) [26] illustrates, computer software, especially Computer Aided Instruction (CAI) such as simulation, is very instrumental in enabling teachers to teach in colleges and universities with increased efficiency. Besides, this crop of individuals is likely to appreciate and popularize intellectual property law and the impact it has on the use of computer software in teaching.

Furthermore, in order to ascertain the nature, degree and dimension of intellectual property and computer software, the population is disaggregated into gender (male and female) in light of both teachers and students. This gender dimension of the population is very crucial as it resonates with the rising phenomenon of girl child education in Sierra Leone, an element that has been at play in the reconstruction process of the country which still battles with the vestiges of civil disorder. The decision as to the nature and constitution of the sample size is very instrumental and deliberate intended to capture the missing

[26] Bitter, G. G. (1986): Computer Literacy. *Awareness. Applications. Programming*. Addison-Wesley Publishing Company, Canada.

link between intellectual property and computer software particularly as it affects the teaching process.

Looking at the population under study, it is crucial to determine the exact period of arrival and settlement in the study site. But for the purpose of this research, the population is referred to those teachers and students who have lived in Sierra Leone, especially in the capital city, within the past twelve years since the end of the acrimonious civil war.

3.5 Sample Frame

The sample frame for this study is Freetown, the main capital city of the country. Within the sample frame, specific colleges and technical institutions are identified as the main units of analysis in lieu of the use of computer software as a tool for teaching. Hence, the sample frame is segmented in to two broad sections according to the presence of those institutions under study. The area between Waterloo and Eastern Police in the east end of the city is considered as one section. The other section, enveloping both the central and western regions, stretches from Eastern Police to Malama in the extreme westerly flank of the city. Within these sections specific institutions are located as the study sites for this research.

However, it is important to note that this demarcation is obviously not balanced from the point of view of the structural makeup as reflected in the type of infrastructures, the population density, the character and psyche of the population and perhaps the development works generally as instituted by the national government.

Fortunately, the fact that the sample frame is disaggregated into the said sections makes it convenient for the collection of data from the sample population and determination of the degree of computer use as well as intellectual property awareness among teachers and students. Thus, both teachers and students form the interview sample with 45 drawn from each section. Basically, two colleges and two technical institutions are selected from which 45 teachers and 45 students are drawn and interviewed. The table below is a visual representation of the sample frame for this study.

Study Sites Colleges	Number of Respondents		
	Teachers	**Students**	
1. Fourah Bay College and 2. IPAM	20	20	
1. Institute of Administration, Management and Technology(IAMTECH) 2. African Institute of Technology (AITH)	20	20	
TOTAL	**40**	**40**	**80**

Field Survey, 2012

3.6 Sample Size

Considering the objective of this research which involves the impact that intellectual property has on the use of computer software in teaching, it is imperative that a larger sample is used and subjected to rigorous interview process. This would have provided a greater opportunity of determining the use of computer software in Sierra Leone. Besides, such a sample size will provide the basis for integrating a wide range of views and responses from the respondents while providing the opportunity for an in depth analysis of the issue in question. More significantly, the fact that there is very scarce availability of empirical research work especially in the context of Sierra Leone, provides

adequate justification for a larger sample size which would have helped the situation further.

However, the selection of a sizeable sample has also been done with a very careful attention to the case study research design used in conducting this research. As a key feature of a case study research design, a sizeable sample size portrays idiosyncratic specificities and indepthness that results in a thorough investigation of the phenomenon. This revealing attribute of a sizeable sample prompted the narrowing of the study sites to involve colleges and technical institutions (2 from each domain). Therefore, a sample size of 80 respondents was chosen from whom information was carefully solicited. Teachers and Students formed the primary sample (20 from each of the four institutions).

3.7 Sampling

The selection of the sample was done with one major goal in mind, that is to ensure that it is structurally represented. This implies that the sample should comprise of a sufficient amount of respondents who represent the educational social structure and the phenomena in question. In order to achieve this goal, a range of variables was taken into consideration which included sex of the teacher and student, level of education, years spent in teaching and learning, and a number of others. These variables were derived and fine-tuned from the review of the literature. On this basis, the sample size was obtained using a mixture of

lottery method and purposive sampling technique. A total number of 80 teachers and students were identified from each of the colleges and technical institutions. Using a lottery method, up to 20 teachers and 20 students were randomly selected from that population, a technique intended to give equal chance to the samples for selection.

3.8 Sources of Data

It is evident that the reliability of data for a specific phenomenon is determined by the accuracy and precision of the materials and the individuals from which the information is obtained. But this consideration alone does not guarantee the degree of the reliability of the data for a particular study. In this vein, the researcher should sieve through those information and the techniques in order to critically analyze them to suit the circumstances and situation surrounding the problem. Bearing this fact in mind, information was obtained from both primary and secondary data which were used to examine the impact that intellectual property has on the use of computer software in teaching. The study was enriched with adequate information from the theoretical literature at the early stage of the research which equipped the researcher with adequate information, perspectives and insights of what theories exist about the major and minor variables and the possibility of determining the study area and population. The study was therefore initially preceded by the collection of information from a

wide range of existing literature on both the general and specific variables. Both published and unpublished materials such as text books, articles, monographs and journals were reviewed to determine the form of the impact that intellectual property has on the use of computer software in teaching in Sierra Leone. These materials were obtained from the Sierra Leone Library Board, Fourah Bay College Library, the American Embassy Library Section, Personnel from the Office of the Ombudsman, individual Parliamentarians, Parliamentary proceedings, the library section of Parliament, and, of course, the internet.

The secondary data was supplemented by information gathered from field research by interviewing those individuals that constituted the sample. As an integral part of a case study research, the researcher believed that by speaking with the subjects, those specific variables will shed light on the nature and intricacies of protecting computer software under intellectual property law, especially those of copyright and patent. The fact that this study is extensively based on mixed method research strategy and design provides the opportunity of capturing the strengths and details of the phenomena in question, making it possible for the conduction of subjective and objective analysis of the issues. It also attracted the use of structured and unstructured questionnaire instruments for gathering information. The use of such instruments created room to hear the views of the subjects themselves (teachers and students), who took a lead role in not only identifying and exegising the problem, but will have the opportunity to take control of the intervention that will follow.

3.9 Research Instrument

It is a general assumption in the realm of social research that the instrument of research and the research questions for which answers are sought are critical in underscoring the extent to which the results and findings of the study are reliable and valid. Thus, the tendency of achieving analytical, accurate and interpretative precision of the data is higher where the questions are carefully and unambiguously designed to achieve clarity. This also provides the researcher with the opportunity to make inferences that are highly predictive and therefore closer to the main expectation and possible outcome of the research.

Obviously, a success in this direction is only assured through a coalition of a number of research instruments. For this reason, then, several instruments were used to gather information from the subjects, which included structured questionnaire, in-depth open interviews using open-ended questions as mere guide, group discussions and covert observational techniques. Since the research is more heavily tilted towards qualitative research strategy, emphasis was placed on open ended questions allowing the respondents to make decision about how to respond and even bringing up their own questions. The structured questionnaire was couched in view of the study objectives in order to collect the best kind of information from the study population.

3.9 Collection of Data

The intention to censoriously frame the various instruments for the research, in line with the techniques to be used and to logically and arbitrarily demarcate the study site and the required respondents, triggered a number of surveys across the city in early December, 2012. Thereafter, a pretesting exercise was conducted using 10 questionnaire instruments in the Milton Margai College of Science and Technology, Brookfields, Freetown with the intent of fine-tuning the questions and determining their precision as they appear in the annex.

Interviews of teachers and students were conducted on Fourah Bay College and the Institute of Public Administration and Management campuses and the compounds of the Institute of Administration, Management and Technology (IAMTECH) and the African Institute of Technology (AITH). The approximate time for each interview was 30-40 minutes. The English Language was used as the main language for the interview of teachers and students. Generally, the interviews were effectively conducted as a result of the cautious use of the key principles of research among which confidentiality featured prominently.

3.10 Analysis of Data and Interpretation

Although this study is conducted using a mixed research strategy (qualitative and quantitative research strategies) it will be based extensively on descriptive analysis where the data is skillfully interpreted within appropriate contextual framework. This approach is influenced by the strong qualitative nature of the study. However, as the main unit of analysis is academic institution within the last 12 years after the termination civil war in Sierra Leone, quantitative representation and discussion of the responses will be conducted to ascertain the level of the impact that intellectual property has on the use of computer software in teaching in colleges and technical institutions. For this reason, tables, diagrams, and charts will be the main tools. The primary data will be coded and tallied in frequency tables as they frequently appear in the questionnaire. Exceptional variables will be assigned numerical values to ensure that all shades of the responses are absorbed into the analysis. This procedure will result in a complete summarization of the whole collated data which will deliver it from the ambit of analytical complexity.

From this point forward, the statistics already calculated will be interpreted by means of simple averages and percentages, aided by eye-ball analysis where appropriate to generate inferences and conclusions after critical examination of the views of the respondents.

So far, this chapter has carefully presented the procedures, methods and instruments used in obtaining data for the research. Among the key assumptions raised is that although the study is based on a mixed method research strategy and design, it draws heavily from qualitative research strategy in conducting thorough analysis of the problem in question. The next chapter continues the process by presenting, analyzing and discussing the results of the field research.

CHAPTER FOUR

Presentation and Analysis of Results

4.1 Introduction

This chapter focuses on data gathered from field research in key educational institutions within Freetown. Considering the fact that a mixed research strategy and design is used to solicit information from the respondents, this chapter is disaggregated into two broad divisions within which a thorough and critical examination of the variables is conducted. The first part of this chapter therefore presents the information obtained from field research backed by sound analysis. The second section discusses the results collated graphically.

Specifically, data for this research have been collected using qualitative and quantitative research strategies or procedures. Below is the order in which the results obtained are being presented:

- Characteristics of Respondents;
- The use of computer software in Sierra Leone;
- The awareness of Intellectual Property in Sierra Leone;
- The Impact of Intellectual Property on the use of computer software in teaching; and,
- Recommendations.

4.2 Characteristics of Respondents

The respondents who were interviewed had the following characteristics: educational level, number of years spent in teaching (teachers), and number of years spent in learning (students).

4.2.1 Educational Level of Teachers and Students

In the bid to determine the educational level of the respondents, they were asked to indicate their last qualifications prior to entering into college or technical institution (in the case of students), or engaging in teaching job (in the case of teachers). Their responses are summated in table 1.

Table 1 showing the percentage distribution of the educational level of Teachers and Students.

Educational Level	Teachers		Students		N = 100 TOTAL	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
Secondary	-	-	25	31.25	25	31.25
Technical Institution	15	18.75	10	12.5	25	31.25
College/University	25	31.25	5	6.25	30	37.5
TOTAL	**40**	**50.0**	**40**	**50.0**	**80**	**100.0**

Field Survey, 2012

The table above shows that higher number of teachers, 31.25%, have acquired college/University education, with only 18.75% who have certificates from technical institutions. As the data show, there is no teacher with merely Secondary level certificates. However, half of the students, 31.25%, admitted to have school leaving certificates as their highest academic qualification. It is only 6.25% of students who stated that they already have College/University degrees,

while 12.5% have certificates from technical institutions. In total, therefore, half of the respondents interviewed said that they have already acquired college/university degrees.

4.2.2 Activities of Respondents

In the study area, the respondents indicated that they do engage in a wide range of activities as part of their institution's daily programs. The responses that the teachers gave are presented in table 2, while table 3 showcases the information indicated by the students.

Activities	**Teachers**	
	Frequency (f)	**Percentage (%)**
Teaching	40	50
Use of Computer System	8	10
Extra curricular Activities	6	7.5
Reading	16	20
Research	10	12.5
TOTAL	**80**	**100.0**

Table 2 showing the activities of Teachers in selected colleges and technical institutions

Field Survey, 2012.

From table 2 it is noted that teachers engage in a wide range of activities. However, half of the teachers, 50%, considered teaching as their primary activity, with 20%, the second highest who noted that reading is a strong activity that they engage in for most of the time. Only 7.5% of teachers, who are in the minority, said that they engage in extracurricular activities such as viewing of film, in-house party, and social clubs. About 12.5% said that they engage in research work, and 10% are fond of using computer software system.

Table 3 showing the activities of Students in selected colleges and technical institutions.

Activities	Students	
	Frequency (f)	**Percentage (%)**
Research	10	12.5
Reading	30	37.5
Use of Computer System	6	7.5
Sporting Activities	20	25
Extracurricular Activities	14	17.5
TOTAL	**80**	**100.0**

Field Survey, 2012.

Table 3 shows that students indulge in a variety of activities in the colleges and technical institutions. Interestingly, one-third of students interviewed, 37.5%, said that they engage in reading for most of the time. The table also reveals that large number of students, 25% take part in sporting activities, while 17.5% and 12.5% engage in extracurricular activities and research work, respectively.

4.2.3 Number of Years Spent by Respondents in Teaching and Learning

In order to ascertain the duration that teachers and students have taken while trying to acquire education, they were asked to indicate the years that they have spent in teaching (in the case of teachers) and learning (in the case of students). Their responses are enumerated in table 4 (for teachers) and table 3 (for students).

Table 4 showing the number of years that Teachers have spent in teaching

Number of Years Spent in Teaching	Teachers	
	Frequency (f)	Percentage (%)
1-5	25	31.25
6-10	30	37.5
11-15	15	18.75
16-20	5	6.25
21 and above	5	6.25
TOTAL	**80**	**100.0**

Field Survey, 2012.

In table 4, it is observed that close to half of the teachers, 37.5%, have spent 6-10 years while teaching, followed by 25% of those who have spent between 1-5 years as

teachers. Only 15% have taken between 11-15 years with the least, 5% haven spent 16-20 years and 21 years and above, respectively.

Table 5 showing the number of years that Students have spent in Learning

Number of Years Spent in Learning	Students	
	Frequency (f)	**Percentage (%)**
1-5	-	-
6-10	5	6.25
11-15	5	6.25
16-20	40	50
21 and above	30	37.5
TOTAL	**80**	**100.0**

Field Survey, 2012.

As reflected in table 5, students do have spent different years in the educational arena throughout their life span. Close to half of the students, 50%, have taken between 16-20 years in acquiring knowledge, while those who have spent from

21 years and above form 37.5%. The remaining 12.5%, who are in the minority as the data show, have spent 6-10 years and 11-15 years, respectively.

4.3 The Use of Computer Software in Teaching in Colleges and Technical Institutions in Sierra Leone

In the course of the research, it was discovered that Students do pay extra fees to acquire computer knowledge in colleges and Technical institutions. In order to ascertain whether they actually use computers in carrying out their academic works, the issue was discussed under the following headings:

1. The use of computers in Sierra Leone;
2. The use of computer software as aid in teaching in higher institutions of learning;
3. Selected institutions where computer software is used as aid in teaching; and,
4. Ways in which computer software has improved teaching process.

4.3.1 The use of Computers in Sierra Leone

Since it was necessary to determine the rate of computer users among teachers and students in Sierra Leone, the respondents were asked to indicate whether

they do use computer in conducting their academic activities. The responses that they gave are presented in table 5.

Table 6 showing the use of Computers in Sierra Leone.

The use of Computers in Sierra Leone	**Students and Teachers**	
	Frequency (f)	**Percentage (%)**
3 years ago	10	12.5
5 years ago	20	25
10 years and above	50	62.5
TOTAL	**80**	**100.0**

Field Survey, 2012.

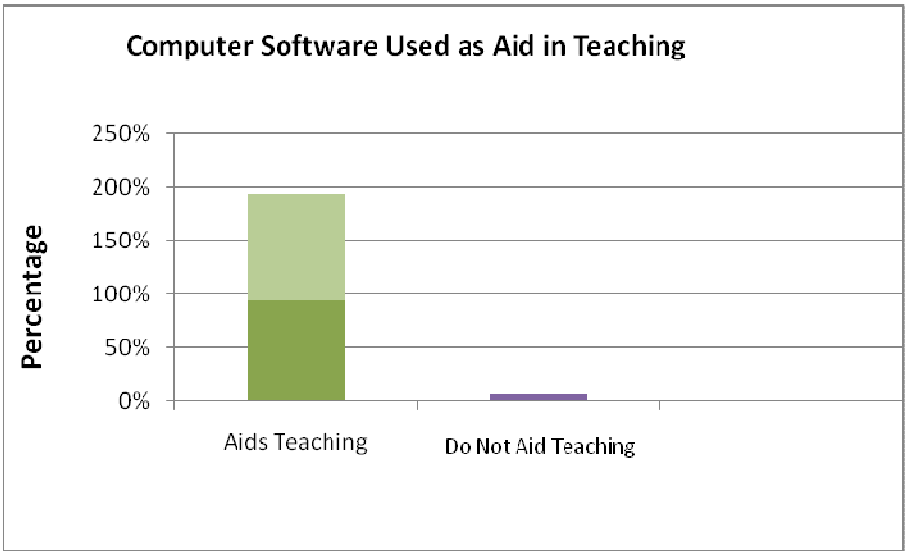
Majority of the respondents interviewed, 62.5%, as evident in table 6, noted that they started using computers in Sierra Leone some 10 or more years ago. About 25% of the respondents said that computer use became evident since 5 years ago,

around 2007. Those who said that people started using computer just three years ago in 2009 are in the minority, 12.5%.

4.3.2 The use of Computer Software as aid in Teaching in higher institutions of learning

Attempt was made to find out from the respondents as to whether computer software is used as aid in teaching in colleges and technical institutions or not. Their responses are shown in figure 1.

Figure 1 showing the use of computer software as aid in teaching in higher institutions.



Field Survey, 2012

Figure 1 shows two opposing views from the respondents with regards the use of computer software as aid in teaching. From the figure, majority of the

respondents, 93.75%, noted that computer software aids teaching process. Only minority of the respondents, 6.25%, said that computer software does not aid teaching.

4.3.3 Selected institutions where computer software is being used.

The respondents were asked to identify the higher institutions where computer software is used. Table 7 below gives a summary of their responses.

Table 7 showing selected higher institutions where computer software is used.

Institutions	Teachers and Students	
	Frequency (f)	Percentage (%)
Technical Institutions	15	18.75
Colleges/Universities	10	12.5
All of the above	55	68.75
TOTAL	**80**	**100.0**

Field Survey, 2012.

As shown in table 7, more than half of the respondents, 68.75%, indicated that computer software is used in both technical institutions and colleges/universities. Those who admitted that computer software is only used in technical institutions form close to one-fifth, 18.75%, of the respondents. The remaining 10% of the respondents stated that computer software is used only in colleges/universities.

4.3.4 Ways in which computer software has improved teaching process.

A large number of respondents were asked to indicate the way that computer software has improved teaching process in higher institutions. Table 7 showcases their responses.

Table 8 showing the ways in which computer software has improved teaching process in selected universities and technical institutions.

Respondents' views on ways that computer software has improved teaching in colleges and technical institutions	**Teacher**	
	Frequency (f)	**Percentage (%)**
It has helped teachers to achieve quality teaching techniques.	15	18.75
It has made teaching to be conducted in an interesting way using games to teach.	20	25
It has made teaching very simple and less complex and boring.	25	31.25
It helps teachers in dramatizing concepts and allowing students to have real experience of the ideas as taught by the teacher.	15	18.75
It has enabled teachers to make wide use of question and answer exercises through drill-and-practice software.	10	12.5
TOTAL	**80**	**100.0**

Source: Field Survey, 2012.

The views of respondents with regard to the manner in which computer software has improved teaching in colleges and technical institutions show a major breakthrough in the field of academia. As indicated in table 8, about two-fourth of the respondents, 31.25%, admitted that the use of computer software has made teaching very simple and less complex and boring, followed by 25% of those who said that through the use of games computer software has made teaching to be conducted in an interesting way. Furthermore, while 18.75% stated that computer software has help teachers to acquire quality teaching techniques, the same percentage of respondents said that it helps teachers in the course of dramatizing concepts through simulation technique thereby allowing students to experience real experience of the ideas as taught by the teachers. There are those, who, though in the minority, noted that teachers use wide range of questions and answers through drill software.

Table 9 showing ways in which computer software has helped in the Student's learning process.

Ways in which computer software has improved Student's Learning Process	Students	
	Frequency (f)	Percentage (%)
Increases students' understanding through repetition.	20	25
Allows students to take lead role in classroom lectures.	30	37.5
Through simulation software students improve on their interactive ability.	15	18.75
It has improved students' creative ability through drill-and-practice software.	10	12.5
It arouses students' interest in education.	5	6.25
TOTAL	**80**	**100.0**

Field Survey, 2012.

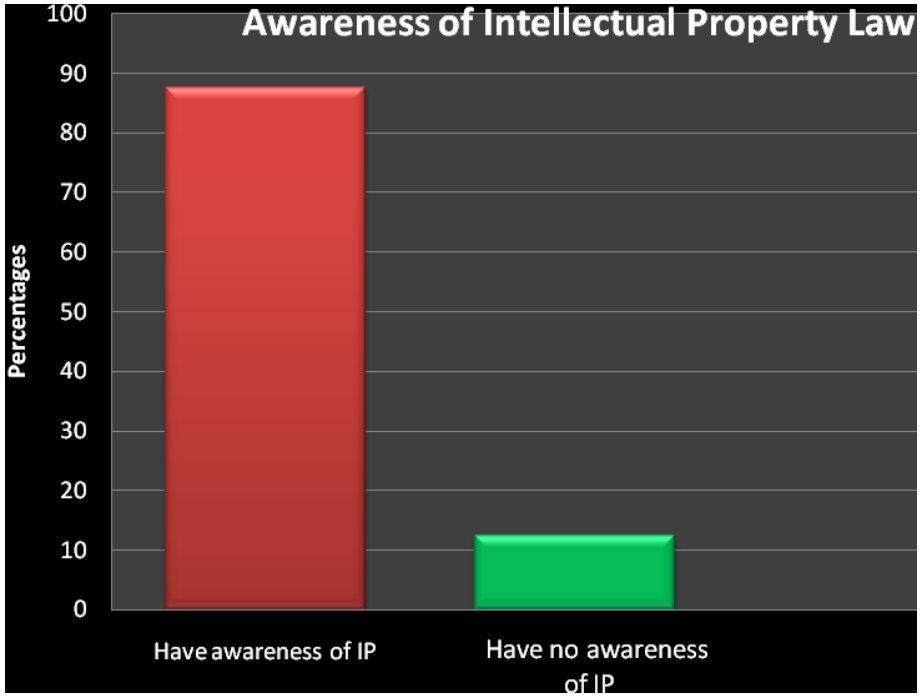
Computer software has also improved students' learning process as shown in table 9. Majority of the respondents, 37.5%, pointed out that computer software has allowed students to take lead role in classroom lectures. Also, 25% of the respondents admitted that through repetition computer software has helped to

increase their understanding of issues taught by lecturers. One-fifth of the respondents, 18.75%, said that their interactive ability has improved through simulation; while on the other hand, those who said that their interest in education has been aroused by computer software are in the minority, 6.25%.

4.4 The Awareness of Intellectual Property Law in Sierra Leone

The respondents were asked about how and when they became aware about intellectual property law. Their responses are presented in Figure 2, Figure 3, and Table 13.

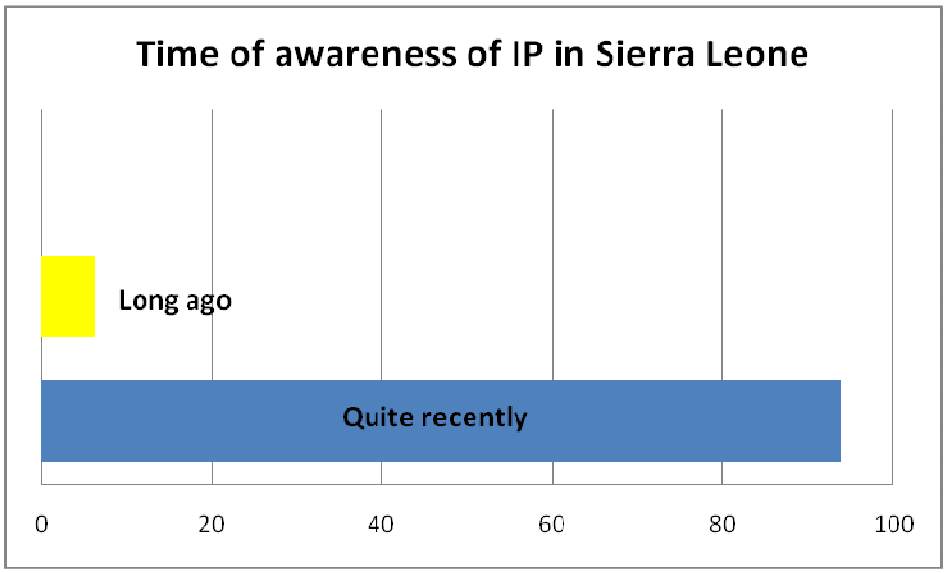
Figure 2 showing the awareness of Intellectual Property as a Law in Sierra Leone.



Field Survey, 2012.

Figure 2 shows whether the respondents are aware of the existence of intellectual property law in Sierra Leone or not. Generally, more than half of the respondents, 87.5%, stated that they have awareness of intellectual property in Sierra Leone. Only about 10% of the respondents said that they have no awareness of intellectual property.

Figure 3 showing the time of awareness of intellectual property in Sierra Leone.



Field Survey, 2012.

From figure 3 it is clear that almost all of the respondents, about 93.75%, pointed out that it is quite recently that they got aware of intellectual property law in Sierra Leone. Those who said that they had long got the knowledge form just one-tenth of the respondents, 6.25%.

Table 10 showing the way that Teachers and Students became aware of Intellectual Property Law in Sierra Leone.

Ways in which Teachers and Students became aware of Intellectual Property in Sierra Leone	**Respondents**	
	Frequency (f)	**Percentage (%)**
From the national constitution	5	6.25
Through Parliament	40	50
From the public	30	37.5
Others	5	6.25
TOTAL	**80**	**100.0**

Field Survey, 2012.

In table 10 it is noted that three different ways are identified in which the respondents became aware of intellectual property in Sierra Leone. About half of the respondents, 50%, said that they got the awareness of intellectual property law through Parliament, followed by 37.5% of those who said that they got aware or it from the public, such as the musicians, writers e.t.c. Those who linked their knowledge of intellectual property law to the national constitution are in the minority, 6.25% and the others who also form similar percentage.

4.4.1 Intellectual Property and its impact on computer software use in teaching

The impact of intellectual property on computer software use in teaching was intensively explored during field research. However, in order to place the discussion in proper perspective, the subject was examined along the following issues:

1. The use of intellectual property law to protect computer software;
2. Aspects of intellectual property law that protect computer software;
3. Problems encountered in using computer software that is protected by intellectual property; and,
4. Remedies to the problems.

4.4.2 The use of intellectual property to protect computer software

In order to rationalize the impact of intellectual property on computer software in Sierra Leone, respondents were asked to show whether intellectual property is used to protect computer software or not. The responses given are presented in Table 10.

Table 11 showing whether intellectual property is used to protect computer software or not.

Intellectual property use to protect computer software	**Respondents**	
	Frequency (f)	**Percentage (%)**
Intellectual Property is used to protect computer software	25	31.25
Intellectual property is not used to protect computer software	5	6.25
No idea	50	62.5
TOTAL	**80**	**100.0**

Field Survey, 2012.

Table 11 gives variety of views regarding the protection of computer software by intellectual property law in Sierra Leone. While half of the respondents, 62.5%, said that they have no idea as to whether computer software is protected by intellectual property law, one-third of the respondents, 31.25%, said that intellectual property is used to protect computer software in Sierra Leone. About 6.25% said that intellectual property is not used to protect computer software in Sierra Leone.

4.4.3 Aspects of intellectual property law that protect computer software in Sierra Leone

Investigation was launched to determine which aspect (s) of intellectual property law that is used to protect intellectual property law in Sierra Leone. The responses given are presented in table 12.

Table 12 showing the aspect of intellectual property law that protects computer software in Sierra Leone.

Aspects of intellectual property law that protect computer software in Sierra Leone	Protection Rate	
	Frequency (f)	**Percentage (%)**
Copyright	75	93.75
Patent	4	5
Both	1	1.25
TOTAL	**80**	**100.0**

Field Survey, 2012.

There are three different responses given with regards to the use of intellectual property to protect computer software in Sierra Leone. From the table, more than half of the respondents, 93.75%, indicated that computer software is protected copyright law in Sierra Leone, while 5% of the respondents cited patent law as the one used to for such protection. Just one-tenth, 1.25%, of the respondents said that both copyright and patent laws are used to protect computer software in Sierra Leone.

4.4.4 Problems encountered by Respondents in using computer software that is protected by intellectual property to teach and to learn.

Several problems were highlighted by respondents which emanate from the use of computer software that is protected by computer software in teaching. The problems are presented in table 13.

Table 13 showing the problems that teachers encounter while using computer software that is protected by intellectual property to teach.

Problems	Teachers	
	Frequency (f)	**Percentage (%)**
1. It is not used in the event of power failure	15	18.75
2. The software are often difficult to easily understand	20	25
3. It makes teachers become bored especially when using drill-and-practice software	30	37.5
4. It affects teaching trend in the event of faults	10	12.5
5. It makes teachers become lazy	5	6.25
TOTAL	**80**	**100.0**

Problems	Students	
	Frequency (f)	**Percentage (%)**
1. Lack of continuous access to computer by each student affect their learning process	20	25
2. Students become bored by the repetitiveness of the software in teaching	25	31.25
3. It does not create the impact that the teacher makes in teaching	10	12.5
4. Students' learning process is hampered in the event of power failure	22	27.5
5. Affect students' eyesight.	3	3.75
TOTAL	**80**	**100.0**

Field Survey, 2012.

In table 13, several problems are highlighted as indicated by both teachers and students in colleges/universities and technical institutions in Freetown. In the case of teachers, 37.5% pointed out that computer software makes them become

bored especially when using drill-and –practice software. This was followed by 25% of teachers who said that the software is often difficult to easily understand. Only 6.25% of teachers who are in the minority said that computer software makes them become lazy in teaching.

In the case of students, majority of them, 31.25%, complained of becoming bored by the repetitiveness of the software in teaching, followed by 25% of those who said that their learning process is affected by the lack of continuous access to computer at a time. The least response rate was given by 3.75% of students who said that computer software affect their eyesights.

4.5 Discussion of Results

Results derived from the research show various levels of academic attainment of the respondents in both college and technical institutions. Statistics show that majority of people who teach in colleges and technical institutions have acquired higher qualifications. This makes it possible for the effective and qualitative teaching status in those institutions. In the case of students, it is revealed in table two that majority of them have their school leaving certificates which is in fact the key requirement for entrance into those institutions.

With regards to the activities that the respondents do engage in, it is observed that majority of teachers consider teaching as their primary activity while the greater numbers of students (37.5% and 25%) engage in reading and sporting

activities respectively as revealed in tables 2 and 3. These respondents are married, single, divorced or widowed. However, the results of the research show that slightly above half of the total respondents, 62.5%, are married. This further buttresses the idea that Sierra Leoneans become fathers and mothers especially in their early twenties.

It is also revealed that in the colleges and technical institutions in question, a significant number of the teachers (37.5%) have spent 6-10 years in teaching, while 50% of students have taken 16-20 years in the acquisition of knowledge (see tables 4 and 5). This shows that a large number of teachers and students in the colleges and technical institutions have taken fairly longer time in either teaching or pursuing knowledge. Despite the fact that both the teachers and students do encounter problems in using computer software that is protected by intellectual property, their years of experience help them immensely in coping with the situation.

The Use of Computer Software in Teaching in Colleges and Technical Institutions in Sierra Leone

In Freetown, the use of computer has been very common among students and teachers. Table 6 clearly shows the percentage rate of teachers and students who started using computers in the last 10 and more years, around the end of the civil war in 2002. Although it has been said that the advent of computers in Sierra

Leone is relatively new, its impact in the lives of majority of people is quite revealing. Among teachers and students in the colleges and technical institutions under review, such importance proves to be greater especially in aiding them both to teach and to acquire knowledge. For instance, from figure 1 a widely held indication is that close to hundred percent of the teachers and students (93.75%) unanimously agreed on the point that computer software aids them in teaching and learning. This shows that even though Sierra Leone is least placed on the technological map in Africa way below Ghana, Nigeria and countries in the West Africa sub region, there is fair amount of optimism that soon Sierra Leoneans will catch up with others. This optimism is especially seen in those colleges and technical institutions where computer software is used for teaching and learning (see table 7). In those instances, the use of computer software has had a wide range of impact on teaching and learning. For instance, as found in table 8, the use of computer software has made teaching an interesting and less complex affair as noted by 31.25% of the respondents. Similarly, 37.5% of students also noted the fact that they now take a lead role in the teaching process in classrooms as a result of the use of computer software. All the other views show the positive role that computer software seems to have played so far in that regard. Hence, the teaching and learning atmosphere is becoming even more friendly, interesting and rewarding.

The Awareness of Intellectual Property Law in Sierra Leone

On the issue of the awareness of intellectual property law by teachers and students, it was revealed by 87.5% of respondents that they have knowledge of its existence. However, there is no specific time of such awareness, although, as indicated in figure 3, majority of the respondents, 93.75%, only got the awareness very recently with the enactment of the Copyright Act in 2011.

Intellectual Property and its impact on computer software use in teaching

Judging from the results presented so far, it is obvious that intellectual property law tends to have substantial impact on the use of computer software in teaching. This impact relates particularly to the teaching process itself and the students who are the recipients of the knowledge taught in the colleges and technical institutions. For instance, although table 11 indicates a disparity in the idea that intellectual property law is used to protect computer software, it is however clear that somehow, the protection is in existence. What is missing however is the fact that the law that ensures the protection of computer software is not being enforced and that people are not made to understand that the unauthorised use of software, whether through computer systems or not, will be subject to punishment by law. At whatever rate, the awareness that computer software is protected under certain aspects of intellectual property law remains a reality, although such protection is only made under copyright. For instance, table 12

highlights copyright as the only intellectual property law used to protect computer software in Sierra Leone. Hence, majority of the respondents, 93.75%, said that computer software is protected more under Copyright Act, as against those who believe that it is protected under patent law as well. What this argument points at is that in some way computer software enjoys some amount of protection in Sierra Leone although such protection is not being widely recognised as a result of the fact that the existing law on copyright only remains nominal.

Problems encountered by Respondents in using computer software that is protected by intellectual property to teach and to learn.

Although there has been immense positive impact of the use of computer software that is protected by intellectual property in teaching, it has not escaped its own problems which are as replete as one can imagine. Table 13 presents the commonest problems that are often experienced by teachers and students in colleges and technical institutions in Freetown. Among these include the lack of computer software use in the event of power failure, the difficulty to easily understand the software, and that it makes teachers become bored especially when using drill-and-practice software. Other problems highlighted include the way in which computer software affects teaching trend in the event of faults and the view that it makes teachers become lazy.

In similar vein, students are also affected, especially in the course of learning. One problem highlighted is the lack of continuous access to computer by each student and the fact that they become bored as a result of the repetition that the software does in the course of teaching. As the respondents noted, it also does not create the impact that the teacher makes in teaching, while it hampers students' learning process in the event of power failure. It also affects students' eyesight.

4.6 Conclusion

This report has brought out clear understanding of how intellectual property impacts on computer software in the course of a learning process. While quality teaching and learning is derived from the use of computer software, it also creates a friendly and interesting environment for both the teacher and student. However, it is revealed from available statistics that some problems are encountered in using computers at universities which pose threat to the learning process. But such problems do not undercut the significance that computer software offers.

The next chapter gives a summary, conclusion and recommendations for remedying the problems that are encountered in using computer software to teach in Colleges and technical institutions.

Chapter Five

Summary, Conclusion and Recommendations

5.1 Introduction

The preceding chapters have laid down the basis for the understanding of the impact of intellectual property on the use of computer software in teaching in selected colleges and technical institutions in Sierra Leone. The study is based on investigating the problem of the lack of effective protection of computer software and other inventions which has resulted, though partially, in the low level of development. It also covers the issue of the lack of recognition of intellectual property as an independent discipline in its own right. Generally, intellectual property has become a separate field of study that widely impacts on the socio-economic development of the country in diverse ways. However, as it is emphasised in this report, intellectual property law plays a crucial role in the use of computer softwares by teachers and students in teaching and learning respectively.

5.2 Summary

This report is undertaken to investigate the use of computer software in teaching in higher institutions. Specifically, it considers intellectual property as a powerful tool in protecting computer softwares that are used in the teaching process. On this note, series of research questions were set for investigation which includes:

- What is the level of IP awareness among the lecturers and students at University in Sierra Leone;
- How often computer software or computer aided program is used as a tool of teaching by teachers and lecturers?
- What are the implications of using computer software that is protected by intellectual property law?
- How effective is computer software in teaching in Sierra Leone?

In this vein, key objectives were established as a basis of the research which includes the following:

- to investigate the impact of intellectual property law on the use of computer software in teaching,
- to investigate the use of computer software in teaching in colleges/universities and technical institutions in Sierra Leone
- to investigate the awareness of intellectual property law in Sierra Leone; and,
- to give recommendations.

These questions and objectives are investigated through the review of the literature which is very strong in theory but vey limited in terms of empirics especially in the context of Sierra Leone. Thus, four theoretical projections are identified in the literature as advanced by William Fisher, Marx and Hegel, Bitter, and others. Notable among them is the utilitarian theory, the functionalists' theory and those related to the social elements of intellectual property.

Specifically, the research is conducted through a mixed method research strategy and design, an approach used mainly with the aim of soliciting both quantifiable data and subjective analysis of the impact that intellectual property has on the use of computer software in teaching in selected colleges and technical institutions in Sierra Leone.

Although there is not much literature on intellectual property in Sierra Leone, a very significant step was taken in November, 2011 when the Copyright Act was enacted and gazetted as law. This significant step provides opportunity for the protection of computer software and other kinds of properties, as well as the increase awareness of intellectual property law as it relates to the ordinary Sierra Leoneans. This mixed method design is used to solicit information from selected populated of teachers and students in colleges and technical institutions in Freetown. From this population, 80 samples were drawn using purposive and

rotary method of sampling. Information was then obtained from this sample using questionnaire instruments as well as group discussion participant observation methods which were then subsequently analysed through statistical tools.

General information was gathered from the respondents which included their age and sex, family status, ethnicity, educational level, number of years spent in teaching and learning, and marital status. While most of the respondents, 53.75%, are between 21-26 years, an age bracket which includes both teachers and student, majority, 68%, are heads of their families, which implies that a good number, 50%, are married. In terms of the educational level of the respondents, majority of teachers, 31.25%, have acquired college education while majority of students, 25%, have school leaving certificates. Although the respondents do engage in a wide range of activities, majority of the teachers, 50%, carry out teaching as their main profession. In the case of students, majority, 37.5%, are fond of reading. Also, the respondents are predominantly Mendes, forming 40% of the entire population.

Furthermore, the respondents do use computer software to conduct teaching and learning process. In this regard, 62.5% of the respondents started using computer software some ten years ago, and 93.75% admitted that they use computers as aid to teach especially in colleges and technical institutions as shown in table 9. The results also show the ways in which computer software has improved

teaching in colleges and technical institutions where majority, 31.25%, of the respondents noted that it has made teaching very simple and less complex and boring. About 37.5% of students also noted that computer software them to take lead role in classroom lectures.

Also, the results from field research identified the respondents' awareness about intellectual property law, the time of knowledge of it and the way in which such knowledge was got. Up to 70% of the respondents said that they are aware of intellectual property, with 93.75% who said that they got knowledge about intellectual property quite recently through parliament in 2011.

In terms of the protection of computer software through intellectual property law, majority of the respondents, 62.5%, said that they have no idea about protection, although 31.25% of them said that intellectual property is used to protect computer software which means that some degree of protection do exist. Besides, where protection is carried out it is done under copyright law as noted by majority of the respondents, and to extent, that of patent law.

The results also show a number of problems that teachers and students do encounter from the use of computer software that is protected by intellectual property. Among them is the fact that it makes teachers become bored especially when using drill-and-practice software as majority, 37.5%, of them stated. Also,

majority of students, 31.25%, become bored by the repetitiveness of the software in teaching.

5.2 Conclusion

Generally, a study of intellectual property and computer software in a context where the use of both instruments are still new and, make it very difficult for a researcher to explore effectively the problem being investigated. In the case of Sierra Leone, intellectual property has been dormant both in terms of the knowledge that people had about it and its impact. It is only quite recently in November 2011 that much attention was focused on the issue when mounting pressure was made by leading musicians and other members of the public in the fight against piracy.

With the repeal and passage of the Copyright Act of 2011, the government was able to open a new window of opportunity for Sierra Leoneans to further exploit the fruit of their labour by benefiting from what they produce. Since, as this research has shown, the idea of intellectual property has permeated institutions of higher knowledge in Sierra Leone, the possibility now exists that in subsequent years much impact will be created in the lives of academicians especially in elevating the process of teaching and learning.

Hence, the revival of intellectual property law at a time when Sierra Leone students have started pursuing knowledge in such discipline in the Diaspora, means that the

right path to progress and development is being constructed.

5.3 Recommendations

In view of the fact that the use of intellectual property in colleges and technical institutions has been marshalled by a barrage of problems which affect both teachers and students, it is impelling that solutions are sought as a way of straightening the rough edges. This consideration has ignited the proffering of a number of recommendations for an urgent action by the relevant authorities both from the structures and institutions of state government and the institutions of higher learning. Below is a discussion of some of them.

For an effective and lasting impact of intellectual property law to be effected in lieu of the process of teaching and learning in higher institutions of learning, the need for a robust and substantive tutoring of the use of computer software in teaching should be considered strongly. This should assume the form a general campaign which should be launched across the country in colleges and technical institutions. In fact, the starting point should be at the schools and grass root level. The culture of using computer in a learning process should be made obvious and compulsory, and made stricter at higher level of academia.

In order to boost the campaign, the government and other non state actors should be encouraged to intervene in ensuring that they provide a large consignment of computers and laptops for school going pupils and perhaps students. The idea of one-child-one-computer should be translated into reality. This will make it possible for the realisation of the wide use of computers by ordinary Sierra Leoneans right at the onset of their educational journey. In the event of the free or cheap possession and use of computers, the long trek to the localisation of the use of intellectual property law in protecting computer software will be driven to a road post.

While the availability of computers for the wide use of scholars is important as a solution, it should be accompanied by the supply of software that enables effective teaching and learning process to take place especially in colleges and technical institutions. Specifically, software that is less sophisticated should form the first point of trial in this all important business of intellectual property.

Furthermore, there should be the need for the wide use of intellectual property law in addressing the problem of piracy and other unauthorised use of inventors' products and ideas by people for their personal gratification. In this regard, Parliament, the Judiciary, and the Executive arm of government should pull together their efforts in ensuring that these steps do not remain on paper. An

enviable starting point is the organisation of fora which should involve the wider spectrum of the public with school going pupils, students and teachers taking the lead.

With regards the need to raise awareness about the essence of intellectual property, the gazette which has been produced by Parliament should be widely circulated to the public and in higher institutions of learning at affordable cost. At the level of schools, it should be distributed on a free basis so that a wide range of pupils and teachers will possess them.

Perhaps the need for intellectual property law to be institutionalised in Sierra Leone will create a unique impact on the struggle to fine tune the use of intellectual property in protecting computer softer and other software or ides. A special independent institute of intellectual property should be established under the purview and guardianship of qualified experts in the field to ensure that it is effectively managed.

Finally, for any serious and substantive approach to be used in ensuring that computer software, under the protection of intellectual property law, enhances teaching in colleges and technical institutions or in the country as a whole, then there should be the direct involvement of experts from other countries and universities where it has gained firm route. Since the hiring of experts may be costly, a further appeal should be launched to the international community and

donor agencies to financially support the process. This support should involve both finances and equipments that are relevant to the establishment of intellectual property institutions and computer system. Provision should be made also to train local Sierra Leoneans in the art of intellectual property and computer software so as to be able to integrate both fields in a most effective manner. It is only in this way that the long struggle to enhance the impact of intellectual property on the use of computer software in teaching in Sierra Leone will be realised.

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QUESTIONNAIRE FOR TEACHERS

QUESTIONNAIRE ON THE IMPACT OF INTELLECTUAL PROPERTY ON THE USE OF COMPUTER SOFTWARE IN TEACHING IN SIERRA LEONE.

I am a Student of the African University, Mutare, Zimbabwe pursuing Masters Degree in Intellectual Property.

This Questionnaire is designed to solicit information on the impact of Intellectual Property on the use of computer software in teaching in Sierra Leone.

Please note that all information and responses provided will be dedicated purposely for academic use and treated with the maximum confidentiality.

SAMPLE NUMBER……

Instruction: Enumerators are required to record all responses in the spaces provided or tick in the appropriate boxes where necessary using sharp ball pencil.

Section A: PROFILE OF TEACHERS

1. Name……

…….. ☐ ☐ ☐

Age bracket: a) 15-25 b) 26-36 c) 37 and above

Sex: a) Male ☐ b) Female ☐

2. Occupation……..……

……

3. Marital Status:

a) Married ☐ b) Single ☐ c) Divorce ☐ d) Widow (er) ☐

4. Educational background :

a) Primary ☐ b) Secondary ☐ c) Tertiary ☐ d) No ☐

5. Number of Years Spent as a

Teacher……

SECTION B: THE USE OF COMPUTER SOFTWARE IN TEACHING IN UNIVERSITIES IN SIERRA LEONE.

8. When do you realize the use of Computers in Sierra Leone?

a) Three years ago ☐ b) Five years ago ☐ c) Ten years and above ☐

9. Is computer software being used as aid in teaching?

a) Yes ☐ b) No ☐

10. If yes, please select any of the institutions stated below where it is being used?

a) Technical Institutes ☐ b) Colleges / Universities ☐ll of the above ☐

11. Where computer software is being used, in what way has it improved teaching process?

Please state.

……

……

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12. Explain the way in which computer software has helped you in teaching?

……

……

……

SECTION C: INTELLECTUAL PROPERTY AND ITS IMPACT ON COMPUTER SOFTWARE

13. Have you ever heard of intellectual property in Sierra Leone?

a) Yes ☐ b) No ☐

14. If yes, please indicate when?

a) Recently ☐ b) Long ago ☐

15. Is intellectual property law extended to computer software?

a) Yes ☐ b) No ☐

16. If yes, how does it improve on the effective use of computer software? Please explain.

……

……

……

17. Under which aspect of intellectual property is computer software protected in Sierra Leone?

a) Copyright ☐ b) Patent ☐ c) Both ☐

18. Do you encounter any problem in using intellectual property protected computer software to teach?

a) Yes ☐ b) No ☐

19. If yes, please state the problem (s) that you do encounter?

1. ……

2. ……

3..……

4.…….

20. What remedies do you give to solve the problem (s) stated above?

1. ……...

2. ……

3. ……

4. ……

THANK YOU

QUESTIONNAIRE FOR STUDENTS

QUESTIONNAIRE ON THE IMPACT OF INTELLECTUAL PROPERTY ON THE USE OF COMPUTER SOFTWARE IN TEACHING IN SIERRA LEONE.

I am a Student of the African University, Mutare, Zimbabwe pursuing Masters Degree in Intellectual Property.

This Questionnaire is designed to solicit information on the impact of Intellectual Property on the use of computer software in teaching in Sierra Leone.

Please note that all information and responses provided will be dedicated purposely for academic use and treated with the maximum confidentiality.

SAMPLE NUMBER……

Instruction: Enumerators are required to record all responses in the spaces provided or tick in the appropriate boxes where necessary using sharp ball pencil.

Section A: PROFILE OF STUDENTS

6. Name……..

7. Age bracket: a) 15-25 ☐ b) 26-36 ☐ c) 37 and above ☐

8. Sex: a) Male ☐ b) Female ☐

9. Occupation……

10. Marital Status…….

a) Married ☐ b) Single ☐ c) Divorce ☐ d) Widow (er) ☐

11. Educational background :

Primary ☐ b) Secondary ☐ c) Tertiary ☐ d) None ☐

12. Number of Years Spent as a

Student…….

SECTION B: THE USE OF COMPUTER SOFTWARE IN TEACHING IN UNIVERSITIES IN SIERRA LEONE.

8. When do you realize the use of Computers in Sierra Leone?

a) Three years ago ☐ b) Five years ago ☐ c) Ten years and above ☐

9. Is computer software being used as aid in teaching?

a) Yes ☐ b) No ☐

10. If yes, please select any of the institutions stated below where it is being used?

a) Technical Institutes b) Colleges / Universities ☐ c) All of the above ☐

11. Where computer software is being used, in what way has it improved teaching process?

Please state.

……

……

……

12. Explain the way in which computer software has helped your learning comprehension?

……

……

……

……

SECTION C: INTELLECTUAL PROPERTY AND ITS IMPACT ON COMPUTER SOFTWARE

13. Have you ever heard of intellectual property in Sierra Leone?

a) Yes ☐ b) No ☐

14. If yes, please indicate when?

a) Recently ☐ b) Long ago ☐

15. Is intellectual property law extended to computer software?

a) Yes ☐ b) No ☐

16. If yes, how does it improve on the effective use of computer software? Please explain.

……

……

……

……

17. Under which aspect of intellectual property is computer software protected in Sierra Leone?

a) Copyright ☐ b) Patent ☐ c) Both ☐

18. Do you notice any problem encountered by teachers in using intellectual property protected computer software to teach?

a) Yes ☐ b) No ☐

19. If yes, please state the problem (s) ?

1. ……

2. ……

3. ……

4.……

20. What remedies do you give to solve the problem (s) stated above?

1. ……...

2. ……

3. ……

4. ……

THANK YOU