

DIGITAL LITERACY FOR AN INFORMATION SOCIETY: AN EVALUATION OF THE  
IMPLEMENTATION OF THE BASIC INFORMATION SCIENCE SYLLABUS IN  
PRIMARY SCHOOLS IN THE KHOMAS REGION

A RESEARCH THESIS SUBMITTED IN PARTIAL FULFILMENT

OF THE REQUIREMENTS FOR THE DEGREE OF

MASTERS OF EDUCATION IN CURRICULUM INSTRUCTION AND ASSESSMENT  
STUDIES

OF

THE UNIVERSITY OF NAMIBIA FACULTY OF EDUCATION: DEPARTMENT OF  
CURRICULUM, INSTRUCTION AND ASSESSMENT STUDIES

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April 2019

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## ABSTRACT

Since independence, the education sector in Namibia has undergone a major transformation due to changing patterns and methods of curriculum delivery. The Implementation of digital literacy through the subject Basic Information Science in primary schools is one initiative, which is a key aspect of the educational developmental pillars in line with Vision 2030. Basic Information Science (BIS) as a non-promotional school subject has suffered various implementation problems. This study sought to evaluate the factors that influence the implementation of Basic Information Science syllabus in primary schools of the Khomas region.

The areas covered in the literature include the P21 theoretical framework of 2009, which emphasises that every 21<sup>st</sup> century skills implementation requires skills to build a base of core academic subject knowledge in the context that learners must also acquire the essential skills for success in today's world. These are skills such as critical thinking, problem solving, communication, research and collaboration. Equally, the non-implementation of digital literacy in countries, south of the Sahara including Namibia where BIS is attributed to non-compliance in its teaching remains wanting. Studies in the past have also revealed that BIS was not on most school timetables and not taught at all. Therefore, the main aim of this study was to evaluate if principals and teachers implemented the Basic Information Science syllabus as prescribed by NIED. This is in terms of learning objectives, competencies and specified subject content in the classroom.

A sequential explanatory mixed methods research design was used. Quantitative data was collected first using a survey questionnaire to assess 20 school principals and 32 BIS teachers.

Qualitative data was collected using semi-structured interview schedule, whereby 10 principals were involved, 12 teachers participated in a focus group discussion and 3 classroom observations. Respondents for qualitative data collection were purposively selected.

The research findings showed that, lack of classroom space, ICT equipment and other teaching and learning resources, qualified BIS teachers and librarians, Principal support to BIS teachers as well as lack of subject content clarity were factors that delayed the successful implementation of BIS in primary schools in the Khomas region. Out of the listed factors, two main causes of the slow implementation of BIS according to principals and teachers was lack of classroom space and lack of qualified librarians. The study recommends that: The Ministry of Education Arts and Culture strengthens and improves the recruitment of qualified school librarians and deployment of ICT equipment and other information resources to mitigate the challenges that disturb the smooth implementation of the BIS syllabus.

**Keywords:** Factors, Implementation, Challenges, Digital literacy, Information literacy, Media literacy, ICT literacy, Information management.

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## ACKNOWLEDGEMENTS

First, I want to give Glory and honour to my almighty Jehovah God the creator of the Universe and everything in it.

I will secondly give my gratitude to my supervisor Dr. Perien Boer for the kind, noble and wise guidance, advice, support and patience she rendered to me through the deliberations and completion of this thesis. Thank you for helping me navigate the way and motivating me to hold on when I almost dropped off by the wayside. Your wise words gave me hope to see the light at the end of the tunnel.

Gratitude also goes to the Statistician, for the statistical knowledge, time and efforts accorded to helping me to be able to do and understand the statistical analysis of chapter four.

Thanks to the Ministry of Education Arts and Culture for the two years' financial support towards my studies. I would also like to extend my gratitude to the Directorate of education Arts and Culture of the Khomas region for granting me an opportunity to conduct my study in their schools. I humbly thank the school principals and teachers of the selected primary schools in the Khomas region for granting me part of their precious time to participate and contribute to the realization of the objectives of this study.

Mazinza Margaret Ndala

## DEDICATION

First, I would like to dedicate this study to Jehovah my God in heaven for His love, mercy and wisdom to afford me to accomplish work of this great magnitude. There are times when I felt discouraged but through it all the Lord helped me to follow purpose, longsuffering and to persevere and conquer (2 Timothy 3:10). Second, I also dedicate it to my loving husband Eric, my children Tucus, Ndala, Lunza and little Benji and my dear mom for her support and encouragement when I needed them, “my gain is your gain”.

**DECLARATION**

I, Mazinza Margaret Ndala, hereby declare that this study reflects my own work and that it has not been submitted for a degree in any institution of higher learning. No part of this thesis may be reproduced, stored in any retrieval system, or transmitted in any form, or means (e.g. electronic, mechanical, photocopying, recording or otherwise) without the prior permission of the author, or the University of Namibia.

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Mazinza M. Ndala

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Date

**LIST OF ACRONYMS**

BIS	Basic Information Science
ICT	Information Communication Technology
DL	Digital Literacy
IL	Information Literacy
ML	Media Literacy
MoEAC	Ministry of Education Arts and Culture
P21	Partnership for 21 <sup>st</sup> Century Framework
NLIC	Namibia Library and Information Council
CFSD	Catalina Foothills School District

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## CHAPTER ONE: INTRODUCTION

### 1.1 The background of the study

Digital literacy is separate from computer literacy. It requires critical thinking skills, an awareness of the necessary standards of behavior expected in society. It is rated as a tool of paramount importance that can facilitate the set educational reform. Implementation of digital literacy is complex, because it requires special facilities and equipment such as libraries and computers connected to the internet. In addition, it requires teachers and principals' competencies in terms of information administration and management.

Therefore, in order to better understand the process of implementation of the teaching of digital skills, it is important to create an understanding of the challenges to be encountered during such implementation and how these will affect practice.

For the purpose of this study, the focus is on the evaluation of the implementation of the Basic Information Science syllabus in selected primary schools of the Khomas region. In Namibia, the Ministry of Education introduced digital literacy as a non-promotional subject named Basic Information Science (BIS). This is defined as the umbrella concept referred to as the life skill that requires both cognitive and technical skills and retains close connection with other literacies such as reading, writing and mathematical competence that are an integral part of education (UNESCO, 2011).

The rationale for the BIS syllabus is to highlight the importance of the ability to recognize access, ethically use and generate relevant information as essential skills to the personal development of a learner (MoE, 2008). It also emphasizes that information is the major requirement for personal, social, religious, economic, political and educational development, (MoE, 2008). The Government, through the Ministry of Education, supports the teaching of BIS, which includes information use and digital literacy in schools, but there are no qualified

teachers employed to teach the subject. The Ministry has employed a subject advisory officer only at head office level. According to Nengomasha et al., (2012), the teaching period for BIS at most schools was used as a “free” period whereby teachers spent it to complete their marking of promotional subjects, while learners are instructed to do their homework. Similarly, the Namibia Library Council (NLIC, 2007) observes that some schools did not have BIS on the timetable because most teachers concentrate more on teaching promotional subjects. This shows that digital literacy has not yet become a priority in the teaching and learning process in some schools in Namibia. Studies conducted in New Zealand indicted that learners need to gain the confidence and skills, to adopt ICT in appropriate ways. Meaning digital literacy is seen as a life skill in the same way as reading, writing and numeracy, (Ministry of Education, 2003).

The 2008 BIS syllabus stipulates that BIS is meant to harmonize the integration of information skills in all subjects and ensure that learners acquire various skills in school to be able to cope with these fast-changing characteristics of information explosion. The teaching and learning of information and media skills can be done by practical activities across all subjects. Therefore, the Ministry of Education Arts and Culture (MoEAC) developed the curriculum for Basic Information Science (BIS) which is aimed at assisting learners to acquire specific 21st century skills of information seeking, and media literacy in order to improve their multimedia communication skills and academic results (Ministry of Education, 2008).

Other 21<sup>st</sup> century skills include critical thinking, creativity and innovation skills, collaboration and communication skills, global awareness and technology skills (Bereiter & Scarndamalia, 1999). A number of literatures reviewed in chapter 2 illustrates the rapid rate of change in the way information is created and managed. This means that learners need to be taught information-seeking skills so that they can develop the ability to understand, manage, apply and create effective oral, written and /or multimedia communication in a variety of formats and media. For example, for a person to be digitally literate one should be able to understand the

relationship between technology and lifelong learning, personal privacy and stewardship of information (ALA, 2011). In other words, teaching Digital Literacy (DL) is a way to ensure that teachers and learners have a set of digital age literacies that enable them to not only take full advantage of online and offline learning opportunities, but also to understand and respond appropriately to the risks they may encounter as they use information. The BIS syllabus was introduced at the primary school level in Namibia, however the (NLIC, 2007) showed that school principals and teachers do not teach BIS as prescribed by National Institute for Educational Development (NIED). This means that learners leave school without these 21<sup>st</sup> century skills.

At the international level, several studies have been undertaken and articles written based on the implementation of digital literacy skills in schools and the challenges it presents. In Kenya for example, many teachers acknowledge that the ICT part of digital literacy has great potential to enhance learning activities, but this is hampered by challenges such as inadequate equipment, lack of technical and administrative support specialists and educational administrators. In view of this, it is considered unfortunate that adequate capacity building of teachers in ICT integration is yet to be achieved (Tonui & Kerich, 2016).

(Paton-Ash & Wilmot, 2013) states that in South Africa, their concern is evident regarding the implementation of digital literacy in schools. The differences in the availability of resources such as teacher librarians, internet and other information resources as well as the use of ICT was pointed out as a struggle that leads to schools not integrating digital literacy across subjects, this was evident between Schools in Johannesburg and those in Soweto. In Addition, (Paton-Ash & Wilmot, 2013) argue that the school library is a resource whereby flexible multimedia spaces exist in which small and big groups of learners can work, more than one class can be accommodated at the same time, digital media can be used and created and formal teaching can occur. It is a place where information is not only accessed, shared and stored, but

also challenged and created. This means that schools without relevant resources as explained above will have challenges in implementing the prescribed syllabus to teach digital literacy skills.

## **1.2. Statement of the Problem**

The Basic Information Science (BIS) syllabus is regarded as a critical subject as it ensures that learners are equipped with skills and knowledge that make them functional digital literate citizens able to make informed contributions to their own learning. The Government of Namibia, through the MoEAC recognizes the importance of Basic Information Science (BIS) as a viable means to teach ethical use of information. That constitutes issues of plagiarism, copyright and protection of intellectual property and citizen participation. However, a uniform implementation of the teaching of BIS in Namibia remains a challenge.

In the 21<sup>st</sup> century learners require skills to think critically, collaborate with peers, find, understand, evaluate, create and communicate digital information in a wide variety of formats (ALA, 2011). As a requirement for a learner centered education system such as in Namibia, it is emphasized that our children need to learn to think independently and critically. They must master strategies for identifying, analyzing, and solving problems. Most importantly, they must develop self-confidence; their own sense that they have the ability to contribute productively to their society, to help it grow, and to participate in governing it, (Ministry of Education and Culture, 2008). This explains that, as soon as a child is in school especially those from upper primary level, they are expected to show creativity, innovation, critical thinking and the consultation and application of information from complimentary information sources other than the prescribed textbook. When learners are taught in this way they grow into a culture of understanding how to interpret various information sources including those that accompany

questions in our national examination papers in grades 5,7,10 and 12. However, previous studies indicate that schools do not take BIS seriously (NLIC, 2007).

Furthermore, Smith et al. (2008) points out that BIS is regarded as a “free” period in most Namibian schools. In addition, he mentions that the teaching of the subject is not taken seriously, as most teachers spend much time on planning, teaching and assessing only promotional subjects. Therefore, the purpose of this study is to investigate specific challenges reported by Principals and teachers when implementing the teaching of digital literacy in schools. Furthermore, previous studies (Nengomasha, Utoni & Yule, 2012) and (Namibia Library Council, 2007) in their reports reveal that there is little or a lack of understanding and value given to digital literacy. In some cases, the subject BIS had a timetable slot but no one taught the subject while in some schools there was no timetable slot for it at all.

Despite all this, there is little information to explain the non-compliance to the implementation of BIS syllabus in Namibian schools because the scope of research done in this regard is very limited. There is a need for a better understanding of the implementation of the non-promotional Basic Information Science now referred to as Information and Communication in schools. Current literature only highlights the problems experienced but does not bring the reasons for the implementation problems of the BIS syllabus to the fore. The preceding background of this study therefore investigated the implementation of the BIS syllabus in selected primary schools of the Khomas region.

### 1.3. *Research Questions of the Study*

#### **The main question of this study:**

1.3.1. What are the challenges affecting the successful implementation of the BIS syllabus?

#### **The sub-questions that inform the larger/main research questions are as follows:**

- 1.3.2. What do the principals and teachers understand by the importance of digital literacy?
- 1.3.3. How do schools coordinate digital literacy classroom activities in allowing learners to participate in the process of knowledge creation and sharing?
- 1.3.4. What are principals and teachers identifying as challenges affecting compliance to the implementation of the teaching of the BIS syllabus?
- 1.3.5. What kinds of support do principals and teachers expect from MoEAC in realizing a more successful implementation of the teaching of the BIS syllabus?

#### **1.4. Significance of the Study**

The researcher highly desires that this study will be regarded as a source of assistance in providing appropriate recommendations to educational policy makers in order to highlight the factors that hinder the successful implementation of Basic Information Science syllabus in Khomas regional schools. In addition, the findings from the study could also inform the revision of the newly implemented subject namely Information and Communication because the subject content is still the same as that of BIS despite limited content addition and change of name. Furthermore, the study will contribute towards curriculum implementation research in Namibia because the findings will add to literature, knowledge and skills.

Finally, the findings of the study will encourage and motivate other researchers to conduct similar evaluation in other parts of the country because the focus of this research is on one region only.

### **1.5. Limitations of the study**

The researcher had to drop off questionnaires to 38 primary schools in the Khomas region, it turned out that only 24 questionnaires were correctly filled in and returned. Ten (10) of the questionnaires were not filled in because presumably the principals were too busy to do it and the other 4 questionnaires were reported as lost. Meaning, 14 questionnaires were discarded. The time for conducting the research in schools was a limiting factor because teachers were supervising first term examinations; therefore, some appointments were postponed upon arrival at the school. Appointments for principals' interviews were challenging because some principals wanted to delegate the interview to their subordinates but the researcher managed to win them into agreement. Given the limited size of the sample, caution was exercised to avoid generalization of the findings.

### **1.6. Delimitation**

The target group for this study was primary school principals and primary school BIS teachers in the Khomas region.

### **1.7. Key Definitions of concepts and terms**

**Digital literacy (DL):** According to Milton (2013), digital literacy (DL) is the interest, attitude and ability of individuals to work with information, digital technology and communication tools to appropriately access, manage, analyse and evaluate information, construct new knowledge and create and communicate it to others.

**Information literacy (IL):** IL is an awareness of how one will recognize the needed information, use their information skills to identify gather, use, manage, critically evaluate and synthesise information and data in an ethical manner to create new knowledge and share it in any appropriate format (SCONUL, 2011)

**Media literacy (ML):** ML is the ability to access, enjoy, interpret, analyse, produce and evaluate messages in all varieties and combinations of print, visuals and digital formats (Jenkins, 2003).

**Information management (IM):** IM is the process, by which information is acquired, stored, disseminated, from one or more sources, to the custodianship and distribution of that information to those who need it to make decisions, and fulfil their roles (Association of Project Management [APM], 2017).

**Information Communication Technology (ICT):** ICT is the ability to use technology, communication tools, and or networks to define, access, manage, integrate, evaluate, create and communicate information ethically and legally in order to function in a knowledge society, (International ICT Literacy Panel, 2002).

**Hindering factors:** These are some things that cause, delay, difficulties and hamper progress. To prevent someone from doing or acting on something, or blocking something from happening, (dictionary .com.2016)

**Implementation:** Is to make what has been officially decided happen, or to start to happen or be used, or to carry out decisions, Oxford Dictionary (2010)

## **1.8. Summary**

In this chapter, the researcher gave an orientation of the study in terms of the purpose that prompted the research to be undertaken, research objectives, the statement of the problem, its' significance as well as the definitions of key concepts.

## CHAPTER TWO: LITERATURE REVIEW

### 2.1. Introduction

This chapter introduces the P21 as the conceptual framework that grounds this study and presents the literature. A literature discussion begins with the history of digital literacy and its developments. It continues with a discussion on what Basic Information Science (BIS) entails, its value to education, and its possible implementation challenges. The discussion focuses on policies, articles, conference papers, reports and other literature that make up the major areas of the research. Namely (1) Implementation of Digital literacy; (2) factors affecting digital literacy based on the government, school principal as the implementing manager of the syllabus and the teachers as the executing officer of the curriculum, (3) Gaps in literature and how this study will fill in these gaps and (4) theoretical considerations to guide the study. Additionally, literature review focuses on several aspects related to digital literacy.

O'Leary (2004) reasons that research may be done alone, but it is never done in isolation. Therefore, production of new knowledge is fundamentally dependent on past knowledge.

### 2.2. Conceptual Framework

A conceptual framework according to Labaree (2013), refers to the existing theories and concepts that are structured for the theory that constructs a particular research study.

The importance of a conceptual framework to the study is to affirm the study in a number of ways, (ibid):

- Providing time for the reader of the research paper to assess the outlined theoretical proposals.

- Guiding the researcher in addressing the questions such as the “why, “how of the topic under investigation, leading to the generalization and the identification of possible limits to the generalization of numerous aspects of the issue under investigation.

Therefore, the conceptual framework creates an understanding of the aspects of the results to add to the knowledge body as well as practices and experiences. In this study the meaning and integration of Digital Literacy as well as the framework for the 21st Century teaching and learning is used (P21, 2009). The P21 framework is a model for incorporating 21<sup>st</sup> century skills into learning. It was developed to define and illustrate the skills and knowledge that the students need to succeed in work, life and citizenship as well as the support system necessary for 21<sup>st</sup> century learning outcomes. It has been used by thousands of educators and hundreds of schools to put 21<sup>st</sup> century skills at the centre. The framework was created to combine a set of competencies that emphasise 21<sup>st</sup> century skills for students and support teachers in teaching those skills. (The P21 framework observes four stages of learning: life and career skills, learning and innovation skills, information, media and technology skills and core subjects.

- (i) **Life and career skills** –This stage is about ensuring the learner’s ability to navigate the complex information age.
- (ii) **Learning and innovation age skills** -This describes skills of digital literacy as inventive thinking, effective communication and high productivity.
- (iii) **Core subjects**-This component is about mastering knowledge and skills in priority subjects such as Mathematics, Science, and English etc.
- (iv) **Information, media and technology skills** -This stage is about developing learners in a world that holds unprecedented opportunities for education, personal growth and fulfilment as well as global communication, resource scarcity, conflict and problem solving.

This framework was selected based on its emphasis on 21st Century skills proposed to develop authentic, intellectually challenging work by learners in a world that holds unprecedented opportunities for education, critical thinking, personal growth and fulfilment as well as global communication, resource scarcity, conflict and problem solving (Catalina Foothills School District [C.F.S.D], 2008).

In this study, the P21 framework was used to focus on putting the view of the 21st century learner outcomes and matching it to the BIS learning objectives of ethical information use and creation. It is also emphasised in the study that, the learner's 21st century skills learning outcome of digital literacy seeks to inquire and compare how standards and assessment are indicated in the syllabus. It also shows how the professional development and the actual learning environment support to the learners is encouraged or fostered, and how teachers and principals propose these objectives to be achieved. Furthermore, P21 framework is used to emphasise how school managers and BIS teachers can overcome implementation challenges as proposed by the framework and establish how it measures up.

The P21 framework seeks to point out that its objectives are different from those of the traditional teacher centered teaching methods, which center on the transmission of information to the learner which means that learners are passive; they do not ask questions or direct their own learning. Meanwhile, P21 views all the components as fully interconnected in the process of 21st century teaching and learning, learners learn important communicative and collaborative skills through group work, they also learn to direct their own learning and ask questions to complete their tasks independently.

For the purpose of this study the focus is on Information, Media and Technology. This component is divided into three subtypes: Information Literacy, Media Literacy and ICT literacy. Therefore, using the P21 Framework will help the teacher understand that in

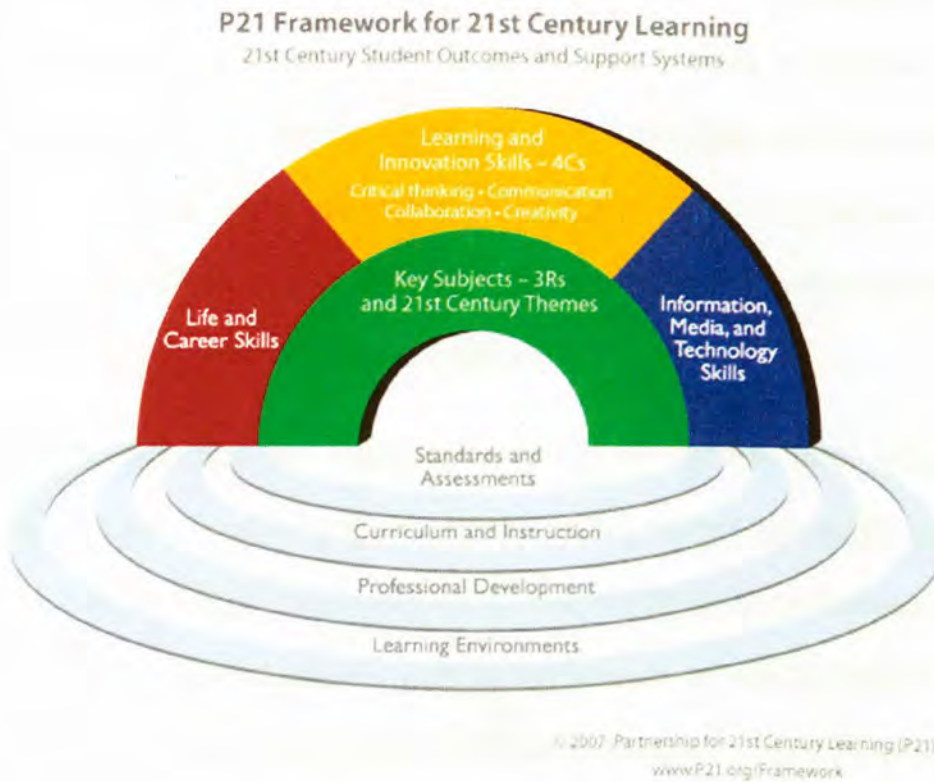
information literacy, the learner has the knowledge and skills to find, critically think and evaluate, use information ethically and legally. Media literacy is where learners have the knowledge and skills of assessing information in media such as newspapers and videos and being aware of the effects of mass media, as well as create media for self-expression and learning. ICT literacy is where the learner knows and is able to identify and use relevant ICT tools for a specific learning and apply a fundamental understanding of the ethical issues surrounding the access and use of information technology. This study aims to employ the P21 framework to discuss how teachers come to know and understand that academic and cognitive skills are essential, as, they are not the only necessary skills for a successful life. Young people need to be able to work with and learn from diverse groups in a variety of learning, work and social settings to adopt the changing times (P21, 2009).

This framework describes the skills, knowledge and expertise learners must master to succeed in the work and life, and it is a blend of content, knowledge, specific skills, expertise and literacies.

Figure 1 below depicts the P21 framework, which emphasizes that the role of teachers is that every 21<sup>st</sup> century skill implementation requires the adoption of abilities to build on a base of core academic subject knowledge, within this context; learners must also learn the essential skills at the base of core academic knowledge. Within this context, learners must also learn the essential skills that are beyond their current ability for success in today's world, such as critical thinking, problem solving, communication and collaboration. Furthermore, the P21 framework suggests that in the classroom setting the teacher is accountable for setting a standard whereby learners are made to understand that people in the 21<sup>st</sup> century live in a technology and media – suffused environment, marked by various characteristics. These including: 1) access to an abundance of information, 2) rapid changes in technology tools, and 3) the ability to collaborate and make individual contributions on an unprecedented scale. Therefore, to be effective in the

21<sup>st</sup> century, learners must be able to exhibit a range of functional and critical thinking skills related to information, media and technology.

**Figure 1: The P21 framework for 21st century learning graphically represented.**



The P21 framework is therefore geared to prepare learners for the future. It focuses on the notion that, learners, workers and all citizens must be able to use information accurately for the issues or problems at hand, and to understand how and why media messages are constructed. The purpose being to understand and utilize the most appropriate media creation tools as they use technology tools to research, organize, evaluate and communicate information. The P21 framework is linked to Namibia's vision 2030 whose aim is to transform the country into a knowledge-based economy which is technology driven.

### **2.3. Historical background of BIS**

In Namibia, the teaching of DL was initiated through the non-promotional subject Basic Information Science (BIS). According to Goosen et al., (2014) the main purpose of this initiative was to support the educational philosophy of Namibia's education, which is learner centered and resource-based. Furthermore, BIS aims to create an information literate young generation, prepared to meet the challenges of the 21<sup>st</sup> century, and to give learners the skills necessary to access, process and apply information in support of all school subjects over and above the prescribed subjects. Therefore, the term Basic Information Science will be used interchangeably with the term digital literacy (DL)

At independence BIS was implemented to replace the traditional subject called Book Education. It was formalised at the Basic Information Science Curriculum Panel of the Ministry of Basic Education and Culture (MBEC). Töttemeyer (1997) affirms that this curriculum panel faced implementation challenges such as the absence of school libraries in 80% of the Namibian schools; the school library is the main resource for the effective teaching of BIS. (Chanakira & Ndala, 2017) supports other investigations done in the past by (NLIC, 2007), Smith et al. (2008) and Nengomasha et al. (2012). These investigations identified challenges such as lack of teachers qualified to teach BIS, lack of qualified librarians to run school libraries and also lack of clarity on subject content by school principals as well as lack of BIS advisory teachers in the regions.

In 2015, the MoEAC engaged into curriculum reform whereby BIS was given a new name, namely: Information and Communication (IC). This change did not affect most of the syllabus content nor the purpose and aim of the subject. There was however a major review on the ICT theme within the content, but the major purpose was still that of making the Namibia learner information literate to enable them to not only approach the information age with confidence

but also to take their elderly people into the global village of the 21<sup>st</sup> century Goosen et al., (2014).

Curriculum reform did not consider the challenges of implementation but focused on the challenges of achieving a knowledge-based economy by the year 2030. (Chanakira & Ndala, 2017) clarifies that Vision 2030 aims to inform the BIS syllabus that Namibian schools need to be transformed into information hubs that would enable learners to acquire critical creative thinking, problem solving, collaborative and innovative skills for lifelong learning fitted for a knowledge- based society.

#### **2.4. Aspects of Literacy**

Throughout history, education has been shaped by societal needs. Education, after all, is the attempt to convey from one generation to the next the skills, values and knowledge that are needed for a successful life. Therefore, literacy for most people meant the ability to sign ones' name or do simple calculations. Any higher education was reserved for the elite to prepare them for service in religious vocations or state bureaucracies, the only institutions where literacy mattered (P21, 2007). Similarly, Isaacs (2007) reports that Namibia's education system has undergone extraordinary transformation from serving a privileged few to one creating an opportunity that allows all learners to attend in an integrated learning environment. In today's context, to be literate means to function successfully at certain levels in society. Therefore, literacy is important because the vast majority of available information in the world is spread through written works such as newspaper, books and the internet. Without literacy, individuals would lack the tools they need to learn efficiently.

Following the advancement of literacy as the ability to read and write, its indispensability in education and life at large has extended to the development of other literacies to compliment the attainment of 21<sup>st</sup> century literacy skills. When we use the term literacy in the everyday

sense we often refer to a set of skills associated with the ability to read and write. A deeper look shows that literacy is much more than isolated skills, and it extends beyond reading and writing as usually conceived. It implies the capacity to communicate meaning from the speaker to the listener and from the writer to the reader with all participants actively engaged to constructing that meaning Casey et al., (2009). In the same context, Casey et al. (2009) quotes from Dewey (1938) and points out that the best we can do is to help school children experience the present world to its fullest extent, involving extracting meaning from experience.

#### **2.4.1. What is Digital literacy?**

The field of digital literacy has a relatively long history; it is a term that has evolved to address the context in which our schools operate today. Its beginnings can be traced back to the 1960s when a feeling that those standard definitions of literacy missed out something important from the increasingly visual nature of media produced by society. Debes, (1969) offers a tentative definition for a concept he called visual literacy. Bawden (2008) records that after visual literacy, technological literacy, computer literacy and information literacy ultimately proved unsuccessful, many sought to find a term more in keeping with digital communication and the internet age. Although he did not invent the concept of digital literacy, the beginning of real discussion of the term was the publication of Paul Gilster's book *Digital literacy*. Gilster's work began to have impact in the early years of the 21<sup>st</sup> century with others citing his generic expression of the idea as strength. Digital literacy is seen to be a survival skill of the 21<sup>st</sup> Century. Jones-Kavallier and Flanningan (2006) suggest that in our 21<sup>st</sup> Century society with an accelerated, media-saturated, and automated information landscape, a new literacy is required, one more broadly defined than just the ability to read and write.

The focus of this study was mainly on investigating the implementation of the subject Basic Information Science (BIS), which teaches that literacy has developed and now includes new

sets of skills. These are digital literacy skills, which include information literacy, computer literacy, critical literacy, media literacy, visual literacy and technology literacy. Bruce (2004), propagates that across the world, educators in primary, secondary, tertiary and professional education context have been developing strategies and policies for designing learning opportunities. Such policies and strategies are designed to enable learners to take advantage of the information and communication literacy, to not only make use of information and communication infrastructures, but to also bring the information practices, which are effective in professional, civic and personal life into curriculum.

In alignment to the emerging need of the knowledge based and information society, digital literacy allows communication to be slightly different than ever before, therefore it made its prominent appearance and it came out to make sense of digital media and digital information. (The Green Paper, 2014) observes that digital literacy laid out the need to enhance educators 'knowledge to accept that there is a need for change because the world has changed drastically and is continuously changing at an alarming rate. Furthermore, the Green paper points out that, those educators need to understand that technology can help them achieve easily the heights that are unreachable without digital tools, tackling literacy beyond the 3Rs, start encompassing the 21<sup>st</sup> century 6 competencies (6cs): collaboration, communication, critical thinking, creativity, citizenship and character education.

The promotion of the implementation of Digital literacy continues. UNESCO's information for all programmes (IFAP 2006/2007) recognizes the considerable efforts invested by many international organizations in measuring the information society, defining digital literacy as a life skill. Karpati (2011) in the UNESCO Policy brief adopted many indicators with direct relevance to digital literacy namely: ICT skills, civic skills, learning to learn skills, participation of adults in lifelong learning. These examples illustrate the importance of digital literacy for the achievement of information society goals. Therefore, digital literacy is a life skill because

it targets all areas of contemporary existence. Currently, digital literacy has penetrated many education systems such as Australia, New Zealand and the United States of America (USA). It has become much more than the ability to handle computers, just like traditional literacy and numeracy, it comprises a set of basic skills which include the use and production of digital media, information processing and retrieval, participation in social networks for the creation and sharing of knowledge, and a wide range of professional computing skills.

According to Milton (2013), digital literacy is the interest, attitude and ability of individuals to work with information, digital technology and communication tools to appropriately access, manage, analyse and evaluate information, construct new knowledge and communicate it to others.

Jones and Flannigan (2006), define digital literacy as the ability to understand and use information in multiple formats from a wide range of sources when presented via computers. It is the assortment of cognitive-thinking strategies that comprises of digital information utilization. It includes the ability to read instructions from graphic interfaces, to use the computer's digital reproduction capability in order to form genuine-creative products, the flexibility of thinking that enable learners to construct knowledge from hyper textual, non-linear navigation through knowledge domains and the ability to critically evaluate and assess the quality of digital information.

Furthermore, it is also noted by the (Pacific Policy Research Centre, 2010) that learners may use information tools such as Information and Communication Technology (ICT) completely for social networking but need teacher guidance for learning based digital literacies. School learners are not experts at evaluating the relevance of materials found online, its accuracy or the authority of the person who uploaded it.

The Ministry of Education Arts and Culture developed (MoEAC) an ICT policy for education, which was approved by Cabinet in (2005). This policy depicts a range of issues in its goals to ensuring access and use of all the technologies used for the handling and communication of information and their use specifically in education. The policy further illustrates that the development of specific ICT curriculum ensures a relevant and appropriate curriculum for the ICT subject, and suitable guidance for the use of ICT in all other areas of the curriculum. The curriculum should promote skills of accessing, managing and processing information, collaborative working skills, problem solving, and learning to learn concepts. Holdway (2009) cited in Milton (2013) argues that digital literacy goes beyond that which is claimed by constructivists to include teaching about and for digital technology for learning. In addition, they point out that central to digital literacy is the co-construction of knowledge. It promotes a higher order of thinking skills and learners move from remembering content to gaining a deep understanding of concepts. Furthermore, the issue of the development of critical analysis, metacognition and reflection often through creation, editing and publishing online is emphasised.

Martin (2008) in Belshaw (2011) claims to have abstracted from prior research literacies in the digital literacies arena came up with five key elements:

1. Digital literacy involves being able to carry out successful digital actions embedded within work, learning, leisure and other aspects of everyday life.
2. Digital literacy, for the individual, will therefore vary according to his /her particular life situation and be an ongoing lifelong process developing as the individual's life situation evolves.
3. Digital literacy is broader than ICT literacy and will include elements drawn from several related digital literacies;

4. Digital literacy involves acquiring and using knowledge, techniques, attitudes and personal qualities and will include the ability to plan, execute and evaluate digital actions in the solutions of life tasks;
5. It also includes the ability to be aware of oneself as a digitally literate person, and to reflect on one's own digital literacy development.

The (European Literacy Policy Network [ELINET] 2016) describes digital literacy as a broad term used to describe three interrelated dimensions of literate practices in the contemporary age:

1. The operational dimension includes the skills and competences that enable individuals to read and write in diverse digital media (including making meaning with and from diverse modes such as spoken and written language, static and moving images, sounds, screen design etc.);
2. The cultural dimension refers to developing a repertoire of digital literacy practices in specific social and cultural context (such as constructing and/or maintaining effective social, educational and /or professional relationships online);
3. The critical dimension recognises that- making resources are selective and operates as a means of social control (e.g. knowing what Facebook is up to when it reminds you that your profile is not complete). Becoming critically literate with digital media therefore include not simply participating competently in digital literacy practices but also developing the ability to transform them actively and creatively.

For this study, the American Library Association (ALA) definition was adopted because it focuses on the main aim of the subject BIS.

ALA digital literacy Taskforce, (2011) defines Digital literacy as the ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills. Therefore, according to ALA a digitally literate person is the one who:

- Possesses the variety of skills- technical and cognitive –requiring to fins, understand, evaluate, create and communicate digital information in a wide variety of formats;
- Is able to use diverse technologies appropriately and effectively to retrieve information, interpret results, and judge the quality of that information;
- Understands the relationship between technology and life-long learning, personal privacy, and stewardship of information;
- Uses these skills and appropriate technology to communicate and collaborate with peer, colleagues, family and on occasion, the general public; and
- Uses these skills to actively participate in civic society and contribute to a vibrant, informed, and engaged community.

As seen from the literature review, the concept of digital literacy is not easily defined. There is no one definition that fits all societies in terms of developing and developed countries. UNESCO as a leading United Nations coordinating agency for Education for All (EFA) goals plays a major role in promoting literacy as an inherent part of the right to education, by means of libraries and ICTs playing a crucial role in the creation of literate societies. However, deliberations and discussions of appropriate or alternative definitions of DL are still ongoing. Eubanks (2012) argues that as more people have become active participants in the digital information age, the quantity, and quality of information that is available has in fact become an issue. Eubanks (2012) further supports that digital literacy is therefore an important component of literate societies, enabling individuals to locate, organize, understand, evaluate

and analyse information using digital technology. It is important to note the difference of DL from IT literacy, McHardy (2014) emphasise that DL looks beyond functional IT skills to describe a richer set of digital behaviour, practices, and identities, focused on digital literacies as essentially a set of academic and professional situated practices supported by diverse technologies.

#### **2.4.2. The importance of Digital Literacy (DL)**

The acknowledgement of the importance of digital technologies and media has increased in many aspects of education and day-to-day activities. Governments of various countries of the world have taken it upon themselves to ensure that every citizen understand and is engaged in the process to know how to use digital technologies. In response to the importance of digital literacy in school subjects, (BECTA, 2009) points out that DL plays an important role in the field of basic education. The essential skills to be considered as capabilities to help learners to be more autonomous, and make learning more enjoyable as abilities to use technology are to:

- Find and select information from digital and online sources, making judgements about accuracy and reliability.
- Create, manipulate and process information, using technology to capture and organize data, in order to investigate patterns and trends, explore options using models and simulations and combine still and moving images, sounds and text to create multimedia products.
- Collaborate, communicate and share information using connectivity to work with and present to, people and audiences within and beyond the school.
- Refine and improve their work, making full use of the nature and pliability of digital information to explore options and improve outcomes.

All of these skills will develop in combination and lead to understanding by using modelling visualisation and real-life experiences to develop deeper knowledge and appreciation of subject concepts and complex ideas.

These definitions and descriptions provide a useful entry to understanding the concept of DL. The emphasis of this explanations and descriptions shades light on the importance of DL extends to teaching the teachers and learners to increasingly combine the development of students' knowledge with the ability to use technology safely and effectively, focusing on the notion of DL as described by Hague and Williamson, (2009).

#### **2.4.3. What are the Digital Literacy Standards and Guidelines for schools?**

In Namibia DL presents itself as Basic Information Science (BIS) in the school curriculum as a compulsory non-promotional subject. Few strategic documents such as the Namibia Library Framework, TECH/NA Implementation Plan Guide, ICT Policy for Education, Adventures into Information manual, and syllabus for Basic Information Science as well as the Policy for Non-promotional subjects are used as working documents for schools and institutions of higher learning. These documents were developed to enhance and inform the importance of teaching learners to acquire different kinds of 21<sup>st</sup> century skills in the knowledge and information society. This was done to create an appropriate school environment where knowledge, skills and attitudes of teachers and learners can be moulded to independently or collaboratively navigate, critically evaluate, create or adapt information using a range of digital technologies to effectively accomplish authentic and relevant goals (Goodwill, 2014).

Kaparti (2011) states that DL is an umbrella concept for important skill clusters whose names are often used as acronyms, their content, however is not exactly the same. It further provides a basis for the acknowledgement that DL retain a close connection with other basic literacies

such as reading and writing as well as mathematical competencies that are integral parts of education.

In Norway's primary school curriculum, published in 2006, digital literacy is discussed as a basic skill together with oral skills and the ability to read, write and calculate. The basic skill has to be built through use of digital literacy tools in all subjects, essentially in the same way that the other basic skills are naturally integrated into all subjects Fyksen (2011).

In Ireland there was a digital strategy for schools which provided a rational and a government action plan for integrating ICT into teaching, learning and assessment practices in schools over the next five years from the year 2008-2013. The Ireland Digital Strategy for Schools 2015-2020 reports that the digital literacy strategy was created to realise the potential of digital technologies to enhance teaching, learning and assessment so that Ireland 's young people become engaged thinkers, active learners, knowledge constructors and global citizens to participate fully in society and economy. The strategy has been developed around four themes identified from the national census report:

- Theme 1: Teaching, learning and assessment using ICT
- Theme 2: Teacher Professional Learning
- Theme 4: Leadership Research and Policy
- Theme 4: ICT infrastructure

The Department of Education in Ireland (2013) reports that Ireland is one of the seven countries (along with Australia, Iceland, Korea-China, New Zealand and Sweden) that had digital reading scores that is significantly higher than the corresponding print reading score.

Meanwhile, in Britain the 1988 curriculum reform brought about significant growth in the use of digital technology in all areas of young people's lives from play and socialising to learning,

both formal and informal (Future Lab, 2010). They further indicate that in 2009 the primary curriculum reform positioned literacy, numeracy and ICT capability as essentials for learning and life that must be embedded across all ages of learning. According to (Future Lab, 2010), (BECTA, 2009), the reform appeared to have brought an increasing significance of ICT in an explicit recognition of the increasing digitization of the world in which young people are growing up and will require digital literacy of all children for their full participation in society. The emphasis was on a shift from focusing solely on functional skills, to a focus on an entitlement for children to develop digital literacy and skills, knowledge and understanding that foster independent, discerning and safe technology use.

#### **2.4.4. Stages of Digital Literacy**

Digital literacy can be seen as the awareness, attitude and ability of individuals to appropriately use digital tools and facilities to identify, access, manage, integrate, evaluate, analyses and synthesize digital and other information resources. A digitally literate person is one who is able to construct new knowledge, create media expressions and communicate with others, in the context of specific life situations, in order to enable constructive social action; and to reflect upon the process Bawden (2008) there are three levels or stages proposed for digital literacy development.

**Stage 1** is Digital Competence which according to European commission “Education and Training 2010” in (Martin & Grudziecki, 2015) covers a wide range of topics, encompasses skill levels from basic visual recognition and manual skills to more critical, evaluative and conceptual approaches, and also includes attitudes and awareness. Individuals or groups draw upon digital competence as is appropriate to their life situation and return to gain more as new challenges are presented by the life situation. Digital competence was identified as one of the eight domains of key competences, defining it as “the confident and critical use of information

Society Technologies for work, leisure and communication. Meaning that learners should be taught digital literacy competences and skills to in specific contexts using higher order levels of thinking.

*Stage 2* is Digital use, which is, the application of digital competences within specific domains, whereby users draw upon relevant digital competences and elements specific to the subject bringing their personal history and everyday practice. This means that learning now becomes a communal activity intimately linked with every day practices as described (Martin & Grudzieck, 2015). Furthermore, during this stage a user is involved in using DL tools to seek, find and process information, and then to develop product or solution addressing the task or problem to trigger further action in the life context.

*Stage 3* is Digital transformation, which is achieved when the digital usages that have been developed, enable innovation and creativity, and stimulate significant change within the knowledge domain. This means that change could happen at an individual or group level but it does not necessarily mean that users need to follow a sequential path at each stage.

#### **2.4.5. What are the challenges of Digital Literacy in schools?**

According to Hurst (2012), 21<sup>st</sup> century knowledge age people need to be adaptable, creative and innovative, able to understand things as a system. Furthermore, Hurst (2012) asserts that these people most importantly need to think and learn for themselves, with the help of external authorities. Therefore, with emphasis she points out that if schools are to prepare young people for successful lives in the 21<sup>st</sup> century, they need to do things differently; they need to develop a new mind set meaning that of knowledge and new context and purposes for learning this knowledge.

Researchers have also found out that computers enhance teaching and learning by providing opportunities to practice and to analyse, offering better access to relevant articles and teaching and learning materials, (Grabe & Grabe 2001) in Bingimlas (2009).

Henessey (2010), Mingaine (2013) in Bingimlas (2009) identified several constraints that hinder effective adoption of technology by schools in Sub-Africa as financial constraints, lack of adequate ICT facilities, lack of reliable electricity and inadequate teachers with ICT skills. Similarly, (Khan & Hasan, 2012) also identifies content characteristics, user characteristics and organizational capacity and technology considerations as factors that influence implementation of ICT in schools. Furthermore, he points out those leaders' sometimes have a negative attitude towards technology. The other important challenge was meeting the cost of training teachers in ICT, as it requires many investments that most schools cannot meet.

Dawes (2001) is of the view that new technologies have a potential to support education across the curriculum and provide opportunities for effective communication between teachers and students in ways that have not been possible before. Yelland (2001) argues that traditional educational environments do not seem to be suitable for preparing learners to function or be productive in the workplaces of today's society.

Dawes (2001) adds that the following barriers in implementation hit many classroom teachers who are appointed to teach digital literacy in schools.

According to (BECTA, 2009) several researches indicate that lack of confidence in ICT prevents teachers from using ICT in teaching. He asserts that this is a major barrier to the uptake of ICT teachers in the classroom. Beggs (2000) asserts that teachers' "fear of failure" caused a lack of confidence. Balanskat et al., (2006) contradicts Beggs (2000) by stating that he found that limitations in teachers' ICT knowledge makes them feel anxious about using ICT in the classroom and thus not confident to use it in their teaching. (BECTA, 2009) pointed out that

researchers also found that teacher' attitudes and an inherent resistance to change was a significant barrier. Gomes (2005) found that science teachers' resistance to change concerning the use of new strategies is an obstacle to ICT integration in science teaching. (BECTA, 2009) broadly argues that resistance to change is an important barrier to teachers' use of new technology in education.

According to Empirica (2006), teachers who are not using new technology such as computers in the classroom are still of the opinion that the use of ICT has no benefit or unclear benefits, resistance to change is therefore not a barrier but an indication that there is something wrong, meaning there are reasons for resistance to change. According to (Albirimi, 2006, Toprakci, 2006 and Sicilia, 2005) in Bingimlas (2009) the most barrier frequently referred to in the literature is Lack of effective training. Beggs (2000) holds that one of the three barriers to teachers' use of ICT in teaching students was the lack of training. Sicilia (2005) pointed out that the issue of lack of access to computers is another complex barrier that discourages teachers from integrating new technologies. Empirica (2006) found that lack of access is the largest barrier and different barriers to using ICT in teaching were reported by teachers, similarly (Korte & Husing, 2007) found that in European schools there are some infrastructure barriers such as broadband access not yet being material.

Research in Namibia revealed few issues relating to the implementation of the teaching of digital literacy through the BIS syllabus in schools. These issues are -: 1. Lack of qualified librarians, 2. School Principal attitudes and 3. Digital literacy neglected due non-promotional subject status, 4. Lack of policy and clear guidelines and how to teach the subject, 5. Lack of teacher training courses in higher education institutions. (Chanakira & Ndala, 2017) states that school libraries as the schools' information centres are vital to the teaching of DL as they provide the support required to implement the school curriculum. Therefore, a qualified librarian for each school is essential in operating and managing the school library.

This seems to be a prominent issue as most of the school principals seem not to take the teaching of BIS and the use of the school library seriously, Nengomasha et al. (2012). Principals as pointed out by Nengomasha et al. (2012), Smith et Al. (2008) are in a habit of prioritizing to turn the school library into a classroom when faced with classroom space problems. The fact that BIS is regarded as a non-promotional subject in the Namibia education system, the (NLIC, 2007) asserts that these compounds to the situation of prioritizing the teaching of digital literacy not to be taken seriously by principals and teachers, they tend to use the time table period allocation for BIS to teach promotional subjects.

According to (Chanakira & Ndala 2017) there is no clearly defined policy of the functioning of school libraries. Principals tend to give full support to the development of school libraries and integration of digital literacy in the teaching and learning process. They do not show relentless support in pursuance of all set syllabus competencies of media and information literacy (MIL) skills due to the absence of standards and policy on the importance of MIL and the methods of teaching and learning in the subject.

The Alberta Teachers' Association argues that the inquiry model informs the theoretical framework that drives the teaching of the subject MIL at a universal. This model clearly stipulates that, the aim of teaching MIL skills is to inculcate in people a set of lifelong learning skills. Kaparti (2011) emphasises that teachers need to undergo a curriculum that provides them with content needed to develop skills in integrating media and information literacy skills in their classroom practices in a manner that values student voices and that is sensitive to gender representation.

It is thus imperative that the institutions of higher learning in Namibia embrace and develop a course on training teachers in the concepts of digital literacy. According to Smith et al. school

principals allocate the BIS to any teacher with the least teaching periods on the time table regardless of whether they have knowledge in the subject or not.

#### **2.4.6. What are the causes of Digital Literacy implementation challenges?**

Many factors affect the successful implementation of digital literacy in schools. For the purpose of this research, three categories were identified as crucial, namely: Availability of funds equipment and infrastructure, Teachers and Parents.

Digital literacy does not only require the availability of an approved syllabus to be taught in schools, Fyksens (2011) points out the lack of ICT strategies combined with financial constrains to build up infrastructure and ICT equipment such as hardware, software, computers, scanners, digital cameras, DVD players and many more is a barrier in schools. According to Lagart (2015) the major challenge in respect to limited digital equipment at virtually all levels of education. He points out that the average access rate is one computer to 15 students in most developing countries, in Kenya the access rate is approximately one computer to 150 students. Sharma (2003), in Langart (2015), states that the allocation of sufficient funds for the educational sector and ICT does not seem to be very attractive to leaders. In Kenya, the idea of the introduction of laptops in primary schools has received strongest opposition from the rival political parties and the case now in the law courts Atieno (2012)

Many authors argue that school leadership plays a major role in the implementation of ICT in schools, Mingaine (2013). Furthermore, he asserts that the successful implementation of ICT in school greatly depends on the effectiveness of school leaders to manage change; the leader plays a vital role in directing and managing positive actions that facilitates adoption and use of technology in their schools.

#### **2.4.7. What are the Intervention strategies to address Digital Literacy implementation challenges?**

The intervention strategies to alleviate the challenges of digital literacy implementation in schools are inevitable. Intervention strategies ensure that principals and teachers are given standards on how to alleviate DL implementation challenges.

The collaboration state between the MoEAC and teacher training institutions on the issue of qualified DL teachers requires high consideration. This is because there is absolutely no one appointed specifically to teach this subject in schools due to the absence of qualified DL teachers. Teachers need to understand and master the subject content in order to provide effective lessons, (Futurelab, 2010) states that the emphasis on DL does imply that teachers need to engage critically with the content of their own subject. Furthermore, it is observed that teacher training will mean that teachers will be empowered to seek to make overt the ways in which technologies, media and other information sources transform learners' engagement with subject content, and may also help teachers to find creative, effective and engaging ways to deliver the curriculum. The importance of acquisition of DL skills by teachers should not be limited to specialisation during teacher training. All teachers should undergo specialised training in DL to mitigate DL integration challenges across the curriculum. In addition, the (The Greenpaper, 2015) points out that if we view school curriculum as an asset of skills, knowledge and understanding organised to prepare young people for a flourishing and civic life then it follows logically that the curriculum must respond to the challenges and opportunities that DL media provide, although this maybe a long-term implementation strategy.

Research has shown that reading requires one to go beyond the text and captivate prior knowledge. (Dobson & Wiilinsky, 2009) asserts that DL constitutes an entirely new medium for reading and writing, it is but a further extension of what writing first made of language.

This means there should be extensive collaboration between the curriculum development institutions and DL teachers to capture information on the ground in terms of teachers and learners' DL reading levels in understanding DL concepts. This is very important according to (Dobson & Willinsky, 2009), because DL is a subject with hypertexts, multi-literacies which encourage diverse viewpoints, learning styles and approaches to knowledge rather than requiring assimilation. Therefore, the main aim of implementing DL in schools is to cultivate ways in which schools can support young people to develop their DL in order to become informed digital participants.

Another strategy that must be implemented in the schools is the unequal allocation of DL resources and infrastructure. Teaching DL and digital participation is one way of ensuring that all young people in schools, not only the privileged, can use technology and libraries meaningfully and be fully included in the digital culture. According to (Futurelab, 2010) It is an important component of tackling the digital divide. The term digital divide is a way of describing the large differences that exist between people who are able to access and use ICT and libraries effectively and those who cannot. In other words, this means that the poorest rural schools in society may have less access to electricity, computers, the internet and any other information resources.

As a 21<sup>st</sup> century subject, DL strives to prepare young learners for the future. In order to be critical thinkers who are creative and innovative in applying knowledge and skills to solving learning and life problems independently. Research argues that both primary and secondary schools should help learners to be able to participate in activities and practices that make them sophisticated users of DL media. Additionally, there is a need, then, for schools to contribute to the process of equipping children with skills, capability and a disposition to participate in informed and critical use of technology both inside and outside school Jenkins (2007). This

means that DL aims to help learners to be self-reliant, informed and discerning users able to select and appropriately use the best technology for any task.

In the classroom and outside the classroom learners are supposed to practice DL skills not only for academic achievement but also for empowerment, by the teacher's instructions. According to (BECTA, 2009) it is emphasised that technology should be used in schools not just to advance subject knowledge but also to empower young people to become effective and safe participants in a world that's increasingly going digital. Using technologies for teaching and learning may be one way to engage young people, arouse, and stimulate their interest in particular subject areas. In other words, it may be a way to encourage learners to learn to communicate, collaborate and link their learning with others in a creative way.

## **2.5. DL and Educational change**

Change in education runs throughout history. (P21, 2007) demonstrates that education has been shaped by the societal needs of the societies in which it is set. They point out that education after all, is the attempt to convey from one generation to the next the skills, values, and knowledge that are needed for successful life. Furthermore, (P21, 2007) asserts that for most humanity's history, and for most humanity, life took place in a slow –changing agrarian world where few ventured beyond their immediate community and even fewer moved beyond their social class. Singh (1991 in Beckett (2011) emphasise that change is a decisively defining element in the choices that may be made in future possibilities. He points out that a society that remains rooted in its present state of affairs and its present knowledge cannot subsist in isolation in the fast-changing knowledge world of today, however hard it may try. Furthermore, in Beckett (2011) argues that the ongoing technological, social and developmental changes will sweep the cocooned society into a future state of affairs without choice or control of its destiny, a passive recipient and not active agent. As shown in table 1 below.

**Table 1: Our changing society (Source: [www.quora.com/What-changes-should-be-made-in-the-education-system-in-the-age-of-information](http://www.quora.com/What-changes-should-be-made-in-the-education-system-in-the-age-of-information))**

<b>Our changing society</b>				
<b>Ages</b>	Hunter gatherers	Agricultural-cultivating	Industrial – Steam Engine	Information-Internet
<b>Period</b>	2.5 million yrs	5,800 yrs	210 yrs	<b>40 yrs so far</b>
<b>Main Skills</b>	Collecting food	Farming	Manufacturing	<b>Service, PC &amp; Internet</b>
<b>Key resource</b>	Tools	Land	Natural, human, capital	<b>Knowledge</b>
<b>Signature Organization</b>	Small group skills	Hierarchy	Bureaucracy	<b>Networks</b>
<b>Society</b>	Nomadic	Communities	Urbanization	<b>Global/virtual</b>
<b>Knowledge transfer</b>	<b>Knowledge to survive</b>	<b>'Know-how' to perform physical tasks</b>	<b>'Know-what' to do – specialist roles &amp; functions</b>	<b>Use Knowledge for higher order thinking</b>

Our current Edu. System      Edu. Change needed

Rasado (1997) points change to the 20<sup>th</sup> century that today we live in a society from that of generations past. A failure to understand this may result in methods of education that are no longer relevant to today's needs much less tomorrow. He further reiterates that it is important to know how society has undergone change, in order to see where we are today in comparison

to the 20<sup>th</sup> century, and the different challenges both school and society face today and will face tomorrow.

According to (P21, 2007) John Dewey believed the aim of the 20<sup>th</sup> century education was not the production of a labour force, but the enrichment of the individual and society by developing a child's social power and insight. Dewey advocated learning by doing, and a curriculum that involves the mind, hands heart. From the information age to the 21<sup>st</sup> century it is recorded that in the '60s and early '70s, as the U.S. economy soared, educational aims moved yet again from issues of political and economic survival to issues of access and equity. They further point out in the 1990s, as result of the advent of the personal computer and the Internet, virtually every sector of the world economy experienced both profound dislocations and unprecedented opportunities, therefore education is profoundly affected by larger society transformations.

In Namibia educational change followed the same route as in other countries of the world, from cradle, traditional teacher centeredness to learner centred and resource-based teaching and learning. National development plan initiatives such Vision 2030 whose aim is to transform and improve the quality of life of all Namibians brought about the teaching of BIS. This means that the government wanted all Namibians to participate actively in the creation of Namibia's knowledge economy.

The aims and objectives of Vision 2030 can only be attained if school learners in primary and secondary school are taught in a new way that is where a learner is the centre of all learning and is a critical thinker. This would allow them to be independent, creative and innovative, thus collaborate, and cope in a rapid changing information era, being globally aware of ever changing technology (Bereiter & Scadamalia, 2012). It is important to teach learners digital literacy skills because they need to be empowered and be capacitated to be able to understand, manage, and create effective oral, written, and /or multimedia communication in a variety of

formats. In addition, the name of subject BIS was changed in 2015; this was not a very significant act because the subject content was slightly modified by strengthening the ICT theme, which was not widely covered in the new syllabus with an additional part on media literacy. Overall, the main purpose of the subject is still that of teaching primary and secondary school learners to be able to find, select relevant information, critically evaluate, re-contextualize, communicate and represent information to various audiences in an ethical manner. However, the other change to note is that BIS was taught from grades 5-10 while IC in taught from grades 4-12.

### **2.5.1. Gaps in literature**

According to the literature reviewed for this study, it was noted that initiatives and much work has been done in promoting the implementation of digital literacy at an international level. Digital literacy is internationally recognized and ranked as an important 21<sup>st</sup> century concept for the future generation. In most developed countries, DL has been implemented and teaching and learning is taking place even at primary school level. It was also discovered that literacy is now more than reading and writing as traditionally perceived. Most study identified government factors, principals and teacher training factors as crucial for implementation of DL in schools.

At the international level, it can be observed that the teaching of DL in the Saskatchewan government was first addressed by the Ministry of Education providing schools with policies and guidelines for local adaptation and implementation. The government of Saskatchewan did this. According to (Couros and Hildebrandt,2015) the government of Saskatchewan worked with schools to provide teacher instructional support and student resources to teach appropriate and responsible online behaviour to all, kindergarten through to grade 12 students. In addition, there was an action plan stating that both students and educators need to be able to use

technology safely and effectively to communicate and collaborate in a global society. The promotion of DL is a key component of this country's education to address problems relating to cyberbullying.

In the United States of America, the California ICT DL curriculum and assessment framework was developed in 2008 to address the assessment issues from elementary school, secondary school, college, vocational up to industry entry level. The main purpose for doing this was to provide a standardised approach for the assessment, diagnosis and continuous improvement of basic information and communication, DL skills for students and the workforce (Career Technical Education Foundation [CETF], 2008).

In Australia the drive to transform teaching and learning through digital education has been supported by \$2.1 billion which was officially launched in 2008 from teacher training to school infrastructure, curriculum design, assessment and community engagement. The Digital Advisory Group (DAG, 2007) cites that there is a 15000 digital learning resource collection including data sets, still and moving images, audio files, assessment items and the like directly linked to the Australian Curriculum and accessed either through the online digital curriculum portal Scootle, the national learning environment or through the individual jurisdictions 'website. There is also a proposal to pilot other Australian language learning space; the Mandarin Chinese is currently underway. In Australia they believe that DL learning is successful when it combines formal and informal learning.

In Namibia, it was also identified through literature that the gaps lie on issues pertaining to lack of DL teacher training in institutions of higher learning. DL given low priority by school leadership in terms of appointment of staff, thus arising in the neglect of the subject. ICT educational policies do not focus much on the importance of dl with emphasis on information finding, selection of relevant information, critical evaluation of information, and

communicating information in an ethical manner teaching and learning in primary schools, rather they focused more on the use of computers. In other words, the ICT policy for Education and Tech Na! In Namibia promotes the use of ICT equipment in the classroom by teachers and learners but does not strongly promote the teaching of learners on how to refine internet searches, ethical use of information, accountability, self –directed and social responsibility when using media. These gaps have prompted the rise of the research problem that has informed the aim this study, which is to identify the factors that hinder the implementation of the BIS syllabus that supports digital literacy in selected primary schools of the Khomas region.

This study has identified the lack of DL trained teachers as an issue of prominence, which this study proposes to inform the authorities. The second gap that needs highlighting is the collaboration between curriculum developers and teachers to address the low levels of subject knowledge by teachers and learners. This is important, given the absence of teacher statistics on the number of teachers qualified to teach DL in Khomas region as per the research sample. The gaps will be bridged because most of the problems in the previous studies have been addressed in depth by this study; the solutions to such problems have been identified from the participants. Therefore, the researcher strongly believes that if these recommendations are taken into consideration by curriculum developers and other line authorities within the MoEAC the implementation of DL will be effective in Namibian schools.

### **2.5.2. Summary**

This literature review revealed that the BIS syllabus strongly aligned with one theme of DL which is information literacy and weak on ICT literacy elements and devoid on the theme of media literacy. Studies further show implementation issues that revealed that there is lack of DL knowledge from both school principals and teachers. Qualified DL teachers are lacking in schools. The lack of understanding of the BIS syllabus and what it aims to achieve results in

no timetabling for the subject, teachers using the period allocation to teach promotional subjects and the like. Therefore, this study will bridge the gaps addressed above.

## CHAPTER THREE: METHODOLOGY

### 3.1. Introduction

This chapter is a discussion of the methodology used in the study. It describes the research design, sampling procedures, the pilot study, data collection, data analysis procedures and ethical considerations are also discussed.

### 3.2. Research design and methodology

The study employed mixed research approach, with the use of a sequential explanatory research design. A research method according to Kothari (2004) may be understood as all those methods or techniques that are used for conducting research operations. Furthermore, Kothari (2004) points out those research methods can be put into three groups namely: data collection methods, statistical techniques and methods that evaluate the accuracy of the results obtained. This study was limited to selected schools only.

In order to conduct a scientific research all components of the research design need to complement each other and fit well together through validation of one another in order to strengthen the findings and show evidence of reliability and in turn produce an output of more than meaning Creswell (2012). (Gay, Mills & Airasian, 2009) describes the research design as the blueprint for conducting a study, meaning the strategy for conducting the study to reach the purpose and objectives of the study. (Thietart, 2001) emphasised that research design is research investigation done in a logical and systematic way. To meet the said requirements, this study adopted an explanatory sequential mixed-methods design. Therefore, for this study, quantitative data was collected and analysed first, followed by a qualitative data analysis phase to help explain the quantitative results and give deeper insight into the phenomenon studied Creswell, (2012).

This research design was selected because when quantitative and qualitative method are used together in a study they provide a better understanding of a research problem than either, research method alone; the two complement each other though in this case quantitative approach will be of a dominating factor (Creswell & Plano Clark, 2007). As a means to demonstrate mixed method research, a notation system was introduced by Morse, which now appears extensively in mixed method literature. Goddard & Melvin (2013) further asserts that a research design is an overall strategy that a researcher chooses to integrate different components of the study in a coherent and logical way ensuring effectiveness in addressing the research problem, it constitutes a blueprint for the collection, measurement, and analysis of data. Goddard & Melvin (2013) notes that the choice of the research design also depends on the research problem, which brings about the main question to which the researcher intends to find an answer.

The study was therefore designed with a strong quantitative background to be explained by the qualitative data. The rationale for doing it this way is clear. Creswell (2014) points out that it involves a two-phase project in which the researcher collects quantitative data in the first phase, analyses of the results, and then uses the results to plan or build on to the qualitative phase which can then be used to deepen participants' views.

### **Quantitative Phase**

Quantitative phase is the collection of numerical data to describe and explain, predict or control phenomena of interest (Gay, Mill & Airasian, 2009). Similarly, Creswell & Plano-Clark, (2007), suggests that quantitative research is the formal, objective and systematic process in which numerical data are used to obtain information about the world. The researcher created a regional questionnaire and distributed it to all 38 government primary school principals and BIS teachers in the Khomas region.

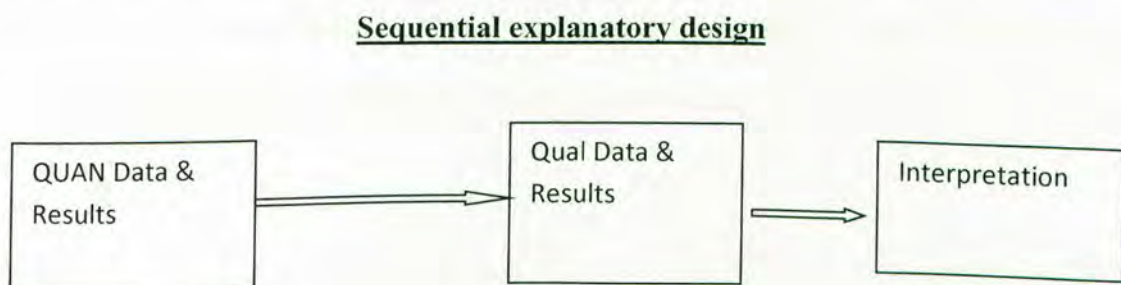
This was done as a requirement of creating baseline information to compare the levels of DL implementation using a survey based on the assumption that, there are social influences with an objective reality separate from the views of individuals. The quantitative data findings gave a general picture of BIS implementation by principals and teachers. The survey indicators matched with the P21 framework domains in chapter 2 namely: Information literacy, Media literacy and ICT literacy. During the analysis of quantitative data, the researcher selected specific schools to understand more deeply how schools implement BIS and why.

### **Qualitative Phase**

The qualitative phase is the collection of non-numerical data. It involves the use of interviews, focus groups and direct observation to record a variety of data. In this study qualitative data was collected and data analysis was based on the norms and values that the participants perceive for their environment (Bless & Acholla, 2011). This means that the analysis of qualitative data collected was based on the views and perceptions of the participants, on how they view their school environment in terms of the research questions.

Classroom observation focused on what exactly happens during the BIS lessons. Observations also determined whether teachers did what they reported in their questionnaire, this was done using a classroom observation checklist. This was the second phase of the study whereby Creswell (2006) asserts that it is connected to the results of the first phase, and the intent was to explain these results using qualitative data as a follow-up, the choice of design is Explanatory

**Figure 2: Design of a sequential explanatory study. (Source: Creswell and Plano, 2007)**



The interviewees of the second phase were purposefully selected as it is explained in Creswell (2006) that the second phase (qualitative phase) is connected to the results of the first phase, and the intent is to purposefully select participants to best address the qualitative research questions. This means that these participants indicated that they were implementing BIS but were struggling in their endeavour.

Including how data was collected, what instruments were used and the means for how data was collected and analysed.

According to (Gay, Mills & Airasian, 2009) research methods are the systematic tools, techniques and procedures used by a researcher to find, collect, and analyse and interpret information. In this study a survey, semi-structured interviews, focus group and classroom observations were used to collect data in primary schools of the Khomas region.

### **3.3. Study Population**

Best and Kahn (2006) define study population as any group of individuals that have one or more characteristics in common and that are of interest to the researcher. The population of the study was all 38 primary school Principals and BIS teachers in the Khomas region.

### **3.4. Sample Sampling procedure**

Sampling is the act, process, or technique of selecting a suitable group of subjects or representative part of a population for the purpose of determining parameters or characteristics of the whole population being studied Goddard and Melville (2013). The degree of representation is based on the sampling technique employed. There are various reasons why samples are important in research rather than the entire population. Firstly, the time factor, to obtain information quickly, secondly economic advantage, using a sample requires fewer

resources than working with the whole population; thirdly, sampling allows accessibility to a smaller representative part of the entire population.

A sample of 30 participants (10 Principals and 20 teachers) was selected from urban and rural parts of Khomas region, thus using the convenience sampling technique as explained by (Briggs et al., 2012) based on the fact that these were schools within easy reach of the researcher. The qualitative phase adopted a purposive sampling where the criteria was to work with schools that implement BIS, implying that respondents were selected intentionally, because the targets were the school principals and teachers who were in the position to best answer the question since they work within the school as practical implementers of the broad curriculum.

### **3.5. Research Instruments**

The study used three types of instruments to collect data. Namely 4 and 5 points Likert scale questionnaires with open-ended questions in the quantitative phase to provide a baseline for the study and indicate which schools implement BIS in the Khomas region. The qualitative phase utilised the semi-structured interview schedule for principals and focus group interview for teachers. Additionally, BIS teachers received four (4) classroom observations each. A validated classroom observation checklist was used to record classroom activities. The questionnaire, the interview schedules and the checklist were tested as a pilot study in two (2) schools that are not part of the study; this was done to ensure validity and reliability.

#### **3.5.1. Validity**

Validity refers to the extent to which an instrument created, measures what it is supposed to measure (Gay, Mills & Airasian, 2009). The survey questions contained questions relating to the knowledge and important aspects of the concept digital literacy as covered in the Basic

Information science and the literature review of this study. Curriculum Assessment and Evaluation Professionals from the University of Namibia, a researcher from NIED and other researchers from National Planning Commission of Namibia and Teachers from 3 primary schools in the Khomas region assisted in reviewing the questionnaire. Therefore, their views, inputs and suggestions for change were considered and incorporated and became part of the final version of the questionnaire.

According to Kimberly & Winterstein (2008) who points out that the quality of the instruments is very critical because “the conclusions the researchers draw is based on the information they obtain using these instruments”. He further states that it is therefore imperative the data and the instruments to be validated on the whole, the following miscellaneous procedures can be used to validate instruments and data.

To cater for the above requirements, the researcher made sure that the instruments and data collected were verified for:

**A) Content Validity** is related to a type of validity in which different elements, skills and behaviours are adequately and effectively measured. Relevant experts from MoEAC and UNAM evaluated the research instruments and data collected for validity.

**B) Internal Validity**, this has to measure the congruence of the research findings with the reality, it also deals with the degree to which the researcher observes and measures what is supposed to be measured on the whole, and the researcher did this through classroom observations and focus group Kimberlin & Winterstein (2008).

### **3.5.2 Reliability**

Reliability refers to the degree to which the test consistently measures whatever it is measuring. The more reliable a test is the more confidence we can have that the scores obtained from the

test are essentially the same scores that would be obtained if the test were re-administered to the same test takers at another time or by a different person, (Gay, et al., 2009). It deals with the dependability, and replicability of the results obtained from the pieces of research.

A pilot was conducted in two (2) schools in Windhoek's Katutura Suburb before the actual research began as a way of determining the reliability of the research instruments. The three schools were chosen because they have similar characteristics as compared to the targeted schools. The main aim of the pilot study was to test the performance of the research instruments to yield results as set in the research objectives. The flaws and necessary changes detected were addressed especially the simplifying the words used as well as the correct numbering.

### **3.6. Data collection procedure**

There are four objectives pursued in a mixed methods research according to Caruth (2013); Creswell (2011), (Plano Clark, 2011) & Ponce (2011). These are: Combining or integrating quantitative and qualitative methods toward the best possible approach to the research problem. Generate quantitative and qualitative data toward a clear and deep understanding of the research problem being addressed. Generate quantitative and qualitative data from the same research problem that allows the researcher greater certainty in inferences, conclusions or statements which formulate its findings and make more robust research by using the strengths from one research model to offset methodological shortcomings from the other. This produces research that is more reliable.

According to Thietart, (2001) a survey or questionnaire enables researchers directly to question individuals. It is a tool for collecting primary data that adapts well to quantitative research, as it allows the researcher to work with large samples and to establish statistical relationships or numerical comparisons.

The quantitative data was collected first using questionnaires, and then followed by the collection of qualitative data via interviews, focus groups and classroom observations. The research was undertaken in sequence in order to use the quantitative data to select participants for the interviews, focus groups and classroom observation and also to purposefully identify areas that needed further exploration.

According to (Gay, Mills & Airasian 2009) semi structured interviews are used often for policy research because they collect detailed information in a style that is somewhat conventional. In this study, qualitative research was used through the interview to involve questioning the subject while maintaining an empathetic demeanour: that is, accepting the subject's frame of reference, whether in terms of feelings or relevance. As it is emphasised by Thietart (2001) semi-structured interviews are designed with as a guide with questions and topics to be addressed in the interview organised in a standardised manner, but open ended to allow for probing so that the researcher is able to cover the correct aspects in regard to the research question. Therefore, for this study, qualitative data collection as the second phase of the research, involved the use of semi structured interviews whereby 10 Principals were interviewed face to face. Participants were made to understand that the second phase of the research was equally important as the first phase because it was a continuation that marked an explanation to the quantitative data collected in the first phase of the study.

Lastly, 3 classroom observations whereby a State Educational Technology Directors Association ((SETDA) classroom observation checklist was used followed. As noted by (Goddrd & Melville, 2013) observation is not a collection method that is used to quantitative research. An intuitive process allows individuals to collect information about others by observing their actions and behaviours in their natural surroundings in which the observer's role can be that of no interaction or one where he/she actively becomes part of the participants. Gay et al., (2009) explains that observers can be either participants or a non-participant who

quietly remains in the background whilst observing the participants in their own setting. In this study, the researcher chose to be a non-participant observer. The researcher used a SETDA direct classroom observation tool to observe classroom activities for 45 minutes per session.

The focus group interview technique for this phase included several individuals who contributed to a research problem; it is like a group interview where data is collected from shared understanding from a group of people (Gay et al., 2009). Two focus group interviews with 6 participants each were conducted using well prepared interviewed.

### **3.7. Data Analysis**

The data was then analysed in three different methods. Firstly, on the analysis plan, the quantitative data was run on the Statistical Package for Social Sciences (SPSS) to obtain statistical information. Secondly, the interview data for both principals and focus groups was thematically analysed and thirdly, an integration of quantitative and qualitative data findings followed. Research questions guided the data analysis process.

Quantitative data was first analysed, questionnaires were screened by the researcher to determine the pattern of responses, identify some problems patterning to the completion of the questionnaires and coding. Descriptive statistics that showed percentages and frequencies were used.

Qualitative data was analysed second, this phase made the researcher to be more cautious. The interviews data was obtained and recorded using an interview schedule. Data was analysed by reading it and coding according to themes as they appeared. Both quantitative data (closed – ended and qualitative data (open- ended) were brought together, to make sense of the findings Creswell (2012). Face-to-face interview data from principals and interview data from the teachers' focus groups was handled separately because the content was not the same.

Finally, the data from classroom observations was also analysed based on the instrument used and the research questions. The classroom observation was necessary to found grounded information, mainly on the quality and type of BIS lesson activities learners engage in while using computers and the school library. Quantitative and qualitative findings were triangulated where necessary.

### **3.8. Ethical considerations**

Ethical considerations are primary to the smooth-running conducting of all research activities Caruth (2013). Mixed methods research requires the researcher to obtain permission to protect anonymity, avoid disruption of sites, and communicate the purpose of the study accurately while the researcher is also expected to avoid deceptive practices, respect the study population, respond to potential power concerns, and confidentiality, (Creswell, 2012). This study therefore, adhered to research ethics.

In this study the researcher sought for a written consent from the Ministry of Education. Informed Consent in a form of an ethical clearance certificate was also obtained from the Faculty of Post Graduate Studies Committee (Appendix 1). Permission was also requested from participants via the regional education office of the Director of Khomas region (Appendix 2). Physical meetings were held with selected school heads to further explain and clarify the purpose of the research. Participants were assured that they had a right to freely pull out of the study at any time they felt uncomfortable. The researcher made sure that all the collected data was kept confidentially; participants were referred to using codes. All records containing data collected from participants was stored electronically and safely stored in their original format for safety during the duration of the study as explained by Creswell (2014).

After data analysis the researcher safely stored the data to ensure it is secure for the period of 5 years, this is both print and electronic data.

### **3.9. Summary**

This chapter is a description of all the procedures followed during the conduct of the research. It accounts for the research methodologies, which include design, the population, and sampling procedure, instruments used to collect data, ethical issues as well as all research steps and procedure key to follow in order to conduct a successful research. A clear explanation because of the choice of methodology is provided; the issues of validity and reliability are also well explained in this chapter.

## CHAPTER FOUR: DATA FINDINGS AND ANALYSIS

### 4.1. Introduction

In this chapter data was presented, discussed, and analyzed. The results were presented by means of tables, figures and scientific discussions. The main aim of the chapter was to examine the study findings in terms of the level and state of the challenges in the implementation of the Basic Information Science (BIS) syllabus in selected schools in the Khomas region.

The main question of this study is:

#### **What are the challenges affecting the successful implementation of the BIS syllabus?**

The sub-questions that inform the larger/main research questions are as follows:

1. What do the principals and teachers understand by the importance of digital literacy?
2. What are principals and teachers identifying as challenges affecting compliance to the implementation of the teaching of the BIS syllabus?
3. What kinds of support do principals and teachers expect from MoEAC in realizing a more successful implementation of the teaching of the BIS syllabus?
4. How do schools coordinate digital literacy classroom activities in allowing learners to participate in the process of knowledge creation and sharing?

The findings of the study were presented in a sequence based on the data collection techniques: work experience, importance of digital literacy, reasons and challenges for implementation of BIS, challenges for compliance to teaching of BIS.

Firstly, the demographic variables of all respondents were used to show perceptions they might have on the implementation of BIS. Kalongiannakis (2008) in (Aramide & Dr. Lapido, 2015)

who argues that teachers' years of experience influence the teachers' use of ICT in teaching confirm this. Survey questionnaire, semi-structured interviews, classroom observations and focus group discussions which was analyzed thematically, research questions were used as headlines.

**Table 2: The relationship between qualitative and quantitative data.**

Research Question (RQ).	Quantitative Data	Qualitative Data
<b>RQ 1 (Section 4.3)</b>	<p>Table 4.2 to 4.5 and Figure 4.1 projects the statistical aspect of the teachers and principal's thoughts on the importance of BIS.</p> <p>Figure 4.1 (85% of principals strongly support the importance of digital literacy).</p> <p>Table 4.5 (The survey found that 65.6% of Teachers strongly agreed to having encouraged learners on the use of multiple information sources</p>	<p>The qualitative data (comprised of a <i>focus group and interview</i>) which assisted in validating the quantitative data, in RQ 1.</p> <p>The teachers confirmed that BIS helps a learner to know how to search for the right information, evaluate information and critically think to enhance informed decisions. Research question 4 (d) on the focus group discussion</p>
<b>RQ 2 (Section 4.5)</b>	<p>Table 4.14 Digital media and online searches require internet connectivity (30% Principals strongly agreed and 46.9% Teachers strongly agreed)</p>	<p><u>Classroom Observations</u> (the researcher visited the schools to assess the teaching of the BIS subject and the availability of resources in each school. School C had nor computers nor a school library. During the interviews principals confirmed that the use of computers is vital to the implementation and teaching of the BIS syllabus.</p>
<b>RQ 3 (Section 4.8)</b>	<p>Table 4.6 to 4.10 and figure 4.2 reveal the quantitative data of the challenges that hinder the effective implementation of BIS.</p> <ul style="list-style-type: none"> <li>• Figure 4.2 (Teachers not having resources to teach BIS/IC, Principals (30%) are of the strong support)</li> <li>• Table 4.7-teachers not trained to teach BIS/IC</li> </ul>	<p>The qualitative data (comprised of a focus group and interview) which assisted in validating the quantitative data.</p> <p>Principals and teachers confirmed lack of educational software compatible computers, well stocked school libraries, librarians and learner textbooks.</p> <p>These results emanate from question 2 on the interview</p>

	<p>(35% of surveyed principals strongly agreed)</p> <ul style="list-style-type: none"> <li>• Table 4.8-insufficient classroom space (40% of the surveyed Principals strongly agreed).</li> </ul>	<p>schedule for principals and question 3 on the focus group discussion questions.</p>
<b>RQ4 (Section 4.9)</b>	<ul style="list-style-type: none"> <li>• Table 4.8 Teachers not trained, (35% Principals strongly agreed and 31.3% Teachers strongly agreed)</li> </ul>	<p>The qualitative data (comprised of a focus group and interview) which assisted in answering the question on lack ICT usage skills by teachers (refer to 4.7). 5a of the focus group discussion questions.</p>

#### 4.2. Descriptive data analysis and work experience

Descriptive data of principals and teachers surveyed in this study are shown in table 3 below. Principals and teachers are the implementers of syllabus in schools, therefore, the researcher saw it fit to assess their demographics using variable such as work experience, gender and subject specialization. The 52 respondents consist of 20 school administrators (principals 38%) and 32 teachers (62%). The gender distributions of Principals were 55% males, and 45% females. The majority (60%) of the 20 principals surveyed had work experience exceeding 20 years, followed by 20% principals whose work experience was between 16 - 20 years, while 20% indicated to have work experience below 16 years.

The total number of teachers who were interviewed was 32, and 25 females (78.1%) dominated their gender distribution, while their male counterparts were only 7 (21.9%). About 50% of Teachers reported work experience below 11 years (N=16), whereas only (N= 7) 21.8 % teachers indicated to have served for more than 20 years. About 5 Teachers indicated to have work experience between 11-15 years (15.6%), while 4 Teachers have work experience between 16-20 years (12.5%).

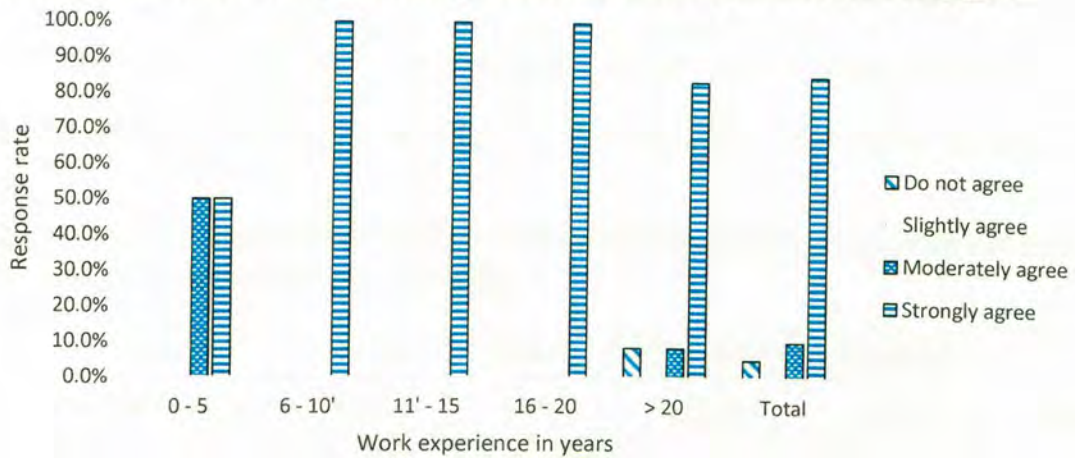
**Table 3: Work experience (years) and gender distribution of Principals and Teachers**

	Gender	Work experience in years					Total
		0 - 5	6' - 10	11' - 15	16 - 20	> 20	
Principals (N=20)	Male	2	1	0	3	5	11
		18.2%	9.1%	0.0%	27.3%	45.5%	100.0%
	Female	0	0	1	1	7	9
		0.0%	0.0%	11.1%	11.1%	77.8%	100.0%
	<b>Total</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>4</b>	<b>12</b>	<b>20</b>
		<b>10.0%</b>	<b>5.0%</b>	<b>5.0%</b>	<b>20.0%</b>	<b>60.0%</b>	<b>100.0%</b>
Teacher (N=32)	Male	3	2	0	1	1	7
		42.9%	28.6%	0.0%	14.3%	14.3%	100.0%
	Female	5	6	5	3	6	25
		20.0%	24.0%	20.0%	12.0%	24.0%	100.0%
	<b>Total</b>	<b>8</b>	<b>8</b>	<b>5</b>	<b>4</b>	<b>7</b>	<b>32</b>
		<b>25.0%</b>	<b>25.0%</b>	<b>15.6%</b>	<b>12.5%</b>	<b>21.9%</b>	<b>100.0%</b>

*Data source: Own survey*

#### **4.3. Research question 1: What do the principals' and teachers understand by the importance of digital literacy?**

The data below indicates the understanding of digital literacy from teachers and principals through their ratings of the importance of digital literacy. According to figure 3, 85% of principals strongly support the importance of digital literacy and the fact that access to information is essential for education, democracy and development, while 10% moderately agreed. Only 5% of the total respondents expressed not to agree.

**Figure 3: Importance of digital literacy related to work experience for Principals**

*Data source: Own survey*

The majority of the Principals (75%) strongly support the fact that Teachers' use of digital technology and media messages help learners to create new information that contributes to the importance of digital literacy, while 4 Teachers moderately agreed (20%) and only 5% of Principals did not agree, Table 4.

**Table 4: Work experience (years) and gender distribution of Principals and Teachers**

	Work experience	Do not agree	Slightly agree	Moderately agree	Strongly agree	Total
Principal (N=20)	0 - 5	0	0	1	1	2
		0.0%	0.0%	50.0%	50.0%	100.0%
	06 - 10'	0	0	0	1	1
		0.0%	0.0%	0.0%	100.0%	100.0%
	11' - 15	0	0	0	1	1
		0.0%	0.0%	0.0%	100.0%	100.0%
	16 - 20	0	0	0	4	4
		0.0%	0.0%	0.0%	100.0%	100.0%
> 20	1	0	3	8	12	
	8.3%	0.0%	25.0%	66.7%	100.0%	
<b>Total</b>	<b>1</b>	<b>0</b>	<b>4</b>	<b>15</b>	<b>20</b>	
	<b>5.0%</b>	<b>0.0%</b>	<b>20.0%</b>	<b>75.0%</b>	<b>100.0%</b>	

*Data source: Own survey*

It is evident from Table 5 that 60% of the principals agree and strongly support the role of media literacy in education and how it communicates meaning within education. About, 35% of the respondents moderately agree, while 5% of the respondents opposed to the notion.

**Table 5: Work experience by principals' understanding and use of strategies to point out the role of media literacy in education**

	<b>Work experience</b>	<b>Do not agree</b>	<b>Slightly agree</b>	<b>Moderately agree</b>	<b>Strongly agree</b>	<b>Total</b>
Principal (N=20)	0 – 5	0	0	1	1	<b>2</b>
		0.0%	0.0%	50.0%	50.0%	<b>100.0%</b>
	6 - 10'	0	0	0	1	<b>1</b>
		0.0%	0.0%	0.0%	100.0%	<b>100.0%</b>
	11' – 15	0	0	0	1	<b>1</b>
		0.0%	0.0%	0.0%	100.0%	<b>100.0%</b>
	16 – 20	0	0	1	3	<b>4</b>
		0.0%	0.0%	25.0%	75.0%	<b>100.0%</b>
	> 20	1	0	5	6	<b>12</b>
		8.3%	0.0%	41.7%	50.0%	<b>100.0%</b>
	<b>Total</b>	<b>1</b>	<b>0</b>	<b>7</b>	<b>12</b>	<b>20</b>
		<b>5.0%</b>	<b>0.0%</b>	<b>35.0%</b>	<b>60.0%</b>	<b>100.0%</b>

*Data source: Own source*

The results in tables 3 and 4 are of vital importance because they explain the importance of digital literacy in terms of how teachers may use digital literacy technologies to and media messages to appropriately help learners create new knowledge. The other importance of digital literacy complimented by the tables is the fact that digital literacy help principals understand and use strategic ideas to point out the role of media literacy in education and how it communicates meaning.

The qualitative results from the teachers' focus group discussions also complimented the above by stating that the ICT components help learners in doing their research effectively.

**This is what some of the school principals had to say:**

- Basic Information Science (BIS) helps a learner to know how to search for the right information, evaluate information and critically think to enhance informed decisions. Old ways of teaching results in the same results annually while teaching with technology raises learners' interest, motivation and positively impacts learners' achievements. (P5 Q1)
- BIS should be taught in all Namibian schools because it is a way of cultivating good information skills in learners, and to compliment reading skills through the use of computers and the school library resources. (P8 Q1)

Teachers demonstrated a very low understanding on the importance of BIS as a subject. During the focus group discussion, it was discovered that only one teacher was vested with relevant information regarding the importance of digital literacy

**This what teachers from the focus groups had to say:**

- I think it equips learners with ICT skills, internet, video, radio, library usage and computers. (TFA Q1)
- I think it has to do with media such as newspapers, retrieval of information for research and basic computer literacy and also Facebook. (TFA Q1)
- BIS helps a learner to know how to search for the right information, evaluate information and critically think to enhance informed decisions. (TFQ 4d)

Most teachers in the focus group discussion did not regard BIS as a lifelong-learning subject.

#### 4.4. BIS Implementation Reasons

**Table 6: School site and principals' response on the importance of BIS subject to learners**

	School site	Do not agree	Slightly agree	Moderately agree	Strongly agree	Total
Principals (N=20)	Katutura	1	0	1	10	12
		8.3%	0.0	8.3%	83.3%	100.0%
	Khomasdal	0	0	0	4	4
		0.0%	0.0	0.0%	100.0%	100.0%
	Windhoek	0	0	1	3	4
		0.0%	0.0	25.0%	75.0%	100.0%
	<b>Total</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>17</b>	<b>20</b>
		<b>5.0%</b>	<b>0.0</b>	<b>10.0%</b>	<b>85.0%</b>	<b>100.0%</b>

*Data source: Own survey*

Table 6 shows the surveyed Principals responses when they were asked about the importance of implementing BIS in schools. About 85% of Principals strongly agreed that BIS is an important subject for learners, while 10% moderately agreed. Only 5% of Principals did not agree to the notion of BIS being an important subject for learners.

**Table 7: Work experience and Teachers encouraging learners to use multiple information sources for research projects**

	Work experience	Do not agree	Slightly agree	Moderately agree	Strongly agree	Total
Teacher (N=32)	0 – 5	0	1	0	7	<b>8</b>
		0.0%	12.5%	0.0%	87.5%	<b>100.0%</b>
	6 - 10'	0	0	4	4	<b>8</b>
		0.0%	0.0%	50.0%	50.0%	<b>100.0%</b>
	11' – 15	1	1	1	2	<b>5</b>
		20.0%	20.0%	20.0%	40.0%	<b>100.0%</b>
	16 – 20	0	0	1	3	<b>4</b>
		0.0%	0.0%	25.0%	75.0%	<b>100.0%</b>
	> 20	0	1	1	5	<b>7</b>
		0.0%	14.3%	14.3%	71.4%	<b>100.0%</b>
	<b>Total</b>	<b>1</b>	<b>3</b>	<b>7</b>	<b>21</b>	<b>32</b>
		<b>3.1%</b>	<b>9.4%</b>	<b>21.9%</b>	<b>65.6%</b>	<b>100.0%</b>

*Data source: Own survey*

Table 7 presents information on teachers encouraging learners on the use of multiple information sources for their research projects. The survey found that 65.6% of Teachers strongly agreed to having encouraged learners on the use of multiple information sources, while 21.9% moderately agreed and 3.1% of respondents did not agree.

Regarding the importance of BIS as a way to teach learners to be digitally literate, it was established from the semi structured interviews that the school principals rated BIS as a very important subject of the 21<sup>st</sup> century. In their personal opinions, it came out that if BIS is taught as prescribed in the syllabus. It could influence the whole curriculum with excellent results because it uses a new way of teaching and learning, School 2 respondent say that “old ways of teaching results in the same results while teaching with technology raises learner interest,

motivation and positively impacts learners' achievements." The study established that principals felt BIS promotes research and reading skills, here is an illustration from School 3:

"BIS should be taught because it is a way of cultivating good information skills in learners, and to compliment reading skills through computers and the use of school library resources" (3)

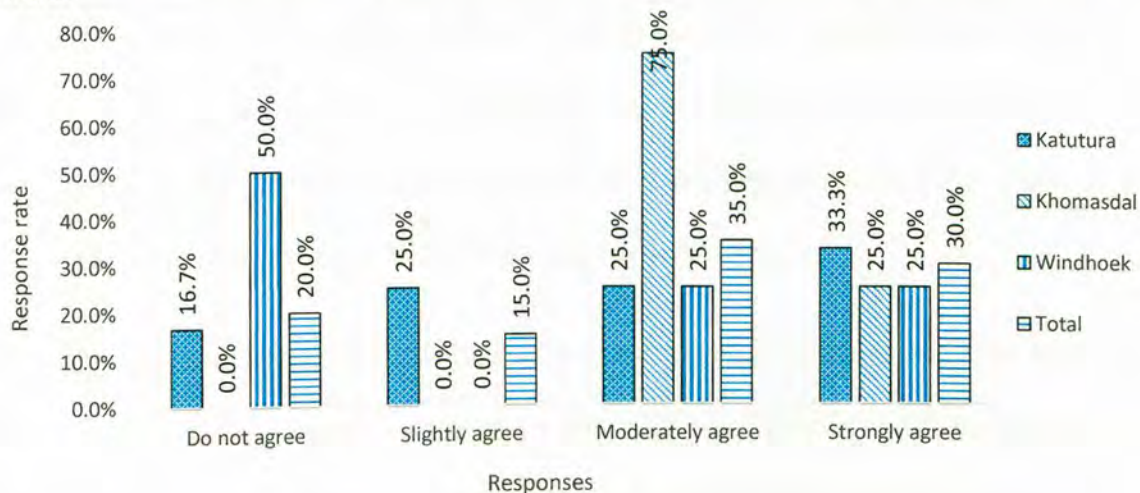
The above suggests that school principals portray a high value for BIS as a 21<sup>st</sup> century subject for learners and require more support and resources to advance implementation. The need for training for all principals was a desire for all respondents as they depicted a belief that this will ensure capacity building.

#### **4.5. Research Question 2: What are principals and teachers identifying as challenges affecting compliance to the implementation of the teaching of the BIS syllabus?**

The findings presented in figure 4, principals (30%) strongly support the opinion of teachers not having enough resources to teach BIS in schools, while 35% of principals moderately agreed and 15% slightly agreed respectively on this matter.

The focus group discussion results revealed that using ICT equipment to acquire information is a challenge. Participants explained that in schools where a computer lab was present, almost 30 computers will be out of order meaning that 30-45 learners will end up sharing 15 computers, which is not healthy for effective teaching and learning. However, about 20% of all the interviewed principals did not agree to teachers not having resources to teach BIS subject in schools. Meanwhile, teachers strongly criticized the absence of resources such as computers, learner textbooks from their classrooms as a challenge.

**Figure 4: School site by principals' response on Teachers not having resources to teach BIS/IC**



*Data source: Own survey*

**Table 8: Work experience by Principals not comfortable with how to search for information online**

	Work experience	Do not agree	Slightly agree	Moderately agree	Strongly agree	Total
Principals (N=20)	0 – 5	2	0	0	0	2
		100.0%	0.0%	0.0%	0.0%	100.0%
	6 - 10'	1	0	0	0	1
		100.0%	0.0%	0.0%	0.0%	100.0%
	11' – 15	0	0	1	0	1
		0.0%	0.0%	100.0%	0.0%	100.0%
	16 – 20	3	0	0	1	4
		75.0%	0.0%	0.0%	25.0%	100.0%
> 20	4	3	2	3	12	
	33.3%	25.0%	16.7%	25.0%	100.0%	
<b>Total</b>	<b>10</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>20</b>	
	<b>50.0%</b>	<b>15.0%</b>	<b>15.0%</b>	<b>20.0%</b>	<b>100.0%</b>	

*Data source: Own survey*

Table 8 shows what principals had to say on whether they were not comfortable to search information online so that they could assist teachers as well. About 20% strongly agreed, while

15% moderately and slightly agreed respectively. About half (50%) of all the respondents did not agree to being not comfortable with how to search for information online, and also refuted to not assisting their teachers. Results from the focus group discussion revealed that teachers need principal support in BIS in terms of class visits, soliciting donations for ICT equipment for the upliftment of the status of BIS in their respective schools.

The qualitative results from the interviews revealed that principals agreed that they need clarification in terms of subject content in the BIS syllabus. However, only four participants suggested that in-service training is required for the smooth guidance and monitoring of the teaching of BIS while six participants suggested training for teachers.

**These are the quotes from the principals:**

- This subject is not my specialization, I have no background knowledge at all and I need training. (P11 Q1)
- There is a need for clarification in terms of subject content in the syllabus, in-service training is required for smooth guidance and monitoring of the teaching of BIS. (P1, P3, P6, P8, P10, P11, P12 Q1, e)

In addition, the seven principals out of the ten interviewed confirmed the absence of a qualified school librarian as another gap in the effective teaching of information skills at school to guide the integration of ICT. Three participants emphasised that a teacher librarian has an important role in the school in terms of guiding teachers and learners towards greater understanding of all concepts that cover issues of plagiarism, copyright, and the ethical and legal use of information.

**Table 9: School site and teachers not trained to teach BIS**

	School site	Do not agree	Slightly agree	Moderately agree	Strongly agree	Total
Principals (N=20)	Katutura	2	3	2	5	12
		16.7%	25.0%	16.7%	41.7%	100.0%
	Khomasdal	0	1	2	1	4
		0.0%	25.0%	50.0%	25.0%	100.0%
	Windhoek	1	1	1	1	4
		25.0%	25.0%	25.0%	25.0%	100.0%
<b>Total</b>	<b>3</b>	<b>5</b>	<b>5</b>	<b>7</b>	<b>20</b>	
	<b>15.0%</b>	<b>25.0%</b>	<b>25.0%</b>	<b>35.0%</b>	<b>100.0%</b>	
Teachers (N=32)	Katutura	8	0	3	5	16
		50.0%	0.0%	18.8%	31.3%	100.0%
	Khomasdal	4	2	3	2	11
		36.4%	18.2%	27.3%	18.2%	100.0%
	Windhoek	0	0	2	3	5
		0.0%	0.0%	40.0%	60.0%	100.0%
<b>Total</b>	<b>12</b>	<b>2</b>	<b>8</b>	<b>10</b>	<b>32</b>	
	<b>37.5%</b>	<b>6.3%</b>	<b>25.0%</b>	<b>31.3%</b>	<b>100.0%</b>	

*Data source: Own source*

Table 9 shows some responses about teachers not being trained to teach BIS/ IC in schools. About 35% of surveyed principals strongly agreed, while 25% and 6.3% moderately and slightly agreed respectively. However, about 15% did not agree to the statement that teachers were not trained to teach BIS/ IC. Furthermore, about 31.3% of all surveyed teachers strongly agreed to teachers not trained to teach BIS/ IC, while 25% and 6.3% moderately and slightly agreed respectively. About 37.5% of all surveyed teacher have refuted the notion of teachers not being trained to teach BIS/ IC in schools.

The results from the interviews also revealed that heads of schools prioritised appointing teachers to teach promotional subjects as compared to non-promotional subjects. The principal from school 4 genuinely said, “I allocate BIS to teachers with less periods irrespective of their subject knowledge because it is a non-promotional subject. He added to say, I do this just because of modernization and globalization because the subject is about ICT and the use of information.” (PQ1f). This evidently shows that there is a need to promote and create an understanding of the role of digital literacy as lifelong learning concept that cuts across all subjects for it effective teaching and learning in schools.

**Table 10: School site by insufficient classroom space**

	Site	Do not agree	Slightly agree	Moderately agree	Strongly agree	Total
Principals (N=20)	Katutura	5	0	1	6	12
		41.7%	0.0%	8.3%	50.0%	100.0%
	Khomasdal	1	0	1	2	4
		25.0%	0.0%	25.0%	50.0%	100.0%
	Windhoek	2	0	2	0	4
		50.0%	0.0%	50.0%	0.0%	100.0%
<b>Total</b>	<b>8</b>	<b>0</b>	<b>4</b>	<b>8</b>	<b>20</b>	
	<b>40.0%</b>	<b>0.0%</b>	<b>20.0%</b>	<b>40.0%</b>	<b>100.0%</b>	
Teachers (N=32)	Katutura	2	4	2	8	16
		12.5%	25.0%	12.5%	50.0%	100.0%
	Khomasdal	4	3	2	2	11
		36.4%	27.3%	18.2%	18.2%	100.0%
	Windhoek	3	0	1	1	5
		60.0%	0.0%	20.0%	20.0%	100.0%
<b>Total</b>	<b>9</b>	<b>7</b>	<b>5</b>	<b>11</b>	<b>32</b>	
	<b>28.1%</b>	<b>21.9%</b>	<b>15.6%</b>	<b>34.4%</b>	<b>100.0%</b>	

Data source: Own survey

Table 10 indicates that insufficient classroom space is a BIS implementation challenge. Finding shows that 40% of the surveyed Principals strongly agreed to this, while 34.4 % of Teachers agree. However, about 40% of Principals indicated that they do not agree. Teachers who did not agree to the reason of insufficient classroom space as a BIS implementation challenge were about 28.1%.

Qualitative Focus group results revealed that insufficient classroom and library space as well as textbooks for the BIS and computers also contributed to the subject not being appealing to the learners' interest (PQ2)

**Table 11: School site and no computer laboratory**

	School site	Do not agree	Slightly agree	Moderately agree	Strongly agree	Total
Principal (N=20)	Katutura	5	1	2	4	12
		41.7%	8.3%	16.7%	33.3%	100.0%
	Khomasdal	2	1	0	1	4
		50.0%	25.0%	0.0%	25.0%	100.0%
	Windhoek	3	0	1	0	4
		75.0%	0.0%	25.0%	0.0%	100.0%
<b>Total</b>	<b>10</b>	<b>2</b>	<b>3</b>	<b>5</b>	<b>20</b>	
	<b>50.0%</b>	<b>10.0%</b>	<b>15.0%</b>	<b>25.0%</b>	<b>100.0%</b>	
Teacher (N=32)	Katutura	4	3	1	8	16
		25.0%	18.8%	6.3%	50.0%	100.0%
	Khomasdal	5	1	0	5	11
		45.5%	9.1%	0.0%	45.5%	100.0%
	Windhoek	4	0	1	0	5
		80.0%	0.0%	20.0%	0.0%	100.0%
<b>Total</b>	<b>13</b>	<b>4</b>	<b>2</b>	<b>13</b>	<b>32</b>	
	<b>40.6%</b>	<b>12.5%</b>	<b>6.3%</b>	<b>40.6%</b>	<b>100.0%</b>	

Data source: Own survey

As observed in table 11 above, data shows that 50% of school principals indicated that they do not agree, while 25%, 15% and 10% strongly, moderately and slightly agreed respectively, to lack of computer laboratory as a challenge for the implementation of BIS in schools.

Amongst teachers, it is shown that 40.6% strongly agreed, while 40.6% disagreed to lack of computer laboratory as an implementation challenge. This could be that in some schools there are computer laboratories although those computers are outdated and not compatible to the current educational software. It could also be that in some schools there are functional computer laboratories as per the findings on the table.

Results from the principals' interviews explains the results in table 9 by indicating that despite the fact that eight of the respondents interviewed confirmed having a computer lab at school/schools such as 3, 4,5, 6, 7, indicated that only 15-20 computers out of 45 are functional and compatible to educational software, most of them are outdated. School 1 has no computer lab at all; therefore, access to information is a barrier to effective implementation of BIS in these schools. Let alone having each learner use a computer during lessons, library resources are also limited to address the teaching and learning needs of the school community, thus the low state of equipment and library facility cancels the availability of such resources to support teaching and learning. Schools 2, 8, 9 and 10 are adequately resourced with a functional computer lab and school library even though the libraries are of classroom size.

**Here are quotes from the principals on the availability of computer labs:**

- Only 15 to 20 computers out of 45 are functional and compatible to educational software, most of them are outdated and no funds to repair them, let alone purchase new ones. (P3, P4, P6, P7, P11 Q2)
- My school has no computer lab, learners only learn theory with no practical lessons. (P1 Q2)

**Here are quotes from the focus group interviews on the availability of computer labs:**

- The computer lab is very important in teaching BIS because it ensures improved information retrieval skills, teaches learners typing skills to present neat and good quality work as compared to written work. (TFGA Q4c)
- Without teachers being well trained the computer laboratory will not be utilized appropriately as per the syllabus. Teachers need to be knowledgeable and skilled to deliver subject matter. (TFGB Q4c)

Furthermore, the respondents in this study strongly highlighted the social inequalities as drawbacks in terms of access to valuable information when comparing to the rich (former advantaged) who have information in all formats to the previously disadvantaged who cannot even access to a public library within their vicinity of residence. The focus group discussion participants were divided into two groups regarding the presence of a computer lab at school. Five out of twelve (12) forming the two groups indicated that a computer laboratory is very important regarding teaching BIS because it ensures improved information retrieval skills, teaches learners typing skills to present neat and good quality of work as compare to hand written work. On the other hand, seven (7) teachers asserted that without teachers being well trained the computer lab will not be utilised appropriately as per the syllabus, they emphasised on teachers not knowledgeable and skilled in delivery of the subject matter.

Despite teachers feeling that they need training, four (4) teachers from school 4 indicated that computers have some negative impact on the learners and they portrayed as:

- Learners just like playing games on ICT gadgets including computers, these things also promote laziness - cut and paste, children not wanting to write by hand and read a book in hard copy. (FG Q4 d)

Participants made an agreement that the teaching of BIS is not solely dependent on computers, apart from computers being used for searching online information. Only one teacher mentioned the importance of the ethical use of information, the issues of plagiarism, copyright and legal aspect of the use of information was then emphasised.

**Participants in the focus group interviews agreed as follows:**

- The world of information is wide open to access other information sources in print and within the environment of the teacher and learner. (FG Q2b)

**Table 12: I have difficulty finding information on a topic in a school library by Work experience (years)**

Teachers (N=32)	Response	Work experience (years)					Total
		0 - 5	6 - '10	11 - 15	16 - 20	> 20	
	Do not agree	12.5%	12.5%	0.0%	0.0%	28.6%	12.5%
	Slightly disagree	25.0%	25.0%	40.0%	75.0%	42.9%	37.5%
	Neither	37.5%	25.0%	0.0%	0.0%	14.3%	18.8%
	Moderately agree	25.0%	37.5%	20.0%	25.0%	14.3%	25.0%
	Strongly agree	0.0%	0.0%	40.0%	0.0%	0.0%	6.3%
	<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>
Principals (n=20)	Do not agree	0.00%	0.00%	0.00%	50.00%	16.70%	20.00%
	Slightly disagree	0.00%	0.00%	0.00%	25.00%	25.00%	20.00%
	Neither	0.00%	100.00%	0.00%	0.00%	16.70%	15.00%
	Moderately agree	100.00%	0.00%	0.00%	25.00%	41.70%	40.00%
	Strongly agree	0.00%	0.00%	100.00%	0.00%	0.00%	5.00%
	<b>Total</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

Data source: Own survey

Finding information on a topic in a school library has been identified as a challenge to some principals and teachers. Table 12 depicts the results of findings where only 12.5% of all surveyed principals have denied the reason stated being a challenge at their schools. About 37.5% slightly agreed, while 25% and 6.3% were moderately and strongly in agreement to support the reason. However, a considerable 18.8% of principals were neither in agreement nor in denial of the alleged reason being a challenge at their schools.

**Here is a quote from Principals on finding information in the school library:**

- The school library is closed as there is nobody to run and manage the facility and as a result all the resources are locked up. (P4 Q3)

Majority (40%) of teachers moderately agreed, while 5% and 20% expressed strong and slight agreement about the reason respectively. However, some (15%) teachers could not side for or against the reason, that teachers have difficulty finding information on a topic in a school library.

**Here is a quote from the teacher focus group on finding information in the school library:**

- It is difficult give practical assignments to learners due to lack of relevant resources in the school library and at home. (TFGQ 2b)

**4.6. Research question 2. What do principals and teachers identify as challenges affecting compliance to the implementation of the BIS syllabus,**

Figure 5 shows principals' responses on whether their teachers do not have knowledge on how to collect and retrieve information from the internet. The findings show that about 62.5% of principals are not in agreement that teachers have no knowledge on how to collect and retrieve information from the internet. Contrary to the substantial number of principals who disagreed, 15.6%, 12.5% and 9.4% of principals were moderately, strongly and slightly in agreement

with the perception that teachers have no knowledge on how to collect and retrieve information from the internet respectively.

To the contrary qualitative results from the focus group revealed that teachers emphasized the need of in-service training in BIS. Seven (7) teacher participants out of 12 had this to say:

- It is of no use for us to have computer laboratories in schools if we lack knowledge and skills to deliver the BIS subject matter. (TFG Q4c)

**Here are quotes from the principals' interviews on the challenges of BIS implementation:**

- The syllabus content is too much and the terminology used is not familiar to teachers and learners, especially those transitioning from lower primary to upper primary. (P4 Q3)
- Lack of funds for schools to acquire resources to compliment the teacher's guide as prescribed by NIED. (P1, P3, P4 Q2)
- Poor implementation of the ICT policy for education in terms of computer deployment to schools. (P1 P3, P5, P6, P7, Q2)
- Lack of relevant teaching and learning materials such as learner textbooks and school library resources. (P4, P6, P7, P11, P12 Q2)

**Here are quotes from the teacher focus group interviews on the challenges of BIS implementation:**

- The subject is not taken seriously due to no-promotional status. (TFG, B Q3)
- There is too much workload as one teacher is both librarian and BIS teacher. (TFGA, B Q3)
- There are no computers, therefore the subject is boring and unappealing to learners. (TFGA Q3)

- Teachers have no background knowledge of the subject and not academically unqualified. (TFGA, B Q3b)

**Figure 5: Work experience by Teachers not having knowledge on how to collect and retrieve information on internet**



*Data source: Own survey*

The survey enquired on whether school libraries were having adequate information on other subjects, and the findings through Teachers' response.

**Table 13: School site by teachers' response on their school library lacking adequate complementary information on other school subjects**

School site		Do not agree	Slightly disagree	Neither	Moderately agree	Strongly agree	Total
Teachers (N=32)	Katutura	2	2	2	6	6	18
		11.1%	11.1%	11.1%	33.3%	33.3%	100.0%
	Khomasdal	1	0	4	2	2	9
		11.1%	0.0%	44.4%	22.2%	22.2%	100.0%
	Windhoek	0	1	2	1	1	5
		0.0%	20.0%	40.0%	20.0%	20.0%	100.0%
<b>Total</b>		3	3	8	9	9	32
		9.4%	9.4%	25.0%	28.1%	28.1%	100.0%

*Data source: Own survey*

Table 13 revealed that about 28.1% of teachers strongly and moderately agreed respectively, while 9.4% of teachers did not agree and slightly agreed respectively. However, about 25% of teachers would neither agree nor disagree that their school libraries had no adequate information on other subjects.

From the findings observed in the classroom it can be concluded that majority of the responding teachers concurred with the statement that many school libraries were inadequately equipped with information on other subjects. The school library and the computer laboratory were closed, the school principal promised that there plans to avail the facilities to the learners' access soonest. It was discovered that out of the 35 computers only 15 were semi -function even though everything was packed out. (Classroom observation School C)

Therefore, it was not possible to determine the computer skills of the learners let alone evidence whether lessons were taught in the past. Though there was evidence of classroom teaching, the lesson did not reflect any practical library or technology skills, all resources were locked up.

**Table 14: Work experience and no qualified teacher- Librarian to ask for assistance in identifying materials while surfing the internet**

	Work experience (years)	Do not agree	Slightly agree	Moderately agree	Strongly agree	Total
Principal (N=20)	0 – 5	1	0	0	1	2
		50.0%	0.0%	0.0%	50.0%	100.0%
	6 - 10'	0	0	1	0	1
		0.0%	0.0%	100.0%	0.0%	100.0%
	11' – 15	0	0	0	1	1
		0.0%	0.0%	0.0%	100.0%	100.0%
	16 – 20	2	0	2	0	4
		50.0%	0.0%	50.0%	0.0%	100.0%
	> 20	3	0.0%	3	6	12
		25.0%	0.0%	25.0%	50.0%	100.0%
<b>Total</b>	<b>6</b>	<b>0.0%</b>	<b>6</b>	<b>8</b>	<b>20</b>	
	<b>30.0%</b>	<b>0.0%</b>	<b>30.0%</b>	<b>40.0%</b>	<b>100.0%</b>	
Teachers (N=32)	0 – 5	8	0	0	0	8
		100.0%	0.0%	0.0%	0.0%	100.0%
	6 - 10'	5	0	1	2	8
		62.5%	0.0%	12.5%	25.0%	100.0%
	11' – 15	2	0	0	3	5
		40.0%	0.0%	0.0%	60.0%	100.0%
	16 – 20	1	1	1	1	4
		25.0%	25.0%	25.0%	25.0%	100.0%
	> 20	4	1	0	2	7
		57.1%	14.3%	0.0%	28.6%	100.0%
<b>Total</b>	<b>20</b>	<b>2</b>	<b>2</b>	<b>8</b>	<b>32</b>	
	<b>62.5%</b>	<b>6.3%</b>	<b>6.3%</b>	<b>25.0%</b>	<b>100.0%</b>	

Data source: Own survey

As shown in table 14, some school principals find it difficult to identify materials on the internet because of lack of qualified librarians to assist them when in need. Findings show that 40% and 30% of principals are strongly and moderately in agreement with the notion respectively, while 30% indicated that they do not agree.

Regarding teachers' indication on the notion, about 62.5% do not agree. Whereas 25%, 6.3% and 6.3% who strongly, moderately and slightly agreed that principals do find it difficult to identify materials on the internet because of lack of qualified librarians to assist them when in need.

Qualitative results from the principals' interviews showed that the absence of qualified school librarians is a gap in the effective teaching of media and information literacy skills.

**Here is a quote from the principals' interviews:**

- There are no qualified school librarians to guide the integration of information and ICT literacy in schools. The school librarian has an important role in guiding teachers and learners towards a greater understanding of concepts that cover issues of plagiarism, copyright and the ethical and legal use of information. (PQ 3a)

**Table 15: School site by teachers and principals believes that digital media and online searches are important for learners, have no internet connectivity for learners**

	School site	Do not agree	Slightly agree	Moderately agree	Strongly agree	Total
principals (n=20)	Katutura	3	3	3	3	<b>12</b>
		25.0%	25.0%	25.0%	25.0%	<b>100.0%</b>
	Khomasdal	1	0	2	1	<b>4</b>
		25.0%	0.0%	50.0%	25.0%	<b>100.0%</b>
	Windhoek	1	0	1	2	<b>4</b>
		25.0%	0.0%	25.0%	50.0%	<b>100.0%</b>
	<b>Total</b>	<b>5</b>	<b>3</b>	<b>6</b>	<b>6</b>	<b>20</b>
<b>25.0%</b>		<b>15.0%</b>	<b>30.0%</b>	<b>30.0%</b>	<b>100.0%</b>	
Teachers (N=32)	Katutura	3	2	5	6	<b>16</b>
		18.8%	12.5%	31.3%	37.5%	<b>100.0%</b>
	Khomasdal	0	0	5	6	<b>11</b>
		0.0%	0.0%	45.5%	54.5%	<b>100.0%</b>
	Windhoek	0	2	0	3	<b>5</b>
		0.0%	40.0%	0.0%	60.0%	<b>100.0%</b>
	<b>Total</b>	<b>3</b>	<b>4</b>	<b>10</b>	<b>15</b>	<b>32</b>
<b>9.4%</b>		<b>12.5%</b>	<b>31.3%</b>	<b>46.9%</b>	<b>100.0%</b>	

• *Data source: Own survey*

Table 15 shows that teachers and principals believe that digital media and online search of information are important for learners, but lack of internet connectivity is a challenge. Findings revealed that 30 % of principals strongly agreed, while 30% and 15% moderately and slightly agreed respectively. In spite of majority having agreed with the notion, some principals expressed differently by disagreeing (25%) that they don't believe that digital media and online search of information are important for learners, although there is lack of internet connectivity in schools.

The question on internet connectivity was not part of the qualitative research questions, however, majority of teachers in the survey strongly agree (49.6%) to the notion, while 31.3% and 12.5% also express moderate and slightly agreement about the belief that digital media and online search of information are important for learners, although lack of internet connectivity remain a challenge. About 9.4% of all the surveyed teachers disagreed with the notion.

**Table 16: School site by Teachers and Principals believes that digital media and online searches are important for learners, have no internet connectivity for learners**

	<b>Work experience</b>	<b>Do not agree</b>	<b>Slightly disagree</b>	<b>Neither</b>	<b>Moderately agree</b>	<b>Strongly agree</b>	<b>Total</b>
Teachers (N=32)	0 – 5	1	0	0	4	3	<b>8</b>
		12.5%	0.0%	0.0%	50.0%	37.5%	<b>100.0%</b>
	6 - 10'	1	1	2	2	2	<b>8</b>
		12.5%	12.5%	25.0%	25.0%	25.0%	<b>100.0%</b>
	11' – 15	0	0	4	0	1	<b>5</b>
		0.0%	0.0%	80.0%	0.0%	20.0%	<b>100.0%</b>
	16 – 20	0	0	1	2	1	<b>4</b>
		0.0%	0.0%	25.0%	50.0%	25.0%	<b>100.0%</b>
	> 20	1	1	0	3	2	<b>7</b>
		14.3%	14.3%	0.0%	42.9%	28.6%	<b>100.0%</b>
	<b>Total</b>	<b>3</b>	<b>2</b>	<b>7</b>	<b>11</b>	<b>9</b>	<b>32</b>
		<b>9.4%</b>	<b>6.3%</b>	<b>21.9%</b>	<b>34.4%</b>	<b>28.1%</b>	<b>100.0%</b>

*Data source: Own survey*

Since teachers are directly in contact with learners and are in better positions to observe and control learners when using internet, it is imperative to pose a question on whether controlling learners' internet use is a challenge. Findings in table 16 have revealed that about 28.1% and 34.4% of teachers who strongly and moderately agreed to the notion that controlling what learners do on internet is a challenge respectively.

While other teachers expressed the opposite, making up 9.4% and 6.3% disagreeing and slightly disagreeing respectively. However, there were teachers who neither viewed the notion as a challenge nor not (21.9%).

Interview results from school 9 shows that principals do not assist teachers in BIS teaching due to reasons such as these: “I am a scientist I have no knowledge on this. The Head of Department (HOD) provides the new teacher with needed resources and gives the reporting line. I think it has to do with media such as newspapers, retrieval of information for research and basic computer literacy (**PQ1**). This means that in a situation where the teacher is out of context in lesson planning and presentation, there will not be any subject advisory service and guidance rendered from the school management, this in itself is a barrier to implementation of BIS. It was also mentioned by eight (8) participants that in worst cases teachers resort to using time allocated to BIS to teach their subjects of specialization because of BIS. This is what they had to say: “This subject is not taken seriously by teachers because of lack of resources and understanding by teachers it is not taught and does not even appear on the learners’ school report but other non-promotional subjects are there (TFGQ3).

According to the 2007, BIS syllabus the goal of all teachers is to promote higher order thinking skills in their learners. Incorporating digital age literacies and technology into lessons and activities is assuring way for teachers to facilitate their learners’ construction of knowledge and meaning. This study revealed that there are factors that hinder the successful implementation of BIS. The following are the hindrances that were found to be frequent amongst the interviewees:

- Lack of relevant teaching and learning materials such as textbooks and compatible up to date computers.
- No qualified BIS teachers and professional librarians.

- Poor implementation of the ICT policy for education in terms of deployment of computers.
- Teachers allocated to teach BIS are overloaded with their subjects of specialisation, because it happens that the person assigned to teach BIS is also the teacher -librarian.
- Lack of funds for schools to acquire resources to compliment the teacher's guide as prescribed by NIED
- No background knowledge on the subject, not academically qualified in BIS
- Lack of computers, therefore the subject is boring and not appealing to learners' interest.

There are hindrances that came out uniquely to specific school principals. These are shared as follows:

School 4 indicated that the syllabus content is too much and the terminology used is not familiar to teachers and learners especially those transitioning from lower primary into upper primary. The computers are outdated and not functional; no funds to repair them let alone to purchase new ones that are compatible to the educational software in stock, (schools 3 and 4). School 1 has no computer laboratory at all, therefore learners learn theory only, no practical lessons. The subject is not taken seriously at school as in some cases it does not even appear on the learners' progress report.

Workload was cited as a challenge in some cases, as work becomes too much if the person given the subject is both the BIS teacher and the librarian as well. At times this person lacks the background knowledge on the subject and can be academically unqualified in BIS which then leads to a Lack of interest from the learners, especially BIS being a non-promotional subject. Participants tried to explain and define the concepts but it turned out to be not

equivalent to what is expected of them. To substantiate on this, school 5 said this: “It is not part of my subject specialization; I have no background knowledge at all. I think it equips learners with ICT skills, internet, video, radio, library usage and computers” (FGQ1)

#### **4.7. Teaching and learning, homework**

The participants from schools with computers clearly indicate that the teachers use videos and the internet to enhance the teaching of their different subjects. One teacher said she has tried to give a BIS practical assignment to her learners but the children did not do it, due to lack of information resources at home, in addition another teacher said there are no computers at her school so they only use print materials.

On the question of examples of mass media use in their classrooms, some teachers did not understand the term mass media, through discussions participants created an understanding and came up with examples such as Smartboard, TV, radio, and social media like Facebook. Furthermore, participants agreed that library books from the MoEAC, Teachers ‘Guide, Internet and computers are the common teaching and learning resources in their schools, meanwhile it was also agreed that the subject requires more resources than the mentioned.

#### **4.8. Research Question 3: *What kinds of support do principals and teachers expect from MoEAC in realizing a more successful implementation of the teaching of the BIS syllabus?***

In this theme, participants portrayed an indication that all of them strongly need principal support so the subject can be effectively taught at their respective schools. They continued to state that they would appreciate if the principal could do class visits to see what is happening on the ground, be proactive in looking for donations or anything that can help the subject to be better taught at their schools.

On the issue of teacher collaboration, participants from both groups have not attended any cluster meetings for BIS to be informed on how it happens with other subjects, and that promotional subject teachers do not even use the library. **This is what they had to say:**

There has not been cluster meeting on BIS as compared to another subject. (TFQ3a)

From the two focus groups, ten (10) teachers indicated a need for in-service training while two (2) teachers felt they would rather be relieved from teaching BIS since it was not part of their professional specialization.

Ten of the participants had no clue of how the subject BIS can help learners understand and learn to the objectives of Namibia attaining knowledge economy status by 2030. teachers felt that the subject was indeed helping learners in achieving information skills but there were not explicitly articulating as to how. They stated that: If learners are exposed to the outside via computers and the internet, beyond their school environment they will be more informed and will perform better in their school subjects (FTQ4c).

**4.9. Research Question 4: *How do schools coordinate digital literacy classroom activities in allowing learners to participate in the process of knowledge creation and sharing?***

Lessons and classroom observations were undertaken in three schools that participated in this study. One classroom/ lesson observation was done per school with duration of 40-45 minutes. The main purpose of carrying out lesson observations was to find out how teachers coordinate BIS classroom activities in allowing learners to participate in the process of knowledge, retrieval, creation and sharing. The classroom observations are in three groups per individual school, (schools A, B, C).

The findings from the 3 schools that were observed are discussed as follows:

### **School A**

At this school there is a qualified teacher librarian, she has a teaching qualification as well; as a librarian qualification. There is a computer lab with 35 functioning computers and a classroom-size school library. The lesson took place in the computer lab, the topic was on creating tables, and it took 45 minutes of teaching and learner activity. Some learners share one (1) computer per two (2) pupils to accommodate those who could not get an individual computer.

About 90% of the class was busy using computers according to the teacher's instructions while those who had challenges were allocated fellow learners to assist them where necessary, this helped everyone to move along with the whole class.

In terms of educational management software, the teacher gave verbal instructions as well as visual on the smartboard for learners to see. The lesson was presented in Power Point; however, each learner had to type their own work and create a folder to save all activities done. Summary of proficiency for this part is C2-1.

In management, the teacher portrayed a full command of the learners, there were only minor problems pertaining to some children who were sharing computers, others had no patience to allow their partners to finish their work considering the time factor. There were no research skills in the lesson.

Regarding effective practice indicators, the technology was used at level 3 (most true). The score for consistency, systematic adoption of technology by the school was exemplary; the school strives at integrating ICT skills in all learners through Internet use and the school library with the aid of a qualified teacher librarian.

The teacher used management strategies that were relevant to technology use as well as high degree of learners' self-direction; the score in this regard is 4. It was observed during the lesson that learners who had good computer skills are trained to cautiously assist those who struggle with computer use while the teacher moves around with an observant eye, ensuring that everything is done correctly and no one is left behind.

On the educator proficiency indicator, a 4 score was allocated; it was evidently observed that the teacher is well vested in the subject matter, she clearly explained the subject content to the learners and they carried out instructions well. The lesson design and standard were based on the prescription of the BIS syllabus. Assessment was covered very well; each learner had a personal folder where they saved all the activities done for the accessibility of the teacher at a later stage.

In terms of the robust access indicators, all 35 computers were functional and compatible to the educational software at hand. There is a smartboard for whole class participation and visibility; however, there appears to be a need for more computers due to the size of the classes, some of the learners had to share computers, which causes impatience to those who have to wait while others are working.

The lesson was well presented and all learners looked interested. It was observed that the computer screens were all clear for individual learning and the smart board was used for whole class visual literacy at a rate of 3 which substantial. The scientific representation was not applicable to the lesson as well as the cultural awareness, collaboration was high (3) fast learners assisted those who were struggling while the teacher monitored. The E-communication skills were emphasized throughout the lesson, learners worked and socialized in harmony even though the issue of sharing computers was creating tension among them. During the lesson learners showed that there were self-directed and motivated to show their individual capability

and creativity. Most of them produced high quality work because and were able to consider helping those who needed help, at this school technology is used at an exemplary rate (4) and it is clear that learners are acquiring 21st century skills it is exemplary (4)

### **School B**

The observation took place in the computer lab. There is a full-time teacher appointed to teach BIS even though it is not the teacher's major subject. Learners used computers on an individual basis for more than 15 minutes each; computers are arranged so that learners face each other. Learners used a word-processor under the Teacher's instructions as they completed their task; the atmosphere of the lab is very basic as compared to school A.

The Teacher managed the class very well, the computer usage was not based on research at all, and learners truly used computers to advance their academic levels in technology employment of classroom management strategies was mostly true (3), educator proficiency indicators was exemplary as well as lesson designing and assessment, however automation was not at all true.

The amount of computer placement was exemplary (4) showing a rich deployment of software and online resources. The lesson provided learners with skills to build visual literacy at the score of 3 which is substantial, no scientific literacy and cultural literacy or global awareness, teaming or collaboration, skills E-communication and self-direction were at 3 substantial, while creativity, the ability to use the tools as well as high order thinking were somewhat for most learners. There were learners who produced high quality work and they manage their folders well.

At this school most of the BIS lessons that does not need technology happen in the library, therefore a second lesson was observed in the school library on the topic Parts of the Book.

### **School C**

This was not a fruitful classroom observation exercise. The teacher only taught a library skills lesson on library etiquette.

#### **4.10. Expectations for successful BIS implementation**

- University of Namibia to consider establishing an out of school course to integrate Media and information literacy into the teacher training courses to address the knowledge gaps discovered in this study.
- Budget allocation to appoint fulltime school librarians. Teachers' requests for classroom visits, monitoring and evaluation of lesson planning and learners' work by school managers be emphasized in schools.
- The NIED syllabus should be written in easy to understand language to facilitate smooth guidance to teachers during syllabus implementation.
- Involvement of BIS teachers in pre -curriculum development for increased ideas on syllabus content.
- Syllabus introduction workshops should be strengthened in order to provide detailed digital literacy pedagogy, to put significance to DL in education.
- Relevant good quality staff development and management skills programs should be ensured through regular on job training and education, recruitment and retention of qualified staff.
- Principals and school management staff to conduct regular classroom visits to provide the BIS subject advisory where necessary.

#### **4.11. Summary**

Chapter four discusses the analysis and interpretation of the study results. The data collection strategies used in the study guided to address the whole process, through Quantitative statistics from the survey, Qualitative views and opinions from semi-structured interviews, non-participant classroom observations and focus group interviews. Verifications of findings were done by the use of quotes from respondents' views. The study strongly established that there are various challenges that hinder the smooth implementation of the BIS syllabus. Participants clearly indicated that they understand the importance of BIS as a 21<sup>st</sup> century skills subject, however, the aspect of lack of resources, both qualified teachers and librarians, library facilities, classroom space and ICT equipment stands out to be the stumbling block because digital literacy is mainly about information, retrieval, use, application and creation of new knowledge and media products.

The next chapter discusses the research findings based on the research questions, limitations, summary and recommendations that emanated from the study.

## CHAPTER 5: DISCUSSION AND CONCLUSION

### 5.1. INTRODUCTION

This chapter focuses on the discussion of the research findings in answering the main question of the research study, i.e. “what the challenges are affecting the successful implementation of the BIS syllabus?” As in data presentation and analysis in chapter 4, the discussion is guided by an analysis of the theme namely; the importance of digital literacy in school, coordination of BIS classroom activities, principals and teachers’ expectations and challenges affecting the successful implementation of the BIS syllabus.

The researcher employed a mixed methods sequential explanatory design, which included collecting and analyzing quantitative data first using a survey questionnaire followed by the collection and analysis of qualitative data using semi-structured interviews, classroom observations and focus group discussions. Additionally, the discussion was guided by the mixed methods question as to what extent the quantitative data confirms the qualitative data.

A total of 52 participants made up the population that took part in the research, 20 principals and 32 BIS teachers in the survey. The qualitative phase drew participants from the same group, of which 10 were principals and 12 teachers.

The data concerning the challenges are broken down into the following subsections:

5.2. Coordination of BIS classroom activities;

5.3. Understanding and perceptions of Digital literacy by teachers and principals;

### 5.2. Coordination of BIS classroom activities

The classroom observations findings concur with the literature review where the NLIC report (2007) asserts that in schools where there is a qualified teacher librarian who teaches BIS

effectively creates a very high learner interest in the subject as compared to schools who are described as overloaded. The study results are a clear case of schools A and B with full time BIS teachers teaching well and as a result learners work is of a good standard. School C on the other hand where there is lack of organized BIS programs deprives learners of all exciting activities of working technology. Furthermore, classroom observations revealed that there was a gap between teachers' practical teaching activities and learning, school C's classroom observation in this study verifies this gap due to a closed computer lab, and library books in boxes contrary to what the teachers at school C claimed to be teaching. Judeson (2006) argued that when teachers are observed directly to assess the degree to which technology integrated lessons are aligned with constructivism principles, analysis did not reveal a significant relationship between practices and beliefs.

Data from the classroom observation showed that school C does not teach BIS, this means that learners at this school are deprived of the BIS syllabus skills they could attain.

It was observed during classroom observation that learners in the two schools used computers at level 3 as per the SETD classroom observation forms. It was also noted that the learners with good computers skills continuously showed that they were well trained as they assisted fellow learners who were struggling. Assessment was covered and each learner was asked to save their work in a unique individual folder for the teachers' attention at a later stage. School A portrayed a well-resourced computer laboratory and school library. School B learners did not collaborate much as they worked more as individuals. Some learners portrayed somewhat ability to use the ICT equipment; others produced high-quality work. In school C the lab was locked and learners did not practice ICT skills.

### **5.3. Principals and teachers' perceptions concerning the importance of digital literacy**

In order to examine the digital literacy perceptions of principals and teachers based on the BIS syllabus that has been taught in schools over the past 27 years. The survey showed that the 85% (N=17) school principals agreed to the notion that it was relevant to implement BIS in schools because it is important for learners. It was found out through the survey (table 4) that 65.6% of teachers encourage learners to use multiple information sources for their projects. Furthermore, data showed that about 85% of school principals strongly agreed that access to information is both essential for education, democracy and development, only 5% of principals indicated that they do not agree, figure 3.

To confirm understanding of DL by principals, table 5 shows that 75, 5% of principals indicated that teachers use digital technology and media such as newspapers appropriately to help learners create new information. This is related to BECTA (2009) who mentioned that DL is important because it helps learners to create, manipulate and process information, using technology to capture and organize data, in order to investigate patterns and trends, explore options using multimedia products. In addition, the P21 framework (2009) stipulates that DL creates ways to use technology as a tool to do research, organize, evaluate and communicate information in many formats. The findings show that principals and teachers have a degree of understanding of the importance of DL in education. Table 5 shows 75% of principals who are in agreement that teachers and principals need to understand and use strategies to point out the role of media literacy in education and show how it communicates meaning.

Meanwhile, qualitative data showed that all N= 10 principals who were interviewed in the study indicated that they need clarification in terms of the subject content of BIS. Principals also emphasized that BIS if taught well as per syllabus guidelines it could impact the whole curriculum with excellent learner achievement, the reason being that teaching with technology

raises learner interest to actively engage in the lesson, theme2. It was also established through the interviews that school principals rated BIS as important because it promotes research and reading. The P21 framework for 21<sup>st</sup> century skills (2009) supports the principals' perceptions in that it presents a holistic view of skills, content, knowledge expertise and literacies with innovative support systems to help students master the multi-dimensional abilities required of them in the 21<sup>st</sup> century.

During the focus group discussion, it came out that teachers struggled to reflect a clear understanding of some BIS syllabus concepts such as mass media, this observation tied together with one of the principal's comments during the interviews when he categorically pointed out that the syllabus contained unfamiliar concepts which were not common to teachers and learners.

The study also observed that heads of schools recommended official appointments for promotional subjects as compared to non-promotional subjects which were given to teachers who had few periods per week. It was established by the study that there are no teachers who are appointed solely to teach BIS. This shows that the teaching of BIS as a subject that promotes lifelong learning is compromised. NLIC (2007) confirms this when stating that BIS is regarded as a non-promotional subject in the Namibian education system, as a result the subject slot on the school timetable is utilized to teach what is regarded as promotional subjects.

#### **5.4. Principals and teachers' expectations**

Regarding expected support from MoEAC, data from structured interviews revealed that in-service training for the smooth guidance and monitoring of other teaching and learning of BIS for both teachers and principals was required. About 70% (N=7) out of the 10 interviewed principals emphasized the importance of having qualified librarians in schools to guide teachers and learners towards greater understanding of the concepts such as plagiarism, copyright,

intellectual property and the ethical and legal use of information. As the framework on which this study is grounded (P21) states that teachers in the 21<sup>st</sup> century need skills to be able to apply a fundamental understanding of the ethical /legal issues surrounding the access and use of information, (P21, 2016)

Meanwhile teachers' expectations in order to attain a successful BIS implementation showed that teachers strongly need principals to conduct regular class visits during BIS lessons in order for principals to know what happens during the teaching of BIS in the classroom, this was emphasized by teachers during the focus group discussion. Literature review shows that successful implementation of ICT in schools greatly depends on the effectiveness of the school leaders to manage change. Therefore, it is vital for Leaders to know that they play a very crucial and important role in directing and managing positive actions that facilitate adoption and use of technology in their schools (Mingaine, 2013). Teachers also voiced out that principals need to proactively solicit for funds / donations or any relevant support to acquire ICT equipment to compliment the practical part of the syllabus. Teachers indicated the need to revive the school cluster system which is a platform for teachers to collaborate and share information regarding their short comings in BIS, theme 3. This is supported by BECTA (2010) when they augured that digital literacy is a combination of functional technology skills, critical thinking and collaboration skills, understanding how, when, why and with whom to use technology.

### **5.5. BIS implementation challenges**

The main aim of this study was to examine and identify challenges that affect the successful implementation of the BIS syllabus in the Khomas region. Adequate resources such as ICT equipment are always problematic to deploy to every school in the country. Lai (2001) distinguishes barrier to the ICT integration in the teaching/learning process, accessibility to ICT equipment is described as a problem. Teachers need access to computers for their

convenient use. The study showed that out of 20 school principals surveyed, only (N=4) 20% strongly agreed that teachers at their schools had no resources to teach BIS, while 50% of the principals did not agree.

The situation suggests that 20% (figure 4) principals who indicated not having resources to teach BIS had a relatively good reason. Data shows in the table 14 that 40% of principals have no qualified librarians, 37.5% principals agreed that it is a challenge to find information on a topic in the school library. This was supported by 40% of teachers. This could be that the library resources were either irrelevant to curriculum, outdated or the library collection might be minimal. Several studies on school libraries in most developing countries indicate that school libraries are poorly managed and neglected (Amaral, 2000 in Lwehabura 2011).

Qualitative data indicated that there is lack of teaching resources such as textbooks, compatible and up to date computers, as well as qualified BIS teachers. The confirmation was made in the focus group discussion that they (teachers) lack background subject knowledge, and they are not professionally qualified in BIS, lack of funds to acquire more resources to compliment the teacher's guide provided by NIED and lack of professional librarians in schools. This confirms findings by Empirica (2006) that identified the lack of access to learning resources such as textbooks is the greatest barrier to effective learning. Access as an educational goal in Namibia still needs attention. It was further explained that teachers assigned to teach BIS are overloaded with their subjects of specialization.

Data in table 6 shows that 50% of principals do not agree to the notion of not being comfortable with the search for information online to assist teachers. About 20% of principals agreed to the notion. It was further observed that (N=3) 30% of the principals indicated that they need a qualified school librarian to guide the integration of ICT. This shows the 20% of principals who strongly agreed in table 14 high pointed a BIS implementation challenge that is common

to others. Lwehaburu (2011) points out that training and availability of trained personnel to main school libraries is of paramount importance in the provision of effective library services in the school system. Data collected in the study showed that out of the N=20 principals, only 35% (N= 7) strongly agreed about teachers not being trained to teach BIS, this was complimented by 31.3% teacher responses, who agreed to the notion, table 9.

Qualitative results from the interviews confirmed that principals cited lack of qualified teachers as a challenge to successfully implement BIS. Data indicated that 83.3% (N=10) teachers requested for in-service training in BIS while 16.6 % (N=2) requested to be relieved from the responsibility of teaching BIS because it was not their subject of specialization.

Meanwhile, in table 10 it can be observed that insufficient classroom space was identified as a BIS implementation challenge. Findings showed that 40% of surveyed principals strongly agreed to this notion, while 34.4% teachers were also in agreement. Another challenge similar to classroom space was the absence of computer laboratories. School principals indicated their disagreement by 50%, while 34.4% teachers indicate strongly agree that lack of computer laboratories were a BIS implementation challenge (table 11).

To explain this observation, the semi structured interview results established that 80% (N-8) of school principals interviewed confirmed having computer laboratories but 40% had only 45 computers of which only 15-20 were functional and compatible to educational software. It is therefore observed that 40% of schools in the study had outdated computers while 10% had no computers at all. This study shows that the state of ICT equipment and lack of classroom space cancels the availability of such resources to support BIS teaching and learning because there will be no space available to accommodate resources, while 40% were adequately resourced. Sicilia (2005) pointed out that the issue of lack of access to computers is another complex barrier that disadvantages teachers from integrating new technologies.

Moreover, findings in table 10 revealed that 37.5% of surveyed principals moderately agreed and 25% agreed to have difficulties finding information on a topic in the school library. Teachers strongly agreed by 20% to this notion. In table 12 it can be observed that lack of adequate complimentary information on other subjects in the school library was a challenge. About 28.1% teachers strongly and moderately agree to this notion.

Findings from the qualitative results confirmed information depicted in tables 10, 11 and 12 by indicating that there are limited resources in school libraries to address the teaching and learning need of the school community. The issue of social inequalities was highlighted as a drawback in terms of access to valuable information for some respondents. The focus of the P21 framework for 21 century learning is the notion that learners, workers and all citizens must be able to access, manage and evaluate, integrate and ethically use information technology and media in order to successfully function in a knowledge economy. It is further stated that P21 framework views all components fully interconnected in the process of the 21<sup>st</sup> century teaching and learning. The study reveals that schools in the Khomas region have challenges that affect access to information through the school library as the information center of the school.

It was further observed from figure 5 that 62.5% of respondent principals do not agree that teachers in their schools have no knowledge on how to collect and retrieve information from the internet. Therefore, this notion was not a BIS implementation compliance challenge. Table 14 revealed that 40% of principals agreed that they need a qualified librarian to identify relevant materials on the internet, to the contrary, 62.5 % teacher were not in agreement. It was also interesting to note that 30% principals strongly agreed to the fact that internet connectivity was important for learners to search for information while 30% moderately agreed, complimented by 49.6 % teachers who agreed to the notion, table 15. In this regard it was observed from the qualitative results that 34%-45% teachers moderately agree and 28.1% strongly agreed the

notion that controlling what learners do on the internet was a challenge. Teachers refuted the need for qualified librarian to assist them while surfing the internet by 62.5 % in table 12. (Blannskat et al., 2006) and Becta (2004) pinpointed that these negative behavioral tendencies by teachers are a result of limitations in ICT knowledge.

However, the focus group discussion study results showed that 58.3% (N=7) teachers agreed to the importance of having a computer lab with computers connected to the internet for the following reason: (1) facilitation of access to information, (2) learners practicing information seeking and sharing skills. On the contrary, 41.6% (N=6) teachers felt that it was not necessary to have computers at school when teachers lack knowledge and skills to integrate such resources in their work. Ideally, this validated the agreement from 25% of the respondents who agree to the presence of the librarian who could assist teachers and learners when surfing the internet.

The focus group discussion yielded barriers to the implementation of BIS in terms of: the subject not taken seriously as a subject because in some cases it does not even appear on the school timetable. This is confirmed in the NLIC (2007) report which states that BIS is regarded as a non- promotional subject in the Namibian educational system; as a result, the subject slot is usually utilized to teach promotional subjects. It was clear from the survey that principals did not understand that DL was part of everyday life in the 21<sup>st</sup> century; they noted it as a specialization or something that needs to be added on. Teachers indicated that they were overloaded with subjects of their specialization; therefore, the teaching of BIS is compromised.

Finally, the study confirmed Creswell (2003) who observes that in sequential explanatory mixed methods research the researcher collects and interprets quantitative data first followed by collection and analysis of qualitative data to ensure that the qualitative results assist in explaining and interpreting findings of the quantitative phase. In this study quantitative data

was collected via a survey, to create an understanding of the findings from survey, qualitative data consisting of semi-structured interviews, focus group and classroom observation was then triangulated to present and explained to gain a deeper understanding of the respondents' views and opinion to a very large extent.

## **5.6. Conclusion and Recommendations**

### **5.6.1. Conclusion**

The main purpose of the study was to investigate challenges of implementing the Basic Information Science Syllabus in primary schools of the Khomas region. Based on the research findings it can be concluded that there were challenges of BIS implementation faced by principals and teachers.

These findings emerged from the survey, the semi-structured interviews, focus group discussions and classroom observations. In the survey some teachers indicated that teacher qualification to teach BIS was not a reason for compliance to BIS implementation, to the contrary during the focus group discussion it came out that teachers feel inadequate to teach BIS and were not qualified in the subject.

There came out implications in terms of principals emphasizing that the BIS syllabus content is too complex and contains unfamiliar vocabulary which affects learners transitioning from lower primary school level to upper primary level, in the sense that the learners face difficulties to comprehend lessons offered. Findings clearly indicate that in Khomas region, schools face challenges in terms of teacher qualification, classroom space to teach BIS, knowledge to comprehend and interpret syllabus for teaching and learning, principal teacher support as well as MoEAC's low supply of ICT equipment library facilities and human resources.

In addition, principals and teachers alluded to the gap of knowledge in media and information skills as described in the syllabus. They acknowledged the importance of BIS as a subject to impart 21<sup>st</sup> century skills if well implemented. The lack of Information and media facilities as well as resources compatible to teach 21<sup>st</sup> century skills are more desirable. It was also revealed that some of the teachers who are currently teaching BIS need relief from the BIS teaching responsibility meaning that they felt misplaced since it was not their subject of specialization.

Much needs to be done in terms of improving the prospects for BIS as a subject. The data revealed that teachers and principals do not sufficiently understand the importance of the subject. This is evident in their perceptions and the fact that scheduling of the subject is neglected. Additionally, training for teachers is not prioritized and teacher preparation programs are not laying emphasis on the importance of digital literacy for teachers. Recommendations below will address ways in which the Ministry, teacher preparation programs and schools can address this issue better.

### **5.6.2. Recommendations**

Based on the conclusion above, the following recommendations were made to improve and address the challenges of implementing BIS as proposed by key respondents who are the school principals and teachers, as they are the implementers of the syllabus in schools. These recommendations are not in any ranking order.

1. An investigation on the views and plans of MoEAC officials regarding the state of BIS now called Information and Communication (IC) which is meant to be taught from grades 4-12 in all Namibian school which was expected to have started in the year 2016, for example school C in the study is still not teaching BIS.

2. The University of Namibia (UNAM) to consider establishing an out of school standalone Diploma or certificate in Media and Information Literacy into the teacher training curriculum to address the knowledge gaps that were discovered during this study. The teacher preparation programs also need to recognize that learning for the 21<sup>st</sup> century is different and that they need to prepare teachers for learners that are already digitally literate.
3. Budget allocation to be envisaged to fast track the appointment of school librarians where library facilities are functional. More emphasis to be placed on sustaining the good work that is done by schools where the BIS syllabus has been implemented for several years now. Teachers requests for classroom visits, monitoring and evaluation of lesson planning and learners' work by school managers as it is the norm for other subjects. The role and support of the school principal is vital, hence both teachers who participated in the focus group interview alluded to it.
4. The MoEAC is encouraged to emulate other countries such as Canada's Saskatchewan province where the government provided systematic policy, funding, ICT resources and practical guidance on the introduction of DL in their school. In terms of practice, the study recommends that MoEAC (1) approach the Directorate of Namibia Library and Achieves service to intensify capacity building for BIS serving teachers to better prepare them to for handling the BIS syllabus. (2) Improve on the implementation of the ICT policy for education regarding the deployment of computers to schools.
5. Based on Kavallier and Flannigan (2006) 21<sup>st</sup> century society accelerated, media-saturated, and automated information landscape, a new literacy is

required, one more broadly defined than the ability to read and write. The NIED syllabus introduction workshops needs to be strengthened in order to provide detailed DL pedagogy, this will put significance to DL in education. Relevant, good quality staff development and management skills programs should be ensured, through regular on job training and education, recruitment and retention of qualified staff will optimize the benefits of DL as a cross curriculum subject. School personnel need to acquire 21<sup>st</sup> century teaching and learning methods in order to combat the scourge of low performance by learning because there is no match between the classroom activities (resource-based teaching and learning) and the resource-based national examinations, which learners engage in at the end of each academic year.

The outcome and recommendation of this study therefore need to be viewed as an indicator to all stakeholders in education to work as a team to initiate strategies to improve the status quo. All stakeholders should also take cognizance of the fact that BIS is the lens through which to see, and the vehicle that carries Namibia's new generation to the attainment of the objectives of a knowledge-based economy by the year 2030. Alongside reading, writing and mathematics digital literacy needs to be prioritized in education as we have seen in the study results that it holds the skills needed for the 21<sup>st</sup> century worker and citizen. The issue of unequal access to teaching and learning resources also raised its head and it needs to be addressed because without relevant resources learners will not attain the basic digital literacy skills as prescribed in the BIS syllabus. In Namibia the school has a bigger role to play in providing opportunities to develop basic and ethical digital literacy skills in the new generation of our youth.

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## APPENDICIES

A



**UNAM**  
UNIVERSITY OF NAMIBIA

## ETHICAL CLEARANCE CERTIFICATE

Ethical Clearance Reference Number: FOE/159/2016

Date: 9 December, 2016

This Ethical Clearance Certificate is issued by the University of Namibia Research Ethics Committee (UREC) in accordance with the University of Namibia's Research Ethics Policy and Guidelines. Ethical approval is given in respect of undertakings contained in the Research Project outlined below. This Certificate is issued on the recommendations of the ethical evaluation done by the Faculty/Centre/Campus Research & Publications Committee sitting with the Postgraduate Studies Committee.

Title of Project: The Challenges in the Implementation of the Basic Information Science Syllabus in Selected Schools in the Khomas Region

Nature/Level of Project: Masters

Researcher: M. M. Ndala

Student Number: 8828067

Faculty: Faculty of Education

Supervisors: Dr. P. Boer (Main) Ms. C. Alexander (Co)

Take note of the following:

- (a) Any significant changes in the conditions or undertakings outlined in the approved Proposal must be communicated to the UREC. An application to make amendments may be necessary.
- (b) Any breaches of ethical undertakings or practices that have an impact on ethical conduct of the research must be reported to the UREC.
- (c) The Principal Researcher must report issues of ethical compliance to the UREC (through the Chairperson of the Faculty/Centre/Campus Research & Publications Committee) at the end of the Project or as may be requested by UREC.
- (d) The UREC retains the right to:
  - (i) Withdraw or amend this Ethical Clearance if any unethical practices (as outlined in the Research Ethics Policy) have been detected or suspected,
  - (ii) Request for an ethical compliance report at any point during the course of the research.

UREC wishes you the best in your research.

Prof. P. Odonkor: UREC Chairperson

Ms. P. Claassen: UREC Secretary



B



REPUBLIC OF NAMIBIA

KHOMAS REGIONAL COUNCIL

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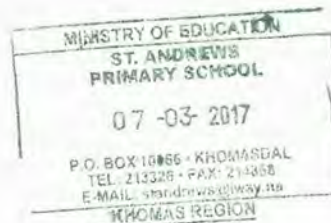
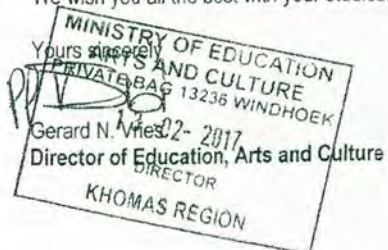
#### PERMISSION TO CONDUCT ACADEMIC RESEARCH IN SELECTED PRIMARY SCHOOL IN KHOMAS

Your letter dated 9 February 2017 on the above subject refers.

Permission is hereby given to you to carry out a study for your Master Degree with the topic titled "The implementation of the Basic Information Science Syllabus" to identify challenges and solutions to the implementation of the teaching of information literacy among school principals and teachers in selected primary schools of your choice in Khomas Region under the following conditions:

- ❖ The Principal of the school to be visited must be contacted before the visit and agreement should be reached between you and the Principal.
- ❖ The school programme should not be interrupted.
- ❖ Teachers who will take part in this research/interview will do so voluntarily.
- ❖ The Directorate of Education, Arts and Culture should be provided with a copy of your thesis/findings.

We wish you all the best with your studies.



## BIS/IC Implementation Principal Survey

The purpose of this survey is to assess and identify the challenges for implementation of Basic Information Science (BIS) Syllabus in selected schools in the Khomas Region

Your voluntary participation is confidential and anonymous. Please do not place your name anywhere on the survey. Responding to all items in this survey helps me ensure that we accurately represent your important perceptions related to seeking leadership positions. *Thank you in advance for your helpful participation. Most sincerely, M. Ndala*

Please rate your agreement with the following items:

General Questions

1	Strongly disagree	2	Disagree	3	Neither	4	Agree	5	Strongly agree
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1. Teachers demonstrate a sound Knowledge of digital literacy  
 1  2  3  4  5
2. I find it helpful to talk to others about concept related to digital literacy  
 1  2  3  4  5
3. A well-resourced library is a prerequisite to keep abreast with 21<sup>st</sup> century skills  
 1  2  3  4  5
4. Taking detailed notes when I search for information is beneficial to me  
 1  2  3  4  5
5. It is good to talk to ICT specialists when planning for digital learning environments  
 1  2  3  4  5
6. I become more interested in digital literacy when I encourage teacher on evaluation of information  
 1  2  3  4  5
7. My seeking for extra information online when I have a textbook is foolish.  
 1  2  3  4  5
8. It is good to make several trips to the library to research on a topic  
 1  2  3  4  5
9. I have difficulty finding information on a topic in a school library  
 1  2  3  4  5
10. It is important for teachers to plan information management strategies for learners  
 1  2  3  4  5
11. I usually struggle to correctly advise teachers to evaluate digital resources for accuracy and relevance  
 1  2  3  4  5
12. I use YouTube content for most things I need  
 1  2  3  4  5

13. Which 3 of the questions above has been your most important ones. [Indicate the question number]

- (a) \_\_\_\_\_  
 (b) \_\_\_\_\_  
 (c) \_\_\_\_\_

## IMPLEMENTATION REASONS FOR BIS

1	No reason	2	A slight reason	3	A moderate reason	4	A strong reason
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## My reasons for scheduling BIS/ IC in timetable:

14. I seek to comply with MOE regulation

1	2	3	4
---	---	---	---

15. I think it is an important subject for learners

1	2	3	4
---	---	---	---

16. I seek to contribute to Vision 2030 and NDP5

1	2	3	4
---	---	---	---

17. Learners should relate to all people as potential sources of information

1	2	3	4
---	---	---	---

18. I seek more practical in-service training for my BIS/ IC teachers

1	2	3	4
---	---	---	---

19. I encourage teacher to use multiple information sources for learners' research projects

1	2	3	4
---	---	---	---

Other Reasons? \_\_\_\_\_

## IMPLEMENTATION CHALLENGES FOR BIS

1	Not a reason	2	A slight reason	3	A moderate reason	4	A strong reason
---	--------------	---	-----------------	---	-------------------	---	-----------------

## The challenges for Implementation of BIS:

20. Insufficient classroom space

1	2	3	4
---	---	---	---

School library facility not well resourced to teach BIS/IC

1	2	3	4
---	---	---	---

21. BIS/IC as a Non-promotional subject does not need school principal understanding and support

1	2	3	4
---	---	---	---

22. No regional advisory services to promote safe and healthy use of Information and digital technology resources

1	2	3	4
---	---	---	---

23. No equitable access to technology resources for all learners in my school

1	2	3	4
---	---	---	---

24. Teachers not trained to teach BIS/ IC

1	2	3	4
---	---	---	---

25. Teacher not having resources to teach BIS/IC

1	2	3	4
---	---	---	---

26. Non-promotional subjects need school principal understanding and support

1		2		3		4	
---	--	---	--	---	--	---	--

27. I am not confident in information and computer skills

1		2		3		4	
---	--	---	--	---	--	---	--

28. I need fundamental understanding of ethical issues surrounding access and use of information

1		2		3		4	
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Other Reasons? \_\_\_\_\_

### IMPORTANCE OF DIGITAL LITERACY

**Information Literacy** (can be implemented without literal technological tools)

29. Access to information is both essential for education, democracy and development

1		2		3		4	
---	--	---	--	---	--	---	--

30. It is important for Learners to use research projects appropriately to create new information

1		2		3		4	
---	--	---	--	---	--	---	--

31. It is important to me that teachers have skills on how to assist learners to evaluate the information they find in the library and surrounding environment

1		2		3		4	
---	--	---	--	---	--	---	--

32. How do I tell teachers to review the validity of learner's research projects, when I do not have time to review it myself?

1		2		3		4	
---	--	---	--	---	--	---	--

33. I pitch in and help out at the school library and lead by example

1		2		3		4	
---	--	---	--	---	--	---	--

34. I use technology as a tool to research , organize , evaluate and communicate information

1		2		3		4	
---	--	---	--	---	--	---	--

35. What is the likelihood that you will want to teach BIS/ IC as the principal? \_\_\_\_\_% chance

36. What is the likelihood that you will NOT want to teach BIS/IC as the principal? \_\_\_\_\_% chance.

### Media Literacy

37. Teachers should Use digital technologies and media messages appropriately to help learners create new information

1		2		3		4	
---	--	---	--	---	--	---	--

38. Teachers should help learners to interpret and make connections between media texts , context and values projected by media

1		2		3		4	
---	--	---	--	---	--	---	--

39. Understand and use strategies to point out the role of media literacy in education and how it communicates meaning

1	2	3	4
---	---	---	---

40. Define and explore multiple roles of media as credible channels of information and knowledge

1	2	3	4
---	---	---	---

41. Beware of the ethical responsibility of generators and consumers of media

1	2	3	4
---	---	---	---

#### Information Communication Technology (ICT)

42. No Computer lab

1	2	3	4
---	---	---	---

43. No equitable access to technology resources for all learners in my school

1	2	3	4
---	---	---	---

44. BIS/IC promotes safe and healthy use of digital technology resources

1	2	3	4
---	---	---	---

45. I will seek for a leadership course in the use of technology as a tool to research, organize, evaluate and communicate information

1	2	3	4
---	---	---	---

46. I believe digital media and online searches are important for learners , but we have no internet connectivity for learners

1	2	3	4
---	---	---	---

47. Apply a fundamental understanding of the social, ethical and human rights issues surrounding access to information technologies

1	2	3	4
---	---	---	---

48. I am not comfortable with how to search for information online, so how can I assist the teachers

1	2	3	4
---	---	---	---

49. There is so much information online that it overwhelms me, I need information literacy skills

1	2	3	4
---	---	---	---

50. Learners need teacher guidance when working on the Internet.

1	2	3	4
---	---	---	---

51. No qualified Teacher-librarian to ask for assistance in identifying materials and while surfing the Internet

1	2	3	4
---	---	---	---

**DEMOGRAPHICS** Please answer the following questions:

- |  |                               |                                 |               |
|--|-------------------------------|---------------------------------|---------------|
| 1. Gender:                               | <input type="checkbox"/> Male | <input type="checkbox"/> Female |               |
| 2. School Name:                          | _____                         | Telephone _____                 | Number: _____ |
| 3. Suburb/Neighbourhood: _____           |                               |                                 |               |
| 4. School Subject/Specialisation: _____  |                               |                                 |               |
| 5. Years of Work experience: _____ years |                               |                                 |               |

If you have any questions or comments regarding this study please contact: Mazinza M. Ndala at EMAIL: [mazinza38@gmail.com](mailto:mazinza38@gmail.com)

Thank you for your important participation!

## BIS/IC Implementation Teacher Survey

The purpose of this survey is to assess and identify the challenges for implementation of Basic Information Science (BIS) Syllabus in selected schools in the Khomas Region

Your voluntary participation is confidential and anonymous. Please do not place your name anywhere on the survey. Responding to all items in this survey helps me ensure that we accurately represent your important perceptions related to seeking leadership positions. *Thank you in advance for your helpful participation. Most sincerely, M. Ndala*

Please rate your agreement with the following items:

### GENERAL QUESTIONS

1	Strongly disagree	2	Disagree	3	Neither	4	Agree	5	Strongly agree
---	-------------------	---	----------	---	---------	---	-------	---	----------------

1. It is difficult to give a specific average age of my library book collection

1		2		3		4		5	
---	--	---	--	---	--	---	--	---	--

2. I find it helpful to talk to others about my ICT needs

1		2		3		4		5	
---	--	---	--	---	--	---	--	---	--

3. A well-resourced media center is a prerequisite for digital literacy

1		2		3		4		5	
---	--	---	--	---	--	---	--	---	--

4. A fixed media center schedule is convenient compared to a flexible one

1		2		3		4		5	
---	--	---	--	---	--	---	--	---	--

5. It is good to talk to ICT specialists when improving learners' computer skills

1		2		3		4		5	
---	--	---	--	---	--	---	--	---	--

6. Digital literacy is a way to avoid plagiarism in schools

1		2		3		4		5	
---	--	---	--	---	--	---	--	---	--

7. My seeking for extra information online when I have a textbook is unnecessary.

1		2		3		4		5	
---	--	---	--	---	--	---	--	---	--

8. It is good to make learners have several trips to the library to research on a topic

1		2		3		4		5	
---	--	---	--	---	--	---	--	---	--

9. I have difficulty finding information on a topic in a school library

1		2		3		4		5	
---	--	---	--	---	--	---	--	---	--

10. I use Google searches mostly to help learners find information

1		2		3		4		5	
---	--	---	--	---	--	---	--	---	--

11. I usually struggle to help my learners construct an online search query, using Boolean operators (AND, OR, NOT, +,-)

1		2		3		4		5	
---	--	---	--	---	--	---	--	---	--

12. I use YouTube content for most things I need for my lessons

1		2		3		4		5	
---	--	---	--	---	--	---	--	---	--

13. Which 3 of the questions above has been your most important ones. [Indicate the question number]

- (a) \_\_\_\_\_  
 (b) \_\_\_\_\_  
 (c) \_\_\_\_\_

#### IMPLEMENTATION REASONS FOR BIS/IC

1	Not a reason	2	A slight reason	3	A moderate reason	4	A strong reason
---	--------------	---	-----------------	---	-------------------	---	-----------------

#### My reasons for scheduling BIS in timetable:

13. I seek to comply with MOEAC regulations.

1		2		3		4	
---	--	---	--	---	--	---	--

14. Information is a major requirement for development

1		2		3		4	
---	--	---	--	---	--	---	--

15. I seek to contribute to Vision 2030 and NDP5

1		2		3		4	
---	--	---	--	---	--	---	--

16. Learners need guidance when working on the Internet.

1		2		3		4	
---	--	---	--	---	--	---	--

17. Learners should relate to all people as potential sources of information

1		2		3		4	
---	--	---	--	---	--	---	--

18. I focus on access, use and management of information because of information explosion

1		2		3		4	
---	--	---	--	---	--	---	--

19. I collaborate with all subject teachers to assist them locate relevant information for their lessons

1		2		3		4	
---	--	---	--	---	--	---	--

20. I seek more practical in-service training to improve my ICT skills

1		2		3		4	
---	--	---	--	---	--	---	--

1		2		3		4	
---	--	---	--	---	--	---	--

34. Textbooks are sufficient information resources, learners don't need digital literacy skill

1		2		3		4	
---	--	---	--	---	--	---	--

35. No time to organize remedial reading promotion , ethical use of information activities

1		2		3		4	
---	--	---	--	---	--	---	--

36. Difficult to assign information seeking tasks to learners without a functional media center

1		2		3		4	
---	--	---	--	---	--	---	--

37. I need fundamental understanding of ethical issues surrounding access, copyright and use of information

1		2		3		4	
---	--	---	--	---	--	---	--

38. Overloaded with own specialized subject preparations and teaching

1		2		3		4	
---	--	---	--	---	--	---	--

39. Other Reasons? \_\_\_\_\_

**IMPORTANCE OF DIGITAL LITERACY/BIS/IC**

1	Strongly disagree	2	Disagree	3	Neither	4	Agree	5	Strongly agree
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**Information Literacy** (can be implemented without literal technological tools)

40. I understand that Information is a major requirement for development

1		2		3		4		5	
---	--	---	--	---	--	---	--	---	--

41. It is important that learners know how to collect and retrieve and evaluate information from multiple sources

1		2		3		4		5	
---	--	---	--	---	--	---	--	---	--

42. I have difficulty finding information on a topic in a school library

1		2		3		4		5	
---	--	---	--	---	--	---	--	---	--

43. Our school library lacks adequate complementary information on other school subject

1		2		3		4		5	
---	--	---	--	---	--	---	--	---	--

44. Learners should relate to all people as potential sources of information

1	2	3	4	5
---	---	---	---	---

45. I encourage learners to use multiple information sources for their' research projects

1	2	3	4	5
---	---	---	---	---

46. I will seek for a short course in the use of technology as a tool to research, organize, evaluate and communicate information .

1	2	3	4	5
---	---	---	---	---

47. 15. I believe digital media and online searches are important for learners, but we have no internet connectivity for learners

1	2	3	4	5
---	---	---	---	---

48. I have no knowledge on how to collect and retrieve information on internet

1	2	3	4	5
---	---	---	---	---

49. Controlling what learners do on the internet is a challenge

1	2	3	4	5
---	---	---	---	---

50. I am not comfortable with how to search for information online, so how can I assist the learners.

1	2	3	4	5
---	---	---	---	---

51. 18. It is important to me that learners know how to evaluate the information they find online.

1	2	3	4	5
---	---	---	---	---

52. There is so much information online that it overwhelms me, I need information literacy skills

1	2	3	4	5
---	---	---	---	---

53. How can I tell learners how to review YouTube videos for biasness and stereotyping, when I do not have time to review it myself?

1	2	3	4	5
---	---	---	---	---

54. 21. I have no knowledge on Identifying gaps in information retrieved and revising search strategies as needed

1	2	3	4	5
---	---	---	---	---

55. It is very important for learners to know how to locate relevant resources for their schoolwork and general life issues

1		2		3		4		5	
---	--	---	--	---	--	---	--	---	--

56. I need fundamental understanding of ethical issues surrounding access, copyright and use of information

1		2		3		4		5	
---	--	---	--	---	--	---	--	---	--

57. It is not important for learners to learn how to use electronic mail

1		2		3		4		5	
---	--	---	--	---	--	---	--	---	--

58. My school cannot afford to buy video cameras, scanners and other electronic gadgets for me to create educational products.

1		2		3		4		5	
---	--	---	--	---	--	---	--	---	--

59. I need to learn how to judge the currency, appropriateness and adequacy of information to help my learners.

1		2		3		4		5	
---	--	---	--	---	--	---	--	---	--

60. I like to Use computers for lesson preparations, make handouts, worksheets, PowerPoint presentations and many more.

1		2		3		4		5	
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#### Media Literacy

61. Difficult to assign information seeking tasks to learners without a functional media center

1		2		3		4		5	
---	--	---	--	---	--	---	--	---	--

62. Understand why media messages are constructed and for what purpose

1		2		3		4		5	
---	--	---	--	---	--	---	--	---	--

63. It is important for learners to obtain knowledge and skills on media ethics

1		2		3		4		5	
---	--	---	--	---	--	---	--	---	--

64. I am not confident to teach learners on the role of media in education

1		2		3		4		5	
---	--	---	--	---	--	---	--	---	--

65. It is not worthy for teachers to evaluate and analyze media texts, images and other sources

1		2		3		4		5	
---	--	---	--	---	--	---	--	---	--

66. Learners do not need to be taught on media literacy they are experts

1	2	3	4	5
---	---	---	---	---

### Information Communication Technology (ICT)

67. ICT is a 21<sup>st</sup> century educational development requirement

1	2	3	4	5
---	---	---	---	---

68. I am not confident in making judgements about quality, relevance and usefulness of information from the internet

1	2	3	4	5
---	---	---	---	---

69. My school cannot afford to buy video cameras, scanners and other electronic gadgets for me to create educational products.

1	2	3	4	5
---	---	---	---	---

70. I have no knowledge on Identifying gaps in information retrieved and revising search strategies as needed

1	2	3	4	5
---	---	---	---	---

71. I like to Use computers for lesson preparations, make handouts, worksheets, PowerPoint presentations and many more

1	2	3	4	5
---	---	---	---	---

72. It is not important for learners to learn how to use electronic mail

1	2	3	4	5
---	---	---	---	---

73. I use Google searches mostly to help learners find information

1	2	3	4	5
---	---	---	---	---

74. I usually struggle to help my learners construct an online search query, using Boolean operators (AND, OR, NOT, +,-)

1	2	3	4	5
---	---	---	---	---

75. I use YouTube content for most things I need for my lessons

1	2	3	4	5
---	---	---	---	---

76. I use technology as a tool to research , organize , evaluate and communicate information

1	2	3	4	5
---	---	---	---	---

77. I have no knowledge on how to collect and retrieve information on internet

1		2		3		4		5	
---	--	---	--	---	--	---	--	---	--

78. Controlling what learners do on the internet is a challenge

1		2		3		4		5	
---	--	---	--	---	--	---	--	---	--

79. I am not comfortable with how to search for information online, so how can I assist the learners

1		2		3		4		5	
---	--	---	--	---	--	---	--	---	--

80. What is the likelihood that you will want to teach BIS/IC? \_\_\_\_\_% chance

81. What is the likelihood that you will NOT want to teach BIS? \_\_\_\_\_% chance.

**DEMOGRAPHICS** Please answer the following questions:

1. Gender:	<input type="checkbox"/> Male	<input type="checkbox"/> Female
2. School Name:	_____	Telephone Number: _____
3. Suburb/Neighbourhood:	_____	
4. School Subject/Specialisation:	_____	
5. Years of Work experience:	_____ years	

**E****Interview Schedule: School Principals****Digital Literacy: The implementation of Basic Information Science syllabus in selected schools in the Khomas Region.**

I want to thank you very much for availing your time to be interviewed for this study, which I am conducting as part of the Master of Education degree. The study investigates the implementation, knowledge and classroom teaching and learning of digital literacy through the Basic Information Science syllabus.

The interview question will focus on teachers teaching digital literacy and school library integration for learners to participate in knowledge creation and sharing.

Thank you in advance.

Questions	comments
<b>1. Background Information</b>	
Background knowledge about BIS	Is not part of my specialization, no background knowledge at all?
Please briefly describe why BIS should be taught in schools	To cultivate good information skills in learners, and to compliment reading skills through reading via computes and school library books.
How many teachers teach BIS/IC in your school	4
How many qualified Librarians are in your school, are they qualified to teach the subject?	1
How do teachers and learners access information to compliment the text book?	By visiting the school library, computer lab at school, Wifi and access internet at home
Have you ever attended any training in BIS / IC?	1 two days' workshop
Do you need any additional training for implementing the BIS syllabus successfully in your school?	Yes more training for professional advancement
How do you implement BIS in your school- in terms of teaching and learning?	The whole syllabus is taught by the 4 teachers , integrating computers in the activities, Librarian helps learners to find resources in the library daring break time and after school
Briefly describe the 3components of BIS syllabus: 1. Media literacy 2. Information literacy 3. ICT literacy	. To learn how to use variety of media to obtain information. Information literacy – interpretation, and creation of information to apply to learning problems. Learn how to use computers and other ICT equipment.
What will you recommend to a new teacher who is allocated to teach BIS for the first time?	Go through the syllabus with the teachers to point out the objectives and competencies.
<b>2. Factors affecting the successful implementation of digital literacy in Khomas region primary schools</b>	
What hindrances do you experience when implementing BIS in your school: List	<ul style="list-style-type: none"> <li>• Overcrowded classrooms and numerous class numbers</li> <li>• Lack of materials and computer equipment Lack of subject related software to enhance e-learning.</li> <li>• Lack of trained teachers qualified to teach BIS, low knowledge on BIS</li> <li>• Lack of funds to acquire resources such as computers, all the above are bottlenecks.</li> <li>• Too many teachers causing timetable clashes</li> </ul>

	<ul style="list-style-type: none"> <li>• Poor implementation of the ICT policy by MOEAC , in terms of deployment of computers</li> <li>• , current computers are outdated not compatible to software</li> </ul>		
<p><b>3. Which factors challenges hinder the successful implementation of BIS in your school?</b></p>			
<p>Please give a detailed description of the areas that hinder the implementation of BIS in terms of :</p> <ul style="list-style-type: none"> <li>(a) Human resource</li> <li>(b) ICT equipment</li> <li>(c) Library facility</li> <li>(d) Time tabling</li> <li>(e) Professional development</li> <li>(f) Policy the ICT Education Policy and TechNa!</li> </ul> <p>3.1 What gaps in knowledge have you identified in terms of the interpretation and teaching of BIS/IC syllabus?</p>	<p>A B C F</p>		
<p><b>4.Recommendations</b></p> <p>What improvements regarding the successful implementation of BIS would you recommend regarding:</p> <table border="1" data-bbox="313 1246 750 1742"> <tr> <td data-bbox="313 1246 580 1742"> <ol style="list-style-type: none"> <li>1. your personal opinion of the implementation of BIS in schools at Ministry of Education Arts and culture level</li> <li>2. NIED Curriculum developers</li> <li>3. Institutions of teacher training UNAM</li> <li>4.. School level as implementers</li> </ol> <p>Any action points for the Ministry of Education Arts and Culture regarding appropriate implementation of this subject and the attainment of Vision 2030 Objectives.</p> </td> <td data-bbox="580 1246 750 1742"></td> </tr> </table>	<ol style="list-style-type: none"> <li>1. your personal opinion of the implementation of BIS in schools at Ministry of Education Arts and culture level</li> <li>2. NIED Curriculum developers</li> <li>3. Institutions of teacher training UNAM</li> <li>4.. School level as implementers</li> </ol> <p>Any action points for the Ministry of Education Arts and Culture regarding appropriate implementation of this subject and the attainment of Vision 2030 Objectives.</p>		<ol style="list-style-type: none"> <li>1. Train teachers to major in MIL</li> <li>2. NIED need to widely consult with school principals and subject teacher before syllabus is amended. Syllabus overview and interpretation not well done             <ul style="list-style-type: none"> <li>- Assess teachers subject knowledge before implementation</li> </ul> </li> <li>3. UNAM: Develop a compulsory course in MIL for teachers, BIS to be part of the UNAM CPD program</li> <li>4. MoEAC: maintain well resource media centres to compliment the teaching of BIs, balance resource allocation. Practice the four goals of education (Equity, democracy, equality and quality for excellent results. Facilitate staff development courses on this syllabus. Vision 2030: MoEAC neds to align budget to the teaching of information and ICT skills in all school to compliment all subjects across the curriculum.</li> </ol>
<ol style="list-style-type: none"> <li>1. your personal opinion of the implementation of BIS in schools at Ministry of Education Arts and culture level</li> <li>2. NIED Curriculum developers</li> <li>3. Institutions of teacher training UNAM</li> <li>4.. School level as implementers</li> </ol> <p>Any action points for the Ministry of Education Arts and Culture regarding appropriate implementation of this subject and the attainment of Vision 2030 Objectives.</p>			

FOCUS GROUP DISCUSSION (Questions)

21/04/17

- 1) Describe the components of the BIS/IC Syllabus, according to your understanding.

Media-

Information-

ICT Literacy-

- 2) Differentiate between print and non-print materials.

Print material-

Non-print material-

- b) Do you teach learners to use both print and non-print formats in their assignments?

- C) What examples of mass media do you use in your classroom?

- d) Which resource is commonly used at your school?

- 3) What barriers hinder the successful implementation of BIS as a school subject.

- 4) Questions on professional development and school management support.

- a) Did you hold any cluster meetings?

b).How many professional development sessions have you undergone?

c.)Is principal support important to you?

d.Do you think the BIS/IC subject is helping our learners to attain VISION 2030 objectives?

- 5) What computer policies do you have at your school?

- a) What is the impact of computers on the quality and standard of education?

- d) ICT- Negative and Positive Factors influencing perceived usefulness

- Negative factors

- Positive factors

- e) Suggestions for curriculum developers
- f) Reflections from your experience with the former IC syllabus
- g) Ethical use of information

Recommendations

G

**APPENDIX C** [taken from State Educational Technology Directors Association (SETDA)  
Observation Tools for School Observers]

**Classroom Observation Protocol – Classroom** \_\_\_\_\_

School: \_\_\_\_\_ Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

Grade Level(s): \_\_\_\_\_ Subject Area(s): \_\_\_\_\_

Description of the unit that provides the context for the lesson: \_\_\_\_\_

Duration: Start Time: \_\_\_\_\_ a.m. / p.m. End Time: \_\_\_\_\_ a.m. / p.m.

Participants:  Number

Students Teachers, Teachers' Aides, etc.  Number

**Technology Used by Teachers or Students (circle all that apply) [C3-1]:**

Laptops: T S	Desktop Computers: T S	PDAs: T S
Calculators: T S	Cameras (still or video): T S	TV/VCR: T S

Other \_\_\_\_\_

**Setting:**

Classroom     Lab     Mobile Lab     Library     Other

**Pattern of Access to Technology (check only one):**

Teacher access only     2 students per device  
 One presentation station     3-5 students per device  
 1 student per device     More than 5 students per device

**Average Length of Time Using Technology (check only one) [C3-1]:**

Less than 5 minutes     10 – 15 minutes  
 5 – 10 minutes     More than 15 minutes

**Proportion of Students Using Technology (check only one) [C3-1]:**

Fewer than 1 in 10 (1/10)     1/2 or more; fewer than 3/4  
 1/10 or more; fewer than 1/4     3/4 or more; fewer than 90%  
 1/4 or more; fewer than 1/2     90 percent or more

**Organization of the Classroom [C3-1]:**

Traditional rows     Small clusters of 3-5 student desks     Lab  
 Desks arranged so that students face each other  
 Desks in circles or semi-circles

Summary Description of Lesson and Major Activities [S1-1, C1-1, C1-2, C2-1]:

If any of the following were used by Teacher or Students, circle "T" or "S" (circle all that apply)  
[C1-1, C3-1, C3-5]:

	Used by...	
	T	S
<b>Peripherals (hardware)</b> (e.g. imaging & recording devices, digital & video cameras, scanners)	T	S
Educational <b>management software</b> (e.g. for attendance, grades, lesson plans)	T	S
Drill & practice, ILS, or <b>educational games</b>	T	S
Word processing <b>software</b>	T	S
Data management ( <b>spreadsheets</b> ), <b>graphing</b> , or <b>analysis software</b> (e.g. <b>EXCEL, SPSS, STATVIEW</b> )	T	S
Database <b>software</b> (e.g. <b>FileMaker Pro, Microsoft Access</b> )	T	S
Presentation <b>software</b> (e.g. <b>PowerPoint</b> )	T	S
Email	T	S
<b>Other communication tools (IM, discussion boards, video conferencing)</b>	T	S
Desktop Publishing <b>software</b>	T	S
Web publishing <b>software</b>	T	S
Internet <b>for research</b>	T	S
<b>Multimedia reference CDs for research</b> (e.g. <b>online encyclopedias</b> )	T	S
Simulations/Modeling <b>software</b>	T	S
<b>Software for video, graphics, and sound editing or production</b>	T	S
Other	T	S

#### Classroom Management:

Please rate the severity of classroom management problems (specifically, behavior management issues or conflicts on the part of students):

No problems       Minor problems       Significant problems

Evidence of Research-based Practices [C1-1]:

Was the use of technology clearly based on research and best practice?

Yes       No

Was the instructor able to relate the technology use to an accepted research-base?

Yes       No

**Robust Access Indicators**

Based on the lesson observed, please rate the following characteristics of the technology deployment in this setting. Use the following scale to score each item:

1 = Not at all true 2 = A little true 3 = Mostly true 4 = Exemplary NA = Not applicable OR can't tell

The amount and placement of technology were appropriate and sufficient to support the learning goals of this lesson (C3-1)	1 2 3 4 NA
There appears to be a rich and appropriate deployment of software and online resources to support learning (C3-5)	1 2 3 4 NA

**Impact on Student Learning:****21st Century Skills, Proficiencies, or Dispositions [S1-2]:**

To what extent did this lesson provide students with opportunities to build the following skills (use the following scale to score each indicator):

1 = Not at all 2 = Somewhat 3 = Substantially NA = Not applicable or can't tell

Visual Literacy	1 2 3 NA	Self-Direction	1 2 3 NA
Scientific Literacy	1 2 3 NA	Creativity	1 2 3 NA
Cultural Literacy OR Global Awareness	1 2 3 NA	Higher-Order Thinking	1 2 3 NA
Teaming OR Collaboration Skills	1 2 3 NA	Ability to Use Real-World Tools	1 2 3 NA
E-Communication Skills	1 2 3 NA	Ability to Produce High-Quality Products	1 2 3 NA
Social OR Personal Responsibility	1 2 3 NA	Ability to Plan, Prioritize, and Manage Work	1 2 3 NA

**Student Impact Indicators**

Based on your observation, use the following scale to score each item:

1 = Not at all true or A little true 2 = Moderately true 3 = Mostly true 4 = Exemplary  
NA = Not applicable OR can't tell

It is evident that technology is being used to improve student learning or academic achievement (S1-1)	1 2 3 4 NA
It is evident that students are acquiring 21st century skills through this use of technology (S1-2)	1 2 3 4 NA

**Notes:**

<b>Effective Practice Indicators</b>	
Use the descriptions in the Effective Practice Indicators key to rate this teacher's status on each item below, based on your observation. Use the following scale to score each item: 1 = Not at all true   2 = A little true   3 = Mostly true   4 = Exemplary   NA = Not applicable OR can't tell	
It is evident that technology is being used by students to advance academic achievement (C1-1)	1 2 3 4 NA
There is evidence that the use observed is part of a consistent, systemic adoption of technology by the school or district (C1-2)	1 2 3 4 NA
The teacher is employing classroom management strategies that result in efficient technology use, as well as high degrees of student self-direction (C1-4)	1 2 3 4 NA

<b>Educator Proficiency Indicators</b>	
Based on the lesson observed, please rate the level of educator proficiency in the following areas. This is not an evaluation: the educator's name will not be associated with the record. Use the following scale to score each item: 1 = Not at all true   2 = A little true   3 = Mostly true   4 = Exemplary   NA = Not applicable OR can't tell	
Personal proficiency with the technologies supporting the observed lesson (C2-1)	1 2 3 4 NA
Proficiency in designing technology-supported lessons that are standards-based and supported by research and/or best practice (C2-2)	1 2 3 4 NA
Proficiency in the use of technology to automate and support the assessment process (C2-3)	1 2 3 4 NA
Proficiency in the assessment of technology-based student products (C2-4)	