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## Using Digital Comprehension to Improve Reading Comprehension Skills Among Young Learners

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### Abstract

This innovation product is invented to assist the understanding of level two primary school pupils (Year Six) in the storyline or chronology of stories contained in the syllabus such as in the Year 6 (SK) textbook, How the Tiger Got its Stripes. This is because the innovators found that their pupils were unable to comprehend the stories in form of text. They have also shown less interest in reading as they are audio-visual learners. This has caused these pupils to be unable to answer the questions based on the story correctly. Digital Comprehension has proved that it has successfully helped these pupils to comprehend story by listening, watching and reading at the same time. Plus, it correlates the most to the six components in the Bloom's Taxonomy, which are Remembering, Understanding, Applying, Analysing, Evaluating, and Creating. The objectives of producing this innovation product are to improve the pupils' understanding onto storylines, to allow them to enjoy learning stories through reading and watching, and to have them to answer simple questions related to the story. As for novelty, Digital Comprehension is created using the 'Courselab 2.0' software and it can be published into an interactive application. So, it is a genuine idea in assisting their pupils. It has proven that Digital Comprehension had improved the pupils' performance in form of worksheets that contains two components; arranging storyline and answering comprehension questions. This innovation benefitted the society the most as it is user-friendly, editable depending on the story the teachers want to teach, can be integrated offline, and suitable for all ages.

**Keywords:** Digital Comprehension, Bloom's Taxonomy, Courselab 2.0, Reading Comprehension Skills, Primary School Pupils

### Introduction

Reading is a necessary component of the communication process. Creswell (2012) claims that as a reader, a person should be able to decode, understand, and make sense of the information provided. The reading comprehensions commences as the reader makes sense of the reading material. Reading is counted as a part of Communicative Language Teaching (CLT), in terms of how the message is conveyed from a writer to a reader via a printed material to achieve one common goal, which is to get the answer to the questions

given to the reader. Reading comprehension issues are frequent among students in the nations of Southeast Asia, especially among non-native English speakers. In Malaysia alone, many students in elementary schools on the outskirts of cities struggled with this issue of reading comprehension as some are unable to recognise a straightforward key concept from a brief paragraph.

We often hear that pupils say that reading is very boring for them. That includes many young people furthering their studies in the tertiary level admit reading is a very tedious and dull activity. Thus, pupils in school always lose their attention while having reading activities in the classroom. It will indirectly affect their performance in education. Pupils will be having a problem understanding the text and unable to comprehend it. Due to this condition, they will not answer the comprehension questions related to the text they have read. Some pupils will read for the sake of following the teacher's order without being able to know or understand the meaning of the text.

The problem in reading occurs because the pupils do not know how to use the clues in the passage and the questions. Samad et al (2017) define contextual clues as a reading tool that helps the readers to decipher the context of the reading material into sections of hints. Generally, the pupils cannot connect from the questions to the passage or vice versa thus complicating constructive learning during reading session. The problem of understanding contextual clue has a serious effect on the pupils' reading skills in the long run. Samad, Jannah & Fitriani (2017) also claimed that learning how to use the contextual clues in sentences could help the readers make sense of their reading materials. This particular claim provides an opportunity to advance initiatives on improving the pupils' reading skills.

Therefore, finding an alternative to enhance reading activity in the classroom is significant for a teacher. Hashim (2018) believed that innovative and exciting aids such as digital comprehension are effective ways to arouse pupils' attention and interest to understand a story. Instead of using the textbook only, the teacher can use a video to accompany the story. While reading the story, pupils can watch the story too. Thus, pupils will find it easier to understand the storyline. Besides, the digital comprehension software also has some questions regarding the story, such as chronological and comprehensive questions.

Thus, I had come upon to a solution with the help of ICT which is called 'Digital Comprehension'. It is an application published with the help of the 'CourseLab 2.0' software, which a slideshow-liked program. The advantage if this software is that, it can be published and cannot be disturbed or altered by the users whilst learning using it. The aim of this research is to improve reading comprehension skills among Year 6 pupils. Reading comprehension skill requires the pupils to understand and comprehend with the text given. The pupils then needed to answer question given either printed or orally. These were to test their understanding. Reading is one of the four indispensable skills of English besides speaking, writing and listening.

This digital innovation focused on pupils' understanding of the text or script in the written medium. It became a significant problem for the pupils due to the COVID-19 pandemic; the researcher has come out with this product in handling this problem. Two central problems appeared and were taken care of, 1. The understanding of the storyline of the story and 2. The ability to answer comprehension questions, including the HOTS questions. This digital innovation has profound that it has linked its purpose to the stages in Bloom's Taxonomy as questions provided appropriately arranged according to the level of

difficulty or in the hierarchy of the taxonomy itself. Plus, there is also a game inserted and believed by Hashim et al. (2019) can engage students' learning in the lesson.

The method developed by me to help the children that were having more hard time in reading comprehension especially when they have to fill in the blanks based on the passage in the worksheet or the test paper. During examination or assessment, this occurrence gives a strenuous effort to answer the questions and sometimes, they just leave it blanks or just put any answers that they could think of.

This research aimed to improve Year 6 pupils' reading comprehension skills, especially in understanding the storyline of the story and getting answers for the comprehension questions. It also targeted to improve the teacher's teaching instructions during the lesson via using 'Digital Comprehension'. Besides, this research also aspires to improve the researcher's teaching of reading comprehension skills among the Year 6 pupils using 'Digital Comprehension'. Plus, it planned to improve Year 6 pupils' motivation and attitude in learning reading comprehension.

I hope that by the end of this study, both teachers and pupils benefit the most in handling reading comprehension problems in primary education as it is vital when it comes to entering secondary level in the upcoming future. It is hoped that it helps in improving the current methodologies practised by ESL teachers to the ESL learners nationwide and worldwide as well.

### **Literature Review**

Years had passed and the integration of ICT had emerged among the community from kids as early as birth up till senior citizens. Tons of reviews made by previous researchers worldwide on the development of ICT occurring in the field of education due to the emergence of technology. As the world keeps on evolving and various methodologies and innovations introduced by creative individuals, the quality of teaching and learning keeps on increasing. In accordance with the ever-changing educational field, a sum number of researches has approved that information and communication technology (ICT) plays a vital role in the field of teaching English as a second language (TESL) and even teaching English as a foreign language (TOEFL). With the emerging of the ICT as an innovative tool in language teaching, English Language teachers as well as the researchers themselves are anticipated to adopt and adapt the new sight of integrating the basic ICT skills in the English Language teaching and learning fittingly.

It is a strong criterion for equipping language learners with essential technological skills. The integration of ICT necessitates certain language skills and strategies. Familiarizing ICT into language teaching classroom had brought upon great implications for curriculum reform, classroom teaching and student learning. It is believed that the upsurge of ICT has intensely strengthened and formed a powerful learning atmosphere. The integration of ICT into a real-life language context is more vital today than ever before since its rising usage as the medium of communication global wide. There are studies have been conducted to scrutinize the pros and benefits of integrating ICT into language teaching. Thus, the integration of ICT instruments such as laptops, LCD projectors, smart whiteboards, internet services and applications in education that act as a strong support will aid learners to use English in a fun and stress-free language learning environment.

Research is essential in certain field of profession to improve the productivity or in teaching profession, it is vital in improving teaching and learning methodologies apart from enhancing educational action research is. For the researcher's action research, I will use

digital comprehension to improve reading comprehension among year 6 pupils as pupils should be able to master it according to the DSKP. For this research, I will conduct an action research to his participants.

This study will be guided by the underpinnings of the theory Anderson’s Online Learning Model. While this theory emphasizes on the usefulness of technology to distant learners it is paramount in this research for its instance on importance of technology to include a blended approach during learning. This approach sees to it that learners, teachers, reading materials and pedagogical approaches are blended to improve learners learning. For Anderson, an online model learning makes learning fun and convenient for all parties. Through an online form of learning as used in digital form of comprehension reading it becomes possible for learners to adopt a community, knowledge, assessment and learner-centred approach to learning. Anderson adds that besides these approaches that the internet provides, it has grown to a media that has all forms of support and always ready to comprehend each other in order to boost learning. Further Iposits that the internet has a capacity of hyperlink that is compatible to human’s mannerism of storing knowledge. This hyperlink is informed of constructivism and this makes interaction during internet learning as the key reason as to why digital learning is more preferred to other forms of learning. This is the importance of any form of interaction between the teachers, content and the students. For Anderson, digital form of reading is a collaborative model that sees there is good interaction between content and learners in order to aid understanding. The image below summarises research as a collaborative model and shows the role of each party or how the different parties interact in order to help in learning.

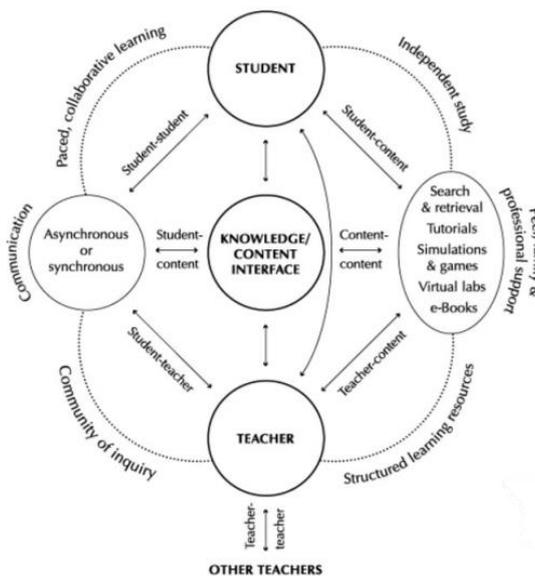


Figure 1. Anderson’s Online Learning Model

In a learning process the key actors are teachers and learners and how they interact with the content. The theory of online learning reinforces that learners have a chance to interact with content through various platforms and as well choose to have a sequenced learning programme and directed by the teacher. Through communities of inquiry it becomes possible to use actives that are net based both asynchronous and synchronous. The net environments are said to be very rich as they allow for grasping of social development and collaborative

form of learning and this boost the relationship between learners and their instructors. A summary of a blended form of learning is provided below.

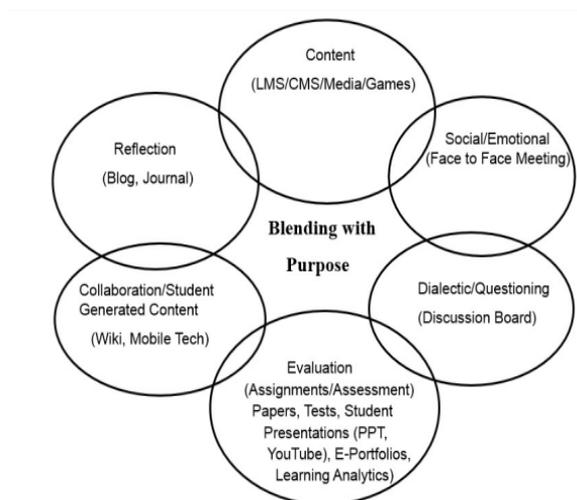


Figure 2. Blending with Purpose

In most schools, technical difficulties sought to become a major problem and a source of frustration for students and teachers and cause stoppages in the teaching and learning process. If there is lack of technical support or amendments made onto the broken technologies, teachers are not able to make full use of the computer for temporarily. The negative outcome is that teachers will be disheartened from integrating or applying computers or other ICT equipment during their lessons because of fear of equipment failure since they are not given any assistance on the issue. These problems include low connectivity, virus attack and printer not functioning. However, there are a few exceptions. Schools in the countries such as the Netherlands have recognized the importance of technical support to assist teachers to use ICT in the classroom.

In addition, teachers' readiness and computational skills in using ICT are playing vital role in the integration of ICT in English language education. Teachers need sufficient ICT skills to implement the technology and to have high confident level to use it in a classroom setting. Besides, teachers require insight into the pedagogical role of ICT, in order to use it meaningfully in their instructional process. They also stated that teachers that had undergone through ICT courses are more effective in teaching integrating ICT tools as compared to those that have no formal education on ICT. A school in Bangladesh reported by MD. Rashedul & MD. Abu Raihan in 2016 saying that teachers who did not develop adequate confidence avoided themselves from being involved with things concerning to ICT. Similar case happened in Iowa; some teachers admitted they were reluctant ICT users because they worried that they might get embarrassed that the students knew more about the technology than they did.

Deprived of any hesitation, ICT is a treasured and a pioneering teaching instrument engaging the English language teaching and learning. The swift development of ICT has unsurprisingly influenced every aspects of language teaching process. The integration of ICT equipment has brought upon optimistic and constructive effects on teaching and learning English. This equipment can be applied to teaching practices to enhance and facilitate foreign language learning. Computers or laptops, internet access, high-tech tools such as smart

boards, smartphones, interactive games, music players and some more are applied in the target language learning process especially English language as to arouse students' motivation and language awareness. The integration of ICT will lead to countless in English language content, contexts and pedagogical methodologies in teaching various educational environment. ICT has made the English language environment more interactive, flexible and innovative.

The integration of ICT in English language teaching has provided a well-rounded student-centred learning environment. It has enabled course administrators and teachers to vary lesson conduct styles to motivate students of erratic interests, delivers learning openings outside the classroom context, and is perceived to accommodate more their individual differences. Integrating ICT into English language teaching has not only reduced teacher-centred 'talk-and-chalk' but also students' language learning anxiety, encouraging them to be risk-takers to practise target language as they are digital natives. There are some positive impacts of ICT on English language teaching under the straightforward headlines such as: availability of materials, students' attitudes, learners' autonomy, authenticity, helping teachers, student-centred, and self-assessment. The availability of large body of authentic materials such as images, animation, audio and video clips facilitate presenting and practicing language.

Prior the digital era the prime means of learning has been printed texts. This is what the teachers have long ago relied on to make learning and reading lessons fruitful for learners. Printed texts are still in use but the uniqueness of ICT has led to emergency of digital reading materials. There is an accelerated influx of these digital texts which calls for a change of pedagogical mechanisms deployed by teachers to ensure that learners comprehend comprehensions better. Researchers have taken it upon themselves to explore the appropriateness of these digital texts and theoretical mechanisms that can be used to analyze the use of digital reading and its importance as opposed to printed texts. To understand digital comprehensions, it is essential that a good comparison is carried out between the printed and the digital ones so as to place the role of digital comprehensions of a printed comprehension. By understanding this, I am able to place the role of digital comprehensions to learners and even instructors and how they comprehend understanding. As well a research on this will shed light on the various strategies reinforced by teachers on reading of digital comprehensions.

Olga and Claudia (2020) presents that when it comes to learning and teaching developments in technology provide diverse forms of resources that can be used. Numerous researches have concluded that technology developments are very paramount to teachers when it comes to teaching of language. This is also paramount as learners can use the technology to self-educate and learn more on language. These conclusions are paramount not only for questionnaire development but also for teachers and learners' perception of learning outcomes. One of the most important aspect of technology in the teaching of comprehension is the computer assisted language learning (CALL) whose key function is to help use technology during learning and teaching of language. CALL emphasizes on an interactive form of learning which calls for interactive sessions through use of multimedia facets such as proper articulation of words and accompaniments such as animations which will not be able to capture through print. These critics present that these elements lead to evoking of interest among learners and better reading desires of comprehensions as opposed to printed comprehensions. For Gibbons (1991), since computers were made to help in comprehension reading, it came to understanding that comprehensions reading could be improved in various ways. The first noticed method of improvement was through control of how and what reading

strategies readers used; give more exercises on comprehensions and offer help with assignment reading through proper articulation of words. Moreover, this research comes in to fill a gap identified by this critic that a good amount of research had to be conducted on digital reading since digital gadgets were widely spread and so this may affect the shift of reading to digital reading from print reading.

In Malaysia there are three races conglomerate. They are the Malay Indian and the Chinese. The country is proud of its diverse culture and how tolerant they are which leads to a peaceful coexistence of these groups of persons. Even when they take pride in these the schools experience a division on regards to the races. The country has thus lived to experience cultural and social distinctions and these have influenced the education system that reach as far as national schools that experience a different language of instruction. The decision on which school to take learners is based on the learners' mother tongue. Culture and race. It is only in national schools where integration of languages of instruction is incorporated where Malays is used as a language of instruction in schools. This brief history introduces us to the diverse and rich background Malay pupils encounter and one that can greatly influence their abilities to read comprehensions in school; mandarin Chinese is used for Chinese schools where Tamil is used for the other group. This has seen English language take the back stage in order to maintain the languages of these groups.

However, in recent years the previous Prime Minister Dato' Seri Dr. Mahathir Bin Mohamad brought changes that were to see the future generation grow through education to become leaders for humanity and through this improvisation of the curriculum to match the global world through vision 2020. This was through adoption of the "Malaysia Education Blueprint 2013-2025" through which the curriculum saw to it that bilingual proficiency in English and Bahasa Malaysia were increased. It is through the English language that Malaysia as a country was going to be propelled forward as this made it possible to communicate and exchange ideas with other countries. The minister emphasized that all Malaysian schools were going to adopt English not as a language of the colonialist but as 'international language of communication'.

To conclude, the integration of ICTS in English language learning and teaching especially on reading comprehension is an area not yet fully explored. All the stakeholders do have a lot to gain by these extravagant tools have to offer. ICT offers an authoritative learning environment for students as the English language learners in the classroom. Many countries have invested a lot of dollars in ICT integration as they are viewed as effective tools for revitalizing educational practice in all kind of fields. As teachers are the main characters to engage the integration of ICT in the educational settings, they should be trained on proper and orderly methods in integrating these tools in the teaching and learning environment.

Thus, ICTS are intrinsic tools in the majority educational institutions, starting of the primary, secondary and tertiary education. The integration of ICT increases the opportunity of teaching, whether in the classroom context as well as outside of the classroom context. It offers a high-quality learning ingredient, generating a self-sufficiency of learning to all individuals. Along with academic excellence, students must have an adequate English language communicative skill for their affluent future. Curriculums should be constructed and immersed with the technological aids as well in order to ease both pupils and teachers to share their works not only to promote cultural diversity, but also to have positive motivational effects and raise self-esteem to everyone.

### Method and Material

For this research, I applied Stephen Kemmis’s action research model, The Plan-Act-Observe-Reflect Cycle. Stephen Kemmis’ action research model is a research pattern that was done through self-reflective inquiry and it was conducted collaboratively in certain small social situation. This cycle has four stages, which are planning, actions, observe, and reflect steps, and two cycles, which currently I did the first cycle of the research. The second cycle of the model will be conducted in near future if the aims or objectives in the first cycle are not completed.

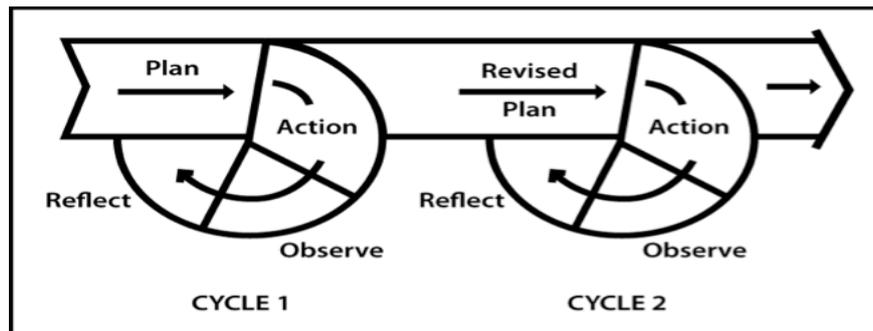


Figure 3. Kemmis and McTaggart’s Action Research model

The researcher’s action on this research is based on behaviourism model, which I used Bloom’s taxonomy of learning model. I focused more on cognitive domain of Bloom’s taxonomy of learning, where this domain narrows down from simple information or simple knowledge to much complex information or knowledge. According to Anderson (2011), the major idea of the taxonomy is what educators want students to know (encompassed in statements of educational objectives) can be arranged in a hierarchy from less to more complex. It is the same note where behaviours progress from those demonstrating basic subject knowledge up to an ability to evaluate or judge the worth of knowledge. Basically, it is a bottom-up reading method, where pupils understand basic knowledge first, and moving on to complex knowledge.

The researcher’s action in this research is using ‘Digital Comprehension’ in improving reading comprehension among Year 6 pupils. ‘Digital Comprehension’ is actually a software created with the help of ‘*Courselab 2.0*’ before publishing it into an interactive software that is user-friendly as well as can be used offline that suits the needs of the research and in his current setting.

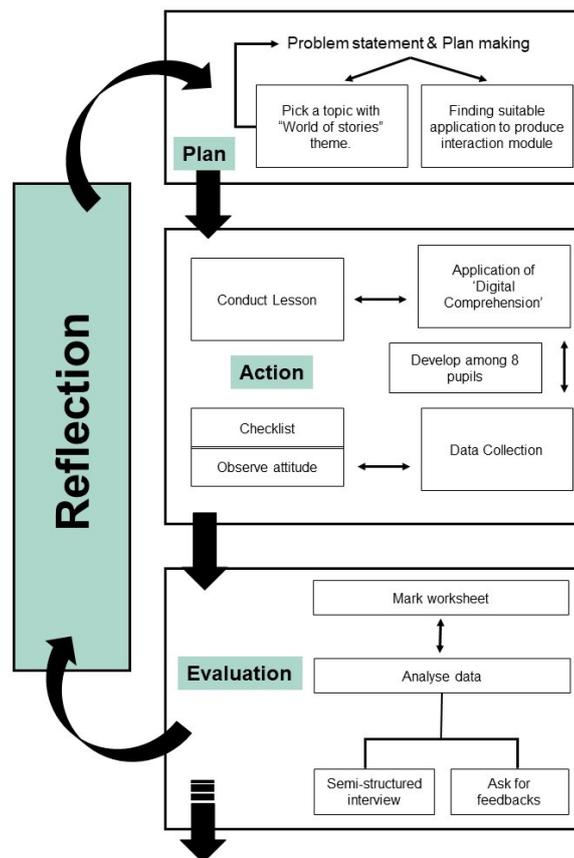


Figure 4. Adaption of Kemmis and McTaggart’s model (1988) in integrating ‘Digital Comprehension’ in the dissertation of research

In implementing the action in teaching and learning session, I used Pre-Reading, While-Reading, and Post-Reading stages to ensure the smoothness of the lesson.

Table 1

Table 2: Lesson Plan in Applying ‘Digital Comprehension’ during the Lesson

STAGES	ACTIVITY
Induction	Showing ‘Digital Comprehension’ to the pupils
Pre-Writing Stage	1. Discussing on the characteristics of the tiger 2. Discussing on the topic ‘How the Tiger Got its Stripes’ with the pupils
While-Writing Stage	1. Get the pupils to use the ‘Digital Comprehension’ in attracting pupils’ attention and interest 2. Video and game provided to them as a guidance and entertainment for them.
Post-Writing Stage	1. A worksheet is distributed to the pupils. 2. They are asked to finish the worksheet in 10 minutes.
Closure	Summarization/Reflection

### *A. Sampling*

As for the group of the participants, they are consisting of the majority of Iban (6), one Chinese and one Melanau. But holistically, they are currently inhibiting the Iban social status in a sense of the way of living. They are of B40 family backgrounds that their financial status that they are much affected due to the pandemic. Lots of their parents lost their source of income that made them to really need to stay in the dormitory.

The study is conducted in a rural school accommodating of less than 50 pupils, with 11 teachers and six staffs. The school is located in Mukah district that needs a boat ride to reach there. In terms of ICT equipment, the school is quite left behind because of the damage done due to the natural disaster such as flood. Nevertheless, the basic ICT equipment such as the laptops, LCD projector and screen are still available and can be used in the dissertation of research.

### *B. Data Collection Method*

#### *1. Document Analysis*

This is where the researcher gathered all the worksheets from the participants from both cycles. The worksheets were marked and compared to observe the alteration between the two cycles from respective participants. The length of the answers given by the participants will also be assessed to assess the empowerment on the English Language among them.

#### *2. Observation*

For observation, the researcher wanted to use observation as data collection methods plan because the researcher had chosen a small group of pupils for the action research. Besides, according to McAteer (2013), for small children, for example, the lack of reading, writing, and oral communication skills may suggest a more observational approach to data capture. Besides, with the observation method, the researcher measured and see the research participants' reaction or their behaviour towards the action that the researcher will use for the research to provide insight into discovering the causes of unexpected patterns of student behaviour.

#### *3. Interview*

The other data collection method important in action research is interview. Interviews are essential in gathering data, especially data related to the research that the researcher has conducted. The researcher used unstructured items to conduct the interview, where interviewees would openly answer questions in the interview sessions later on besides leaving much more interpretations of unstructured to the participants. With unstructured items, the interpretation of the interview sessions can be controlled and directed.

The researcher was able to get closer with his pupils regarding human relations to get an honest and straightforward response from the participants. The eight research participants were all the current Year 6 pupils that the researcher taught in his English language classroom. The researcher conducted the interviews in the afternoon session with his participants as soon as the school reopens. This is because the researcher is currently staying together with the participants in the school compound as all participants are staying in the school dormitory.

### *C. Data Analysis Method*

The data were collected from the three instruments used, specifically observation, document analysis, and interview. The researcher used descriptive statistics to analyze the

data collected. The data analysis for qualitative research moves from the data collected into some forms of explanation, understanding or interpretation of the people or situations being investigated. Hence, the researcher would describe every detail of the data collected.

### *1. Qualitative Analysis*

Based on the worksheets collected from the participants, the researcher analyzed the participants' length and availability of answers in the comprehension. As answers were provided, the researcher could predict that participants were confident and understood the story 'How the Tiger Got its Stripes'. When there was no answer given, the researcher can infer that the particular individual could not comprehend and had had less confidence in proving his or her answer. Apart from that, they are interviewed, and their attitude whilst the research dissertation was observed and noted. All the data collected were analyzed and discussed in terms of the research questions fulfilled.

### *2. Quantitative Analysis*

This is where the researcher got the data from the correct answers to the worksheets pertaining on the story 'How the Tiger Got its Stripes'. The more the correct answers are achieved, the better their understanding is. As a participant did not get any correct answer, he or she is counted as acceptable due to his or her learning disability as the researcher wanted the participant not to feel left behind. The data from the first and second cycle were collected and compared. All the alterations that occurred were discussed on the matter that happened at hand then.

### *3. Thematic Analysis*

Back in the rural environment, ICT is not the primary concern of teachers there. Conventional methods are said to be effective, having excuses that ICT is not applicable in educating rural kids. As they were given a chance to integrate the ICT during the research dissertation, they were excited and curious about using the laptops. This has shown a positive attitude towards learning the English Language.

## **Findings**

The findings of the innovation show few impacts that can be observed. First of all, pupils managed to improve on their ability to arrange the story by its chronological. This has made both RO and RQ1 achieved easily. The first component of the worksheet is meant to test the pupils' memory on the correct order of the storyline.

Secondly, pupils able to answer comprehensive questions correctly. Having it well-said, RO3 and RQ3 are achieved. The comprehension questions are prepared in aligned with the hierarchy of Bloom's Taxonomy. The questions will get more difficult and more difficult up till the last question where pupils have to generate their own ideas in modifying the story.

Last but not least, pupils show interest in learning the story through reading and watching. The researcher has interviewed all the pupils and got their feedbacks. Since all of them were staying in the school dorm, the ICT access were quite limited. So, they had shown great interest as they were allowed to integrate ICT in their lessons. Not only that, they were asked to listen to the videos in order to understand the story. The quizzes and games provided had made the lesson more interesting where the pupils enjoyed answering and had fun guessing the answers and played the game provided. So, RO2 and RQ2 are achieved.

During the dissertation of research, the researcher profound that the participants had shown great interest and curiosity where they are of the rural backgrounds. It was expressed in their faces where they are given the authority to use the laptops by themselves whilst learning the story ‘How the Tiger got its Stripes’. The classroom setting was filled with positive noises where the participants were enjoying themselves watching the video and answering the quizzes inserted in ‘Digital Comprehension’. During the first cycle, words like ‘Best’, ‘*Manah* (Good)’, ‘Fun’, etc., had denoted the sense of enjoyment in learning with the aid of ‘Digital Comprehension’. As for the second cycle, the participants had shown their eagerness to use the laptops independently, and they were smiling although watching the same video for the second time. As for the game inserted in the ‘Digital Comprehension’, the participants kept asking to replay the game as they were keen to win the game.

From getting almost all wrong for the chronological and comprehension questions, pupils managed to get less mistakes and errors. Watching the story while reading help pupils to understand more where they can see the actions of the characters while they reading the scenes.

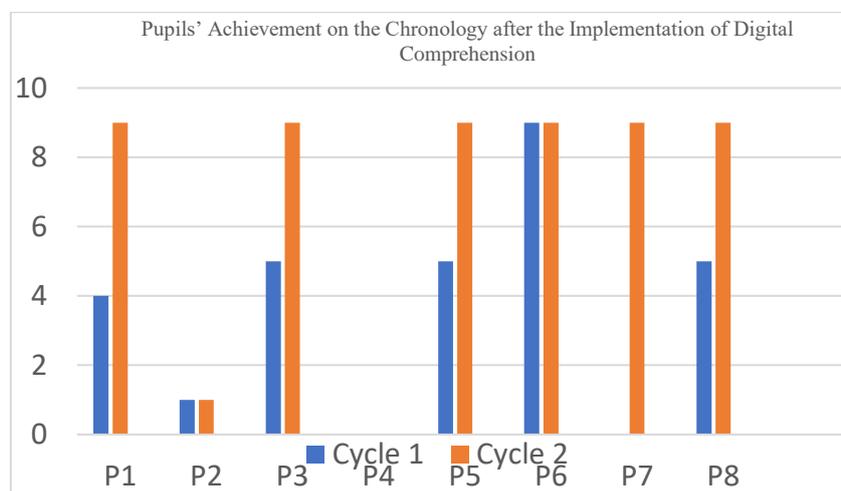


Figure 5. Data analysis on Pupils' Achievement on Chronology Questions

**Arrange the storyline of the story.**

The man went home with his animals.	4 x 5
One day, the tiger saw a buffalo working for a man.	1
The buffalo and the other animals laughed.	8 x 8
It wanted the man's wisdom.	2
The man was afraid the tiger would eat his goats.	1
So, he tied the tiger to a tree.	5 x 4
Finally, the tiger hid in the jungle.	9
The tiger broke free from the tree.	7 x 6
It saw its reflection.	8 x 1

Figure 6. Pre-test for chronological activity

**Arrange the storyline of the story.**

The man went home with his animals.	5
One day, the tiger saw a buffalo working for a man.	1
The buffalo and the other animals laughed.	8
It wanted the man's wisdom.	2
The man was afraid the tiger would eat his goats.	1
So, he tied the tiger to a tree.	4
Finally, the tiger hid in the jungle.	9
The tiger broke free from the tree.	6
It saw its reflection.	7

Figure 7. Post-test for chronological activity

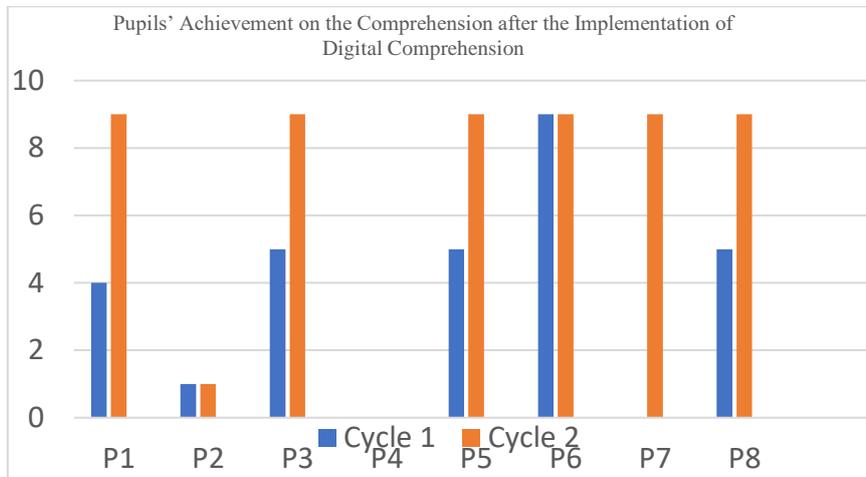


Figure 8. Data analysis on Pupils' Achievement on Comprehension Questions

**Answer these questions.**

- Where did the tiger see the buffalo?  
The tiger saw the buffalo at a paddy field.
- What did the tiger wish for?  
strand
- Which of the following statement is false?  
a. The man tied the tiger to a tree.  
b. The man ran home with his goats.  
c. The tiger wanted wisdom from the buffalo.
- The tiger screamed when it saw its reflection because it was  
scared his shadow
- Why did the tiger want wisdom?  
It would be able to control all the animals

Figure 9. Pre-test for comprehensive questions

**Answer these questions.**

- Where did the tiger see the buffalo?  
The tiger saw the buffalo at the Paddy field
- What did the tiger wish for?  
The tiger wished the man wisdom
- Which of the following statement is false?  
a. The man tied the tiger to a tree.  
b. The man ran home with his goats.  
c. The tiger wanted wisdom from the buffalo.
- The tiger screamed when it saw its reflection because it was  
embarrassed to see its shiny coat burnt
- Why did the tiger want wisdom?  
It wanted to control all the animals

Figure 10. Post-test for comprehensive questions

- Did the tiger find wisdom at the end of the story? Why?  
?
- If you were the author, how would you end the story?  
?

Figure 11. Pre-test for HOTS questions

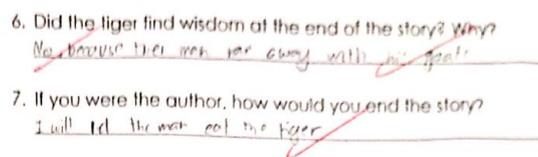


Figure 12. Post-test for HOTS questions

### Contributions and Implications of Study

This study on the integration of ICT in improving reading comprehension skills have several contributions and implications towards enhancing our understanding of technology integration, which can be discussed through theoretical, practical, and pedagogical perspectives.

#### 1. Theoretical Perspective

Digital comprehension through technology integration opens a whole new revenue stream for educationalists to improve the quality of education. This study of digital comprehension approved the TPACK framework, which consists of three types of knowledge, namely: technology knowledge (TK), pedagogical knowledge (PK), and content knowledge (CK). The TPACK framework allows educationists to combine these components and adapt them into curriculum planning towards the educational goals (Mishra & Koehler, 2006). The triangulation among these components considers the various knowledge and how teachers may incorporate technology to deliver the knowledge.

Digital comprehension is deeply associated with the TPACK framework as pupils need to be knowledgeable about managing the content using the equipment and teachers need to find the best way to conduct digital comprehension activities in the classroom. In this context, teachers do not need to follow the TPACK framework strictly as this framework benefits mostly from its instructional principle of content-based learning using technologies delivered with effective pedagogy strategies (Abdul Rahman & Harun, 2018). According to Altun (2019), effective digital comprehension depends on the pupils' intellectual and physical abilities to manage technology equipment. This finding draws similar results to those in Alivi (2019); Cheng & Xie (2018), in which the correlation between Technological Knowledge (TK) and Content Knowledge (CK) heightens as the individuals' ability to comprehend the content increases. Understanding this concept and the relationship between the components helps teachers understand how pupils' TK will boost the sense of discovery in pupils to acquire learning. However, this general overview of the correlations requires further research to understand and benefit the pupils of digital-wise generations.

The conduct of this study also contributes to the expansion of Howard Gardner's theory of multiple intelligences. This theory of Multiple Intelligences introduced in 1983, is based on the principle that individuals learn best through different predetermined intelligences. According to the theory, educators need to identify the type of intelligence possessed by the pupils and find the best methodology to suit that intelligence, thus maximising the opportunity for effective and meaningful learning (Gardner & Hatch, 1989). Despite the nine types of intelligence outlined in this theory, teachers would benefit more by

focusing on visual-spatial and verbal-linguistic intelligence in conducting digital comprehension lessons.

This study on digital comprehension expands the learner's vocabulary through verbal-linguistic intelligence. Bilonozhko and Syzenko (2020) emphasise how verbal-linguistic intelligence enables the pupils to learn best from the digital content they read with purposeful technology integration. Pupils with verbal-linguistic domains can digest reading materials and express them creatively in the tasks given (Liu and Liu, 2020; Froiland and Davison, 2020). The integration of digital comprehension produces endless possibilities for pupils to learn and make use of the lesson, in which their intelligence will steer them towards collaborative learning as they express this interpretation with their peers. Conclusively, the development of digital comprehension among pupils will greatly benefit pupils with verbal-linguistic intelligence. Another Gardner's Multiple Intelligences highlights that pupils with visual-spatial intelligence beneficially manipulate the things they see on screen while they are working on their comprehension skills digitally. Digital Comprehension tools are developed by integrating interesting sound effects and advanced applications of technological skills, adjusted to the students' level of proficiency. This engages the visual-spatial pupils to attentively focus during the conduct as the eye-catching interface and the background music used assist the pupils in understanding the topic. According to Ebrahimi et. al (2021), sounds can help to hold our attention, evoke emotions, and stimulate visual images. Apart from the interesting music background and sound effects, the bright contrasting colours in the digital material ensures clarity of the presentation. A study by Hasanudin and Fitriainingsih (2020) further strengthen this by showing that pupils with higher domain on visual-spatial and verbal-linguistic intelligence can benefit more from digital comprehension because they can construct knowledge respectively to the materials read.

A theoretical perspective on the study of digital comprehension brings forth the Andragogy theory by Malcolm Knowles and how it contributes to the professional development of teachers. According to Hartree (1984), the andragogy theory assumes that adults' perspectives change as they acknowledge the valuable needs of their becoming in their societal role. This context provides an understanding of how teachers acknowledge their role as educators and thus act on their role to be as beneficial as possible to delivering effective lessons (Mews, 2020; Pina, 2019). Malik and Khaliq (2019) also highlighted how the theory helps adults develop themselves through extrinsic and intrinsic motivations. Teachers' extrinsic motivation strives with the ideals that good hard work equals good pay and this motivates them to produce excellent performance throughout their teaching. The desire to see their students succeed is a common source of intrinsic motivation for teachers. Both extrinsic and intrinsic motivating factors will be able to help teachers adjust to the global need to cultivate technology integration in ESL learning.

In this context, the Andragogy Theory acknowledges the need for teachers to be adaptable in conducting technology in the classroom. Caena and Redecker (2019) raise the importance for teachers of being aware that they will be able to learn more as they indulge themselves in new things and find ways to adapt to the changes from then on. Conducting Digital Comprehension as a tool in the classroom should be treated as a practise and experience towards professional development instead of acting for technology's sake. This calls for teachers to improve themselves with proper training and best pedagogy practises to

deliver reading comprehension lessons effectively in the classroom. In addition, working on digital comprehension should be able to help teachers provide alternatives to teaching reading skills. A study by Konig et al (2020) relates to the idea of how pupils' good performance in tackling each skill progressively will be able to motivate teachers so that they will be more enthusiastic in manipulating technology into lessons.

## 2. *Practical Perspective*

The use of digital comprehension can benefit teachers in terms of assessment for reading. The use of digital learning promises flexible manipulation for teachers to assess pupils and find ways to keep track of the pupils' progress. More advanced usage of technology for comprehension purposes may allow teachers to personalise digital-mediated assessment and feedback for pupils. Digital-mediated assessment can save time compared to paper-based exams. As assessments are done digitally, pupils can gain almost immediate feedback from their teachers and further discuss the outcomes of the assessments online (Toroujeni, 2021). Towards the end of the assessment, pupils can be provided with follow-up tasks to further help the pupils improve with proper support from the teachers. A study by Pohl, Hilty, and Finkbeiner (2019) also shows that digital integration for assessment does not limit the assessment to teachers but also enables the pupils to self-assess their comprehension skills. In this context, pupils can keep track of their own progress and find out which sections or topics they need to work on. However, there are limitations to this advantage, such as the pupils' and teachers' technological skills, cost, and access to the internet (Ryn et al., 2020; Pazilah et al., 2019; Ertmer, 1999).

The practicality of digital comprehension promotes fun learning through gamification. The younger generation today prefer activities that are hands-on, fun, engaging, and require less time to complete tasks. Digital activities, in this context, promote fun and constructive learning, which can be suited based on their current level and doable tasks for each comprehension activity (Dehghanzadeh, 2019; Premarathne, 2017; Ebrahimi, 2021; Hasin, Idawarna and Nasir, 2021). A well-prepared digital comprehension activity will be able to help teachers guide the pupils to meet the standard educational goals required in the curriculum. The gamification of the digital comprehension method suits our young, tech-savvy generation today, who are always on the look-out for different learning experiences compared to conventional classroom learning. Therefore, it is wise to assume that the gamification of digital comprehension will be able to catalyse the development of the pupils' reading skills rather than reading through paper-based readings. A study by Premarathne (2017) highlights the fact that pupils make sense and memorise better through gamified learning.

Finally, digital comprehension is practical for long distance learning due to its mobility. Students with short attention spans face the common problem of having insufficient time to digest various pieces of knowledge, one lesson at a time. Therefore, the integration of digital learning in comprehension allows pupils to access knowledge anytime, anywhere at their own pace (Tkachuk et al., 2020). The use of digital comprehension makes it possible for learning to happen at any time of the day without leaving a burden for teachers to be on-site, observing and guiding the pupils. Many constructivism studies show similar findings that learning takes place even outside the classroom as pupils connect to the world, mostly when they are in their common environment, such as home, the playground, or even in their village. Additionally, a study by Amis (2020) further strengthens this perspective by showing that

access to comprehension materials is not necessarily limited to certain equipment or gadgets, if the teachers make the materials available for pupils' access anytime, anywhere. However, this practicality could only go so far as limitations like internet connectivity and access to gadgets get in the way.

### *3. Pedagogical Perspective*

The study on digital comprehension benefits teachers, especially ESL teachers. Technology integration through digital comprehension allows teachers to be adaptive to pupils' different learning styles. Earlier discussion of digital comprehension through theoretical perspective views Gardner's Multiple Intelligences (1989) as being of advantage in this note. This is because teachers can develop their professionalism in lesson preparation to cater to the pupils' visual, auditory, and kinaesthetic learning styles. Inclusive learning plays an important role in effective learning. A study by Jha (2017) stated that pupils collaboratively working on tasks learn more as they perceive knowledge differently while being able to share and review opinions. Inclusive and collaborative learning among pupils with different learning styles will help teachers reflect on the lesson and find possible improvements to integrate technology in a better way for the next lessons (Premarathne, 2017; Gardner and Hatch, 1989; Ebrahimi, 2021; Froiland and Davison, 2020). Even though technology integration seems hasty to be prepared for each lesson, practise upon practise will somehow help teachers to be comfortable with digital learning and eventually act upon it as the core material for teaching and learning.

Digital comprehension helps to build pupil-centred learning, in which the teacher acts as the facilitator of the lesson. Hussain (2018) shows that the adaptability of technology allows teachers to be creative in their mediums to deliver comprehensive teaching by taking into consideration the fact that each pupil can learn something from the lesson. Teachers set the objectives for the lesson, and students collaborate to meet the success criteria using technology as a tool. However, according to Willis et al (2019), the lessons conducted with digital integration are not limited to the teacher's planning and preparation as pupils are also given the autonomy to decide on lessons in which they learn best. Shifting from teacher-centred teaching to pupil-centred learning for comprehension is mostly possible with the integration of digital aids if support is given whenever needed.

Digital comprehension learning requires teachers to be more attentive to task differentiation and materials. In this context, Karatza (2029) highlighted the point that as much as pupils should be treated equally, their learning is most effective when suitable materials and tasks are given to them. Additionally, Ave (2020) notes in her study that using digital comprehension as a tool, teachers can differentiate tasks accordingly as enrichment or remedial tasks. Should the tasks be given equally regardless of their different performance levels, teacher's support and additional materials should be used to assist their learning. Because of their sociocultural differences, digital learning affects pupils differently. Not all pupils are tech-savvy. Considering this context, teachers should prepare various sets of digital tasks to build the pupils' comprehension skills and allocate suitable materials to assist them in each task. A teacher's pedagogy skills are most important for an effective technology-integrated lesson.

### Recommendations for Further Research

Based on the findings and discussions of this study, these are the recommendations for future research.

- i. Future conduct of similar research in the context of the study should consider the good delivery of realistic and cohesive learning opportunities through technology integration. Numerous studies have shown that teachers employ digital games to recreate genuine contexts in which students may apply newly acquired information and abilities, resulting in a deeper grasp of the subject and an indication of higher-order thinking. For example, pupils may be given authentic tasks relatable to real-life situations to work on, and as they collaboratively work on the tasks, teachers should find ways to integrate principles from other subjects, such as the civics or mathematics subjects. This is crucial to ensure constructive learning happens effectively in each lesson conducted.
- ii. In addition, learning through digital comprehension could also be more effective with the integration of social platforms. Emotional and social skills are also developed along with their cognitive skills when pupils are learning through authentic content on social media. Teachers may consider the use of Facebook, Twitter, or TikTok for content. However, strict precautions should be taken seriously because technology provides endless harm to unfiltered content. In order to conduct a successful lesson incorporating social platforms, teachers should be clear and firm in providing guidelines and rules before starting the lesson. Additionally, pupils can also be given the space and opportunity to work collaboratively on tasks using these social platforms. When social platforms are integrated into the lesson, pupils' authentic thoughts and feelings are discovered in times of emotional and social dilemma. This therefore supports the overall development of the pupils towards great nation building.
- iii. In the context of this study, digital comprehension can be implemented more effectively in the future with the expansion of differentiated tasks for each pupil. A similar note has been discussed in the pedagogical perspective of this study, which highlights the importance of tasks and material differentiation to cater to pupils' different performance levels. As such, the conduct of future digital comprehension lessons should start with teachers identifying the performance level of the pupils in the classroom. The data should be analysed by categorizing the pupils into groups of advanced and remedial pupils. Knowing such analysis beforehand allows teachers to select the best materials that suit them and make sure that the tasks given are suitable for the pupils in order to meet the lesson objectives set for the lesson.
- iv. Apart from that, digital comprehension in future conduct should also focus on developing the pupils' analytical thinking towards Higher Order Thinking Skill (HOTS). In order to effectively integrate digital comprehension into the lesson, teachers may consider providing fun but challenging digital tasks on par with their capabilities. Analytical thinking skills are most crucial in comprehending content as it allows pupils to make sense of what they are reading and find ways to manipulate the information for their own behavioural engagement.
- v. Technology integration in the classroom should provide opportunities for active, collaborative learning. Therefore, it is recommended that further implementation of digital comprehension should include activities that allow pupils to work together. This is important so that pupils can share their understanding of the content and

assimilate it into a combined understanding. This will also improve their social skills, as social cues and respect for ideas are practiced while they collaborate. Collaborative learning is crucial in leading our generation towards 21st century learning, in which they can be collaborative and be responsible for their own learning. Teachers, as facilitators, should brief the pupils on how to collaborate ideas critically to avoid miscommunication among pupils. Collaboratively working on digital comprehension will also provide opportunities for peer-teaching when advanced pupils are paired with remedial pupils. This will further improve the comprehension of both groups, contributing towards achieving the goal of the lesson.

- vi. Digital comprehension should be adapted to benefit the assessment of Pentaksiran Bilik Darjah (PBD) in order to ease and provide alternatives for teachers in assessing the pupils. It is required in the PBD that pupils need to meet the minimum passing standard of band 33 in reading skills. Therefore, in future conduct, assessment of reading skills can be done using digital comprehension instead of paper-based assessment.
- vii. It will be interesting to conduct a gamified digital comprehension learning for pupils in the future. Generally, we all know that digital learning revolves around the idea of fun, interactive, and engaging activities. Using digital comprehension as a game would greatly benefit the students since it would allow them to play and learn at the same time. This is important as fun and engaging learning allows for deeper understanding and allows pupils to memorise the lesson better.
- viii. Considering the integration of digital comprehension to be interactive for pupils, it will greatly develop pupils' intrinsic motivation if in-depth and constructive digital feedback are provided for each task. As such, pupils are driven by extrinsic and intrinsic motivation to learn. With an interesting display of feedback such as "well done" or "try again" for the completion of each task, pupils will be more motivated to get on the next task.

## Conclusion

To sum up, the results from this innovation advocates that digital comprehension gives a great impact to pupils' reading comprehension skill especially those in the primary school. Furthermore, the findings from this innovation promote the use of digital comprehension in the classroom as it is very beneficial and user friendly not only in school but also at home. The application itself is editable. Thus, it is suitable for every level of education. Teachers can set the questions according to the learners' levels or language fluency. Besides, it can be used for free and offline. It is very convenient for teachers in rural areas to use it in the classroom.

Nevertheless, there are few suggestions which could be taken into considerations to improvised the digital comprehension application. Firstly, teacher can draw the scenes by him or her own yet keeping the original chronology. Instead of using a video made by someone else, the teacher can produce a video by compiling all the drawings. Secondly, the questions should variety just in case classes of 30–40 pupils want to use the digital comprehension application. The current activities are more to individual activities whereas current education promotes collaborative activity.

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