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Reading Guides for Biology to Facilitate the Reading Comprehension of Grade VII Students

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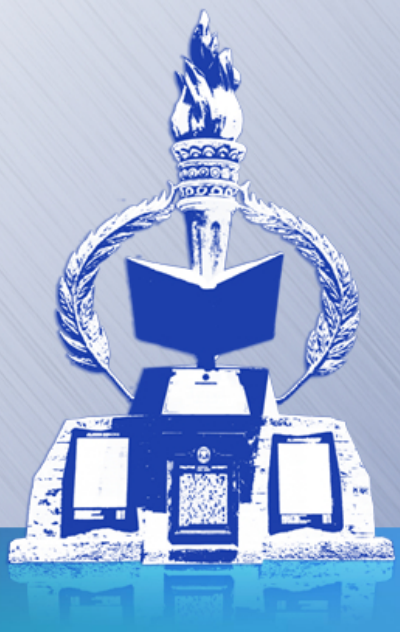

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READING GUIDES FOR BIOLOGY TO FACILITATE THE READING COMPREHENSION OF GRADE VII STUDENTS

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March 2016

Approval Sheet

This Seminar Paper entitled **"READING GUIDES FOR BIOLOGY TO FACILITATE THE READING COMPREHENSION OF GRADE VII STUDENTS,"** prepared and submitted by AMILYN G. ALKATHIRI, in partial fulfillment for the degree MASTER OF ARTS IN TEACHING WITH SPECIALIZATION IN READING is hereby recommended for approval and acceptance.

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ABSTRACT

Title Reading Guides for Biology to Facilitate the Reading Comprehension of Grade VII Students

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Degree Master of Arts in Teaching

Specialization Reading

Key Concepts content area reading, reading comprehension, reading guides

Summary

The study aimed to develop reading guides for Biology to help facilitate comprehension of the students from a secondary laboratory school. The objective of the study are to prepare reading guides for Grade 7 Biology, validate the reading guides, and revise the reading guides based on the validation data from the teachers.

It used descriptive developmental methodologies to gather data for the study. The design had four stages namely pre-development, development, validation, and revision. Major findings of the study reveal that the development process is effective in producing

reading guides for Science texts, sections of the reading guide led the students to focus on the important details of the text. The developed reading guides were highly rated by the teacher-participant who also used the reading guides in their Grade VII classes. Student feedbacks of the developed guides were very positive. Further research on the effect of reading guides for Biology to facilitate reading comprehension of Grade VII students should be done.

Dedication

This seminar paper is dedicated to

the Lord of my life Jesus Christ for His amazing grace

without Him, I am nothing.

I can do all things through Christ who strengthens me.

Philippians 4:13

To God be the Glory!

Acknowledgement

I would like to express my heartfelt gratitude to the following persons who were with me from the start of this study until the end.

Dr. Merry Ruth M. Gutierrez for her wisdom and overwhelming patience as adviser. Her gentle encouragement has inspired me to give the best that I can possibly offer despite the difficulties that I encountered along the fulfillment of this study.

Finally, to my Mama Lina, Lola Minang, and Auntie Leoning for their prayers, love and support.

Amilyn G. Alkathiri

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Chapter 1

The Problem and its Setting

Introduction

Reading is fundamental in any functioning society. It enables people to become productive members of the community where they belong. They use it to fill out application forms, take medicine, make decisions, eat in a restaurant, and many more. Reading enables them to learn more about the world and make sense of their existence.

Reading not only entails being able to identify letters, words, or sentences and verbalizing them; it is a process that begins with the representation of the letters intended by the writer and ends with the meaning constructed by the reader (Goodman, 1988). The process of reading does not only involve the words being read, but also the understanding created by the readers from the materials read. Therefore, being able to recognize letters, words, and sentences without actually comprehending what makes the entire process is a practice of futility.

Effective reading instruction understands this essential part of the reading process. Such an instruction should be able to bring at its core the ability of students to comprehend what they have read (Allington, 1983).

The instruction should be able to provide the learners with experiences that will instill the skills and values of a good reader. It should not only delve into making the learners understand just what was read but also make sure that they can create their own understanding. This understanding then could be used to make informed decisions or open a wider and broader perspective about themselves and others.

In the Philippines, reading is a top priority. In fact, it is a major concern in the government's Education For All (EFA) program in 2015 (UNESCO, n.d.). It seeks to improve the reading skill level of students through various educational reforms such as improvement and empowerment of the School-based Management system, improvement of teacher development programs, and over-all development of the education sector to accommodate as many students as possible through the Alternative Delivery Modes (ADM).

The Philippine Statistics Authority reveals that the literacy level of grade school pupils in the Philippines rose to 97.5% in 2012 from 92.3% in 2000. However, the number does not seem to take into account the actual ability of the students to be functionally literate. The country still has gaps in its achievement of the literacy goals of Education For All. Some of these include a 4% gap in eradication of basic illiteracy and a 14% gap in the eradication of functional literacy.

In the classroom paradigm, the role of the teacher in imparting reading skills to the learners is unquestioned. That is why it is imperative that teachers should also be critical readers.

They should be able to identify these skills and be able to teach them to the students (Karabay et.al. 2015). As the facilitators of learning, teachers initiate the class activities and construct the class environment that would be conducive to the maximum reception of instruction. These are their ways of devising different strategies that would cater to the ever changing needs of the students.

Reading and Student Performance in Science

A common maxim among educators often used to emphasize the importance of reading is the idea that reading is a skill that enables one to learn all other disciplines. Perhaps this is most evident in learning in the Sciences. The 2003 Trends in International Mathematics and Science Study (TIMSS) suggested that the textbook read by students in the classroom is the most common foundation of Science instruction among the participating countries. This being the case, reading plays a very significant role in the understanding of scientific knowledge of school children. Sadly, Filipino students find grasping these concepts difficult, the primary reason for which is that most of the books in Science are written in English. Secondly, students are not exposed to reading informative texts (Duke, 2000). Being within the realm of English and other language subjects, reading and reading strategies are often done using narrative texts, quite different from the nature of scientific texts which are expository (Yopp & Yopp, 2006). Narrative texts rely on a plot and characters' dialogue to convey their message to the reader; whereas content area texts are usually expository, meaning that they are written to inform, persuade, describe or explain information for the reader.

It is for this reason that the study on reading guides for facilitating comprehension of Science texts is conducted as a teacher's instructional strategy for guiding the understanding of Science concepts.

Conceptual Framework

This study is anchored on concepts about Science reading texts, reading guides, and the role of study guides in the teaching and facilitation of comprehension among students.

As Science textbooks are written to inform, exposition is the primary mode of discourse found in these kinds of texts. The more logically connected one idea is to another, the more coherent is the description or the explanation (Vacca & Vacca, 1989). Patterns of organization represent the different types of logical connections among the important and less important ideas in expository texts. Thus, reading in science becomes more demanding as it requires a willingness and capacity to deal with a wider range of text types represented by different organizational patterns. Imam et.al (2014) also showed that performance of high school students in reading comprehension and Science were indexed at low mastery. The difficulties of Filipino students to comprehend science texts are vividly seen through the results of standardized and other forms of tests.

This problem propagates as students move to higher studies without improving their reading abilities.

Hermosa's (2011) study of Filipino high school students seeking admission into various universities revealed that these graduates of the basic education system have the reading level of Grade three or four pupils. This being the case, they would be struggling to cope with university life that requires students to read highly technical and jargon-intensive texts. These studies clearly reveal the immense role instruction plays in the learning of reading (Rupley, Blair, & Nichols, 2009).

Being a content-intensive subject area, Science texts tend to become more reliant on the students' ability to read and grasp ideas from the materials. Revealing the apparent need of the students for improved reading skills, teachers could introduce various strategies to address this. One of these strategies is the use of reading guides. Reading guides are teacher developed materials and/or strategies aimed at improving the reading level of learners. They help guide them through the material in a multitude of means. There are many ways reading guides can benefit the students since they can be developed around many different materials and reading levels. It helps the students monitor their own understanding of the reading material, while actively thinking about and evaluating about purpose for reading. The goal of this paper is to develop and validate a proposed reading guide for Biology 7 that would help facilitate reading comprehension of Grade 7 students.

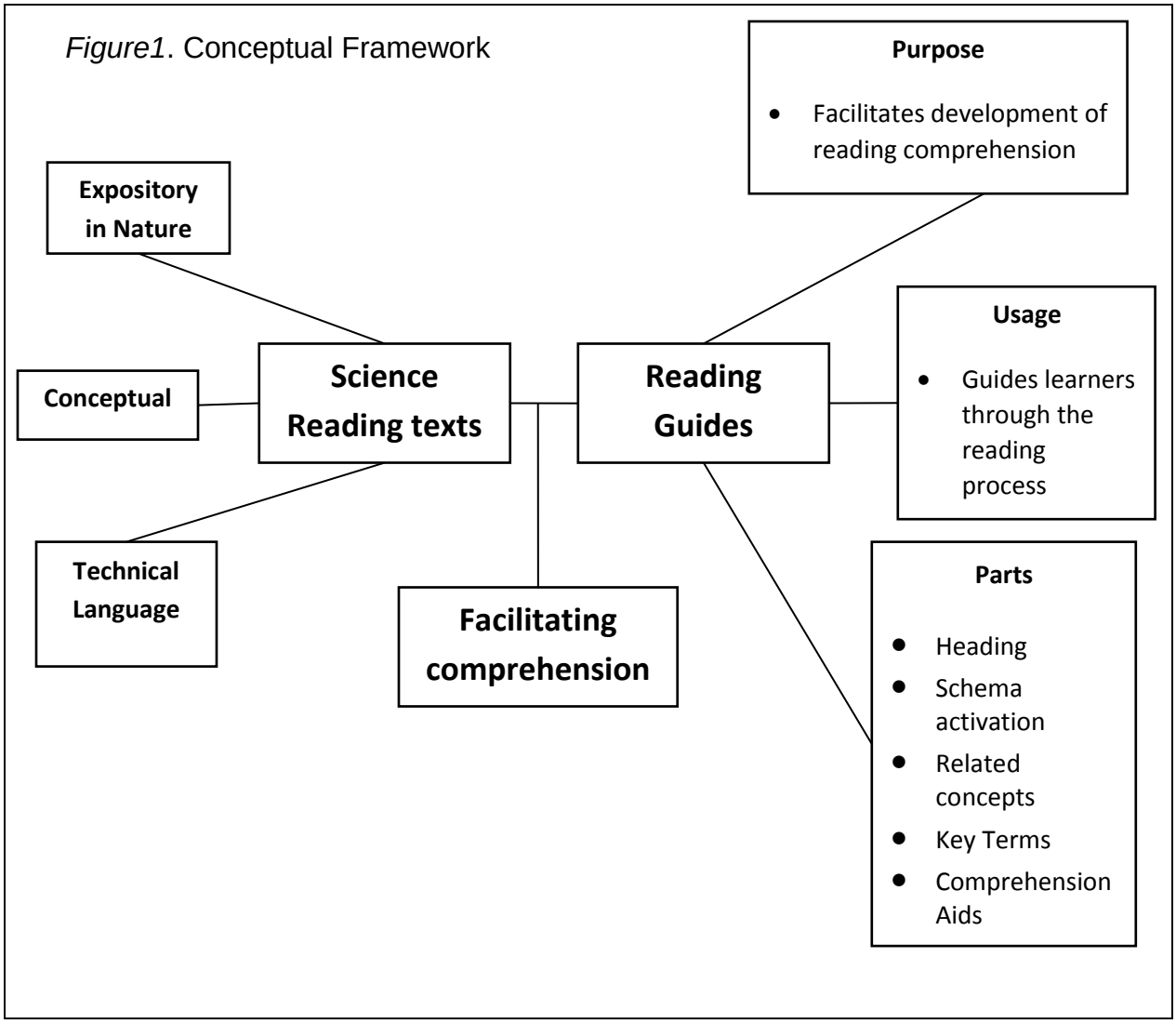
As students struggle to comprehend Science reading texts, the need to bridge this particular gap between understanding and the text is paramount.

The study's conceptual framework describes how the proposed reading guide may be a viable answer to the problem.

The developed reading guides are the links that would augment the need of students to improve their level of reading comprehension. The reading guides were adapted based on the reading level of the students. They were written in the level that they would understand but developed with the right difficulty adjusted to keep it challenging but not frustrating (Armbruster et.al., 2001).

The kind of Science reading text also affects the reading guide as these are the source of content for the guide. As Science texts are by nature expository, the complexity for the text and the reading level of the students determine how the reading guide was developed. On the other hand, the reading guide affects the way the text is perceived by the students. It leads the students on details on which to put more attention to as learners create their own meaning from the analysis of the material.

Figure1. Conceptual Framework



As the figure shows, the concepts on content area reading characterized in academic, expository nature of Science texts relying on heavy conceptual understanding expressed in technical language and vocabularies are considered as challenges making it difficult for students to comprehend. As an instructional strategy, the study highlights the role of reading guides, whose history can be traced back as a study guide generally used for academic purposes.

Since studying is tantamount to reading and comprehending, study guides are believed to facilitate comprehension, especially as they guide learners sail through the texts. Further, the parts of the study guides intend to focus the learners' attention on elements which directly relate to the construction of meaning in reading- from schema activation where they relate the known to the new in the text, to the comprehension aids presented in various forms so that in the end, learners can create a written output reflecting their application of the ideas learned.

Statement of the Problem

The study aimed to develop and validate reading guides for Biology to facilitate the reading comprehension of Grade VII students**.**

Specifically, the study aimed to:

1. prepare reading guides to facilitate comprehension of content area texts in Biology;
2. validate the reading guides; and
3. revise the reading guides based on the results of validation.

Significance of the Study

The development of reading guides for students benefits a great number of stakeholders. Primarily, the **students,** who are the direct recipients of the guides, will find greater hope in developing their reading skill. Their improvement will affect not only their performance in the Science subjects but also all other subjects as it is a core skill.

Not only that, but **teachers** could also benefit from the process of developing the reading guides. This is a strategy which they could add to their arsenal of other strategies gear towards producing better learners. Perhaps this is the greater benefit that they could gain from the study.

Instructional designers and curriculum planners may gain an insight as to the ways instruction and the curriculum could be adjusted to the needs of the struggling readers as curriculum is the academic plan that directs the educational efforts in the school (Lattuca & Stark, 2009). On top of this, future **researchers** may find the study instructive in developing reading guides targeting other skills and other subject areas.

Scope and Delimitation

This study of developing and validating reading guides is limited to the Biology class of Grade VII students from the Secondary Laboratory School of the University of the East within the Academic year 2015-2016. Only the five most difficult lessons for the students to comprehend, which were determined based on the assessment of the teachers, were used as materials for the study. The units covered by the study were those lessons discussed in the Second Quarter of the Academic year.

Definition of Terms

In the conduct of the study, the following terms were used:

Content Area Reading- refers to the acquisition of knowledge through the study of the text from different subject areas. In this study, it refers to the Science texts in Biology used by Grade Vll students.

Reading comprehension-refers to the ability of the students to understand reading texts and use this understanding to formulate their own meaning. In this study, it is the responses given by students as they utilize the reading guides for the Science texts.

Reading guides - refer to the learning material aids that readers use, especially while reading Science texts, to guide their processing of the content.

Chapter 2

Review of Related Literature and Studies

This chapter describes the theoretical foundations of the study and the underlying concepts that led to the development of the research.

Interactive Reading Model

The ability to read has been considered as the most important of the four language skills (McNamara, 2012). However, it becomes very difficult especially when the reading material is very technical or too complex for the reader. For some readers comprehension becomes very challenging in these situations. As such, learners should be given the help they need in order to succeed in such activities, as teachers adjust instruction to meet where the students are. Lev Vygotsky's (McLeod, 2012) Zone of Proximal Development attests to the significance of teacher flexibility, and this is defined as "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance, or in collaboration with more capable peers." In the theory, learners move forward in their development by providing them with tasks or activities that are a little higher that their current level, and that they are helped by their

teachers or peers so they could learn the material.

In order for teachers help them, the former must be able to understand the process of reading and theories that govern it.

The bottom-up model of the reading process is considered the traditional view of the reading process. In this model, the printed text is given more emphasis where the readers must be able to learn to decode the letters and words in the text before they can be taught reading. In this model, the readers are seen as passive recipients of learning or information from the text. As such, the readers do not create meaning but rather simply reproduce the information that resides in the reading material. According to McCarthy as cited by Orbe (2008), this view of the reading process is an “outside-in” processing where the meaning exists only in the text that is interpreted by the reader. Readers are then expected to understand the text and its meaning based on one’s knowledge of the words of the text. The process begins with the smallest linguistic units then moving to decoding and comprehending higher units.

The learning process begins with the students developing their phonemic awareness, the ability to hear, identify, and manipulate phonemes. At this stage, learners get to learn to pronounce sounds such as the “th” sounds or the “st” sound. Then they are taught the correspondence of these sounds with their spelling patterns in order for them to learn the meaning of these sounds as morphemes.

The bottom-up model of the reading process includes identifying letter features, linking

the features to recognize the letters, combining letter features to recognizing spelling patterns, and linking spelling patterns to recognize words. Finally, it proceeds to processing the sentence, which in turn is stretched to paragraph, and lastly, to the full text read in and out of school.

The bottom-up model in reading's ultimate goal is reading fluency. Though beginning readers might not be able to understand most of what they read at the beginning stage of the learning process, they will be leading towards comprehension over time. This is attained once the learner achieves fluency in decoding the words in texts.

The exact opposite of the bottom-up model of the reading process is the top-down model. Where the bottom-up model begins the reading process with the ability of the learners to recognize the sounds, letters and eventually the words in the text before comprehension is attained, the top-down model suggests that the reading process actually begins within the learner (Stratford, 2008). In the model, the learner reads chunks or segments of texts and brings their own sense and understanding of the text without actually dissecting the vocabulary of the material. In a way according to Goodman (Orbe, 2008), it is a psycho-linguistic guessing game where the readers make hypotheses, confirm or reject these hypotheses, and make new ones. The meaning of the text is then extrapolated as a whole via the student's knowledge. As such the teacher, in the top-down model, introduces the literature as a whole to the students instead of teaching them sounds and letters first. The teacher reads whole passages

and lets the students decipher meaning of words through context clues spread all over the text (Pearson, 2008).

The model directly opposes that of the bottom-up model. As the bottom-up model assumes that learning the individual words and each of their meanings shall consequently lead to the learning and understanding of the text itself, the top-down model assumes that learners learn meaning of passages as an entire chunk of knowledge. That is, learners may not be able to understand the meaning of every word in a passage, yet they could still understand its message because they look at it not from what it says, but what they know about it.

The top-down model goes perfectly hand in hand with the schema theory proposed by Rumelhart in 1980. The schema theory simply states that knowledge could be organized in units. These units of knowledge called schemata are general description or a conceptual system for understanding knowledge. It is these schemata that come into play whenever new information needs to be processed by a person; it is also what impacts the readers to be able to understand a reading text. Teachers of the top-down model encourage the learner to choose materials to read based on their personal interests, motivating them to read more and learn the material. As such, the students are engaged more to interact with the reading material than what the bottom-up model suggests.

The problem with two of the previous theories is that they fail to encompass the utter complexity of the reading process. With the bottom-up model, it underestimates

the contribution of the reader in the learning process. Being too linear, it overestimates the student's ability to comprehend the language of the text. On the other hand, the top-down model puts too much attention on the student's ability to comprehend whole concepts. It fails to take into consideration the impact of technical and jargon-intensive texts such as Science materials. Though it may be true that learners put themselves in the texts they read, it would sometimes be difficult for them if the materials they are trying to learn are filled with words they do not know how to define or could not be defined simply by deriving from the contexts in which they were used.

This is where the interactive model becomes useful. It is a complementation of the two models and uses the best of both. It combines both the student's knowledge of the structure of words with the deep structure systems of the brain in order for the learners to build memory and meaning (Anthony, 2008). The model opens the readers to a wide range of strategies of dealing with the different difficulties that might be encountered in the reading process. For example, a reader who found a new vocabulary word in a text might resort to using the context in which the words was used in order to define it; while some students might use their knowledge of words and word structure to help them define the same word. Hence, this paper adheres to the interactive nature of reading for it captures how the two are at work interacting for understanding content of the text.

Teaching Reading

In order for teachers to teach reading, they traditionally look into one of the reading models and adapt their strategies in developing their own way of teaching class reading. In the past, the purpose of reading was to have access to the reading texts in a target language because limited technology severely limited the access of people to reading materials (Weaver, 2002). However, with the advent of the modern age, the technologies for access to reading materials also improved. Nowadays, the goal of teaching reading is not merely to be able to read words out of the text but rather to gain meaning from it. As reading is an activity with a purpose, it is not necessarily a repetition of the written word. A reader may criticize, react, get excited, verify information, and many more, while reading. This very purpose of reading may differ from one reader to another and therefore guide the selection of the reading material.

There are several approaches to teacher reading, most of which are based on the models of reading. One of them is the part-centered approach where the teacher begins to teach the basics of language to the student.

Following the bottom-up model, the part-centered approach looks at the reading process from the language perspective and thus initiates the teaching of reading from the mastery of language.

On the other hand, the socio-psycholinguistic approach to teaching reading adheres to the top-down model of reading. In the approach, the reading process is

viewed as a psycho-social activity where the reader interacts with the material. As such, the readers derive meaning from the text with the aid of their schema (Weaver, 2002). Any reading class would need to combine the two reading approaches in order to be successful in the teaching of reading to the learners. They would need the basic concepts of language to understand the words and they would need to interact with reading materials in order to construct their own meaning from it.

Teachers often find it frustrating to conduct reading classes and worse, find their student not really improving their reading skills in the classroom. There are several strategies that could be employed to ensure that student learn in the classroom (Strategies for Developing Reading Skills, 2004). P*reviewing* refers to looking at the

title, section headings of the material or photo captions in order to get a gist of what the material is about, giving a general overview of the topic to be discussed. *Predicting* makes predictions about the material using one's knowledge of the subject matter. *Skimming and scanning* lets the students get a quick survey of the text to get the main idea or the structure of the text by going through the text very quickly or intently. *Guessing from context* uses one's prior knowledge and experiences to determine the meaning of unknown words in the text. *Paraphrasing* lets the learners stop at certain sections of the text to restate its ideas in one's own words, helping the students retain the information of the section.

In addition, Adler (2001) suggests seven strategies that could help students become more effective readers. These steps begin with m*onitoring comprehension* where students should be able to monitor their own understanding of the reading material they have. Effective monitoring systems in the classroom ensure that learners are focused to what they should be learning from the text. *Metacognition or* "thinking about thinking" is such that students understand the purpose of reading, monitor their own understanding, and check whether they actually understood the material they have. *Graphic and semantic organizers* use illustrations to understand the relationships between and among concepts as important. They help the readers comprehend even the complex texts because of the way they could simplify the material. *Answering questions* is a great way to help readers focus on what they are supposes to learn, give them a purpose for reading, help them to think actively as they read, and help them review and relate what they have read with what they already know. *Generating questions* also help in making sure that they are on the right track in their learning most especially when these questions are made by the students themselves. *Recognizing story structure* is important for learners to get a grasp of the basics of the structuring concepts, most especially in narrative texts, through the use of story maps and other graphic organizers. Lastly, in order for the students to *summarize*, they would have to understand the text and at the same time identify what are the most important points of the reading material.

This is where the use of the reading guides becomes very appropriate. This is because reading guides not only help students become independent, they also encompass a number of reading strategies that could be employed by the teacher in the classroom.

Reading Guides for Facilitating Comprehension

Reading guides are useful strategies to help students develop their reading comprehension ability. These guides, by definition, are teacher developed materials that help student navigate a reading material (All About Adolescent Literacy, 1999). Their use in various scenarios has proven their worth in the classroom and educational paradigms.

Mason (2013) has found out that student-directed and self-regulated learning along with cognitive strategies has improved the reading comprehension among students. The study revealed that using strategies such as oral and written summarization, oral and written retelling among others have improved students' comprehension of expository reading texts.

Hagaman, Casey, and Reid (2016) also revealed similar results using paraphrasing strategies. Their qualitative study of seven middle school students said that using paraphrasing as a teaching strategy in developing reading comprehension proved to be effective in attaining the learning goals of the students. This was most evident in the students improved recall of specific details in the reading text such as the story's plot and their overall comprehension through the short-answer questions.

These studies show that just using several aspects of the strategies employed in reading guides, specifically the writing parts, could actually improve the comprehension of students of reading texts. Adams, Pegg, and Case (2015) presented that using reading guides actually helped students better develop their comprehension of more technical concepts in academic areas. The researchers considered using strategies in teaching reading, specifically the reading guides and used them in improving the way students understand Mathematical concepts. Conderman and Bresnahan (2010) also showed that using study guides to direct student reading helped the class improve their performance in their academics. In their study, the sample class found that using study guides in reviewing for quizzes or tests could increase mastery of content.

Not only do reading guides help improve the performance of students in academic endeavors, they also help increase student motivation and encourage them to read. Kaback (2012) showed that directing student understanding of reading texts through the use of reading guides help them raise their motivation in tackling reading texts and generally augment their comprehension of academic texts.

Sometimes, reading guides and other study guides could even be more effective than simply letting the students do their own studying, as proven by Horton and Lovitt (1989) years back. They examined the effectiveness of using study guides on students with learning disabilities, those who needed remediation, and those belonging to the regular classes. The data revealed that using the study guides, whether student-

directed or teacher-directed, helped the learners to significantly perform higher compared to self-study.

The studies reveal that using some form of organized and well-timed strategy to process student reading aid their comprehension of different reading texts from various disciplines.

Synthesis

Pointing to the significance of study guides and by extension reading guides, the studies cited support the teachers' facilitating comprehension by making students navigate the text through appropriate and timely guidance when they need it in the reading process. No studies as of yet prove otherwise, consequently strengthening the view of the effectiveness of reading guides as instructional strategy to facilitate content area reading, like Biology texts, which the study purports to use.

Chapter 3

Research Methodology

This chapter discusses the methodologies employed in the study. It describes the details on the different stages of development that this study underwent. It features the procedures that the researcher went through in gathering, analyzing, and interpreting the data for the study.

The Research Design

The purpose of this study is to develop and validate reading guides for selected topics in Biology VII. The study used descriptive developmental research methodologies to gain the data needed to attain the research goals. This study's design was divided into four stages: (1) the Pre Development stage; (2) the Development stage, (3) Validation stage and (4) Revision of the reading guides.

Respondents

Four Science teachers of University of the East Secondary Laboratory School act as the validators of the reading guides. They were randomly selected from the Science teachers in the Grade VII. One of them, however, is the coordinator of the subject area.

The validators are all regular faculty members of Secondary Laboratory School of University of the East, Manila.

The student-participants were taken from a Grade 7 class of the laboratory school. There are 40 student participants from Grade 7 Uranus. Twenty of them used the developed reading guide while the other 20 did not. After using the reading guides, students were interviewed to get their ideas and thoughts about the reading guides and how it helped them understand the Science reading text.

Instruments

Several instruments were used for the conduct of the study.

A survey instrument on lesson or topic difficulty in Biology was conducted among Science teachers that served as basis of the reading guides. This was done to ensure that the guides would be most useful for lessons considered as challenging or difficult. (Please refer to Appendix C).

The developed reading guides were used as the primary material supporting the comprehension of Biology texts for Grade Vll students. They were distributed to the student-participants to be used along with their science reading texts. (Please refer to Appendix B).

Evaluation of these reading guides was done using a rating scale that was utilized to determine the validity of these guides. The teacher-participants validated the reading guides based on content, design, purpose, and comprehension aids as criteria

using an evaluation checklist made by the researcher. (Please refer to Appendix A).

The teacher respondents then used these criteria to determine how the developed reading guides were able to improve the reading comprehension skill of the student participants.

Interviews were also used to gather information from the teachers and the students about their insights regarding the developed reading guides. The teacher-participants were interviewed after they evaluated the reading guides using the evaluation checklist prepared by the researcher. The student-participants, on the other hand, were interviewed after they used the developed reading guides in their science class. The following are the questions asked during the interview.

1. How did the reading guide help you?

2. Which part of the reading guide do you like most? Why?

3. Did the reading guide make you excited to locate the answer for the questions?

4. Which one is better? Reading with the guide or without? Why?

5. Was it easy to use?

Data Gathering Procedure

Pre- Development Stage

The determination of lessons to be used for developing a reading guide is a task that involved a survey given to the Science teachers from the Secondary Laboratory

School of the University of the East. The researcher then interviewed the Science teachers about the reading comprehension level of the students, their performance, and the reading and other activities they employ in the conduct of the Science classes.

The researcher was able to identify the lessons to be used for the development of reading guides based on the interview and survey which were conducted among science teachers. After the selection of the topics, the researcher identified the learning targets of each lesson and considered each of them for the development of reading guides.

Development Stage

In the second phase, the researcher used the criteria formulated by Michael McKenna (2003) to direct the development of the reading guides. After these, the draft of the reading guides was prepared. To do this, decisions were made on which parts to be included in the guides. The final decisions that were made are shown in Table 1.

Table1. Parts of the proposed reading guide

Part	Sample	Icon	Explanation
Heading	Characteristics of Ecological System		It sets the reader's purpose for reading. The title of the lesson also prepares the students on what they are expected to learn about the lesson.
Schema Activation	Predict whether the statements below are *true or false* before reading the selection. Return to these statements after reading if you have changed your view.		It serves as a self-assessment for the students on how much or how little they know about the topic. Furthermore, it helps them link their prior knowledge to the new lesson.

Related Concept	Terrestrial and aquatic are two major categories of ecosystems. Forest, grasslands and deserts are main examples of terrestrial ecosystems while falls, lakes, streams or marine waters represent aquatic ecosystem.		It provides the learners additional information about the key word of the lesson to focus their attention on what the text considers important.
Key terms	The following terms would help you understand ecosystem. Locate the definitions of those terms using context clues.		Science terms and concepts are difficult to comprehend. This part directs the learner to focus on the important terms in the text and at the same time to familiarize them with their definition. A page number is indicated for the students to locate the words easily.
Comprehension Aids	The figures on page 150 represent an ecosystem. Look at them closely, and you would notice that it is a group of living things that interact with one another and with the environment. Complete the concept map on components of ecosystem.		It provides tools they can use to comprehend the text. Graphic organizers used in this part help students to monitor their comprehension.
Summary	Ecosystem is a place where _____and_____ occupy and_____ with one another?		It teaches the students how to recognize the most important ideas in a text. Summarizing allows them to use the key words learned and retain them better by creating written output.
Reflection	Which is more important- biotic or abiotic parts of the ecosystem? Why?		Research tells us that learning takes place when there is a process of active thinking about what has been read, and questioning ourselves about what they mean. Reflection also helps to provide deeper learning and self-assessment.

Validation and Evaluation Stage

After the development of reading guides, the researcher formulated an evaluation checklist based on the criteria also suggested by McKenna (2003) on how to construct reading guides. The evaluation checklist form consisted of four parts.

Part 1 - The first part evaluated the content of the reading guide. It determined the appropriateness of the concepts of the lessons, determined the presence of the basic knowledge and skills in Biology, and whether the guides provided additional information about the lesson.

Part 2 - The second part focused on the design of the reading guide. It focused on the adequacy of the space needed for writing on the page, determined whether the page is overcrowded, and whether the material entices the interest of the learners.

Part 3 - The third part looked into the purpose of the reading guide. It identified the demand for skills and knowledge of the student in completing the material, whether the material was able to attain the objective of the lesson and whether the reading guide was able to help the learner retain the information.

Part 4 - The final part, the comprehension aids, assessed whether the reading guides specified the page numbers that help the learners locate specific information in the text, whether the visual tools were enough to help the students comprehend the reading text, whether the reading guide directed the important concepts in the lesson, and whether it emphasized the point of the lesson through writing. The evaluation form checklist has a

3-point rating wherein validators selected from the scale: very good, good, and poor. These were arranged from 3 to 1, 3 being the highest and 1 the lowest.

The reading guides were promptly distributed to the teacher-participants for the evaluation process. It was ensured that the evaluation of these guides was done during the availability and vacant time of the validators for them to study and comment on the reading guides. To further ensure the validity of the process, the validators were explicitly instructed to:

1. Go over the reading guide.
2. Write on the sheet of paper activities, directions, illustrations which are vague and needed to be improved or changed.
3. Answer the items in the evaluation sheet by putting a check mark in the corresponding column.
4. Write the comments and suggestions.

After the evaluation, the researcher tabulated the frequency distribution from the gathered data and got the average rating for each component in the evaluation form given to teacher-participants. Revisions were made after the tabulation and interpretation of the data gathered from the teachers-validators.

Next, students were then asked to use the reading guides as part of their reading sessions in their Biology 7 classes. Students who used the reading guides were then

interviewed in order to get their insights and opinions on the use of the reading guides as aid in their Science classes.

Revision and Refinement Stage

The data were then tabulated and interpreted. The results together with the suggestions of the teacher-participants and the students who used the reading guides were considered by the researcher in the revision and refinement of the reading guides. Particular attention was given to the design and comprehension aids. To do this, the research:

1. Gathered the data from the teacher-participants
2. The gathered data were then listed down and tabulated.
3. Tabulated data were averaged to determine which sections or areas needed improvement.
4. The reading guides were then finalized.

Chapter 4

Presentation, Analysis and Interpretation of Data

Presented and discussed in this chapter are the major findings of the study, and their interpretations to address the objectives set by the study.

The study aimed to develop and validate reading guides for Biology to facilitate reading comprehension of Grade VII students.

Specific Objective1: Develop reading guides in Biology 7 to facilitate comprehension of students.

The study began with the first stage of the process which is the pre-development stage. Survey and interviews were conducted among Science teachers to determine students' difficulties in reading especially in their Science classes. Teachers were asked to rank the Science lessons based on their difficulty. Table 2 shows the ranking of the lessons.

Table2. Science Lessons Difficulty Ranking

Science Lessons	Difficulty Rank
The Microscope and its Historical Development	4
Levels of Biological Organization	1
Microorganisms	7
Characteristics of Ecological Systems	6
Interrelationships Among Organisms in the Ecosystem	5
Ecosystem for All	3
Sustaining the Ecosystem and Its Resources	2

From the interviews with the teachers, the topics in which most of the students were having difficulties were chosen as the focus of the development of the reading guides. The following topics and subtopics were ultimately chosen based on the ranks provided, namely:

1. Characteristics of Ecological Systems
2. Biotic Components and Ecological Niches
3. Abiotic Components
4. Interrelationship among Organisms in the Ecosystem
5. Energy Flow in Ecosystem.
6. Microorganisms

According to the teacher-participants, it is these topics where the Grade VII students needed greater help understanding as the text in these topics were a bit difficult to grasp.

Once the topics of focus were chosen, the researcher examined and analyzed the strategies used in content area reading. After which came the development stage where the reading guides were prepared. This is to ensure that the developed reading guides were best suited to the needs, interests, and current reading ability of the learners.

. The reading guides were developed based upon the suggestions made by Michael McKenna (2003) on how to construct reading guides. Parts of the reading guide include the heading, schema activation, key terms, comprehension aids, summary, and reflection.

The **heading** sets the reader's purpose for reading. The title of the lesson also prepares the student on what they are expected to learn about the lesson. It therefore conditions the learners to take on the material at the onset. This conditioning is important in making sure that the reading guide will be able to achieve the objectives of the lessons.

Schema activation serves as a self-assessment for the students on how much or how little they know about the topic. It helps them link their prior knowledge to the new lesson. Furthermore, this section ensures that the learners relate with the material and that the material is not just some detached lesson they need to cover. This is especially important in helping students deal with new information (Macizo & Bajo, 2009).

Related Concept provides the learners additional information about the topic they needed to focus on. It helps the learners associate the material with other content areas such as Social Studies or Values Education.

Key terms are Science terms and concepts relevant but deemed difficult to comprehend at the current level of the learners. This part directs the learners to focus on the important terms in the text and at the same time to familiarize themselves with their definitions. A page number is indicated for the students to locate the words easily.

Comprehension Aids provides tools learners can use to comprehend the text. Graphic organizers used in this part help students monitor their comprehension.

Summary teaches the students how to recognize the most important ideas in a text. It helps them formulate their own understanding of the text based on a much larger context of reality. Summarizing also improves their retention of the essential ideas from the material.

Reflection helps provide a deeper learning and self-assessment. Research explains that learning takes place when there is a process of actively thinking about what have been read, and questioning ourselves about what they mean.

However, adjustments were made within these parts to ensure their alignment to the needs of the Grade 7 students (Please see Appendix A).

Specific Objective 2: Validate the reading guides

Four science teachers of University of the East Secondary Laboratory School evaluated the developed reading guides in Biology 7 for comprehension improvement of the students. They evaluated the reading guides based on **content, design, purpose,** and **comprehension aids.** Validators rated the guides from one to three (1-3) where one meant **poor** while a three meant **very good**. The researcher tallied their ratings and averaged them. The summary of the validation results is shown in Table 3.

Table 3. Teacher-participants' validation of the reading guides

Very Good(2.25-3.00) - this means that the Reading Guide is accepted and does not require any revision.
Good (1.75-2.25) -this means that the Reading Guide needs 1 or 2 minor revisions.
Poor (1-1.75) -this means that the Reading Guide needs more than 3 items for revision.

Criterion	Indicator	Teacher Rating	Interpretation
Content	1. It emphasizes the important concept of the lesson.	3	Very Good
	2. It contains knowledge and skills relevant in Biology.	3	Very Good
	3. It provides additional information to the content.	2.25	Very Good
Design	1. The page has enough space for writing notes.	2.75	Very Good
	2. The print is not overcrowded.	2.75	Very Good
	3. It arouses learners' curiosity and interest.	2	Good
Purpose	1. It highlights the knowledge and skills demanded by the topic.	3	Very Good
	2. It captures the lessons intended objectives.	2.75	Very Good
	3. It directs the learner's attention to retain information.	2.5	Very Good
Comprehension Aids	1. It specifies the page number or subheads to locate information.	3	Very Good
	2. It provides assistance to locate information.	2.75	Very Good
	3. It contains visual tools for comprehension.	2.25	Very Good
	4. It directs to the important concept of the lesson.	2.5	Very Good
	5. It emphasizes writing to reinforce an important point.	2.75	Very Good

Based on the validation results from the teacher-participants, the researcher found out that the developed reading guides for Grade VII Biology is a very good material that could be a viable strategy for developing reading comprehension. It passed in all criteria set in determining the validity of the reading guides. In addition to the positive feedback garnered from the validators, some of them also included suggestion to further improve the reading guides. One of them said: "*Using trivia can provide additional information. Sometimes this information cannot be found in books particularly in the latest editions."*

Also, students who used the reading guides were interviewed and were given a chance to describe their experiences about the developed reading guides for their Biology 7 class. For one, it helped the students focus on their topics better. "*The reading guide helps me focus on important topics. I don't have to read every word,"* said one student.

"*It makes me busy during reading time,"* said another student. Not only does the reading guide improve the students' ability to focus, it also helped them to consider reading as fun and amusing activity that they could enjoy.

"*It excites me to locate terms because the location is indicated,"* revealed one student, describing his feeling in using the reading guide.

"*My questions were being answered because of the reading guide,"* said another student. Observations of the class also revealed that they were very focused on the reading activity compared with their previous interactions where there was no reading guide to help them.

Summarily, student feedback focused on the reading guides'

1. Ease of usage- the guide made it easier for them to read the pages.
2. Fun factor- they find it fun to locate and write the answer on the guide.
3. Content – It helped them focus on the significant information.

Specific Objective 3 Revise the reading guides based on the results of validation.

As the responses from the teacher-participants were overwhelmingly positive, the researcher needed little revision to the proposed reading guide. This does not mean, however that there is not a room for the improvement of the material. Taking into account the suggestions from the teacher-participants, the reading guides were revised round these propositions. Also, the researcher took into account the criteria that ranked the lowest in the validation made by the teacher-participants, which was the criteria on design, particularly the one dealing with eliciting the interest and curiosity of the learners to the topic. They saw that this would help the learners focus their attention more on the reading materials and gain more insight through the use of the reading guide.

To address the additional trivia and information to the reading guides, the researcher revised the section on **related concepts** to include additional information about the topics. And to increase the material's attractiveness to the learners, these were then printed in full color, as they were distributed to them in black and white during the conduct of the study.

Chapter 5

Summary, Conclusions and Recommendations

This chapter presents the summary of the study, conclusion, and recommendations based on the data gathered and research findings.

Summary

This study aimed to developed and validated reading guides in Biology to facilitate the reading comprehension of Grade VII students. Specifically, it aimed to:

1. prepare reading guides for comprehension development of Grade VII students in Biology
2.validate the reading guide
3. revise the reading guides based on the results of validation

The study was conducted in four stages. These stages were (1) pre-development, (2) development, (3) validation, and (4) revision of the reading guides.

During the pre-development stage, the researcher determined what lessons in science needed improvement. With the interviews and observations conducted with the science teachers in Secondary Laboratory School of the University of the East, five topics were named as the ones that needed greatest improvement; (1) Characteristics of Ecological

Systems, (2) Biotic Components and Ecological Niches, (3) Abiotic Components, (4) Interrelationship among Organisms in the Ecosystem, and (5) Energy Flow in

Ecosystem (6) Microorganisms Along with the determination of these topics made, the teachers also gave hints to the level of reading competence of the students in the Grade VII.

During the development stage, the researcher then used the data collected from the teacher-participants to prepare the reading guides. The guides were developed based on the process proposed by Michael McKenna (2003) with the following parts: The **heading** that sets the purpose for the reading activity, the **schema activation** where the learners assess themselves about how much they know about the topic currently in question, the **related concept** presents the learners with additional information about the lesson and was used to provide trivia about the topic, **key terms** serve as an opportunity for the students to improve their vocabulary ability by understanding key terms of the topic, the **comprehension aids** provide the tool needed by the learners to understand the text, the summary encapsulates the lesson in ideas that were easy to understand, and the reflection where the learners finally thinks about the deeper implications of the understanding they gained after the lesson.

Four science teachers validated the reading guides and rated them based on content, design, purpose and comprehension aids in the validation stage of the study. Using a rating scale as a measure, the teacher-participants rated the effectivity of the developed

reading guides based on (1) content, (2) design, (3) purpose, and (4) comprehension aids. The rating went from one (poor) and three (very good). The ratings of the teacher-participants were then tallied and tabulated to identify the effectiveness of the reading guides developed.

At the last stage of the study, the developed reading guides were then revised based on the suggestions and comments of the teacher-participants.

Findings of the Study

During the conduct of the study, the following findings were identified:

1. Many topics discussed in Science such as Microorganisms, Characteristics of Ecological Systems and Interrelationships among Organisms in the Ecosystem tend to be challenging and difficult for target learners. Because of the very nature of the subject and the complexity of the topics, the students had a difficult time comprehending the lessons.
2. The process of materials development requires feedback and iteration from stakeholders for whom the materials are developed, taking into consideration their needs and reading level.
3. Students found the developed reading guide helpful in keeping them focused to the reading task suggesting an effective impact on the students' confidence in the reading activity.

4. Students also found the developed reading guide helpful in keeping their interest in the topics and tasks on the Science concepts.
5. The reading guides were rated **Very Good** interpreted as highly acceptable by the teacher-participants.

Conclusions

Based on the findings of the study, the following conclusions were drawn:

1. The difficulty in understanding content area text such as that found in Biology is one challenge to teachers not only of the content area but also of the language teachers.
2. Comprehension is facilitated when learners provide guide such as the one proposed in the study.
3. The developed reading guides were successful in helping the students become focused in the comprehension of Science texts, thus avoiding inattention in reading and maximizing engagement in comprehension
4. The reading guide development process used was effective means of developing the proposed reading guide.
5. The reading guide's reception could be affected by its format and layout.

Recommendations

The following are offered as recommendations based on the findings of the study:

1. Teachers in different subject areas could adopt the reading guides as a viable strategy in improving students' reading comprehension skills.

2. Development of reading guides could still be defined further by a process proposed by other proponents.

3. Reading guides for other content areas may be produced.

4. Curriculum developers and instructional designers should look into the use of reading guides to enhance the current curricula.

5. Future researchers should look into the significant difference on comprehension when reading guides are utilized.

6. Inclusion of more teachers and students may be considered for a more valid result.

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Rating Scale in Evaluating Reading Guide for comprehension development in Biology

Name: Jeff Francisco Age: 33 Years in Service 8 yrs

Degree: BSEd Current Position: Faculty

Overview

This scale is from the suggestions given by Mckenna et.al (2003) on constructing a Reading Guide. Content, design, purpose and comprehension aids were the criteria considered necessary for the assessment of the reading guides.

Directions: On the list below are items that contain the rubrics in Reading guides evaluation. Kindly rate each item by putting a check mark in the corresponding column.

Very Good (2.25-3.00) - this means that the Reading Guide is accepted and does not require any revision.
Good (1.75-2.25) -this means that the Reading Guide needs 1 or 2 minor revisions.
Poor (1-1.75) -this means that the Reading Guide needs more than 3 items for revision.

Criterion	Indicator	Rating		
		3	2	1
Content	1. It emphasizes the important concept of the lesson.	✓	✓	
	2. It contains knowledge and skills relevant in Biology.	✓	✓	
	3. It provides additional information to the content.	✓	✓	
Design	1. The page has enough space for writing notes.	✓	✓	
	2. The print is not overcrowded.	✓	✓	
	3. It arouses learners' curiosity and interest.		✓	G
Purpose	1. It highlights the knowledge and skills demanded by the topic.	✓	✓	
	2. It captures the lessons intended objectives.	✓	✓	
	3. It directs the learner's attention to retain information.	✓	✓	
Comprehension Aids	1. It specifies the page number of subheads to locate information.	✓	✓	
	2. It provides assistance to locate information.	✓	✓	
	3. It contains visual tools for comprehension.		✓	G
	4. It directs to the important concept of the lesson.	✓	✓	
	5. It emphasizes writing to reinforce an important point.	✓	✓	

Comments/ Suggestions:

Using Trivia can provide additional information. Sometimes this information cannot be found on books particularly latest edition.

Evaluator:

Jeff Cherwin Francisco

Signature over printed name

Thank you and God bless!

Rating Scale in Evaluating Reading Guide for comprehension development in Biology

Name: Eliza Z. Alcoseg Age: _____ Years in Service_____

Degree: _____ Current Position: _____

Overview

This scale is from the suggestions given by Mckenna et.al (2003) on constructing a Reading Guide. Content, design, purpose and comprehension aids were the criteria considered necessary for the assessment of the reading guides.

Directions: On the list below are items that contain the rubrics in Reading guides evaluation. Kindly rate each item by putting a check mark in the corresponding column.

Very Good (2.25-3.00) – this means that the Reading Guide is accepted and does not require any revision.
Good (1.75-2.25) –this means that the Reading Guide needs 1 or 2 minor revisions.
Poor (1-1.75) –this means that the Reading Guide needs more than 3 items for revision.

Criterion	Indicator	Rating		
		3	2	1
Content	1. It emphasizes the important concept of the lesson.	✓	✓	
	2. It contains knowledge and skills relevant in Biology.	✓	✓	
	3. It provides additional information to the content.		✓	G
Design	1. The page has enough space for writing notes.	✓	✓	
	2. The print is not overcrowded.	✓	✓	
	3. It arouses learners' curiosity and interest.		✓	G
Purpose	1. It highlights the knowledge and skills demanded by the topic.	✓	✓	
	2. It captures the lessons intended objectives.	✓	✓	
	3. It directs the learner's attention to retain information.		✓	G
Comprehension Aids	1. It specifies the page number or subheads to locate information.	✓	✓	
	2. It provides assistance to locate information.	✓	✓	
	3. It contains visual tools for comprehension.		✓	G
	4. It directs to the important concept of the lesson.		✓	G
	5. It emphasizes writing to reinforce an important point.		✓	G

Comments/ Suggestions:

Evaluator: Eliza Z. Alcoseg

Signature over printed name

Thank you and God bless!

Rating Scale in Evaluating Reading Guide for comprehension development in Biology

Name: Rogen's Gonzaga Jr. Age: ____ Years in Service____

Degree: BSED- Current Position: Grade 8 Teacher

Overview

This scale is from the suggestions given by Mckenna et.al (2003) on constructing a Reading Guide. Content, design, purpose and comprehension aids were the criteria considered necessary for the assessment of the reading guides.

Directions: On the list below are items that contain the rubrics in Reading guides evaluation. Kindly rate each item by putting a check mark in the corresponding column.

Very Good (2.25-3.00) - this means that the Reading Guide is accepted and does not require any revision.
Good (1.75-2.25) -this means that the Reading Guide needs 1 or 2 minor revisions.
Poor (1-1.75) -this means that the Reading Guide needs more than 3 items for revision.

Criterion	Indicator	Rating		
		3	2	1
Content	1. It emphasizes the important concept of the lesson.	✓	✓	
	2. It contains knowledge and skills relevant in Biology.	✓	✓	
	3. It provides additional information to the content.		✓	✓
Design	1. The page has enough space for writing notes.	✓	✓	
	2. The print is not overcrowded.	✓	✓	✓
	3. It arouses learners' curiosity and interest.		✓	
Purpose	1. It highlights the knowledge and skills demanded by the topic.	✓	✓	
	2. It captures the lessons intended objectives.	✓	✓	
	3. It directs the learner's attention to retain information.	✓	✓	
Comprehension Aids	1. It specifies the page number or subheads to locate information.	✓	✓	
	2. It provides assistance to locate information.	✓	✓	
	3. It contains visual tools for comprehension.		✓	✓
	4. It directs to the important concept of the lesson.	✓	✓	
	5. It emphasizes writing to reinforce an important point.	✓	✓	

Comments/ Suggestions:

_____

_____

_____

_____

Evaluator:

_____

Signature over printed name

Thank you and God bless!

Rating Scale in Evaluating Reading Guide for comprehension development in Biology

Name: Edwin F. Sampang Age: 55 Years in Service 24

Degree: BS Civil Eng'g w/ 18 units Educ Current Position: Science Coordinator
MAT Mathematics

Overview

This scale is from the suggestions given by Mckenna et.al (2003) on constructing a Reading Guide. Content, design, purpose and comprehension aids were the criteria considered necessary for the assessment of the reading guides.

Directions: On the list below are items that contain the rubrics in Reading guides evaluation. Kindly rate each item by putting a check mark in the corresponding column.

Very Good (2.25-3.00) - this means that the Reading Guide is accepted and does not require any revision.
Good (1.75-2.25) -this means that the Reading Guide needs 1 or 2 minor revisions.
Poor (1-1.75) -this means that the Reading Guide needs more than 3 items for revision.

Criterion	Indicator	Rating			
		3	2	1	
Content	1. It emphasizes the important concept of the lesson.	✓	✓		2.75 VG
	2. It contains knowledge and skills relevant in Biology.	✓	✓		
	3. It provides additional information to the content.		✓	G	
Design	1. The page has enough space for writing notes.		✓	G	2.5 G
	2. The print is not overcrowded.		✓	G	
	3. It arouses learners' curiosity and interest.		✓	G	
Purpose	1. It highlights the knowledge and skills demanded by the topic.	✓	✓		2.75 G
	2. It captures the lessons intended objectives.		✓	G	
	3. It directs the learner's attention to retain information.		✓	G	
Comprehension Aids	1. It specifies the page number or subheads to locate information.	✓	✓		2.65 VG
	2. It provides assistance to locate information.		✓	G	
	3. It contains visual tools for comprehension.	✓	✓		
	4. It directs to the important concept of the lesson.		✓	G	
	5. It emphasizes writing to reinforce an important point.	✓	✓		

Comments/ Suggestions:

In constructing a test (fill-in the blank test), blanks should be of uniform length so as to avoid any clue.

Evaluator:

Edwin F. Sampang

Signature over printed name

Thank you and God bless!

Appendix B

Reading Guides

Characteristics of Ecological System

Think of one important word that you want to learn more about this reading selection. Then, write it in the bubble.

Predict whether the statements below are *true or false* before reading the selection. Return to these statements after reading if you have changed your view.

_____Ecosystem comes in all sizes.

_____ Forest and aquarium are examples of ecosystem.

Terrestrial and aquatic are two major categories of ecosystems. Forest, grasslands and deserts are main examples of terrestrial ecosystems while falls, lakes, streams or marine waters represent aquatic ecosystem.

The following terms would help you understand ecosystem. Locate the definitions of those terms using context clues.

Term	Location	Definition
Habitat	p. 150 par.1	
Population	p.150 par. 2	
Community	p.150 par. 3	
Niche	p. 50 par. 4	
Abiotic	p.151 par. 1	
Biotic	p.151 par. 1	

The figures on **page 150** represent an ecosystem. Look at them closer, you would notice that it is a group of living things that interact with one another and with the environment.

Identify and categorize the abiotic and biotic factors of the ecosystem shown below.

Abiotic	Biotic

Ecosystem is a community of _____and_____ that they _____ on each other to _____.

Which is more important- biotic or abiotic parts of the ecosystem? Why?

_____
_____
_____
_____

Biotic Components and Ecological Niches

Think of one important word that you want to learn more about this reading selection. Then, write it in the bubble.

Write a meaningful sentence using each word below.

Niche-

Biotic-

All biotic factors need energy to survive.

Locate the definitions of the two biotic factors. **p. 152**

Term	Location	Definition
Autotrophs	par.2	
Heterotrophs	par.2	

Fill in the following information. p. 152 par.3-4

Classifications of Autotroph

1._____

2._____

Classifications of Heterotroph

1._____

2._____

Autotrophs are also known as producers. Heterotrophs can be consumers or decomposers. Locate the examples of the following heterotrophs. **pp. 152-153**

Consumers	Examples
1.Herbivores	
2.Carnivores	
3.Omnivores	
Decomposers	**Examples**
1.Scavengers	
2.Detritivores	
3.saprotophs	

Write the needed words to complete the paragraph on the biotic components of the Ecosystem.

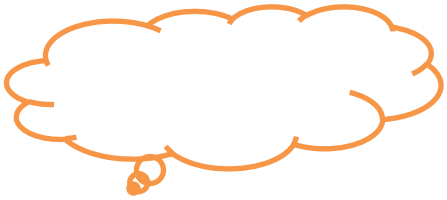
Plants are the common_____. They_____ their own food and this process is called_____. The other biotics components are the_____ and_____. They get their food directly or indirectly from the producers.

Write a short reflection on what you have read. See how much you can remember about it.

_____
_____
_____
_____

Abiotic Components

Think of one important word that you want to learn more about this reading selection. Then, write it in the bubble.



Write on the space anything that comes out your mind about the word below.

Abiotic

Abiotic factors are very important in the ecosystem. Their absence would greatly affect the biotic factors. A fish (biotic) cannot live without water (abiotic).

In your own words, tell what abiotic is?

Read the abiotic components. Then fill in the information below. **pp. 154-56**. Number one has been done for you.

Abiotic component	Benefit to biotic
Soil	provides the plants with water and nutrients that they need.

Abiotic factor or_____ includes things like_____,_____,_____,_____ _____,_____. These factors work together to balance the _____.

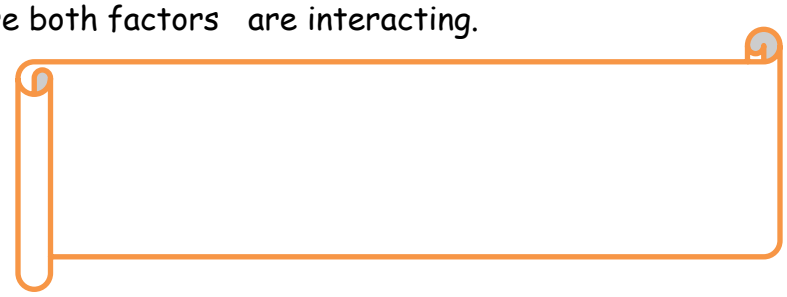
As a human being, how do you benefit from the abiotic factors?

_____
_____
_____
_____

Interrelationship Among Organisms in the Ecosystem

Think of one important word that you want to learn more about this reading selection. Then, write it in the bubble.

In your previous lesson, you have learned that the biotic and abiotic factor depend on each other to survive. Illustrate the scenario where both factors are interacting.



In this world, all things are made with a purpose. We all exist for one another.

Read the book definition of ecological **relationships** on p.**157, par. 3**. You may use of a context clue to grasp the meaning of the above mentioned term.

Don't you know that the term **symbiosis** comes from two Greek word that mean" with '" and "living?" It is also known as living together.

Read p.157, par.4.

Living things are bound to interact with one another. One type of this interaction is called a symbiosis. Fill in the following information. Look at the figures for examples **pp. 157-159**

Symbiotic interaction	Example	Your explanation

Symbiosis describes_____between or among different species. Mutualism, commensalism, and parasitism are_____. Some organisms are involved such kind of relationship because they_____ from one another. However, there are types of symbiosis that are not beneficial and may in fact_____ one or both of the species which in this case is the_____.

Can a man live in an island alone? Explain your answer briefly.

_____

_____

_____

_____

Energy Flow in Ecosystem

Think of one important word that you want to learn more about this reading selection. Then, write it in the bubble.

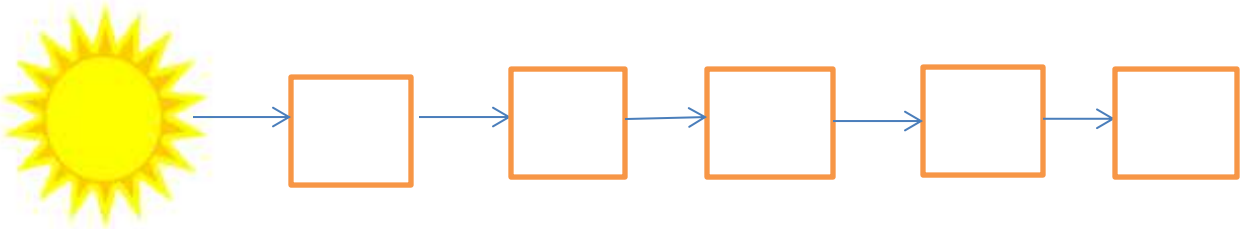
Why do we need food?

Most biotic or living things keep alive on this planet because of the energy flow coming from the sun.

Read **p. 159, par.5.** Then explain **energy flow** using your own words.

Let us determine how different species acquire their energy supply. Read pp.160-61 silently and take a closer look at the figures. You will be reading about energy flow, food pyramid and food chain or food web.

Energy Flow



All living things need_____to live. They get their _____ from the food they eat. The _____ directly obtain their energy from the sunlight while the _____ directly or indirectly dependent on_____ for their energy.

What would happen to the world if there is no transfer of energy among the producers, consumers and decomposers?

_____

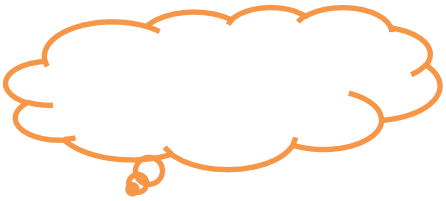
_____

_____

_____

Microorganisms

Think of one important word that you want to learn more about this reading selection. Then, write it in the bubble.



Predict whether the statements below are *true or false* before reading the selection. Return to these statements after reading if you have changed your view.

_____ A microorganisms are living things and can be seen easily.

_____ Microorganisms can also be found in our food.

_____ All microorganisms are harmful.

Microorganisms live almost everywhere on earth. In fact, they were the first living creatures on earth.

In your own words, tell what microorganism is.

Read pages 112-115 silently. Then fill in the information below.

Groups of microorganism	Description

Microorganisms are_____ things that cannot be seen by our naked _____. There are four groups of microorganisms and these are the_____,_____,_____ and_____. They may be _____or can cause disease.

How can you relate with this statement. "Even small creature such as microorganisms plays a vital role on earth."

_____

_____

_____

_____

Appendix C

Survey on Rank of Difficulty

Dear Teachers,

I am conducting a study on *Reading Guides in Facilitating Comprehension of Grade VII Biology Texts.* The first step I need to do is determine the topics which appear to be difficult to understand among students

In line with this, may I request you to rank the following lessons from 1-7. The easiest lesson is 1 and 7 is the most difficult one.

Directions: Please rank the following topics on Biology as to their difficulty.

Second Quarter Lessons	**Rank**
The Microscope and its Historical Development	
Levels of Biological Organization	
Microorganisms	
Characteristics of Ecological Systems	
Interrelationships Among Organisms in the Ecosystem	
Ecosystem for All	
Sustaining the Ecosystem and Its Resources	

Thank you.