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**Strategies, Challenges and Solutions for Intensive  
Reading: The Case of Science Undergraduate Students at  
the University of Botswana**

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## Strategies, Challenges and Solutions for Intensive Reading: The Case of Science Undergraduate Students at the University of Botswana

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### Abstract

**Purpose:** Reading is a vital communication skill that every university student should be proficient in. The demands for reading at university are very high and continue to grow as students move further into high levels of study in their different disciplines. Students are expected to intensively read a wide variety of material such as prescribed texts, journal articles, newspapers, magazines and lecture slides. Intensive reading goes beyond simply understanding facts to also requiring skills that enable a student to critically analyze, synthesize, evaluate, and review information. The need for reading comprehension skills that enable the reader to concentrate for lengthy periods and yet recall and retrieve information is critical. Students need to develop more active reading strategies that enable them to read independently and effectively hence, a student that fails to develop effective reading skills faces difficulties in constructing accurate comprehension of content. This study explores strategies that students possess for intensive reading. It also investigates the challenges that students encounter while reading intensively and proposes solutions to these challenges.

**Materials and Methods:** Three theories of reading; namely, the schema theory, the

Conscious Raising (CR) approach and social constructivist theory, formed the theoretical framework for the study. Data were collected using a questionnaire administered on 180 first year science students at the University of Botswana registered for the Communication and Academic Literacy course during the first semester of the 2019/2020 academic year. Data were analyzed quantitatively using frequency counts and simple percentages.

**Findings:** Analysis of data revealed that science students encounter numerous challenges associated with intensive reading. Furthermore, the majority of them lack knowledge of effective reading strategies which will help them navigate through the myriads of reading assignments that they are expected to undertake during the course of their study.

**Implications to Theory, Practice and Policy:** A number of useful solutions have been adduced to assist students deal with the challenges associated with intensive reading.

**Keywords:** *Intensive Reading, Reading Strategies, Reading Comprehension, Challenges, Solutions*

## 1.0 INTRODUCTION

Reading is a vital communication skill that every university student should be proficient in. The demands for reading at university are very high and continue to grow as students move further into high levels of study in their different disciplines as they are expected to intensively read a wide variety of material such as prescribed texts, journal articles, newspapers and even lecture slides. Intensive reading goes beyond simply understanding facts to requiring skills that enable a student to synthesize, analyze, evaluate, and review information. Purposeful reading requires applying one's mind for information to 'sink in and resurface' when there is need. Therefore, a student must develop more active reading strategies that enable them to read independently and effectively. In addition, a student that fails to develop strong reading skills faces difficulties in constructing accurate comprehension of content. It was therefore important to undertake this study just before the students went through a series of lectures and activities that focus on reading at university. The main aim was to inform the lecturer of the reading strategies that students employ in intensive reading as well as the challenges that they encounter so that these are effectively addressed during the lecture sessions on developing effective reading skills. This study explores the strategies that students use and the challenges that they encounter while reading intensively. It then goes on to propose solutions for the challenges encountered.

### Background to the Study

Communication and Academic Literacy courses are offered to all first year students across the different faculties at the University of Botswana. Each course is designed to suit the specific needs of students in the different disciplines. For instance, students from the Faculty of Science take the Communication and Academic Literacy for Science course. The main objective of Communication and Academic Literacy courses is to impart communication skills and key competencies that will enable students to handle the demands of academic language and traverse the tertiary education platform. The courses cover the four communication skills; listening, speaking, reading, and writing and in addition to communication skills, students are taught study skills.

While the demands of reading in tertiary education are high, those of the science programmes are much higher. Generally, at tertiary level, students no longer find it possible to read, memorize lesson notes, and regurgitate the same. They have to read texts with the ability to comprehend, differentiate essential and non-essential information, make inferences, and make deductions (Weideman, 2007). Scientific texts often have new words, familiar words with unfamiliar meanings, abstract concepts, and even complex processes hence the need for students to be armed with effective cognitive strategies. Paris, Wasik & Turner (1991) define cognitive strategies as a collection of strategies that readers use to understand a text. These strategies, it is observed, are cognitive actions that are acquired and thoughtfully applied. Students have an array of challenges that they face while studying. The challenges include short attention span, lack of concentration, failure to make notes from a text, failure to gather useful information from a text, synthesise it with their point of view and even discuss the information with others. It is upon this background that a study of this nature is conducted.

### Statement of the Problem

As indicated above, students face numerous reading challenges that may hamper successful learning at university. These challenges may be obstacles to producing the self-directed learner that a tertiary institution may aspire to produce. It is therefore vital to carry out a study that

gathers information on the challenges that students face when reading intensively as well as the strategies that they use to read as a way of informing the teaching exercise.

### **Research Questions**

The following were the research questions that guided the study:

- i. What strategies do students use during intensive reading?
- ii. What challenges do students face during intensive reading?
- iii. What are the proposed solutions to the problems encountered by students during intensive reading?

### **What Is Intensive Reading?**

Intensive reading refers to reading a text thoroughly for purposes of comprehension and gaining deeper understanding of a text (McAlister, 2011). The main purpose of a student's clear comprehension of a text in most instances is the ability to internalise the subject matter and be able to answer questions in a test, exam or successfully make a meaningful contribution to a discussion. There are various purposes for reading. According to McAlister (2011), reading may be done with focus on the subject matter where the interest is on the ideas, themes and mastery of the subject matter. It may also be done with focus on the language structure such as vocabulary, paragraphing, how sentences are linked, various text features and knowing the authors' intentions (McAlister, 2011). Intensive reading, therefore, is an invaluable skill which undergraduate students need to possess for academic success.

### **Theoretical Framework**

This study draws on the Schema theory, the Conscious Raising (CR) approach and the Social constructivist theory. The schema theory attempts to explain how a reader comprehends a text and how the knowledge acquired from a text is utilised (Letsholo-Tafila & Moyo, 2019; Shen, 2008; An, 2013; Rumelhart, 1980). The theory posits that a written text is meaningless on its own and only provides direction on how to retrieve or construct meaning from previously acquired knowledge. What matters the most during reading is the knowledge that one brings to a text and these knowledge structures which are a representation of generic concepts underlying actions, events and objects are referred to as schemata. The schemata are abstract and contain a place holder; that is, a slot for each constituent element in the knowledge structure.

The schema theory asserts that comprehending a text needs one to go beyond what is in the text and the ability to read between the lines. Windonsons (1983) in (Shen 2008) suggests that effective comprehension of a text is highly reliant on the reader's aptitude to relate the content of the text to a familiar schema. This theory places emphasis on the need to make practical, rational inferences and even to go to the extent of supplying suppositions about the intentions of the author. That is, to 'fill in the gaps' if the message is insufficient.

A number of factors such as the reader's knowledge, beliefs and personal history are said to influence the interpretation of a text. It further states that the knowledge that a reader acquires from a text is mainly dependent on the knowledge that the reader already possesses. When there is lack of correspondence between the schemata in the text and the already existing schemata, distortions and intrusions result and the reader fails to comprehend the text. High level of schemata; that is, ample knowledge about the subject of the text enables the reader to even have different approaches of interpreting the text (Bransford & McCarrel, 1974; Bransford, Nitsch & Frank, 1977). According to this theory, the ability to relate the content of



the text to previously acquired world knowledge is paramount to successful comprehension of a text.

The next approach that informs this study is the Conscious Raising (CR). The main principle of CR is to promote 'reading awareness' and guide the reader's attention to certain parts of a text. This is achieved by development of tasks to be carried out during the reading (Azizifar Babaei Jamalinesari & Gowhary, 2015; Shen, 2008; Ellis, Sinclair & Barbara, 1994). The tasks encourage the reader to be on the lookout for certain aspects of the text based on a given activity. The tasks may be based on aspects of the text such as structure: title, author, sections, and sub-sections.

It may be on the paragraph structure such as topic sentence, supporting sentences and specific examples. This helps learners to find the central idea of a text and hence, comprehension. The activity may also be language based and in this case, the reader is expected to take note of the use of language such as transition signals: *first, second, third, for example, for instance, finally*. These aid the reader in establishing the direction of the argument in a text. Taking note of transition signals aids comprehension in terms of bringing to the surface 'patterns of writing' in a text. For instance, the reader should be able to tell that a text is argumentative, comparing and contrasting, classification, cause and effect, explanation of a process, narrative, or descriptive. The task may also be centred on the overall meaning of a text, where learners can focus on answering questions based on the text.

The third theory that underpins this study is social constructivism (Vygotsky, 1978). Social constructivism underlines the contribution of social interaction to the process of learning. In terms of reading as a learning activity, the social constructivist views reading as an authentic and meaningful activity and learners as active participants in a text and not as outsiders. Social constructivism contends that comprehension and learning take place successfully when there is an inter-mental interaction between the learner and a source of information. The source of information may be the teacher or a text. According to the social constructivists, learning is not a passive process but rather an active process where the learner interacts with experiences of the world. The theory observes that it is possible for a learner to passively receive information but not comprehend it until connections are made between prior knowledge and new knowledge. For this connection to take place effectively, the reader should actively engage with the text.

In summary, it can be observed that all the approaches to this study; namely, the Schema theory, Conscious Raising (CR), and the Social Constructivism are intertwined. While the schema theory underpins effective understanding of a text and the capability to relate the written material to one's previous knowledge, social constructivism argues for an internal dialogue between the learner and the text. The Conscious Raising (CR), on the other hand, encourages tasks that help stimulate and broaden the schemata and thereby improving comprehension as retention of content is improved. In conclusion, all the approaches to reading ensure that learning takes place as the learner engages with any given text and relates the new information to the real world.

## 2.0 LITERATURE REVIEW

A lot of research on reading has been carried out from various angles. Some of the studies focus on students' reading habits, some on the challenges that students face while reading whereas others centre on strategies for successful reading comprehension such as awareness of cohesive ties and text structure Arua (2009). However, most of the research focuses on cognitive

strategies of reading; the Survey, Question, Read, Recall and Review (SQ3R) (Robinson, 1946). This study looks at undergraduate students in the Faculty of Science who deal with scientific and technical texts, to find out how they cope with intensive reading of these texts. The literature review for this study is in two parts. The first looks at the strategies that students employ for successful reading comprehension while the second part deals with challenges that these students encounter during intensive reading.

### **Reading Strategies**

The ability to read and understand a text fully requires concentration that is intense and continuous. For a reader to attain this intense and uninterrupted level of concentration and be able to retrieve the information and construct meaning from a text, there is the need for effective reading comprehension strategies to construct meaning. Two strategies are discussed in this paper; namely, the FIVES (Shea & Roberts, 2016) and the REAP strategy (Melati, 2018).

Shea and Roberts (2016) suggest a strategy to reading comprehension that is referred to as the FIVES, an acronym from the words Facts, Inferences, Vocabulary, Experiences and Summary. This strategy is a combination of reading skills that can be functional in any reading activity from the elementary or primary through to the tertiary level. According to the FIVES, it is vital for the reader to acquire the information that is communicated by the author through the text. The text should be meaningful to the reader. If the reader cannot comprehend the gist of the text, then the reading exercise becomes unsuccessful as the main objective of a reading activity is to comprehend explicitly what is stated in the text. Inferencing involves reading between the lines; bringing into the text background knowledge on the subject and past experiences. Shea and Roberts (2016) point out that background knowledge varies across readers as life circumstances, culture, and environmental factors that influence the background that is brought to the text differ.

The Vocabulary used in a text also plays a vital role in reading comprehension. In pursuit for clarity, preciseness and objectivity, authors choose words that convey the message explicitly. Some of the expressions, words and terms may be unfamiliar to the reader. Additionally, 'words have power', Shea (2011: 194), this means that the words, expressions and terms used are loaded with information that has to be decoded. Some of the terms may be topic or discipline-specific and it is vital for the reader to pay particular attention to vocabulary. In terms of Experiences, after a text is read and comprehended, the reader passes value judgment over it, considers factors such as the accuracy of the content, depth of coverage of subject matter, expands the comprehended text beyond what the text offers and relates the information to personal experiences. In the end, the reader makes a summary of the text. It should be noted that readers summarise the gist of the text as they read through the text and this metacognitive exercise reveals the extent to which the text has been comprehended.

The ability to produce a summary of the text reveals the extent to which the reader took note of significant details of the text. It establishes whether they were able to differentiate the main points and supporting details, as well as the clarity of the text. If the reader is able to retell in their own words, the overall message of the text, then the reading exercise has been successful. Shea (2011) gives an elaborate account of the FIVES strategy and highly recommends it as it offers an opportunity to actively engage with text on multiple cognitive levels. The focus on facts in the text encourages the reader to investigate and recall adequate information in the text and encourages independent reading, supports critical thinking and in turn improves student's aptitude in making inferences (Shea, 2011). In addition, the strategy increases student's

vocabulary. The need to create connections between experience, background knowledge, life and the text supports full appreciation of the writer's message.

Melati (2018) writes on another reading strategy that has been found to be effective, the REAP strategy. REAP stands for Read, Encode, Annotate, and Ponder. The main objective of REAP is to encourage students to read a text, comprehend it and present the writer's ideas in their own words. This is done by writing short notes in the text as well as making notes on a separate sheet of paper. According to the REAP strategy, reading a text independently is the first step that a learner must go through. By so doing the reader is Reading, giving time to explore their reading comprehension potential and absorbing the meaning of a text. The reader then Encodes the message of the text and presents it in their own words.

The encoding of the message varies across readers as it is based on the degree of understanding of the text. The encoded message is then annotated on the text. Annotating a text involves making notes based on the main points of the argument as well as supporting details discussed in the text. Presenting main points in the reader's words reflects successful comprehension. It also discourages memorising the text word for word as the reader is encouraged to present the message in their own words. Lastly, the reader Ponders on the meaning of the overall text. Pondering involves engaging deeply in thoughts about the message of the text and reflecting on it. At this stage, the reader is able to share what they have read with others, discuss and evaluate the text.

Apart from the above strategies for reading comprehension, there are other skills that a reader can take cognisance of during the reading exercise as they have a bearing on text comprehension. In conclusion, it can be noted that all the reading strategies discussed above: the FIVES and the REAP encourage reading independently and comprehending the information in a given text. Summarising the message of the text as well as relating the information read to one's background knowledge and experiences ensure effective comprehension. The two strategies also ensure that the reader is an active participant in the reading process and not just a passive reader.

### **Reading Challenges**

Solheim (2011) observes that motivation is imperative to a student's reading progress since there is a strong relationship between motivation-to-read and reading comprehension. Solheim (2011) adds that motivation to read is correlated to time spent reading and reading comprehension. Guthrie and Wigfield (2000) explain that these factors encompass the engagement model of reading development which elucidates that comprehension improves when readers are engaged. Another motivational construct that influences reading comprehension is self-efficacy. Students' beliefs about their ability to read has a direct influence on their "performance, effort, and persistence, as well as their choices of what tasks to perform" (Solheim 2011:4). From these examples, it is clear that students' efficacy, that is, their beliefs and motivation about reading are strongly related to reading comprehension.

Shen (2008) carried out a study that explores application of the schema theory as a strategy for aiding comprehension of a text during intensive reading. Although Shen's (2008) focus is on second language teaching, it is still relevant to this particular study in the sense that it makes use of reading comprehension as an avenue for second language learning. Shen (2008) points out that text comprehension is easier when background knowledge about the subject of the text is enhanced. This results in prior knowledge about the subject at hand serving as a link to understanding the new content from the text. As a student reads a text on a familiar subject,

they bring to the text their past experiences, perceptions, attitudes, viewpoints and values. This in turn, encourages the student to apply their thoughts to the subject and thereby, improving comprehension. In summary, the study points out the significance of linking prior knowledge to the text so as to reach total understanding of the text. The same view is expressed by Teele (2004) who emphasises that when a learner activates prior knowledge and links the subject of the text to their pre-existing knowledge, reading comprehension becomes easy. Teele (2004) terms this strategy the 'Text-to-text', Text-to-self and text-to-world strategy.

Furthermore, Duke, Pearson, Strachan & Billman (2011) look at essential elements for fostering and teaching reading comprehension. The study posits that successful reading comprehension requires strong world knowledge; that is, current affairs on the subject, and exposure to a variety of discipline-based texts. The study also suggests incorporating reading and writing activities as well as discussions following a reading exercise as effective means of fostering reading comprehension. This suggestion echoes Umunnakwe's (2013) study which confirms that an integrative approach to reading and writing ensures effective comprehension of texts and serves as an efficient approach for teaching writing skills in undergraduate classrooms.

In addition, Duke and Pearson (2002) provide other aspects that lead to successful comprehension of a text. The duo emphasise that just from the outset, a learner must have clear objectives for reading. When a learner has clearly set goals for reading, it becomes easy for them to evaluate if the text meets the set goals, which is relevance. Duke and Pearson (2002) add that it is vital for a learner to engage actively in the reading exercise. This engagement is characterised by the ability to note sections of the text relevant to the purpose of reading. Other areas identified as fostering reading comprehension include predicting the issues addressed in the text, revising the text, asking questions and researching on unfamiliar concepts discussed in the text. Duke and Pearson (2002) further observe that active reading enables the learner to monitor their comprehension of the text to find out if they are able to deal with gaps in their understanding of the concepts. As a result, one is able to pass value judgement on the text in terms of whether it is a good or bad text in the discipline.

Moreover, Buly and Valencia (2002) explore reading abilities that led to performance in a national reading assessment. The findings of the study reveal that reading challenges differ and are varied across students and these require diverse instructional focus. The study identified challenges ranging from word identification to interpreting the meaning of a text. Furthermore, Singh (2014) investigated reading practices of graduate students in a Malaysian university. The focus of the study was on international students whose first language was not English. The main aim of the study was to explore the academic reading challenges as well as suggest ways of overcoming the challenges.

The study revealed the first challenge as language based in the sense that the medium of instruction was not their first language. Singh (2014) recommends a review of the teaching program so as to offer support to the language proficiency needs of students. The study recommends partnership across disciplines such as content and language. According to Singh (2014), discipline specific lecturers and language lecturers can collaborate to create integrative language and content instruction courses that focus on particular discourses in the discipline to bring about the ideal exposure of the academic reading expectations of the students. Singh's (2014) study also recommends implementation of reading programs as a way of cultivating a culture of reading such that an activity develops reading interest as well as building confidence in academic discussions.



### 3.0 METHODOLOGY

The survey method was used to collect primary data for this study. A questionnaire was administered to 180 undergraduate students randomly sampled from a population of 500 first year science students at the University of Botswana registered for the Communication and Academic Literacy course in the Communication and Study Skills Unit for the 2019/2020 academic year at the University of Botswana. The Communication and Academic Literacy course is a compulsory first year course that enables first year undergraduates to improve on their communication and study skills for effective learning at the university.

The course is tailored towards meeting the specific communication and academic literacy needs of each faculty. The questionnaire was divided into five sections; namely, A, B, C, D and E (See Appendix 1). Section A sought demographic information of the students such as gender, age and year of study. Section B focused on students' reading habits. Section C sought information on the reading strategies students use when they engage in intensive reading. Section D had questions on the challenges students face during intensive reading while Section E solicited suggestions on how to deal with the identified challenges. The students' responses were analyzed using frequency counts and simple percentages. The results of the data analysis are presented in the next section.

#### Analysis and Presentation of Results

Of the 180 participants who responded to the questionnaire, 112 (62%) were female, and 66 (37%) were male, while 1% (2) indicated other gender. Their ages ranged between 15 to above 30 years, with the majority, 172 (96%) participants within the 15 to 20 age range. The majority of the participants, 178 (99%) were in their first year of study, while only two students (1%) were in the second year. These are students retaking the course or those who could not register for the course in their first year of study.

Data on Section B (Reading Habits) yielded the following results:

A total of 100 (56%) participants prefer reading in a quiet environment, without distractions, while 71 (39%) of them prefer reading or studying with music playing at the background. Furthermore, 40 (22%) participants indicated that they like reading with friends and prefer group work over individual reading. It was also observed that whereas 36 (20%) students preferred studying early in the morning, 86 (48%) students preferred studying late at night when everywhere is calm and quiet. However, 51 (28%) students indicated that they could study at any time of the day, be it in the morning, afternoon or late at night. Results on this section also revealed that 78 students (43%) had bad reading habits such as doing intensive reading while lying comfortably on their beds (12%), and vocalizing every word or reading aloud (31%).

Data on Section C, Reading Strategies:

On the question: As a science student, do you find time to read extensively (reading for pleasure)?

Sixty-two participants (34%) indicated that they find time to read materials like novels, newspapers and magazines while the majority, 118 (66%) students stated that they do not find time to read anything else apart from the prescribed texts in their discipline, citing work overload as the primary reason for not engaging in extensive reading. Some students actually stated that reading for pleasure was a waste of time because they always had lab sessions, assignments, tests and exams to contend with.

Answering the question: Do you enjoy intensive reading?

A total of 107 (59%) participants stated that they enjoy intensive reading while 69 (38%) of them revealed that they do not enjoy reading intensively. The reasons given for not enjoying intensive reading included: it is time consuming, stressful, tiring, mentally- challenging and not fun at all. The participants, who enjoy reading intensively, stated that it helped them to source for new information, understand concepts and helped them to perform well in their assignments, tests and exams.

On the question, list the strategies you use when reading intensively, the participants had various answers. A total of 86 students (48%) indicated that they always read, summarize and make short notes while reading intensively. Forty-one students (23%) indicated that they always attempt questions on what they have read to ensure that they understood the content. Another 41 students (23%) stated that they prefer group studies when they engage in intensive reading. Furthermore, a total of 39 students (22%) revealed that they use the SQ3R reading strategy when they engage in intensive reading. Other reading strategies mentioned by the participants included re-reading a text until the main points are understood (10%), watching videos on YouTube on a given topic (5%), memorizing concepts and formulae (3%) and using the internet to look for additional information on the topic or doing research on a given topic (1%).

Data on the challenges encountered during intensive reading included the following: A total of 87 students (48%) revealed that they find it difficult to concentrate during intensive reading. In addition, 77 students (43%) stated that the workload for science students is enormous; therefore, they found it difficult to read the numerous reading assignments. Sixty-three participants (35%) find it difficult to understand scientific texts because they are hindered by high technical vocabulary while 40 (22%) find it difficult to identify main points in a text. Furthermore, 41 participants (23%) stated that they have difficulty in evaluating and analyzing facts in a given text.

Other challenges identified bordered on self -discipline. A total of 111 participants (62%) confessed that procrastination was a major challenge regarding their ability to read intensively. Similarly, 90 (50%) participants confirmed that they always left their reading assignments to the last minute. Seventy-eight (43%) revealed that they do not find time and energy to read assigned texts while 55 (31%) stated that they suffer from hopelessness when it comes to reading intensively. Some other challenges enumerated by participants include lack of interest, not making studying a priority, laziness, negative attitude to the topic or the lecturer, as well as hanging out with friends instead of studying. The last section solicited solutions for the identified challenges to intensive reading.

A total of 67 participants (37%) stated that self-discipline was an important factor in making students to read intensively. They suggested that teaching time management and organizational skills will help to curb the problems of procrastination, leaving reading assignments to the last minute, and laziness. Others suggested that lecturers need to motivate students by making reading materials colourful, minimizing excessive reading assignments and making use of the internet for information. Lastly, participants felt that they needed more education on reading skills, mentorship for guidance and encouraging small study groups for discussions and sharing of ideas.

#### 4.0 FINDINGS

Results from the data collected from participants helped in answering the research questions for the study. The first research question was:

What strategies are used by students during intensive reading?

Results indicate that only a handful of students (39 or 22%) employed an effective reading strategy during intensive reading. These students indicated that they use the SQ3R reading strategy for intensive reading. The rest of the students used only aspects of reading strategies which included reading and re-reading to comprehend text, summarizing, making short notes and attempting questions based on the given text. These aspects of effective reading strategies listed by students are steps in reading the process but there are not comprehensive enough to ensure effective comprehension of difficult texts (Duke & Pearson, 2002; Shea, 2011; Shea & Roberts, 2016). A few others mentioned watching videos on the given topic, researching using the internet and engaging in group studies. However, some participants mentioned that they memorize concepts and formulae while reading intensively. Melati (2018) reveals that the REAP strategy for intensive reading discourages memorizing of facts. Students are rather encouraged to read, understand and summarize content in their own words. Memorizing concepts does not ensure comprehension.

Research Question 2: What are the challenges that students face in intensive reading?

Results show that science students at the University of Botswana have numerous challenges during intensive reading. Top on the list is not being able to concentrate. Some students complained that they find it difficult to concentrate during intensive reading. This is as a result of not using appropriate reading strategies while reading intensively. Another challenge stated by participants is the heavy workload which makes it difficult for students to find time to deal with the volume of reading expected of them. Indeed, science students spend hours in the laboratory performing experiments as well as attending lectures, leaving them with limited time to engage in intensive reading. Other challenges include difficulty in understanding scientific texts and technical vocabulary, identifying main points in a text, as well as difficulty in analysing and evaluating facts in a given text. Furthermore, participants revealed challenges that emanate from lack of self-discipline. These include procrastination, studying at the last minute, lack of interest or motivation in reading, negative attitude and laziness.

Research Question 3: What are the proposed solutions to the problems encountered by students during intensive reading?

As a student in the university, self-discipline is very important. Students need to be taught effective time management and organizational skills to help them effectively manage their time. This will help deal with the problems of procrastination, leaving studying till the last minute and socializing with friends when they are supposed to be engaged in their studies. Interestingly, the Communication and Academic Literacy course has a component that focuses on effective study skills such as time management skills, organizational skills and self-motivation. Students will benefit maximally if they attend lectures on these topics.

Motivation and mentorship are also important in getting students to read intensively. The participants stated that they needed to be motivated and guided to be able to read effectively. Solheim (2011) confirms that motivation is imperative to a student's reading progress since there is a strong relationship between motivation-to-read and reading comprehension. In order to motivate students, reading assignments should be made colourful and eye catching. It is also important to give reading assignments that are discipline-specific to arouse students' interest

and ensure that they have enough background and previous knowledge to deal with the texts (An, 2003; Rumelhart, 1980; Shen, 2008). Shen (2008) asserts that effective comprehension of a text is highly reliant on the reader's aptitude to relate the content of the text to familiar schema or previous knowledge. As noted earlier, the schema theory posits that the knowledge a reader acquires from a text is mainly dependent on the knowledge the reader already possesses (Rumelhart, 1980). In addition, reading assignments should be activity or task-based to ensure active participation and full engagement during intensive reading. This is supported by the CR approach discussed earlier (Ellis, Sinclair & Barbara, 1994; Shen, 2008). When students are sufficiently motivated and reasonably mentored, problems such as laziness, hopelessness, lack of interest and negative attitude towards the topic or lecturers will be sufficiently minimised or completely eradicated.

Difficulty in concentrating during intensive reading is often a result of not using the right reading strategy. When a student is fully engaged in the reading process, being an active participant, posing questions, predicting, making inferences, reading, summarizing, making notes, recalling and reviewing what has been read, the student is bound to concentrate on the reading exercise (Shea, 2011; Melati, 2018). Lecturers, therefore, need to intentionally teach the different reading strategies; for example, the FIVES (Shea, 2011; Shea & Roberts, 2016), the REAP strategy (Melati, 2018), the SQ3R (Robinson, 1946) and many others that will expose students to effective ways of reading intensively. Lack of concentration is often as a result of not being fully engaged in the reading process.

The problem of heavy workload cited by students could also be addressed by effective time management. Students should be encouraged to have personal timetables that include all their daily activities such as, time to attend lectures, attend lab sessions, personal studies, group discussions, time for relaxation and time to sleep. Such personal timetables must be religiously adhered to in order to ensure that there is time allocated for intensive reading.

Problems associated with difficulty in understanding scientific texts and technical vocabulary, identifying main points in a text, as well as difficulty in analysing and evaluating facts in given texts could be solved also by using the proposed reading strategies in this study; namely, the FIVES (Shea & Roberts, 2016) and REAP reading strategies (Melati, 2018). As outlined earlier, the FIVES strategy ensures that a student gets the information embedded in a text (Facts), makes Inferences based on the student's previous knowledge, pay particular attention to the Vocabulary used in the text, relate information to the student's personal Experiences and then Summarizes the text to find out how much of the content has been comprehended. Similarly, the REAP reading strategy will ensure that the student Reads the text, Encodes or comprehends the main points, Annotates or makes notes of the main points and supporting details, and Ponders or thinks critically, and deeply reflects on the contents in order to evaluate the text. These two reading strategies which the study proposes have the potential of dealing with most, if not all the challenges that students have identified as hindrances to their effective comprehension of a text during intensive reading and also ensure that students effectively comprehend texts during intensive reading.

## 5.0 CONCLUSION AND RECOMMENDATIONS

This study explored primarily the reading strategies and challenges that science undergraduates at the University of Botswana face during intensive reading. The study found that the majority of students lack knowledge of effective reading strategies that will ensure effective comprehension of texts. In addition, the study found that the science students face various

challenges which inhibit their effective comprehension of texts during intensive reading. To deal with these challenges, the study has come up with a number of solutions geared towards assisting students to read effectively, and maximally comprehend what they have read. The study proposes the intentional teaching of appropriate reading strategies such as the FIVES, REAP, SQ3R and other effective reading techniques which will help students in effectively reading and comprehending difficult texts during intensive reading for excellent performance in their academic pursuit at the university.



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