

WH-Wheel with Digital Newspaper in Education (NIE)

Improving Reading Comprehension Skills

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Abstract—As the nation moves towards the 4th Industrial Revolution, technology has become a focal point in the classrooms. However, recent exam scores have shown that secondary and primary level students struggle with the English language, particularly, reading comprehension. They fail to elicit specific information effectively resulting in poor test results. It is thought that insufficient attention is paid to teaching of reading skills such as skimming and scanning. For most students in suburban and rural areas, the only exposure to English material is through the textbooks during English lessons. An action research was conducted to test the effectiveness of implementation of digital NIE and the WH-Wheel in improving students' skimming and scanning abilities. A WH-Wheel was designed online, containing concise questions that could be used to tackle different kinds of reading passages. Reading passages were sourced from digital newspaper articles which provided a source for current and authentic reading materials. Students would spin the wheel and immediately skim and scan the text to locate the answer. The action research carried out involved 12 primary school students from a national school in Kuala Lumpur. Pre-test and Post-test scores were compared and analyzed to determine if there was an improvement in students' reading comprehension skills. The findings revealed that pupils performed better in the post test indicating that the intervention used could improve students' skimming and scanning skills to elicit information. By utilizing digital reading materials and innovating a WH-Wheel, newspaper in education (NIE) can be incorporated in a fun way in the language classroom. It is hoped that English Language Teachers can integrate the WH-Wheel and digital NIE in teaching of reading comprehension.

Keywords— *WH-Wheel, digital newspaper in education, reading comprehension skills, skimming, scanning*

I. INTRODUCTION

Reading in the 21st Century is undergoing a tremendous shift. Reading skills are no longer confined to the pages of text books but have grown to include digital text and literacy. In line with the 4th Industrial revolution that is upon the nation, the rapidly evolving area of e-texts, while not a new concept in the educational technology sphere per se, offers a cost effective, efficient and accessible resource for students [1]

Since the nature of readers have changed, it makes sense that reading instruction should also be adapted to suit these needs. In Malaysia, teachers all over the country have been trained to make this shift to create 21st century classrooms. Former education minister, Datuk Seri Mahdzir Khalid announced that beginning in 2017, all schools in the nation would implement 21st century learning methods within the next five years [2]. In accordance to these needs, digital newspaper in education (digital NIE) and the WH-Wheel has an important part to play.

The WH – Wheel is an interactive web tool that was created in 2012 on the website, wheeldecide.com to provide a fun and engaging way to make decisions. Each wheel can be custom-made or edited to suit the user's needs. For the purpose of the study, our wheel was edited to include WH-questions like “where did it happen?”, “when did it take place?”, and “why do you think it happened like that?” It was decided that the wheel would be used as a fun way to create some excitement during the reading lesson, and at the same time, exposed students to WH questions.

Reading comprehension is a large part of Malaysian primary school English assessments; with sections covering about fifty percent of the paper in the primary six examination, Ujian Pentaksiran Sekolah Rendah (UPSR). In line with 21st Century learning methods, there is a lack of teaching tools and emphasis on reading skills like skimming and scanning. The introduction of digital NIE and the WH-Wheel could provide a novel method to tackle this issue faced in the 21st century language classroom. The aim of this study is to investigate the effectiveness of the combination of digital NIE and the WH-Wheels in improving students reading comprehension skills.

II. LITERATURE REVIEW

A. Reading Comprehension and Schemata

One theory that is widely esteemed in reading comprehension is the Schema theory, first developed by David Rumelhart in 1980. This theory proposed that background knowledge plays an important role in reading comprehension [3]. In her paper, the researcher focuses on different types of

schemata; formal schemata, content schemata, cultural schemata and linguistic schemata. Formal schemata was described as the knowledge of the organizational, rhetorical structures of texts. In other words, when a reader recognizes that the text was in a story form with its components such as rising action, climax and falling action, it would help them in processing and comprehending the text. Content schemata refers to the knowledge regarding the subject matter of the text, [4]. Linguistic schemata has been described as the lexical and grammatical knowledge that builds the basis of content schemata while cultural schemata has been explained in terms of cultural awareness in relation to the topic read [5]. In other words, readers have a higher chance of comprehending a text that is based on their own culture.

In a study on the role of content schema in reading comprehension among Saudi EFL students [5], a questionnaire was distributed to 61 Saudi EFL teachers in the English Language Centre, Taif University. They responded with perceptions on the role of content schemata in reading comprehension. It was discovered that background knowledge of Saudi EFL readers, fortified by pre-reading strategies like brainstorming and classroom discussions about the topic, helped significantly in reading faster and understanding better.

Similarly in a study on translation performance, [6] it was discovered that content schemata played an important role in the scores obtained by the participants. 172 Iranian undergraduate students majoring in translation, were given 6 questions that tested their content knowledge by testing vocabulary size, reading comprehension and translation ability. While vocabulary knowledge could not be a predicting factor in the success of their translation task, content knowledge positively correlated with the translation performance indicating that the higher the content schemata of a reader, the better they were able to comprehend a reading text.

In the context of this study, content and cultural schemata is recognized as extremely important in students' comprehension of the text. It is for this reason that digital NIE was selected to provide the reading materials for the students. The local and current news would tap into students' prior and cultural knowledge. With students reading about events within their country, they would be able to relate culturally to the content and this would aid with overall meaning making from the text. Familiarity of the content increases readers' comprehension significantly and they can comprehend a written text much better about a topic which is familiar to them [5].

B. Skimming and Scanning

Phil [7] revealed that skimming and scanning are probably two of the most useful skills in reading as long as you can overcome the fear that you will miss information if you do not read everything with perfect comprehension at all time.

A study carried out [8] investigated the use of skimming and scanning in comprehending English texts to 42 university students in Malang. Two classes were used as samples of the second semester students. The first class was taught with the skimming and scanning technique meanwhile the second class was taught using the conventional method. The results implied that the first class achieved better scores in reading comprehension after the skimming and scanning techniques were implemented in the teaching and learning process.

According to Brown [9], skimming requires the reader to scan through the text and get the main idea or the gist of it. On the other hand, scanning requires the reader to locate specific information. Nuttall [10] posits that scanning involves the reader glancing rapidly through a text to either locate specific information or to determine if the text is suitable for the given purpose. We scan to find the exact information that we want. This is supported by Anand [7] who mentioned that we scan when we want an answer to a particular question.

In a study, [11] the significance of skimming and scanning in the improvement of reading comprehension skills was discussed. An experimental research was conducted on 54 university students in Indonesia. The participants sat for a pre-test to determine proficiency levels before the intervention and post-tests to observe whether students improved on their reading comprehension test scores. The intervention method applied on the experimental group was teaching reading using skimming and scanning strategies while the control group were not exposed to this method of teaching. Results reported that the experimental group outperformed the control group in reading comprehension after receiving treatment that focused on skimming and scanning strategies. The researcher was able to conclude that these two strategies were effective in reducing reader confusion and increasing the speed with which a text was read.

C. ICT in the Language Classroom

Integration of technology into language education has become an everyday occurrence [12]. Information and Communication Technologies (ICTs) play a major role in creating a new and improved model of teaching and learning [13]. This means, as the language classroom in the 21st century changes to adapt to the current trends, Information and Communication Technology are coming to the forefront of education in the language classroom. The introduction of computers in education was greatly hindered by the cost but has since been recognized as indispensable tools for learning in institutions [12]. In a study to investigate students' and lecturers' perceptions on "TELL ME MORE" courseware as a learning tool, [12] carried out a survey questionnaire with 85 polytechnic students and 4 English language lecturers in Malaysia. The findings of this research indicate a positive perception towards the use of courseware as a learning tool. In line with this view, this study also employs technology as the main tool in supporting language learning.

Despite the advent of technology in the language classroom, research continues show that there is a lack of actual usage in the schools in Malaysia. To back this view, in a separate study conducted, [14] found that the use of technology in the ESL classroom was relatively low. In this study 4 English teachers from a school in Kuala Lumpur were interviewed by the researcher on the implementations of technology in their ESL classrooms. While, the findings reported a low usage, some disadvantages that surfaced were the difficulty of class control, tendency of students to use short forms in writing and distractions. Teachers too confessed to being unable to manage problems and plan activities involving technology.

In line with trying to overcome this problem, this study attempts to make full use of technology in the classroom in a user friendly way to increase exposure to the use of ICT in the

language classroom to aid in the improvement of reading comprehension.

D. Newspaper in Education (NIE)

The media plays a vital role when it comes to informing the public on what happens around the world, which is also helpful to students who need to be updated on the current issues surrounding them. Hopkins [15] mentioned that teaching current events through newspapers develops students to acquire good news reading skills and awareness of current events. One of the channels to achieve this, is to use newspapers as a teaching aid, especially as a tool to promote the reading culture where a lot of effort has been invested by the government and other stakeholders.

In his journal [16] highlighted the benefits to using online newspapers in the classroom. He posited that if suited to the students' level of English, newspaper articles can be interesting to read and may trigger some in-class discussion, as well as increase students' cultural awareness depending on the articles that they read. It is also believed since they are easily accessible and virtually free, its advantages should be fully exploited by the teacher.

The Newspapers in Education (NIE) program is made accessible to students in its aim to connect them to current affairs, and helps to stimulate interactive ways of teaching to attain the goals that are often specified when the teaching of language is concerned. The program, moreover, has the firm intention of creating a generation of critical thinkers and informed citizens.

The use of newspapers as a teaching tool is very important to students because it does not only provide authentic news, but also gives students knowledge on the use of English language. Newspapers provide different perspectives, ranging from business to lifestyle trends, as well as topical world events, among others.

III. METHODOLOGY

This action research was carried out on 12 primary school students from a school in Kuala Lumpur. Students were from various first language (L1) backgrounds and learnt English as their second language (L2). A pre-test was administered by utilizing the August term test for Year Four Students. There are 10 reading comprehension items in the tests that require skimming and scanning to locate answers. Students' scores in the comprehension section were recorded.

The intervention, the WH-Wheel, was employed in the reading classroom. Reading passages were sourced from digital newspaper articles which provided a source for current and authentic reading materials. Reading classes were conducted once every week for a duration of five weeks where students would undergo the intervention. After that, a post test was carried out by using the students' year end assessment for Year 4 to observe if there was any improvement in answering 10 comprehension questions. The post-test scores were tabulated and analyzed using the Statistical Package for Social Sciences (SPSS). Shapiro-Wilk's test for normality was carried out. A paired samples t test was done to test the significance in the difference in scores for pre and post-test.

IV. INTERVENTION

In the reading classroom, students are first given links to online newspaper articles via Google Classroom on their Chromebooks. The articles were read and any unfamiliar words or context were discussed. Next, the WH-Wheel was spun to provide a question. The wheel is an online wheel that is designed to spin and provide different outcomes every time. To spin it, students have only have to click the wheel. The Wheel was modified online to contain WH – questions; What, Where, Who, How, Why, and Which. For example, upon spinning the wheel, a student might encounter the question “Where did it happen?” or “Who is involved?”. The class then attempted to answer the question by referring back to the online newspaper article. Answers were keyed in simultaneously into a Google Document and could be immediately assessed and corrected.

Firstly, using digital NIE recognizes that students not only respond better to reading digital text but also get more out of the reading experience by being able to engage with digital media. Utilizing online newspapers like The Star Online in computer labs enables students to get access to authentic and culturally relevant materials. Simply right-clicking on a challenging word allows students to search for definitions of words by Googling them. Secondly, WH-Wheels are specially designed questioning tools that can be applied to various types of reading texts. Students simply “spin” the wheel by clicking it to retrieve their question. This is a departure from the traditional method of testing reading comprehension commonly seen in workbooks or textbooks. Not only does the wheel create an element of suspense, the time limit set by the teacher trains students to skim and scan texts for information quickly. Teachers benefit from this because it allows them to have a ready stock of questions that is valid for use at any time.

V. FINDINGS AND DISCUSSIONS

The data collected from the pre-test and post-test was tabulated to find out if there was an improvement in the post test scores. The difference between each student's score was also tabulated.

TABLE I. PRETEST AND POSTTEST SCORES

Participant	Pretest score	Post test score	Score difference
Student 1	5	7	2
Student 2	4	7	3
Student 3	3	6	3
Student 4	5	8	3
Student 5	4	7	3
Student 6	4	6	2
Student 7	2	6	4
Student 8	7	7	0
Student 9	4	6	2
Student 10	3	8	5
Student 11	3	7	4
Student 12	8	9	1
		Mean Score Difference:	3

Based on Table I, it is observed that 11 out of 12 participants managed to improve on their scores. 1 student obtained the same score. This can be further standardized into percentage form whereby 91.67% of participants recorded improvement in their post-test scores. This finding is in line with a study conducted [11] that showed similar improvements in students' post-test scores' after having received treatment that focused on skimming and scanning reading strategies. Participants showed improvements in areas of inferring meaning, transferring information and correctly identifying tone, feeling and attitudes in the texts. While the average score difference reported in this study is an improvement of 3 marks, the highest recorded improvement is 5 marks, and the lowest being 1 mark. It can be summarized that however little the margin of improvement, students did seem to benefit from the treatment as most managed to raise their scores.

1) *Shapiro-Wilk Test for normality:* To test the significance of the scores, the data was entered into the SPSS software to compute the normality using Shapiro-Wilkes test. It was found that for the purpose of validation of data presented in literature, normality tests such as the Shapiro-Wilk test, provided by SPSS software are recommended [17].

The results showed that the tests were not significantly different from a normal distribution since the significance values of the pre-test was 0.013 and post-test was 0.051, both having a significance value of higher than 0.05 ($p > 0.05$). Therefore, the pre-test and post test data was considered to be normally distributed. Normality tests for small sample sizes, are most likely not able to reject the null hypothesis and therefore small samples most often pass normality tests [18].

2) *Paired Samples t test:* As the data was determined to be normal, a paired samples t-test was carried out to determine whether there was a significant difference between pre-test and post-test scores. Paired t tests can be categorized as a type of t test for a single sample because they test the difference between two paired results [19].

TABLE II. PAIRED SAMPLES STATISTICS FOR PRETEST AND POST TEST SCORES

		Mean	N	Standard Deviation	Standard Error Mean
Pair 1	Pretest	4.3333	12	1.72328	0.49747
	Post test	7.0000	12	0.95346	0.27524

Table II shows the mean scores for both pre-test and post-test. The mean score for the pre-test was found to be around 4 marks, while the mean score for the post-test was 3 marks higher, at 7 marks. It can be summarized that participants' demonstrated improvement after the intervention was carried out. This result could be attributed to the fact that reading comprehension tests were based on common themes in the Malaysian English Curriculum. In addition, during the intervention, students were exposed to articles in the newspapers that were culturally aligned with their own schemata, which in turn, may have increased their ability to comprehend the texts. This view is supported by findings [5] that stressed upon the idea that the not only linguistic

knowledge, but activation of the content schemata also plays an important role in facilitating the readers to understand a text.

TABLE III. PAIRED SAMPLES TEST FOR PRE-TEST AND POST-TEST SCORES

		Mean	N	Std Dev	Std Error Mean	df	Sig. (2-tailed)
Pair 1	Pretest	2.667	1.371	0.396	6.739	11	0.000
	Post test						

Table III above illustrates the significance of differences between the scores for the pre-test and post-test. In other words, the results in this table indicate if the differences of mean scores are statistically significant. The last column on significance reads 0.000 which is less than ($p=0.05$). In conclusion, there is a significant difference between the two mean scores. It can be summarized that the intervention method used to train students on their skimming and scanning skills for reading comprehension, clearly improved their ability to perform in the reading comprehension post-test.

The use of current Malaysian newspapers in the intervention phase could have had an impact on this outcome as it may have increased students' content knowledge. Coming from various L1 backgrounds meant that participants would resort to some translation when attempting to understand reading texts. This conclusion is similar to findings in [6] where content knowledge was found to be the second highly correlated variable to reading and translation performance. The employment of the online WH-Wheel that provided continuous exposure on WH-question types in an engaging way also might have had an impact on students marked improvement in tackling these types of questions.

This finding could imply that the use of interactive technology in the classroom may aid in the conceptualizing ideas and meaning making. This is in line with the theory outlined in the Education Blueprint for Higher Education 2015-2025 in relation to the Fourth Industrial Revolution and the Education 4.0 Framework whereby revamping the nation's education system has become the Federal Government's priority [20].

VI. CONCLUSION AND IMPLICATIONS

This study was conducted to determine if the use of WH-Wheel in designing questions increases pupils' ability and confidence in answering comprehension questions. The findings have emphasized the idea that through the use of the WH-Wheel, pupils were able to practice their skimming and scanning skills and improve reading comprehension of the passages in order to answer the questions. There was an improvement in the post test scores as compared to the pre-test. The findings in this study are coherent with [7] which found that by explicitly teaching skimming and scanning in the classroom, students' were able to perform better in their reading comprehension post-tests highlighting the importance of the education of explicit reading strategies such as skimming and scanning to improve reading comprehension. Some of the limitations of the study is the issue of accessibility of computers and internet connection in all Malaysian schools.

Not all schools are equipped with these facilities to allow the study to be conducted.

Some key implications of the study indicate that students are better versed and up to date with current issues through the use of the newspaper in the classroom. Apart from that, students are able to apply the reading skills learnt through this intervention and apply them in other subject areas. In the future, perhaps increased efforts can be invested into the incorporation of ICT games, tools or software to aid the teaching and learning process. Furthermore, there could be more exposure, training and focus on specific reading strategies such as skimming and scanning for information.

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