

# Exploring Digital Technology Framework: Through the Lenses of a Qualitative Study

## *Meneroka Kerangka Teknologi Digital: Melalui Lensa Kajian Kualitatif*

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**Abstract:** The need for technologically inclined teachers has emerged as society has become more and more digitized, emphasizing the need for new methods when it comes to incorporating technology into education. Teacher educators have a dual obligation in this regard; they should not only be able to use technology for their own teaching, but should also contribute to the growth of the technical digital competence of teachers. The primary goal of this study is to investigate the nature of cognitions of Malaysian teachers regarding (using) digital technology (DT) in English as a Second Language (ESL) literacy instruction. The research employs an exploratory case study approach, focusing on three teachers in Malaysia in a rural setting. The teachers were observed and interviewed, and the findings indicate that while these educators believe in DT's ability to enhance teaching, they are skeptical about the adoption of the use of technology. The results suggest that teaching experience generates knowledge of teaching strategies and shapes the teaching practices of teachers.

**Keywords:** Digital Technology, teacher cognition, Digital Technology Framework

**Abstrak:** Keperluan untuk guru yang cenderung teknologi telah muncul ketika masyarakat menjadi semakin 'digital', menekankan perlunya kaedah baru ketika mengintegrasikan teknologi ke dalam pendidikan. Pendidik guru mempunyai kewajiban tambahan dalam hal ini; mereka bukan sahaja perlu menggunakan teknologi untuk pengajaran mereka sendiri, tetapi juga harus menyumbang kepada pertumbuhan kecekapan digital teknikal guru pelatih. Matlamat utama kajian ini adalah untuk menyelidiki sifat kognisi guru Malaysia mengenai (dan penggunaan) teknologi digital (DT) dalam subjek Bahasa Inggeris sebagai Bahasa Kedua (ESL). Penyelidikan ini menggunakan pendekatan kajian kes eksploratori, dengan memberi tumpuan kepada tiga orang guru di Malaysia di beberapa sekolah luar bandar. Para guru dicerap dan diwawancara, dan penemuan menunjukkan bahawa walaupun para pendidik ini percaya pada kemampuan DT untuk meningkatkan pengajaran, namun mereka skeptikal tentang penerapan penggunaan teknologi. Hasilnya menunjukkan bahawa pengalaman mengajar menambahkan pengetahuan mengenai strategi pengajaran dan membentuk amalan pengajaran guru.

**Kata kunci:** Teknologi Digital, kognisi guru, Kerangka Teknologi Digital

## Introduction

In the twenty-first century, the advancement of technology has resulted in the availability of an exciting platform for evolving ways of learning, communication, and collaboration. Several studies have highlighted the concerns and anxieties of

Malaysian English teachers about the use of DT in teaching, citing low levels of English skills and a lack of training and support as grounds for not using DT (Che Had & Ab Rashid, 2019). Educators are also stated to have reduced imagination and low motivation when it comes to the use of DT in the classroom (Hava, 2019). Not many studies have specifically published on

teacher cognitions and uses of DT in teaching ESL literacy, in particular their perceptions of why and how they use DT in their classrooms (Nam, 2020), apart from this particular study. Thus, this study will explore the nature of Malaysian teachers' cognitions about (the use of) DT in ESL literacy instruction, their cognitions about ESL literacy instruction in general and their cognitions about the role of DT in English literacy instruction. Besides that, this study will also investigate how the Malaysian teachers' cognitions about DT related to their use of DT in ESL literacy instruction.

## Literature Review

A study conducted by Koponen (2020) on the role of digital multimodal technologies in the daily lives of teenagers in the United States found that digital technologies are a necessity in youth culture and provide many opportunities for them to connect with friends, download and upload media, and use mobile phones and iPods to play video games. In the twenty first century, Luke (2004) suggested a need to redefine 'literacy' as today's texts are no longer restricted to language, but can also integrate sounds, visuals, gestures, icons, moving pictures, and more with a number of interactive multimodal technologies (Gierhart, 2020). Some earlier studies show that the use of digital technology has created different types of meaning-making representations, as these variables are based on people's social behaviours (Kynigos, 2019).

Esfijani et al. (2020) stresses that a lack of teacher ICT skills is correlated with a lack of teacher preparation, as well as other concerns such as insufficient time for further training related to the use of ICT and negative perceptions among teachers of the ability of classroom ICT resources. Compared to those who were less experienced, highly qualified teachers showed more ability to develop their ICT skills through their own learning and structured training. In addition, the relationship between computer-based skills and teaching epistemology was often informed by the behaviour and techniques that teachers used in the classroom.

The most up-to-date ICT technology must be offered to teachers in schools (Regan, 2019), and the absence of ICT equipment such as software and computers would hinder teachers' ability to maximise classroom teaching facilities (Aikins & Arthur, 2019). When the DT facilities are inadequate, it is not fair to expect teachers to use technology in teaching. Eze et al. (2018) highlights that improving ICT facilities would directly increase the usage of ICT hardware in the classroom, and teachers are stated to be more

optimistic as García and Miller (2019) notes that equipment loss and other issues associated with prolonged and recurrent technological breakdowns are a key barrier to the adoption of ICT. According to him, if the school does not provide the technical assistance required by teachers, the lack of monitoring and maintenance of ICT equipment would also cause ICT problems.

Che Had and Ab Rashid (2019) suggested there was a discrepancy between technology-familiar teachers and teachers who wanted to sustain traditional classroom teaching practises. They added that if teachers use conventional, non-DT approaches, teachers who have been exposed to DT from childhood are restricted in terms of their learning opportunities. Atkinson (2019) affirms the value of informal over formal learning, since informal learning takes place in social environments and colleagues are better prepared to impact the behaviours and cognitions of each other. They also note that a teacher would feel the desire to use DT in a social atmosphere where other teachers are actively using technology and are able to provide 'contextual knowledge about the importance and application of technology,' and would be more readily willing to try. Teachers felt more comfortable sharing their shortcomings with their colleagues in this particular study, rather than seeking advice and opinions from experts outside their school context.

Veliz and Hossein (2020) states that it is hard to comprehend ICT due to a lack of preparation or shortcomings in the training offered. Teachers need to incorporate ICT into their pedagogy of teaching, and thus need to undergo appropriate instruction, so that their skill aligns with the standards of students, and they are able to perform tasks effectively (Amhag et al., 2019). Adams and Muthiah (2020) state that adequate in-service training for all teachers at all levels is a crucial element that the Ministry of Education should provide, so that they have the latest skills in teaching techniques relevant to the current requirements. Sipman et al., (2019) also states that, in order to achieve an appropriate and specific impact, professional training and teaching pedagogy should be emphasised in parallel. When the teacher is in training, such training should be carried out to ensure that any teacher who is teaching has adequate professional skills and pedagogy to prevent any problems when they are beginning to teach Vaganova (2019).

It points out that the system and culture that is followed there needs to be considered in order to bring about improvements in the use of technology in an educational institution, since the same methodology does not generally extend to all institutions. The

amount of time a teacher has to devote to incorporating DT into their teaching affects training levels, computer skills, coordination with students, and trust. Technology integration allows teachers to be dedicated to time and, among other things, teachers need ample time to attend training sessions, practise what they have learned in their classes, develop computer-based instructional materials, and focus on their progress so that changes can be made. Esfijani and Zamani (2020) argue that it is not only about getting time to prepare for teaching or undergo instruction, but also time to manage ICT hardware when teaching in the classroom, that the problem with time constraints is. The majority of research concerning the attitudes of English teachers and the use of DT in teaching, relative to public schools, were carried out in smart schools. This could be because there are better ICT facilities in smart schools. However, while public schools do not have such sophisticated ICT facilities, since most schools around the world have a moderate level of technology, it is necessary for further research to be carried out in such an environment. Other than that, most studies have concentrated on the attitudes of teachers towards the use of DT in English language education, general expectations and perceived levels of competence. There is very little comprehensive and in-depth research on the experiences of English teachers and their practical use of DT in teaching literacy. In addition, most previous studies have used quantitative methods and, while such studies can be useful in explaining teacher expectations and the use of DT, they do not provide in-depth information as opposed to that which can be collected by qualitative methods.

## Methodology

This research explores the essence of DT cognitions of Malaysian teachers, which are not measurable but play an important role in teachers' professional lives. As it explores the dynamics and nuances of teachers' thought, and how their experiences contribute to their teaching practises. The aim of the research was not to generalise from these cases, but to develop a deeper understanding of the phenomenon of teachers' use of DT in rural schools, especially by going deeper into the cognitions of teachers.

The participants were from three rural primary schools in Johor, with a chain sampling method for recruitment purposes. The decision to focus on the rural area was due to disparities in the financial status of teachers and students in the rural environment, levels of access to DT at home and in the community, between teachers and students, degrees of early exposure or

introduction to DT, either from the very early stages of their lives or later; and disparities in the level of competence of teachers in the use of DT. It can be assumed that these aspects of the social environment and the experiences of participants would impact their use of DT in everyday life and thus can influence attitudes towards and use of DT for school literacy training. In addition, the selection of teacher-participants for the study was adapted participants with more than five years of participation in teaching English in Malaysia. The teachers to be chosen should be those who frequently and intentionally use DT, especially for teaching purposes. Due focus was placed on certain important aspects of ethical consideration, such as full openness with the participants, gaining ethical approval and compliance with the regulations of the organisations and the procedures, whether formal or informal, as well as compliance with the demands of the participants.

## Pilot Study

Three methods, namely observations, stimulated recall and semi-structured interviews, were piloted, using two participants who matched the criteria for participation in the study to ensure that the methods chosen to collect targeted information were reliable and rigorous. Through the study, it was expected to improve on gather opinions on how to improve the data collection methods.

## Data Collection Methods

On the average, four to seven lessons taught by the participants, and at least three of these observation sessions for each teacher were video recorded. Field notes were taken during the interviews and lesson observation sessions. As this study used a multiple case study method, the data collection procedures were repeated for each participant. During the data collection process, the researcher studied the schools sociocultural background with the aid of the Internet and the school's documents to understand the participants being studied. These data were used in the data analysis.

The data collection process took five to seven months, and, ongoing communication continued to be conducted with participants through WhatsApp and email for about two years to obtain more data. Regular member checks were also conducted so that the analysis of data was confirmed to be what the participants intended and understood.

## Interviews

Semi-structured interview sessions were conducted individually with each participant at the beginning of the study, during the study, and at end of the study. The first interview session conducted with each teacher before the observation sessions on teachers' attitudes towards and uses of DT in English literacy instruction, as well as their professional and personal backgrounds, English literacy instruction practices, and general use of DT in their day-to-day lives. The second interview (the During Instruction Interview) was conducted with each teacher in the middle of the study after observed every teacher's ESL literacy teaching 2 or 3 times. During this interview, questions were also more focused on the aspects of DT usage in the classroom. The third interview conducted with each teacher towards the end of the study after the classroom observations and gathered the lesson materials from them.

### *Stimulated recall interview*

According to Tochon (2017), video-based reflections can enable participants to reconstruct and explain what was thought in past events, to reflect on what has happened in the past and to shape the construction of reflections for present and future actions. Fifteen stimulated recall sessions were conducted (three for every teacher) with questions raised in the sessions were generated from the initial analysis of the semi-structured interviews. During the sessions, the teachers were asked to watch the lessons that were video recorded during the teaching observations, and they were asked to pause the videos at places that they felt were noteworthy and appropriate for discussions from the point of view of use of DT. In the course of the interviews, participants were asked to narrate the activities that took place, as recorded in the observation videos, before explaining in detail what they had planned, and the reasons why the activities were being conducted in the way observed.

### *Observation of lessons*

The motivation behind observing participants' actual use of DT in English literacy instruction was to create a clear picture of their instructional methodologies and later to check whether there were any differences between the teachers' perceptions and their real use of DT in ESL literacy instruction. During the observation session, the participants provided sufficient detailed data to portray how the teachers used DT in their teaching. Each teacher was observed between fifteen to seventeen times during their ESL literacy instruction, but video recordings were only done between eight to

ten times for each of the participants for ethical reasons. The teachers' lesson plans were observed and discussed before each lesson and, as a whole, only sessions that focused on the use of DT by teachers were video- and audio-recorded. The participant was reminded that the researcher presence was an observer, not as an assessor.

## **Data Analysis**

The main data for this study were collected from the observations and the interview sessions. Data analysis was exploratory in nature and emerging themes were discussed and analysed. For analysis of individual participant variation, in-depth description for each teacher were based on specific themes. When comparing between participants, similar and different units and themes were analysed in detail. Throughout the study, the findings were checked against the original data, in addition to communicating with the participants regularly to ensure that the interpretations in relation to the collected and analysed data were accurate.

## **Findings and Discussion**

### *Respondent cognitions about DT in English literacy instruction*

The analysis shows that Respondent A (RA) cognitions about DT directly affect her pedagogical approach in terms of her preparation, teaching style, expectations of students, assessments, and classroom management.

### *Data analysis of Respondent A (RA)*

**RA** attitudes towards her English literacy instruction were grounded in the following concepts: *English is enjoyable*, i.e., engaging, fun, interesting; *English is necessary*, i.e., students need to master literacy in order to pass examinations, receive qualifications to enter higher education institutions, to access certain jobs, and for their social and general development; *preparation for examination*, i.e., English literacy is an important part of taking examinations; *preparation for future life*, i.e., English literacy provides good preparation for future life; and *the importance of good reading and writing*, i.e., writing and reading correctly and efficiently are essential for daily life.

**RA** exhibited a positive attitude towards the English language and respected the Malaysians who were fluent or who used English in daily communication. Through the analysis, one of the major themes that appeared was '*English is enjoyable*'. **RA** explained:

*Essentially learning English is enjoyable. Teachers incorporate games, singing songs, making artwork and creative handcrafts or mobiles. It can be fun and enjoyable for both teachers and students (RA/SRIInt/16 August19).*

**RA** believed that the subject of English was among the most interesting subjects in school and should be taught in an engaging way in order to attract students to the subject, although she acknowledged that this was quite difficult for some. These attitudes were also evident in **RA**'s teaching methods, in which she often chose topics or methods that she felt would attract her students to the subject, beyond simply preparing for examinations. **RA** strongly believed that English was very necessary as a skill because it is an international language, and also the second national language in Malaysia. In addition, **RA** believed that her students would need English to study at a higher level and also to get a job later in life. According to her:

*A lot of employers have been complaining about the English competency of university graduates nowadays. They came into the interview sessions with remarkable results on their degree certs, but when asked questions in English, some couldn't even reply in good English. (RA/SRIInt/11Aug19)*

**RA** felt that through the teaching of English, students were exposed to other life skills such as moral values, how to socialise and communicate effectively, and so on. With regards to her use of DT in the classroom, she thought that the students could also learn how to use the computer correctly, which would be useful in their daily lives. She added:

*English can help people to function better as a human being in different parts of the world. (RA/Int2/15Aug19)*

Even though **RA** stated that her main objective in teaching was to ensure that every student was able to use English, as a civil servant required to meet the expectations of the Malaysian Government, she had to ensure that her students succeeded in their examinations. Although **RA** definitely felt that the examination was important for the students, she argued that this was not the only way to assess student achievement:

*Obviously, the English literacy instruction is important for examination, but examination is not the only way to assess students' performance or development in learning the language. [...] They get good grades in their examinations, get perfect scores in their written assignments yet was unable to speak good English. (RA/Int2/18Aug19)*

In addition, **RA** experiences as an examiner for the national examination board was also put into use in the classroom, whereby she provided useful tips to her students on how to answer the examination questions effectively.

**RA** felt that it was important for people to have good reading and writing skills. For her, being literate was very important not only for the purpose of exchanging information and daily communication, but also to enable a person to express emotions, feelings, and so on:

*If you do use the wrong expressions or words at the wrong time or situations, then you might end up giving wrong a message or unwanted impression about yourself to others (RA/Int 3/15Oct19).*

**RA** defined DT as that it was anything to do with the Internet. Her definition, which was somewhat simplistic and general, might have been influenced by her frequent use of the Internet to facilitate her work and personal matters:

*Some software may be good for this group of pupils, but it may not be good to some other pupils (RA/Int 3/15Oct19).*

Although **RA** recognised the potential of DT to raise the quality of teaching and learning, she felt that what was more important was the teacher's own teaching ability, rather than the type of technology they used. According to her, the human instincts of the teacher, as well as their knowledge and experience, were vital to really understand the needs of the students, and these properties could not be achieved by computer technology. **RA** also felt that the teachers are more prominent in determining the quality of the teaching sessions provided. According to her, teachers should be confident in using it even if sometimes the use of DT created additional problems in their teaching sessions. She added:

*It's a lot of hassle, I have to... I can do stuff myself, I can actually set up things here and there, if only I have access to it. But sometimes, most of the time, I don't have enough access to it, not as much as I want to.*

(RA/Int 3/15Oct19)

**RA** believed that teachers need to be confident and committed to the ability of DT, although its use sometimes requires more time and more preparations. Nadia believed that the use of DT can deliver the desired results if the teachers who use it have the necessary skills and have reliable equipment. She added:

*If you use it the correct way. It all depends on how the teachers use the software or the materials. Even good materials, if you use it wrongly, it wouldn't be successful. It won't it won't play its purpose. I mean, it all depends on how you manipulate the materials I think, yeah.*

(RA/SRIInt 3/15Oct19)

**RA** also felt that the use of DT should not necessarily be done all the time during the teaching of literacy, because according to her, some topics or skills were better taught through traditional methods. **RA** explained:

*If the objective of the lesson is to do writing, then I would see no purpose in using ICT, I would prefer them to use pen and paper and actually I would have to show by writing at the front as well.*

(RA/Int 4/15Oct19)

Although the **RA** perspectives of DT were quite complex, it was obvious that she generally felt positive towards the use of DT in literacy instruction. She admitted that she used DT to gain students' attention and respect for her, and thus motivate them to want to learn English:

*If you can have those students look up to you, in that sense, it'll be easier to influence them to love English more. [...] if you can trigger that that that if you really plant that seed, you will just have to watch it grow.*

(RA/SRIInt 4/15Oct19)

**RA** also thought that DT could make lessons more interesting for students. She said that with the use of DT, her students became more active and able to

concentrate for longer. **RA** found more enjoyment in her lessons when her students were also having fun and concentrating. She thought that this was important to facilitate a good learning environment and believed that DT helped to achieve this goal. **RA** mentioned:

*Because the moment I incorporate the use of ICT, I get to have people's engagement [...] Most of the time, I take time to, you know, bring back their attention to the lesson so sometimes, it could be a hinder but most of the time, it helps to engage the people into the lesson, yeah.*

(RA/Int 4/7Nov19)

### *Data analysis of Respondent B (RB)*

Just like **RA**, **RB** felt that the process of teaching and learning English literacy should be enjoyable and interesting. The use of DT tools such as the Internet, computers and audio and visual devices, he said, helped make learning sessions more interesting, and were a direct factor in the increased motivation of students. He added:

*Through song they learn English through videos, interesting videos in YouTube. They also learn English in storybook. I think they enjoy learning something new.*

(RB/SRIInt1/15Oct19)

**RB** thought that learning English literacy was enjoyable because of the challenges arising from learning a new language. Since English was a second language for most of his students, many of them were keen to master the language in order to maximise future benefits. When they were able to use English in daily activities, such as browsing English websites, watching English movies and so on, they came to value the importance of learning the language, as **RB** described:

*Speaking in one language is quite boring for them, but English make them feel more challenging. They're having fun.*

(RB/SRIInt 3/15Oct19)

**RB** believed that preparing his students for the major examinations was one of his core objectives in teaching English. He acknowledged that his teaching techniques and goals focused specifically on preparing for answering examination questions. He described:

*I taught my students to be literate in English by focusing on reading and writing because in Malaysia, finally, they learn English purposely for exam oriented.*

(RB/SRIInt1/15Aug19)

The analysis shows that **RB** cognition affected his pedagogical methods directly, specifically his preparation, teaching style, expectations of students, assessments, and classroom management.

The cognition that **RB** had towards his English literacy instruction, in general, was based on the following concepts: *English is enjoyable*, i.e., engaging, practical, attractive for students; *English is necessary*, i.e., students need to master literacy in order to sit important examinations, to enter higher education institutions, to get relevant jobs, and for their social and general development; *preparation for examinations*, i.e., English literacy is an important aspect of taking the examinations; and *difficult to teach*, i.e. **RB** faced a number of challenges when he taught English literacy.

**RB** felt that the process of teaching and learning English literacy should be enjoyable and interesting. His notion that English is enjoyable came from his own interest in the subject. He believed that if students enjoyed learning English literacy, they would learn more effectively and thus be better prepared in the future. The use of DT tools such as the Internet, computers and audio and visual devices, he said, helped make learning sessions more interesting, and were a direct factor in the increased motivation of students. He added:

*Through song they learn English, through videos, interesting videos in YouTube. They also learn English in storybook.*  
(RB/SRInt2/15Nov19)

In a similar way to **RA**, this respondent believed that competency in English would enable the students to meet the needs of the examination system in Malaysia, as well as daily communications in Malaysia. This is because English is the second national language in Malaysia and English proficiency is necessary in many careers. In addition, **RB** thought that English competency was very important because the language is widely spoken on the Internet. According to him:

*I think English literacy is very important. For our daily life, as example, in our career development, if we are fluent in English, we can go into many field in our job scope such as high ranking officials and diplomats*  
(RB/SRInt1/Nov19).

Of the three participants, **RB** used DT the least in his teaching sessions, despite being very familiar and competent with the technology. He recognised the great potential of DT to *increase the quality of teaching and*

*learning, ongoingly updated* and to enable people to *reach beyond boundaries*. However, he also discussed the limitations of using DT, stating that DT could be *challenging and requires extra preparation*.

Although **RB** stated that there are many advantages to using DT, he acknowledged that one needs to have sufficient knowledge and skill. According to him, a teacher should always try to use DT in a way that was relevant to the students' learning. He explained:

*I think someone who uses ICT in English literacy instructions is someone who must be willing to spend his time and effort to do something more for the pupils* (RB/Int2/7Nov19).

**RB** thought that DT tools enabled teachers to teach more efficiently and to a higher quality. According to him:

*I think it is more effective and saving your time using ICT rather than go to the library, for now, because the computer is a limitless library.*  
(RB/SRInt1/5Aug19)

As this extract shows, he believed that the higher quality teaching originated from the ability to access resources from around the world. DT also, according to him, enabled remote communication, allowing teachers to communicate with one another and share ideas. He added:

*You can also gain knowledge from your friends through the Internet by sharing whatever new knowledge that you have learned.*  
(RB/Int1/Nov19)

Additionally, **RB** recognised the benefits of DT use among students, in that the tools allowed students to review what they had learned in a flexible fashion. For example, he highlighted the website provided by the MOE as an illustration of how students could revise what they had learned anytime and anywhere, if they had access to the Internet. He said:

*DT or ICT can assist me in accomplishing my vision by the existence of Frog VLE. I can actually upload the song that I use in the lesson in the Frog VLE so that they can refresh their memory when they want to revise their lesson later.*  
(RB/SRInt1/5Aug19)

DT offered many new materials for **RB** teaching purposes. The materials available were updated regularly, and thus his teaching materials could keep up to date with trends, demands, and current needs. This factor directly ensured that students were always interested in the topics because they could discuss current issues while studying literacy. **RB** explained:

*I use ICT to gain more, update my current knowledge, because whatever in the Internet, is updated time by time.*  
(RB/Int3/5Aug19)

**RB** explained that many things were difficult to teach or explain. With DT tools, he was able to show students a variety of new information from around the world. To illustrate, he described:

*I think that using ICT in English literacy instruction is like stargate, where my pupils are able to access anywhere, they want to go, they want to know* (RB /SRInt2/19Sep19).

#### *Data analysis of Respondent C (RC)*

The cognition that **RC** had about his English literacy instruction, in general, were the concepts of *English is enjoyable*, i.e., engaging, practical, easy to attract; *English is necessary*, i.e., students need to master literacy to sit for important examinations, for qualification to enter higher education institutions, to get relevant jobs, and for their social and general development in general; *preparation for examination*, i.e., English literacy is an important aspect of taking the examinations; and *easy to teach*, i.e. **RC** finds it easy to teach English literacy.

Just like **RA**, **RB**, **RC** noted that the teaching and learning process of English literacy should be enjoyable. However, he acknowledged that the excessive emphasis on examinations could make the process less fun. He argued that the primary objective in English literacy teaching should be to empower students to converse well in English and not merely to answer examination questions. He clarified:

*Teaching English is fun unless there is other stress.*  
(RC/Int3/11Nov19)

**RC** believed that making English literacy learning sessions fun would encourage students to master a second language. He thought that students should put as much effort into learning their second

language as their first. He mentioned:

*The importance of English is not only based on teaching it but for teachers we need to make sure that our people love and have fun while learning English.*  
(RC /Int2/11Oct19)

**RC** felt that if students appreciated learning English and took it seriously, they would better understand the real value of English in their lives. Although **RC** often emphasised the importance of English literacy for general use, he did not deny the importance of mastering the language in order to move to higher education institutions.

According to **RC**, the mastery of English literacy would enable students to communicate with the global community and opening up more opportunities for them in terms of socio-economic statuses or career paths. The ability to communicate in English as well as the international language of instruction also, according to **RC**, would allow his students to communicate with foreigners. He said:

*So sometimes we still need English to communicate with others, foreigners maybe to reach to Malaysia.* (RC/SRInt2/11Oct19)

In addition, **RC** noted the importance of mastering English literacy in daily life, as most day-to-day activities, especially those involving social media and the Internet, require English. He added:

*As the mass media or the social media becoming very widely used [...]. Most of the things [...] are in English [...]*  
(RC/Int2/11Oct17)

Although **RC** believed that his students should have fun while studying English literacy, he did not ignore the reality of the education system in Malaysia which emphasises preparing students for national examinations. Hence, **RC** believed took examination preparation seriously, ensuring his students achieved an optimum level of English literacy before taking formal assessments. He stated:

*[...] the main focus for the UPSR, for the examination, for the general examination still on reading and writing so it is the most important skill the students should grab*  
(RC/SRInt/16Oct19).

Additionally, just like **RA** and **RB**, **RC** prepared



his students for the examinations through rigorous teaching methods with an emphasis on ongoing training in the application of English literacy. His focus was primarily on the elements tested in national examinations. He elaborated:

*In Malaysia even though we have divided all the skills or all the literacies in English into four, [...] reading, writing and listening and speaking but we focus more on writing and reading (RC/SRIInt/16Oct19).*

Recognising the limitations of focusing too much on examination preparation, **RC** was aware of the importance for his students to obtain high results in order to ensure a better future. He would have felt more comfortable if he was given the flexibility to choose the contents and materials for his teaching sessions, but he had to comply with the syllabus and materials supplied by the MOE. He stated:

*So, we can't do much in the lesson. We can't do much in the learning of English compared to preparing them to answer what the question is ask for. (RC/SRIInt/16Oct19)*

Unlike **RB**, who felt that the teaching of English literacy was a difficult process, **RC** thought that it was quite easy. He mentioned:

*For me teaching English literacy is easy. (RC/SRIInt/16Oct19)*

He thought this because of the availability of DT. DT tools greatly facilitated his work in terms of teaching preparation, teaching processes and the student assessment process, as the materials he needed were available either on the Internet or supplied by the school or MOE on compact disks and hard drives. He explained:

*For most it is because of the technology. Our globalisation nowadays where the television, where the internet, computer and even their games that they play are widely use English. (RC/SRIInt/16Oct19)*

He felt that his teaching sessions were more effective when he used DT tools than when he used traditional methods. By factoring in his students' interests, **RC** recognised the great potential of DT in retaining student focus and motivating them in the long

run. He also stated that his teaching sessions were livelier and more colourful, and students often responded more positively if DT tools were used. He added:

*When we use Power Point even I use simple word as in 'Good Morning', 'How are you today?', they will be attracted more than I just saying the word out from using traditional way asking 'how are you?' than reading 'how are you' from Power Point, the feedback is different, there will be, it will encourage them at least to answer the question. (RC/SRIInt/16Oct19)*

Another advantage of using DT, according to **RC**, was its ability to encourage weaker students, or those with no desire to learn, to be interested in learning. **RC** acknowledged that some of his students considered English a 'killer subject' and were afraid to learn it. However, with the involvement of DT in teaching and learning sessions, these students had shown a tendency to try. To illustrate, he described:

*As you can see even though the weak students or the weaker student in the class without knowing any words in English, they can use computer well, to use the VLE Frog so by using it at least they will know some word like 'Start', 'Save'. (RC/Int3/16Oct19)*

Despite acknowledging the advantages of using DT in the classroom, **RC** could not escape episodes of frustration and disappointment when using the technology. He found that sometimes his lessons could not run as planned due to technical problems at school, even though he had sufficient DT skills and planned meticulously in advance. He elaborated:

*Somehow not every day we can use technology without any problem, any errors as what happened previously as I plan to do, to use the LCD or computer went off or broke down so I have to change the teaching into traditional way [...]. (RC/Int3/16Oct19)*

In this study, psychological and social factors shaped and determined how teachers perceived the use of DT in literacy instruction. These factors included their professional and personal backgrounds, experience and skills using DT, training related to DT, and support in the use of DT. However, there were also

contextual factors which directly influenced their cognitions towards and use of DT in the classroom. These involved rules and policies imposed by the schools on the use of DT, as well as the availability of facilities and technical support provided. Other influencing factors include students' views of DT, students' skills in using DT, and their attitude and behaviour while using DT in learning. Overall, these psychological, social and contextual factors both directly and indirectly formed the teachers' perceptions about the uses of DT and the ways in which they used DT in teaching.

All the teachers involved in this study demonstrated different levels of exposure to, and education about, DT. RA and RB had used DT since adolescence, while RC was exposed to DT much earlier. RA stated that she had received ICT training at secondary school, and the three teachers stated that they relied heavily on DT when studying at university. In addition, the three teachers also reported that they had discovered a number of ways to use DT by exploring and trying tools independently based on their interests. Although RA and RC reported that they received more training using DT compared to RB, the three exhibited high technical skills when using DT in daily activities and in their professional lives. All three also reported that they received in-house training when they trained as teachers, although they acknowledged that this was very rare. RA and RC also noted that they were often asked to provide training to other teachers in their schools or schools in their districts based on their DT skills.

In daily life, the three participants were highly dependent on the use of DT, particularly the Internet, for activities such as information or shopping, communication, entertainment purposes and increasing revenue sources. All three had their own DT hardware, and they also had access to various DT facilities provided by the school and the MOE. Their technical skills meant that they were able to generate additional income through their abilities. RB had skills in photography and film-making, and he had his own wedding photography studio, as well as having an online furniture business, while RC generated part-time income by repairing computer hardware, carrying out photographic services and ran a business setting up public address (PA) systems for events. In addition, they also expressed an interest in owning the latest DT gadgets and hardware (i.e., laptop computers, digital cameras, smartphones, etc.) and they were very active on social networking websites and mobile applications.

The three teachers taught in different contexts (i.e., different student backgrounds and school

environments), but they showed similarities concerning their use of DT in teaching English literacy. Additionally, the three of them encountered the same bureaucratic problems within their schools which made it challenging to use DT, and at times created issues with inadequate facilities. In terms of the English proficiency of their students, only RA's students exhibited fairly good competency, while RB and RC's students displayed moderate and low abilities in English literacy. The three teachers were naturally different both in terms of their careers and personalities. They had different attitudes to the methods they used to become more effective teachers. Their practices and preferences in teaching also showed some variation, both in terms of their practices teaching English literacy and in their use of DT tools in the classroom. Despite these differences, they shared some of the same views about DT and use in helping in the teaching and learning processes. The beliefs and cognitions came from both aspects, positive and negative, in which they believed the advantages and abilities contributed by DT tools, but also recognised the shortcomings and problems arising from the use of such technology.

## Implications of the study

With an acceleration in the use of DT, particularly in the field of education, a complex situation has arisen for teachers, policymakers, school administrators, teacher educators, and curriculum makers as they strive to upgrade the educational system to ensure that students succeed. This study used a variety of methodologies to study teachers' cognitions about DT in literacy instruction, and future researchers could use the same procedures or build upon them to increase the reliability and validity of the findings. This study can be used as a point of reference for researchers using case study methods, as this study illustrates an example of a three-case study design, as well as triangulated data from different sources. The research may also be useful for researchers who are looking for methodological information regarding semi-structured interviews, stimulated recall interviews, observation of lessons, field notes and collection of lesson materials.

The development of digital literacies has grown and will continue to grow rapidly and influence future teaching methods (Bohon et al., 2017). Various factors affect the use of DT among students, including access issues beyond the classroom. These factors should be considered in order for a learning session that integrates DT to accommodate student skills, interests and habits. According to (Bohon et al., 2017), students

use DT differently at home compared to at school; the use of DT in the classroom is often unsuitable for the needs of students, contradicting to the way students think, and there is sometimes a gap in technical skills between students and their teacher, who may be less proficient.

## Limitations of Study

There are some limitations identified in this study that need to be discussed. The study cannot generalise all teachers in all contexts, because this study involved a limited number of participants in a specific context. However, like most other qualitative studies, the goal of this study was not to generalise, but to provide a thorough and contextualised review, specifically of the participants' cognitions about the use of DT in literacy instruction as well as their actual use of DT.

## Conclusion

This study demonstrates the importance of paying attention to the social and cultural factors with regards to the use of DT in literacy instruction. The combination of literacy and DT continues to evolve, and this type of research is vital to monitor and assess the current situation. The data is hoped to shape the standard of education and the latest paradigm in the field of teaching to align with the necessities and requirements of the present. Increasingly sophisticated digital technologies have created new definitions and conceptions of literacy, education, and new literacies. New values, beliefs, and practices relating to literacy at present may need to be better understood by teachers, primarily because of the differences they have regarding their cognition, values, and practices in teaching English literacy. Recognising the challenges faced by teachers in this regard will have significant implications for the education of teachers, education systems, stakeholders, curriculum makers and researchers.

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