MINDOMO: A DIGITAL MIND MAPPING IN PRIMARY ESL READING SKILLS

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ABSTRACT

Reading is one of the essential skills in the English language that need to be mastered by students in schools. Teachers have practiced various teaching techniques in order to help the students grasp new knowledge and finding out the meanings through reading. Since the traditional mind mapping is one of the teaching materials used in teaching reading, this study aims to investigate the perceptions of students in using Mindomo, a digital mind mapping tool in the reading lessons. In order to achieve the objective of this research, a questionnaire with both quantitative and qualitative items were developed. The 30 participants responded are Primary Year 6 students from an urban school in Banting, Selangor. Through the analysis of the data, majority of the students opted to use Mindomo during their reading lessons as it helps to comprehend the texts read. In addition, the students feel encouraged to read more written texts as well as find the lessons using Mindomo enjoyable and interactive. Mindomo also helped the students to improve on the vocabulary knowledge. The use of Mindomo in the reading lesson also paves new path in incorporating Information Communication & Technology (ICT) tools and skills into the pedagogy as it is coincide with the objectives of leveraging ICT to scale up the learning quality in the Malaysian Education Blueprint 2013-2025. This study's results aspires to assist teachers, education officers and relevant authorities the importance of using Mindomo as a ICT teaching tool in motivating students' reading skills.

Keywords: digital mind mapping; reading skills; ICT tools; 21st century skills; ESL

INTRODUCTION

The objective of Malaysian education curriculum pertaining to the English language is students are able to converse efficiently and effectively in the language in social and professional situations (Chitravelu, Sithamparam & Teh, 2005). In the English language curriculum, the four skills of listening, speaking, reading and writing are vital in the teaching and learning. Malekzadeh and Bayat (2015) stated through mastering the reading skills, students are able to discover many things, enhance their knowledge besides figuring out the meanings in texts especially in countries like Malaysia where English is been used as the second language. In addition, students would not be able to achieve their intended achievement in academic if they fail to comprehend the texts they read. Hence, the importance of reading is seen to assist the students to understand the meanings in texts and able to present their own ideas based on the materials read. Additionally, reading is one the important skills which need to master by students by the end of their schooling years and enabling them apply English proficiently in the society are listening, speaking, reading and writing. Tompkins (2010) defined reading as a complex process to understand written text besides interpreting the meanings of the materials the readers read appropriately. Reading is given important in the Malaysian education system too as the MOE aims to produce students who are independent readers through the mastering of basic literacy using the methods of phonics (Kementerian Pelajaran Malaysia, 2012). The Malaysian education system has seen many new technologies been introduced daily to improve the teaching and learning methods of reading skill. These technologies help teachers to make their lessons more interesting and attract students' attention. Moreover, technology-aided classes would help teachers to achieve their teaching and learning objectives. According to Yunus, Salehi and Chen (2012), students lose interest in classes where the teachers apply the traditional 'chalk and talk' method. Pupils who drift away during lessons would lose out in obtaining the knowledge intended to be passed by the teacher. Teachers have used a variety of teaching and learning techniques to make their lessons interesting as well as achieving the objectives intended including mind mapping, group work, researches on various topics and

making scrap books. The 21st century skills are given an importance in the Malaysian education system as the Ministry of Education (MOE) aims to produce students who are capable to face the challenges of the 'real' world besides being a successful 'world player'. The idea of involving the 21st century skills like solving complex tasks, making quick decisions and critical thinking skills (Prensky, 2006 in Hassan & Mohsin, 2015) creates an all-rounder student where he or she does not only excel in academics but also able to conquer the challenges faced. Thus, the changes in the teaching and learning techniques will pave innovate ways to prepare the students to adapt to the nature of the challenges as well as getting them to imply the knowledge gain to succeed in life. Furthermore, Somekh (2004) mentioned about the students being responsible of their own learning by providing them adequate ICT knowledge and allow them to learn them in their own pace. The MOE also highlighted the vital role played by infusing the Higher Order Thinking Skills (HOTS) since the execution of these skills prove to be fundamental in this century (MOE, 2011 in Hassan & Mohsin, 2015). This is because the level of thinking skills of the students helps in making sure they are able to grasp the 21st century skills with the help of integration of ICT tools. The role of traditional teacher also transforms to be the facilitator in the classrooms (Yunus, Nordin, Salehi, Embi & Salehi, 2014; Garba, Byabazaire and Busthami, 2015) creating the 21st century classroom and incorporate HOTS.

Teachers over the years have implemented various teaching techniques to teach reading skills to the students. The use of games, group work and library researches are some of the examples exercised by the teachers. The mind mapping has been one of the strategies which are effective used during reading lessons. Mind mapping has defined by Liu, Zhao, Ma & Bo (2014) as a method used to picture the relationship of different terms and concepts which have distinctive features in terms of its colours and free form. This technique helps in showing the relationships among the concepts with the use of connecting lines and intersecting figures (John & Olusola, 2006). The mind mapping technique aids the students in the promotion of creative thinking and bridging significant ideas on areas focused (Buzan, 2010). In addition, teaching and learning can have more positive effects and help students to understand better the topics via mind mapping and its graphical design. According to Liu et. al. (2014), students will have higher motivation level besides increasing their memory retention power through using mind mapping in classes. Yunus and Chien (2016) have the same opinion the idea of mind mapping as an effective tool in helping the teaching and learning process. Sabbah (2015) agrees the usage of mind mapping in helps to improve the reading skills of the students. Hence, a study on the integration of the digital mind mapping tool would help the relevant authorities the importance of assimilating ICT tools into the teaching and learning of ESL in schools.

The study limited in focusing on the perceptions of 30 Primary Year 6 pupils in Banting, Selangor towards using Mindomo, a digital mind mapping tool in their English reading lesson. The researcher mentions the hypothesis of the study as follows: There is a significant influence of Mindomo in improving the students' reading skills in the English lesson. Consequently, this study aims to investigate the students' perceptions in using the digital mind mapping, Mindomo in their reading lessons. The following research questions are developed to guide the researcher in investigating the use of Mindomo: 1) What are the perceptions of the students in using Mindomo in their English reading lesson? 2) What are the advantages of using Mindomo in the English reading lesson? and 3) How does Mindomo helps them to be motivated to read texts?

LITERATURE REVIEW

Reading skills

Reading is defined as a receptive language process by Goodman as cited in Carrel (1988) where the reader makes meaning of what he or she reads through the ideas that the writer trying to portray. On the other hand, Alexander (1988) describes a writer tries to converse with the readers through the written language thus stating that reading is a communicative process. Reading has always been a two-way communication between the reader and writer and it is an ongoing active process. Meanwhile, reading also involves the writer tries to convey their thoughts and views in their writing whereas the reader comprehend the text and the messages from the text (Baradja, 1990).

In order to enhance reading skills, various theories are involved such as the top-down approach, graphic organisers, visual learning and constructivism (Sabbah, 2015). The students are focused to grasp the main ideas rather than the comprehending each of the words in a passage through the top-down model. According to Tompkins (2010), students make meaning of what they read through a combination of text-based information and their background knowledge on the given topic. This happens because reading is a meaning-making process (Tompkins, 2010) as students construct their own meaning through their understanding of the text and prior knowledge. Furthermore, Heilman, Blair and Rupley (2002) mentioned reading need to be fostered among the students in order to create the ability of them to understand printed materials as well as linking ideas through them.

The mind mapping technique

Mind mapping is one of the methods used by teachers in helping students to understand particular topics and materials that they have read. It also helps improving their memory and making the students remember the notes read. Deshatty and Mokashi (2013) defined mind mapping as a chart focusing on the fundamental keyword or topic which is connected to various ideas, words and phrases to show the relationships among them. Moreover, mind mapping also aids them to write down short notes and ideas linked to the main topic by branches containing words, phrases and images (Buzan, 2006). Teachers who are employing the mind mapping strategy in their reading lesson would help the students see the relationship between the ideas involved thus encouraging them to classify them accordingly to help them improve their understanding (Padang & Gurning, 2014). In addition, Malekzadeh and Bayat (2015) stated mind mapping aids students in structuring their thoughts in a simple yet comprehensive manner which helps them in presenting their ideas in easy, meaningful way to their listeners. The mind mapping strategy also helps teachers in elaborating the learning in a simple manner as well as being useful for learners who are visually inclined. Stephen and Hermus (2007) support this as in their study they stated the mind mapping helps visual learners to comprehend the topic better because this strategy assist them in creating connection and handling their notions. Moreover, Ruffini (2008) mentioned that teachers are given freedom to express their ideas through the use of mind map in their lessons since this strategy does not limit them to visual and linear structure. Since mind mapping involves lots of graphics and colours, it would help the students to grasp and retain new knowledge in an effective way. This is similar in the study of Liu, Zhao, Ma and Bo (2014) where they found out teaching and learning are more colourful through mind mapping supports memory retention and motivation enhancer for the students. Moreover, according to Malekzadeh and Bayat (2015), mind mapping is a useful tool in helping teachers to enhance teaching besides creating a strong base for the students to learn.

Digital mind mapping, Mindomo in ESL classrooms

The traditional mind mapping is created by students writing the main topic in a square or circle in the middle of the paper. Then, they draw nodes and write words or ideas associated to the topic. Students would also draw more nodes to elaborate their main ideas as sub-ideas further using different colours to differentiate the ideas. However, this method demonstrated to be time consuming as well as wasting materials and effort (Sabbah, 2015). The era of Information and Communication Technology (ICT) has paved various innovative ways to make the teaching and learning process much more interesting and engaging including the reading skills. Thus, the use of Mindomo (http://www.mindomo.com) which was launched in 2007, the digital mind mapping would be a better choice for the teachers to conduct their lessons additionally increasing students' attention and attracting their interest to gain more valuable knowledge. This mind mapping tool gives new path for teaching and learning as it guides the students to create graphic organisers (Pashaie, 2009) which are colourful and interactive in addition sharing with their peers to be commented and evaluated. Mindomo helps to improve our teaching and learning and also perform better in our presentation during meetings and courses. Moreover, Mindomo assists in turning our ideas into colourful mind maps which creates better understanding for the listeners as well as providing the proper model to show the developments of our plans (Exswap, 2016). It can be used in various ways by the users besides presenting the ideas like a professional.

In ESL classroom, the digital mind mapping, Mindomo can be a helpful tool for the teachers to create interactive and interesting lessons especially for reading skills. The idea of integrating Mindomo in the classroom would produce 21st century skill students who are proficient at brainstorming, questioning,

synthesising, analysing and generating new ideas, problem-solving, and researching since they will work collaboratively creating mind maps (Dominik, 2014; Mindomo, 2016). Mindomo does provide a platform for students and teachers to work cooperatively in order to form a digital ESL classroom with the integration of ICT besides achieving the dreams and visions of the MOE in creating the 21st century classroom. The traditional classroom in educating English for the students should be transformed to an interactive ICT related lessons since the students are more tech-savvy and prefers to indulge in classes involving ICT tools thus Mindomo creates this pathway to realise their intentions and make the teaching and learning much more enjoyable and interesting.

METHODOLOGY

This section deals mainly with the methodology used in this study covering the areas of research design, research instrument and data collection procedures. The methodology will explain on how the researchers conducted the study, collected the data and obtain the results on the use of Mindomo in the reading lessons.

Research design

The researcher utilised a survey to collect both quantitative and qualitative data concurrently in this study. The data collected are to measure the perceptions of students on the use of Mindomo in their English reading lessons besides taking into account their thoughts on the advantages of using this tool and the improvement they endure in their reading skills throughout the research period. The respondents of the questionnaire consisted of 30 Year 6 students in a primary school in Banting, Selangor. They are taking one of the national examinations in Malaysia; the Ujian Penilaian Sekolah Rendah (UPSR) and are the first batch of students who have gone through 6 years of the new education system which is the Primary School Standard Curriculum (KSSR). These participants of this study are suitable since they are the production of the ministry's objectives to create students who are capable of facing the challenges of the 21st century. The integration of ICT in their reading lesson is parallel with the objectives underlined by the MOE in the KSSR document in which they stated that students should be able to "read and comprehend a range of English texts for information and enjoyment by the end of Year 6" (Kementerian Pelajaran Malaysia, 2012) thus, the participants are appropriate for the study. However, the participants are limited to one school only where the results cannot be generalized all over nation. The respondents' age is 12 years old and their level of English proficiency in reading range from average to good, consequently, everyone of them are able to read the English texts and there are not major obstacles for them to understand the texts. The primary school that been chosen is located in the urban area of Banting, Selangor and it is a mixed population of students consisting the Malay, Chinese, Indian, Orang Asli and other races as well. The respondents in this study have not been exposed to digital mind mapping, Mindomo in their schooling years based on the researcher's investigation. In this study, the researcher utilised the convenience sampling method since the researcher was teaching the class. According to Sabbah (2015), convenience sampling is defined as a non-probability sampling technique since the respondents are chosen based on the researcher's convenient accessibility and closeness to be able to conduct the research.

Research instrument

The research questionnaire substances were adapted from Sabbah (2015) as well as Yunus and Chien (2016) study. In this study, the researcher produced the questionnaire consisting two parts; Part 1: ten close-ended items and Part 2: two open-ended items. In order to bring out the students' insights on the use of Mindomo as a digital mind mapping tool, the ten close-ended questions were considered by the researcher. The close-ended questions use the Likert Scale ranging from number 1-4 (Strongly Disagree, Disagree, Agree and Strongly Agree). This technique assists the respondents to answer the items in a mannerly way. In addition, students were allowed to express their opinions on the advantages of using Mindomo in their reading lessons and how it helps them to understand the texts read through the two open-ended questions. These open-ended questions focuses the views of the participants wish to express in helping the researcher to understand better on the use of Mindomo in the reading lessons. The items would help the respondents to understand better the intended purpose of the study besides guiding the researcher to obtain the results

based on the participants' point of views. Moreover, the respondents are able to express their ideas on using Mindomo in their reading lessons in a more structured manner.

Data collection procedures

This study was conducted over the period of 5 weeks with an interaction time between 1-2 hours per day. This is due to the time allocated for the English subject in the Malaysian school where the contact hours assigned to teach English is 5 periods per week (30 minutes per period). The researcher starts off the study by giving the students 2 hours of introduction classes on how to use Mindomo to create mind maps and they are given time to explore the tool in groups. This is to create understanding among the students on the digital mind mapping tool which they will be exposed throughout the 5 weeks of the study. Moreover, the collaborative technique gives the students opportunities to share their ideas with their peers. Some of the students also discovered ways to include images in their mind map besides changing the fonts and colours of the words and phrases. In addition, these introduction classes also work as a mini workshop for the students where they can ask questions and doubts on using Mindomo. Then, in the following session, each of the students is given a set of texts to be read in the first 15 minutes of the interaction time with the researcher. Then, they have to type the important points or ideas of the texts into the Mindomo on their computers. They should draw the mind maps with the main topic as the central focus and branch out the ideas gotten from the texts read. The participants then need to present their work to the researcher and peers in the presentation mode which was exposed during the introduction mini workshop. The students are given time (approximately 10 minutes) to comment on their friend's Mindomo mind map and suggest ways to improve them. At the end of Week 5, each of the students is given a questionnaire to be answered based on their experience using Mindomo in their reading lessons. The answers from the participants are collected and the data was analysed to find out their view on Mindomo as a teaching tool in their reading classes.

FINDINGS & DISCUSSION

In this section, the researcher will reveal the findings that were obtained through the data analysis. This section will be divided into four sections namely the demographic data, students' view on using Mindomo in their reading lessons, their perceptions on the advantage of assimilating Mindomo in reading and the level of students' motivation to read students with the use of Mindomo in their English lessons thus leads to the discussion of the objective of this study.

Demographic data

The number of respondents for this study is 30 divided between 20 female (67%) and 10 male (33%). In terms of race, the respondents are separated into 5 Malays (17%), 1 Chinese (3%), 21 Indians (70%) and 3 Orang Asli (10%). The division percentage of the respondents based on the gender and race are almost similar to the total ratio of the students at the school.

Students' view on Mindomo in reading lessons

The items from the questionnaire were based on the Likert Scales and the data from it are shown in Table 1 as below. In Table 1, the researcher shows the answers given by the respondents regarding the use of Mindomo in the reading lessons.

TABLE 1: Students' answers on Mindomo in reading lessons

Items	Students' answer							
	Strongly Disagree		Disagree		Agree		Strongly Agree	
	F	%	F	%	F	%	F	%
1	0	0%	0	0%	14	47%	16	53%
2	0	0%	0	0%	11	37%	19	63%
3	0	0%	0	0%	12	40%	18	60%
4	0	0%	3	10%	14	47%	13	43%
5	0	0%	0	0%	10	33%	20	67%
6	0	0%	0	0%	21	70%	9	30%
7	0	0%	2	7%	15	50%	13	43%
8	0	0%	0	0%	15	50%	15	50%
9	0	0%	1	3%	11	37%	18	60%
10	0	0%	0	0%	7	23%	23	77%

Based on the Table 1, the majority of the respondents agreed that Mindomo proves to be a useful tool in helping them during the English reading lessons. It shows their satisfaction in implementing Mindomo in their reading lesson and able to continue the integration of the tool. In this study, more than half of the students (53%) strongly agreed that Mindomo helps them to organise ideas based on the texts they have read. This finding is supported by Naqbi (2014) and Malekzadeh and Bayat (2015) as mind mapping help students in organising their thoughts as well as enhancing their ability to plan their work (Item 1). The students mostly strongly agree (63%) that the process in creating mind maps using Mindomo was enjoyable (Item 2) whereas 67% of students claimed that they enjoyed the overall process of using Mindomo in their reading lessons (Item 5). The enjoyment of the students in the process of indulging themselves in using Mindomo during the reading lessons is parallel to the findings by Sabbah (2015) where he stated the use of mind mapping is enjoyable for the students and it is an effective tool. In addition, majority of the students (90%) of students stated that the use of Mindomo assisted them in understanding the ideas in the texts read (Item 4) and all of them concurred Mindomo aids them in identifying the main ideas and sub-ideas in Item 6. This is agreed by Moi and Lian (2007) where they found that mind maps works as an effective tool in improving the students' understanding on topics read. However, only 3 students (10%) of them disagree to this (Item 4) since they felt some of the texts that they read were difficult.

The use of Mindomo in the reading lessons helps the students to be creative as 18 students (60%) strongly agree this tool creates a platform for them to express themselves in a more innovative manner (Item 3). This finding is supported by Liu et. al. (2014) and Sabbah (2015) mentioned that using mind mapping tool in the classroom encourages students to think creatively besides preparing a platform for them to organise their ideas in a more organised way. The 18 students (60%) strongly agree the integration of Mindomo in their reading lessons increases their motivation to indulge themselves into reading (Item 9). The use the mind mapping tool has been proved to enhance students' motivation in obtaining new skills and knowledge as supported by Liu et. al. (2014) in addition to the study conducted by Jones, Ruff, Snyder, Petrich & Koonce (2012) found out the mind mapping activities conducted also demonstrate the increase in the students' enthusiasm to learn. Likewise, the results obtained from the study also parallel to Johnson and Johnson (2009) where they mentioned mind mapping tool increases students' intrinsic motivation as well. Half of the students (15 students) agree that Mindomo develop their reading skills (Item 7) whereas only 2 students (7%) disagree with this item. In addition, the students have the same opinion that Mindomo also helps them to improve their vocabulary skills (Item 8). This is supported by Liu et. al (2014) stated the incorporation of mind mapping tool during lessons helps in improving the students' achievement in their academic thus the findings from the study too proves the same in terms of the reading skills. Furthermore, Pashaie (2009) found out that mind mapping tool plays a vital role in the increment of vocabulary knowledge among students. The majority of students (77%) strongly agree Mindomo mind mapping tool make the learning of reading skills much easier and interesting with the inclusion of colours and images during the creation of the mind maps. Betancur and King (2014) mentioned that students would be attracted to the mind mapping software since they are able to move freely and create beautiful mind maps.

The advantages of using Mindomo in reading lessons

The researcher reviewed the open-ended questions' responses from the students and it helped to reveal the benefits of using Mindomo in the reading lessons. Most of the students mentioned that Mindomo helped in improving their reading skills especially their reading comprehension. Since Mindomo assists in summarising and organising the ideas from the texts read, the students are able to skim and scan purposefully the passage and answer the given questions effectively. These are some of the responses from the students:

- Mindomo helps me in understand when reading English passages in textbook.
- I can understand the texts I read better.
- Mindomo helps me to get the ideas from the books I read and makes me understand.
- I can read better now with the help of Mindomo because I can understand what the writer is trying to say.
- I can remember better what I read after learning to use Mindomo.

According to Liu et. al. (2014), mind maps help in retaining the information need which would be helpful in learning the language since they are visualisation tool besides improving the ability to understand the ideas intended. In addition, the students also responded by using colours and images, they are able to grasp the meanings of texts in an enjoyable and interactive manner. The students' responses on this matter are as follow:

- When I use lots of colours, I can see the links better.
- The different colours I use show me how different things are related to each other.
- I use many colours for the lines and words to show the connection between the main idea and other ideas.

Sabbah (2015) supports these answers as the use of colours and shapes assists the students in detailing the ideas from the texts by connecting them into relevant relationships. These statements from the students prove that using Mindomo in reading lessons would be fruitful because they will able to learn more new things and comprehend the texts better.

Mindomo motivates students

The second open-ended question unravels the students' view on the influence of Mindomo in motivating them to be an avid reader besides improving their reading habit. Most of the students (90%) responded that they feel motivated to read more and others have turned Mindomo as a tool to develop their reading skills. This is due to the lack of exposure to reading materials as well as the skills to comprehend the texts read. Following are some of the examples of responses on the motivation of using Mindomo:

- I want to read more books now. Mindomo helped me understand the texts I read.
- I feel so good when I read because I understand better now.
- Mindomo makes my reading much more enjoying. I use Mindomo at home when I read to get the ideas.

Hence, this study proves that Mindomo, a digital mind mapping tool aids in improving the students' reading skills by giving them options to summarise the ideas in the texts, providing colourful images and fonts to attract their attention besides enhancing their motivation to read more texts especially related to English language. Moreover, Mindomo helps the teachers to vary their teaching techniques and transform their traditional 'talking' teacher to facilitator or guide for the students to grasp the intended knowledge. Mindomo also promotes creativity among the students and generates the feel of responsibility and accountability of their own work.

CONCLUSION

The teaching and learning techniques of the English language should transform by providing the students a platform for them grasp new knowledge and improve in the language. Reading skills plays a vital role in enabling students to be master of the English language especially in countries such as Malaysia where English is used as the second language and practiced widely across the nation. To be a confident reader to English texts, one must be able to comprehend the meanings the writer tries to convey through his or her written language. Mind mapping does provide this as students are able to obtain the main and sub ideas from texts read. However, the traditional mind mapping would discourage students from being an avid read, thus, the incorporation of Mindomo, the digital mind mapping tool pave its way into the teaching and learning of reading in the English lessons. Students enjoy the process of learning and practising the mind mapping tool during the lessons as well as promoting their creativity in producing virtual mind maps to be presented to their peers. In addition, Mindomo also assisted the students in understanding the meanings of the texts they read by increasing their vocabulary knowledge and it enhances their motivation to read more written texts.

On the other hand, this study does draw some setbacks. For example, the researcher could not conduct this study in a bigger scale due to time constraint. The study on the use of Mindomo should include more participants including the secondary level students to obtain results and views in helping to make a generalisation in a larger group of people. In addition, this study only covers the perceptions of students in the incorporation of Mindomo in the reading lessons. In the future, studies should be conducted on the effectiveness of this digital mind mapping tool in enhancing the other three important skills of English language. Furthermore, an in depth study should be carried out with the teachers as the respondents to identify their willingness to incorporate ICT tools such as Mindomo in their teaching pedagogy.

Overall, this study revealed some important findings in terms of teaching and learning. The ministry's aim to indulge ICT in the 21st century classroom would help in producing HOTS students. Further, the incorporation of ICT tools such as Mindomo is parallel with the 7th shift of MEB 2013-2025 and assists in leveraging the quality of our education in Malaysia. In addition, the transformation of teachers' role as facilitators in the 21st century classroom will be successful in the near future. Nevertheless, more studies should be carried out to investigate the effectiveness of incorporating Mindomo as a teaching tool as well as the enhancement of the other language skills involved.

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