INVESTIGATING THE IMPLEMENTATION OF INFORMATION AND COMMUNICATION TECHNOLOGY-BASED ENGLISH LANGUAGE TEACHING IN CHINESE INDEPENDENT HIGH SCHOOLS IN WEST MALAYSIA

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By

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DEDICATION

This dissertation is dedicated to my family and friends:

My loving parents;

My beloved younger sister and all my friends for their constant support and encouragement .

ABSTRACT

INVESTIGATING THE IMPLEMENTATION OF INFORMATION AND COMMUNICATIONS TECHNOLOGY-BASED ENGLISH LANGUAGE TEACHING IN CHINESE INDEPENDENT HIGH SCHOOLS IN WEST MALAYSIA

MAK VEE VIEN

The use of ICT has been one of the most discussed topics in education for the past twenty years. Notably, it has posited education in Chinese Independent High Schools (CIHS) in Malaysia to a more challenging platform due to several factors: their distinctions around the self-funding, medium of instruction and syllabus. Past studies found that although most teachers had positive attitudes toward ICT integration, some barriers might prevent them from fully utilising ICT in schools. In this study, the targeted respondents were those English teachers from CIHS in West Malaysia. It aimed to investigate teachers' perceptions and challenges while using ICT-based online learning in the teaching and learning process and some solutions from the teachers to overcome the obstacles. A mixed-method explanatory sequential research design was used in this study, in which the quantitative method was conducted first, followed by the qualitative approach to help explain and receive more data to supplement the quantitative results. 180 English teachers answered the questionnaire adapted from Qasem & Viswanathappa (2016) and Salehi & Salehi (2012). Among 180 respondents, 24 of them were selected for the interview sessions. The pilot study was done before the actual questionnaires

were distributed. Besides descriptive analysis, Reliability Test, T-Test and One-Way ANOVA were used to analyse the data collected via SPSS version 24. About two-thirds of the respondents in this study had an awareness towards the use of technology in education and perceived ICT in the teaching and learning process positively. The significant challenges faced by the English teachers in this study while using ICT to teach their students included insufficient time, teachers' attitude and interest, lack of skills and competence in ICT, teachers' teaching experiences, insufficient Internet coverage, lack of technical support from schools, lack of professional training on ICT, lack of accessibility and privacy on ICT, schools' views on ICT, lack of infrastructures and facilities provided on ICT by the school management, and students' attitudes on ICT. Constant training on using ICT in teaching should be provided to ensure a more successful implementation of ICT in education. Apart from this, adequate ICT resources must be made available for teachers. This study would be significant to educators, researchers, and school management to develop useful guidelines to assist teachers in overcoming the challenges of using ICT in teaching and learning.

Keywords: Information and Communications Technology (ICT), online learning, Virtual Learning Environment (VLE), perceptions, challenges

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APPROVAL SHEET

This dissertation entitled **"INVESTIGATING THE IMPLEMENTATION OF INFORMATION AND COMMUNICATIONS TECHNOLOGY-BASED ENGLISH LANGUAGE TEACHING IN CHINESE INDEPENDENT HIGH SCHOOLS IN WEST MALAYSIA"** was prepared by Mak Vee Vien and submitted as partial fulfilment of the requirements for the degree of Master of Philosophy in Social Science at Universiti Tunku Abdul Rahman.

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It is hereby certified that **Mak Vee Vien** (ID No: **17AAM00948**) has completed this dissertation entitled " **INVESTIGATING THE IMPLEMENTATION OF INFORMATION AND COMMUNICATIONS TECHNOLOGY-BASED ENGLISH LANGUAGE TEACHING IN CHINESE INDEPENDENT HIGH SCHOOLS IN WEST MALAYSIA**" under the supervision of Dr Joanna Tan Tjin Ai (Supervisor) from the Department of Languages and Linguistics, Faculty of Arts and Social Sciences, and Mr Cheah Kok Sung (Co-Supervisor) from the Department of Languages and Linguistics, Faculty of Arts and Social Sciences.

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Yours truly,

Vivian

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(MAK VEE VIEN)

DECLARATION

I, **Mak Vee Vien,** hereby declare that the thesis/dissertation is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at UTAR or other institutions.

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(MAK VEE VIEN)

Date: 27/01/2023

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LIST OF ABBREVIATIONS

ICT	Information and Communication Technology
CIHS	Chinese Independent High School
UCSCA	United Chinese School Committee Association
USCTA	United Chinese School Teachers' Association
AG	Auditor General's Report
VLE	Virtual Learning Environment
UEC	Unified Examination Certificate
ESL	English as a Second Language
SMS	Short Messaging System
TPACK/TPCK	Technological Pedagogical Content Knowledge
TK	Technological Knowledge
PK	Pedagogical Knowledge
CK	Content Knowledge
TPK	Technological Pedagogical Knowledge
TCK	Technological Content Knowledge
PCK	Pedagogical Content Knowledge
SPSS	Statistical Package for the Social Sciences
MML	Multimedia Language

1.0 INTRODUCTION

1.1 Background of the Study

The generation of the 21st century is firmly rooted in Information and Communication Technology (ICT), which extends to education (Gitali, 2020). ICT is a scientific tool that helps users to establish, connect and receive information from the Internet (Hassan, Ahmad & Rosnaini, 2016). In the twentieth century, the Internet became a global space for its users, and most students were more prone to daily online activities (Muthuprasad, Aiswarya, Aditya & Jha, 2021). It significantly establishes neoteric technology in the teaching and learning model (Gitali, 2020). A study has revealed that the Internet and computers were flourishing swiftly to enhance the development of all stages in the teaching and learning process (Hassan, Ahmad & Rosnaini, 2016). As reported in the Malaysian Educational Blueprint (2015-2025), 3.035 billion people in the world use the Internet, and this vast number has promoted the engagement of online learning (Ministry of Education Malaysia, 2015).

The rapid growth of online learning is due to the increasing number of "digital natives", which contributed to the swift introduction of ICT-based learning in education (Ministry of Education Malaysia, 2015). "Online learning" can be defined as the pedagogical environment sustained by the Internet, and it provides different learning programs for learners through several online websites (Dhawan, 2020). Educators feel that online learning has enforced the use of new technology, which has resulted in many positive effects that have changed the traditional ways of teaching and learning (Muthuprasad, Aiswarya, Aditya & Jha, 2021). As mentioned in the Malaysian Educational Blueprint

(2015-2025), it is predicted that 50% of the classes in high schools in the USA will be taught online by the year 2019 (Ministry of Education Malaysia, 2015).

A study by Zainab (2018) mentioned that ICT significantly impacts both teachers and learners as it offers exciting and unique opportunities in the process of teaching and learning and provides essential contributions to learning accomplishments. ICT as a tool in online learning has changed teachers' teaching methods, and students can procure a wide range of knowledge from different parts of the world (Gitali, 2020). Many schools have started integrating ICT into their education system as it has transformed the teaching and learning process from teacher to student-centred (Akyildiz & Altun, 2018). As a learning tool, ICT is an exciting teacher for students because it can make learning more accessible and attractive (Akyildiz & Altun, 2018). Studies have shown that implementing ICT in schools helps to increase the joy of learning and is helpful to teachers and their students (Akyildiz & Altun, 2018). Undoubtedly, effectuating ICT in education allows teachers to increase their teaching process and students to improve the effectiveness of their teaching and learning (Hassan, Ahmad & Rosnaini, 2016). Students can perform their homework independently, as well as increase their confidence and skills while using technology in learning; this accounts for the reasons why many schools have started to implement ICT in their education system by providing materials like online songs, videos, editorial cartoons and online resources to encourage students and teachers to integrate ICT in the teaching and learning process (Hassan, Ahmad & Rosnaini, 2016).

This study's primary focus is integrating ICT-based online learning in Chinese Independent High Schools (CIHS) in West Malaysia. The targeted

participants were the English teachers teaching in CIHS. English is unquestionably the most common language this century (Shalini & Vajay, 2016). More than 350,000,000 people use English as their mother tongue, while over 400,000,000 people learn English as their foreign or second language (Shalini & Vajay, 2016). In Malaysia, all students must learn English as a second language in primary and secondary schools (Nor et al., 2019). English has been a compulsory subject in all secondary schools in Malaysia since the year 2000 (Yahya, 2017). Naturally, those students who lack English proficiency find it challenging to learn English (Nor et al., 2019). Therefore, it is essential to ensure that students can learn English in a fun and easy way that will attract their attention. This responsibility falls on the language teachers accountable for managing student learning development (Qasem & Viswanathappa, 2016). The enjoyment of learning is induced by using ICT as a tool to teach the English language, and educators have realised that ICT establishes both collaborative and independent learning environments for students to learn English much more quickly (Jayanthi & Kumar, 2016). A study has mentioned that most English teachers in this century prefer technology instead of traditional methods (Jayanthi & Kumar, 2016). The use of ICT benefits students in learning English inside and outside the classroom and provides a suitable environment for teachers and students to interact effectively (Jayanthi & Kumar, 2016).

The CIHS teachers in West Malaysia were the participants of the current study due to geographic reasons. Malaysia is well known as one of the several multilingual countries in the world where at least four languages, namely, Malay, Chinese, English and Tamil, are used in daily life and the

education system (Muthusamy & Farashaiyan, 2016). There are four types of secondary schools in Malaysia, including CIHS, a unique type of secondary school in Malaysia, as only a few countries have set up this kind of Chinese private high school (Yu, 2017). Bahasa Malaysia is the official language used in Malaysia, while Mandarin and other languages, such as English, are taught in schools (Wong, 2017). Nevertheless, CIHS in Malaysia use Mandarin as their medium of instruction, and they are private secondary schools fully established by the Chinese communities in Malaysia (Yu, 2017). Therefore, English and Bahasa Malaysia are taught in CHIS as part of the CIHS curriculum (Yu, 2017). Based on a past study, the development of Chinese education in Malaysia has come a long way since the large-scale immigration of the Chinese to the Malayan Peninsula that began in the 19th century (Xia, Yang & Lee, 2018). As of 2014, there were a total of 61 CIHS in Malaysia. The development of CIHS in Malaysia was initiated by the Chinese educationists affiliated with the United Chinese School Committees' Association (UCSCA), also known as Dong Zong, and the United Chinese School Teachers' Association (UCSTA) or Jiao Zong. These two institutions have played an essential role in maintaining the growth of Chinese education in Malaysia (Xia, Yang & Lee, 2018). These associations aim to develop and facilitate Chinese education in Malaysia and integrate the Chinese community's influence to enhance the quality of Chinese schools in Malaysia (Wong, 2017). Practically, CIHS in Malaysia has set up a standardised examination known as the Unified Examination Certificate (UEC) (United Chinese School Committees' Association of Malaysia (Dong Zong), 2018). The examination is an essential entry qualification to local and foreign colleges or universities. It is

recognised as an important reason to make the examination special in Malaysia (United Chinese School Committees' Association of Malaysia (Dong Zong), 2018).

Despite the full recognition of Malaysian CIHS of ICT as a means to bring better enhancement to the Malaysian education system, the major problem persists in the sense that these schools are categorised as non-profit educational organisations that are not entitled to any financial aid from the government (Low, 2015). Therefore, these schools face more challenges and barriers in implementing ICT in teaching and learning than the government and Smart Schools in Malaysia. Although these barriers might cause more difficulties for CIHS to adopt ICT in their education system, as mentioned by the Malaysian Independent Chinese Secondary Schools educational blueprint, school management and educators should find ways to enhance students' independent learning, ability, knowledge, thinking and creative power to enable lifelong learning; the rapid influx of knowledge in conjunction with the development of information technology can help students to select the most suitable academic paths and career choices for them (United Chinese School Committees' Association of Malaysia (Dong Zong), 2018). Additionally, teachers and school management are required to efficiently handle administrative tasks, especially the usage and management of resources, by utilising information technology and the electronic system (United Chinese School Committees' Association of Malaysia (Dong Zong), 2018). Furthermore, based on the CIHS educational blueprint, the information infrastructure and facilities of CIHS need to be improved and ensured that the development of educational technology, the Education Cloud and Big data are put in place

(United Chinese School Committees' Association of Malaysia (Dong Zong), 2018). Therefore, this research allows the school management to grasp better the teachers' difficulties and perceptions about teaching while incorporating ICT in teaching and learning. At the same time, this study also provides a platform to learn from the recommendations suggested by the CIHS teachers to help the teaching community solve related problems.

1.2 Problem statement

For the past two decades, ICT use in teaching and learning has been frequently discussed among educationists (Kamaruddin, Che Abdullah & Idris, 2017). It has placed the Malaysian education system in a more challenging position, particularly in teaching English as a second language. Based on the most recent educational blueprint by the Malaysian Ministry of Education, both rural and urban schools in Malaysia are now required to implement ICT in schools. Teachers must shift their teaching methods from traditional methods to ICT (Ang & Sandara, 2020). Malaysian government recognises that there are many advantages to be gained via the use of ICT in education (Ang & Sandara, 2020). Nevertheless, 80% of Malaysian teachers used ICT for not more than an hour per week, and only a small number of students experienced the use of ICT inside their classrooms due to various problems (Ministry of Education Malaysia, 2013). A study by Awang, Mat Aji and Osman (2018) concluded that although the advantages of ICT had prompted the Ministry of Education in Malaysia to invest in this new way of teaching and learning in

Malaysian schools, the use of ICT in education by the government school teachers in Malaysia is relatively low.

Teachers are the primary motivators for schools to implement ICT into the education system. Therefore, they should improve their ICT knowledge in teaching to create a new technological learning environment for their students (Hassan & Mirza, 2020). In addition, it is crucial to understand the teachers' perception towards integrating ICT in school. Past study has discussed the teachers' characteristics that influenced their perceptions of using ICT in schools (Rotich, Githua & Ng'eno, 2020). It is crucial to understand how teachers' characteristics would encourage them to use the new technological way of teaching and learning (Rotich, Githua & Ng'eno, 2020).

A study by Basargekar and Singhavi (2017) mentioned that teachers' gender might influence their attitudes and perceptions about using ICT in their teaching. Another study by Nizoloman (2019) concluded that one of the factors that affected schools utilising ICT would be the teachers' gender. ICT skills intertwined with gender issues as the male teachers rated their skills higher than the female teachers (Ilomäki, 2018). Contrarily, another study by Fatima and Nasrin (2019) argued that gender might not be the factor that influenced the teachers' perceptions of ICT. In their study, a stereotypical view of gender and technology use has been developed. Most people think that younger and older females react negatively towards technology use, which causes them to be less actively engaged in technology-related behaviours and activities. However, it is also possible that people from different regions may have different perceptions and understandings of the use of technology due to unequal regional economic development and differences in technology

accessibility; this would lead to differences in gender groups' opinions on technology use in different cultural contexts (Fatima & Nasrin, 2019). However, further research is required to comprehend the influence of gender on the use of ICT (Fatima & Nasrin, 2019). Therefore, this study intended to investigate whether teachers' perceptions of ICT use would be influenced by their gender.

Next, a study by Basargekar and Singhavi (2017) mentioned that teachers' teaching experience would influence their perception of using ICT in classroom teaching. Another past study mentioned that teachers' teaching experience could be one factor that influences the use of computers in their lessons (Nizoloman, 2019). Noureddine (2017), in his study, found that the teachers who had less than 20 years of teaching experience used ICT tools to prepare their lessons more frequently; however, they seldom used it in their classrooms to support students' learning, unlike the ones with more than 20 years of teaching experience. Area-Moreira et al. (2016) found that older teachers with longer teaching experience would enhance ICT integration compared to those younger teachers with less teaching experience. The result from this past study also showed that teachers with more professional teaching experience were the ones to use ICT in classrooms more frequently (Area-Moreira et al., 2016). Hence, the current study intended to determine whether teachers' characteristics, such as gender and teaching experience, influenced their perception of ICT and their use of it in classrooms.

Disappointingly, ICT use in English lessons is still far from encouraging and has yet to be fully utilised (Santosh & Mohammed Adulkareem, 2018) due to some significant barriers that the teachers face.

Implementing ICT in the Malaysian education system is one of the most critical investments. Around 10,000 smart schools in Malaysia offer ICT as online learning in their curriculum (Ministry of Education Malaysia, 2013). Although CIHS in Malaysia has started implementing ICT in their education system, their status as non-profit schools hinders them from receiving government funding (Low, 2015). Hence, they need a substantial amount of money to maintain the infrastructure and accessibility to ICT. From the researcher's point of view, CIHS faces even more challenges than government or smart schools while implementing ICT in their education system. For example, teachers in CIHS are confronted with different challenges related to their knowledge, skills and experiences in using ICT (Khoo, 2021).

A past study by Khoo (2021) focused on the coronavirus outbreak period, which necessitated the world to be under lockdown, and all schools had to maintain the continuation of teaching and learning during the confinement. The school management was crucial in helping students use ICT infrastructure, which enabled the students to study more effectively (Khoo, 2021). Teachers needed support in implementing ICT effectively in their teaching practices (Khoo, 2021). The investigation was focused on Chinese Independent High school (CIHS) in Malaysia. The portion of the survey targeting the administrators was focused on three CIHSs in the Northern part of West Malaysia. At the same time, the qualitative method with semi-structured interviews sought responses from school principals, Dong Zong officers, and other educationists in various departments and divisions at CIHS (Khoo, 2021). The results of the study concluded that most principals, teachers and school staff needed more training in using ICT. Besides that, the students needed more

experience in using new technology in learning and the skills to study independently (Khoo, 2021).

ICT-based online learning has become more public and sociable as it contains social networks and personal learning environments (Saravanakumar, 2018). A past study; aimed to explore the changes in teachers' roles in integrating ICT in teaching and learning and its benefits and challenges mentioned that ICT offered new opportunities for the teachers to teach in a significant way; it also provided new opportunities for students to communicate and collaborate with their friends and teachers, which was distinctive from traditional classrooms (Hassan & Mirza, 2020). Nevertheless, some challenges may stop teachers from using ICT in their classrooms and prevent them from adopting ICT-based accessorial materials (Hassan & Mirza, 2020).

A mixed-method study by Ng and Yunus (2021) aimed to find out the perceptions of 55 Malaysian primary school teachers who taught English as a second language in Lawas and also to identify the barriers to the use of ICT. The research summarised that teachers' motivation and expectations in using ICT in language classrooms and internal and external factors could induce a positive academic atmosphere that benefits teachers and students. The study also reported four main challenges faced by the teachers in incorporating ICT in classrooms: first, the lack of ICT infrastructure and facilities, including an unstable internet connection in schools and lack of electrical supply that could be overcome by the schools providing basic facilities such as desktops or laptops, speakers, power supply and also stable internet connection; second, teachers' attitude of viewing ICT integration as more time consuming and

burdensome to their already taxing workload; third, lack of cooperation from students in completing the tasks assigned by the teacher; finally, the lack of parents' ability in guiding their children during their online learning due to their illiteracy in technology. These factors might influence the teachers' perception of using ICT in their English lessons (Ng & Yunus, 2021).

In conclusion, implementing ICT in education still needs to be encouraging, although teachers have a positive perception of the use of ICT. Moreover, the barriers would also discourage them from adopting ICT in schools. Therefore, the challenges of using ICT are still considered essential topics that need to be discussed because teachers from secondary schools, as well as lecturers in colleges or universities, are still encountering many challenges in using ICT in their teaching. CIHS teachers, in particular, are facing both external and internal barriers to using ICT in teaching. Therefore, it is significant to determine the challenges of using ICT faced by CIHS teachers in teaching the English language as a second language in Malaysia in order for them to move forward. The suggested possible solutions resulting from the current research will enhance the use of this new technology in English teaching in Malaysia most effectively and proficiently soon.

1.3 Research Objectives

The research objectives for this study are:

1. To investigate the perception of Malaysian CIHS teachers, based on their gender and teaching experience, in implementing ICT-based online learning in English Language teaching.

2. To investigate the challenges Malaysian CIHS teachers face while implementing ICT- based online learning in English Language teaching.
3. To recommend possible solutions to overcome the challenges Malaysian CIHS teachers face in implementing ICT-based online learning in English Language teaching.

1.4 Research Questions

The research questions are derived from the research objectives as mentioned earlier, as listed below:

1. What are the perceptions of Malaysian CIHS teachers, based on their gender and teaching experience, in implementing ICT-based online learning in English Language teaching?
2. What challenges are Malaysian CIHS teachers facing while implementing ICT-based online learning in English Language teaching?
3. What are the possible solutions to overcome the challenges Malaysian CIHS teachers face in implementing ICT-based online learning in English Language teaching?

1.5 Significance of the Study

This study aims to investigate the perceptions among Malaysian CIHS English teachers and the challenges they face in ICT integration in the teaching and learning process. Past investigations on the teachers' point of view have helped to understand teachers' willingness to use ICT in teaching, as teachers'

attitude is the main reason to successfully enhance the use of ICT in education (Murithi & Yoo, 2021). Therefore, the current study's findings on teachers' perception towards the use of ICT would provide a better insight into teachers' attitudes towards ICT integration, which, if leaned to a more positive axis, would ultimately promote and enhance the use of ICT in schools. In addition, this study also aimed to find out whether teachers' characteristics, such as gender and teaching experience, affected their perception of the integration of ICT. A study by Fatima & Nasrin (2019), which intended to find out whether teachers' gender influenced their willingness to use ICT in school, mentioned that the stereotypical view on gender and technology use was developed based on the assumption of most people, which commended that women and girls had a negative attitude towards technology use that caused them to be less actively engaged in technology-related behaviours and activities (Fatima & Nasrin, 2019). Next, another study by Kalra (2018), which focused on the Thai context, mentioned that teachers' teaching experiences could influence teachers' use of computers in their lessons. It was found that experienced teachers seldom realise the importance of using ICT tools to teach their students; hence, computers were used infrequently in their classes, as minimal as once per month in classrooms, as opposed to the less experienced teachers who integrate computers, use in their classrooms daily (Kalra, 2018). Another study also mentioned that it is significant to examine teachers' characteristics in using ICT in school (Kule et al., 2015). Thus, these studies conclusively advocate the significance of understanding CIHS teachers' perception and willingness to use ICT and if they are affected by their characteristics.

As mentioned earlier, it is challenging for Malaysian CIHS to fully adopt ICT-based online learning into their education system as they need general financial support from the government. Therefore, the challenges and possible solutions mentioned in this study can provide some useful guidelines for CIHS in Malaysia to understand the teachers' use of ICT to ensure that ICT-based online learning can be fully utilised in Malaysian CIHS. A previous study suggested that education authorities should find the best way to promote the use of ICT in teaching and learning, particularly in educational activities, and they need to be conscious of the major role of ICT in everyone's life (Reuben & Khanyisile, 2018). Based on the results analysed from both questionnaires and open-ended interviews, the possible solutions at the end of this study would be significant to most of the CIHS teachers who used ICT-based online learning in education. Schools should continue to investigate to find other solutions to help resolve any challenges teachers encounter in using ICT. Overall, the results from this study will be sent to UCSCA (Dong Zong), and they will be used as concepts to understand the future of ICT in online learning in CIHS in Malaysia as the use of ICT in CIHS is still very low. Although the Malaysia Independent Chinese Secondary educational blueprint has stated the inclusion of information communication technology and computer as well as technology and life skills for living in their education system (United Chinese School Committees' Association of Malaysia (Dong Zong), 2018), this study can help the committees to understand CIHS teachers' perception and the barriers in using ICT, and the suggested solutions by the teachers during the interview sessions could be used as guidelines to solve all the problems of using ICT in language classrooms.

1.6 Scope of the study

This study focused mainly on investigating Malaysian CIHS English teachers' perceptions of the use of ICT in online learning, as well as determining the challenges in implementing ICT in the Malaysian education system. It also aimed to recommend possible solutions to overcome the challenges identified in this study to increase the use of ICT in Malaysian classrooms in future.

2.0 LITERATURE REVIEW

Online learning can be defined as a wide range of programs that use the Internet to support pedagogical materials and help establish connections between teachers and students or among the students (Dhawan, 2020). As stated in other studies, online learning is also known as blended learning when the online elements are combined with face-to-face interactions (Dhawan, 2020). Nowadays, online learning has become very common in education. Many schools have implemented ICT-based online learning in classrooms, enabling teachers and students to experience a novel teaching and learning environment (Dhawan, 2020).

Integrating ICT in classroom teaching and learning is known as Virtual Learning Environments (VLEs). VLE is a structured and interactive online teaching platform that aims to accelerate learning (Awang et al., 2019). It is a software system that intends to provide stimulated teaching and learning with different tools and activities (Awang et al., 2019). Through online, VLE offers the possibility of communication and provides educational materials, such as videos, to be posted by teachers for their students' reference (Awang et al., 2019). VLE is a tool that helps teachers and students to communicate flexibly and, thus, enables distance learning methods (Awang et al., 2019). Meanwhile, Hamid et al. (2018) defined VLE as an online learning platform which combines the virtual learning concept with traditional education.

A past study recommended using VLE to improve students' results and stimulate independent learning while targeting to enhance student motivation

in learning through online platforms (Awang et al., 2019). A study by Hamid et al. (2018) that focused on the use of VLE in Malaysian classrooms reported that the 1BestariNet project, which the Ministry of Education Malaysia introduced in 2011 that entailed the "Frog Virtual Learning Environment" (Frog VLE), helped to provide an integrated solution for the ICT infrastructure in all Malaysian schools for the teaching and learning process. VLE or Frog VLE provided a highly accessible learning platform for teachers and students; they could access the online materials uploaded to cloud stores from anywhere via laptops or mobile devices (Hamid et al., 2018). Furthermore, VLE platforms allowed teachers to share extra information with their students, and the students were able to complete their homework after school hours; the teachers could also evaluate their students' homework as soon as the students submitted the tasks to VLE rather than waiting for the students to make physical submissions in classrooms before the teachers begin their evaluation (Hamid et al., 2018). The study found that the use of the VLE in the teaching and learning process had a positive impact on students. Because teachers were the role models imparting knowledge and skills about virtual learning to students, existing facilities should be used to increase the use of ICT (Hamid et al., 2018).

Therefore, the current study mainly focused on implementing ICT-based online learning in education so that teachers and students could experience a new teaching and learning environment. Today, education has moved into the virtual environment to accommodate online teaching and learning, where learning platforms have shifted from fixed traditional classrooms to virtual classrooms via the integration of ICT; this shift has

enabled teachers and students to teach and learn anywhere and anytime (Linus, 2019). Teachers in Malaysia have been using ICT with VLE in their education system since VLE was introduced by the Ministry of Education (Awang et al., 2018). Awang et al. (2018) found that the intention to use VLE technology among Malaysian teachers was at the intermediate level. Besides that, the study also investigated the reasons that influenced the teachers' decision to keep using VLE in the teaching and learning process, which concluded that the teachers' skills and competence in using ICT and ICT accessibility were the main problems (Awang et al., 2018).

In order to fully utilise ICT-based online learning in the CIHS education system, this study intended to scrutinise teachers' perceptions and challenges in using ICT in their teaching process. It also aimed to recommend possible solutions to help resolve the barriers faced by the teachers while implementing ICT-based online learning in teaching English as a second language in Malaysian CIHS.

2.1 ICT introduced in Malaysian Educational Blueprint 2013-2025

The Malaysian government has come out with several measures and schemes to promote the use of ICT to enhance its potential in the educational field (Ministry of Education Malaysia, 2013). Our Ministry of Education has spent more than RM6 billion to implement ICT in education over the past decade. This remains one of the essential investments undertaken by the ministry (Ministry of Education Malaysia, 2013). According to the Malaysian Educational Blueprint (2013-2025), ICT has begun to be integrated into

primary and post-secondary education for several years, and it is a part of school life for technologically proficient teachers and students as they use this new technology beneficially and productively (Ministry of Education Malaysia, 2013).

The Malaysian Ministry of Education identified three major policies to implement ICT in Malaysian education: first, the positive aspect of ICT that benefits every student and helps to lower the digital gap among the schools; second, the capability and role of ICT as a teaching and learning tool in Malaysian education; third, the implementation of ICT in improving the effectiveness, readiness and performance of the management system (Ministry of Education, 2013).

With the implementation of the three significant policies mentioned above, ICT in education would be managed into three waves under the Malaysian Educational Blueprint 2013-2025: the first wave was scheduled between 2013 and 2015, which indicated that the basis for implementing ICT in schools requires proper arrangement; the second wave was set between 2016-2020 that focused on improving the use of ICT in the Malaysian education system by establishing the best practice standards for schools and teachers, which allowed the merging of ICT in a classroom; the third wave focuses on ensuring that ICT would be fully implemented into Malaysian education system (Adzhari & Rosseni, 2021).

Consequently, to ensure that ICT can be fully utilised in Malaysia's education, it is crucial to conduct an in-depth study to examine teachers'

perceptions and challenges while using ICT. From these perspectives, this study also aimed to find possible solutions to overcome these challenges.

2.2 Introduction to Malaysian Independent Chinese Secondary School Educational Blueprint

As reported in Malaysian Education Blueprint, CIHS represent the most considerable counting of "other education systems" in Malaysia, with around 66,700 students enrolled in 60 CIHSs (Ministry of Education Malaysia, 2013). Each school in this category is managed by an independently elected Board of Trustees named either the United Chinese School Committees' Association (UCSCA), also known as Dong Zong or the United Chinese School Teachers' Association (UCSTA), also known as Jiao Zong, which receives funding from philanthropic donations and tuitions (Ministry of Education Malaysia, 2013).

The 'Independent Chinese Secondary School Education Blueprint' project team was founded by UCSCA (Dong Zong) in 2016 to respond to 21st-century education-related problems and aimed to enable CIHS education to keep abreast of the times and continuous advancement, which put many Chinese educators, scholars and experts together for ideas (United Chinese School Committees' Association of Malaysia (Dong Zong), 2018). Through many efforts, Dong Zong was able to draft a preliminary proposal for the 'Malaysian Independent Chinese Secondary Schools Education Blueprint (Consultation Draft)' that described the directions and plans for Malaysian CIHS for the next ten years (United Chinese School Committees' Association of Malaysia (Dong Zong), 2018).

Most importantly, Dong Zong weighed primary considerations of implementation, as practised by the education blueprints and policies of different nations, before executing its policies among Malaysian CIHS: the considerations of teachers' teaching, students' learning, infrastructures and school policies (United Chinese School Committees' Association of Malaysia (Dong Zong), 2018). Through the operation and correlation of these four directions, including the support of information technology, it is hoped that the Malaysian Independent Chinese Secondary Schools' educational blueprint can develop core literacies that will prepare the 21st-century CIHS students (United Chinese School Committees' Association of Malaysia (Dong Zong), 2018).

Although CIHS do not come under the purview of the Malaysian Ministry of Education, based on the Malaysian Independent Chinese Secondary Schools' educational blueprint, school management and educators should find ways to improve their students' independent ability, knowledge, thinking, and creative power for long life learning, as the development of information technology, has proliferated and this can help the students choose the most suitable academic paths and career choices (United Chinese School Committees' Association of Malaysia (Dong Zong), 2018).

2.3 A Document Analysis of the English Language Syllabus and Textbooks Used in CIHS in Malaysia

The integration and use of ICT have made it possible to enable VLE, one of the significant ICT investments by the Malaysian Ministry of Education, to help Malaysian students develop English language skills and ensure

uniformity in the quality of education between urban and rural schools (Berok & Yunus, 2019). A study by Ahmadi (2018) reviewed the use of technology in English language teaching and learning. The results indicated that using new technologies enhanced students' ability to learn languages compared to traditional teaching methods. Students can access the Internet to search for any information they want, while teachers can look for suitable English learning materials for their students that can be downloaded and shared (Ang & Sandaran, 2020). This ease of accessibility has made ICT one of the primary teaching and learning tools used in CIHS in Malaysia.

The current research analysed the English Language syllabus and textbooks used in CIHS in Malaysia to determine the necessity of ICT skills for school teachers. The Junior Middle level and Senior Middle-level English Language syllabi were initially drafted by the UCSCA's curriculum department in 2005, followed by the latest revision for the Senior Middle level in 2012 and the second revision for the Junior Middle level in the year of 2009 (United Chinese School Committees' Association of Malaysia, 2009). Teachers received the syllabi before schools reopened and were required to use them as guidelines to teach their students proficiently.

Based on the documents provided by UCSCA's curriculum department, English is the second language taught in CIHS in Malaysia. Junior Middle's and Senior Middle's syllabi for English Language teaching focused mainly on the four essential components: reading, listening, writing and speaking, in addition to the teaching of grammar, sound systems and vocabulary (United Chinese School Committees' Association of Malaysia, 2009). The Junior Middle English syllabus aims to help the students strengthen the language they

learned during Primary school and apply it in their everyday lives. It also promotes positive students' beliefs and attitudes about learning English. Meanwhile, the Senior Middle English syllabus enhances students' ability to deepen and strengthen their English skills which they can use when they further their studies to the tertiary level (United Chinese School Committees' Association of Malaysia, 2012).

Currently, Malaysian teachers teaching English does not only require the teachers to have critical thinking skills, problem-solving skills, collaboration skills as well as in-depth knowledge of the subject, but they are also required to include ICT skills to use multimedia resources like Internet and computer activities such as Power-point while teaching (United Chinese School Committees' Association of Malaysia, 2009). The same rules have guided most Malaysian CIHS as their teachers need to use the computer inside classrooms and computer labs. For example, English Language teachers may provide additional online listening activities when teaching listening skills to their students. They could upload extra speaking exercises for their students, and the students need to upload their recordings of speaking English to the cloud link provided. The additional online tasks could aid the students in acquiring correct English word stress, pronunciation and intonation, which is one of the primary targets of Malaysian CHIS English language syllabi (United Chinese School Committees' Association of Malaysia, 2012). Some CIHS in Malaysia has made it compulsory for their teachers to use ICT and upload additional online exercises for their students to supplement the prescribed textbooks or workbooks (Kumutha & Hamidah, 2014).

Despite the rapid growth of integration of ICT in teaching in CIHS, this teaching mode has failed to gain the acceptance of all CIHS teachers due to some external and internal barriers that they constantly face (Kumutha & Hamidah, 2014), which were the main focus of the current research. Past studies on the use of ICT in limited schools are scarce when the primary concern of using ICT is paralleled with Malaysian CHIS; Kumutha and Hamidah (2014) remain the authors of the ICT-integrative teaching and learning process. Having done the document analysis on the English language syllabi and textbooks used in Malaysian CIHS, these documents would be used to design the most appropriate and relevant interview questions for the intended respondents.

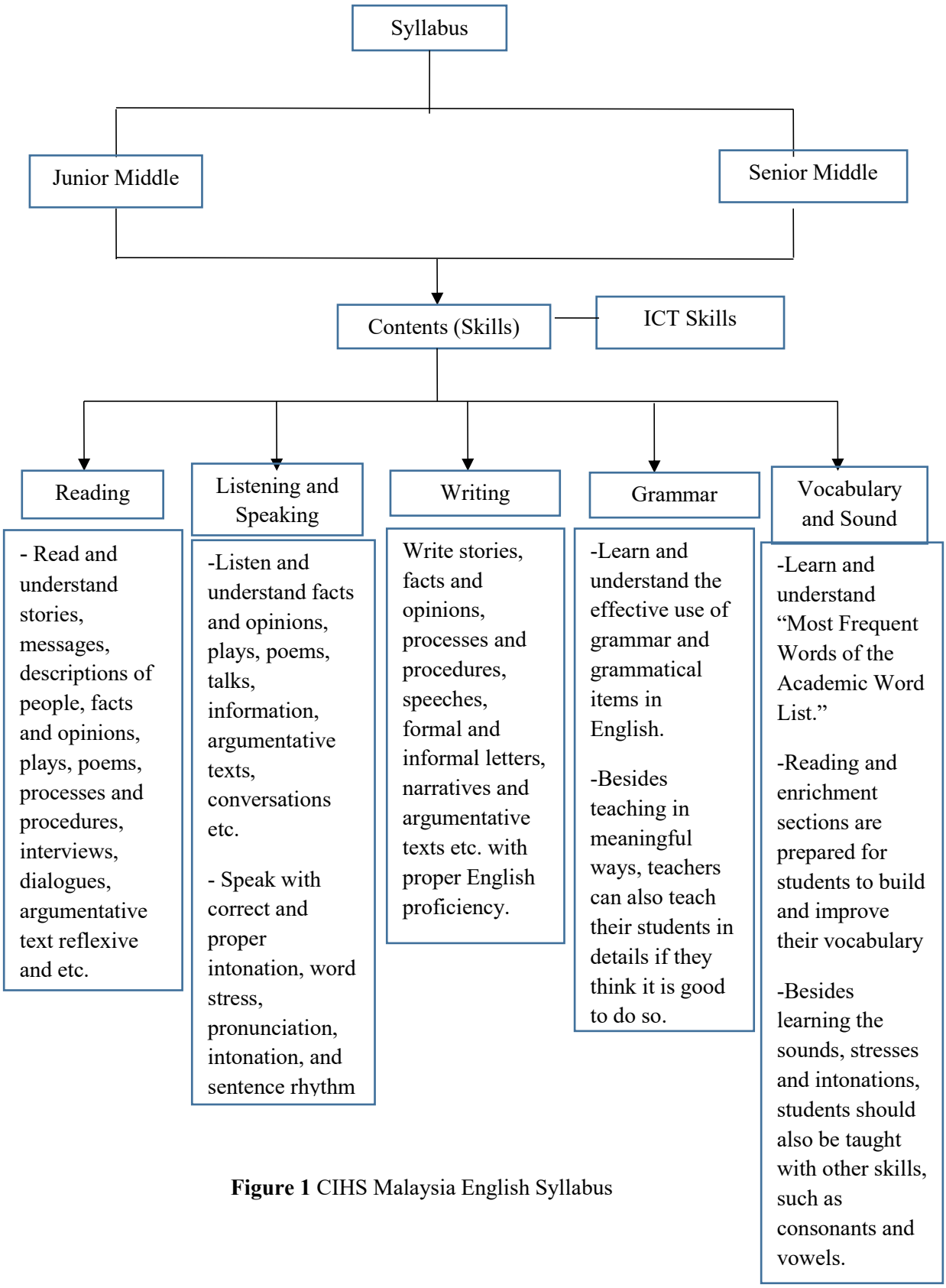

Figure 1 CIHS Malaysia English Syllabus

2.4 The Use of ICT as a Teaching and Learning Tool in Education

Based on the study by Zainab (2018), the implementation of ICT in education has an excellent potential to engage, encourage and motivate students in their learning, and help teachers to strengthen their teaching process. Many past studies worldwide have proven ICT's abilities to improve teaching and learning behaviour (Zainab, 2018). Schools that had implemented ICT into their education system experienced better changes in teaching practices because many teachers adopted student-centred and collaborative teaching (Avidov-Ungar & Forkosh-Baruch, 2019). When teachers selected online teaching materials or planned for the learning tasks that integrated ICT, they needed to ensure that they had selected suitable and appropriate classroom materials. Teachers, who are at the forefront of education, need to acquire digital literacy and the ability to use ICT to create, find and communicate (Hafifah, 2020), which could be achieved via the collaboration between educators and the school management to design ICT training programs for teachers that could improve their skills, knowledge, and confidence in using ICT in the teaching and learning process (Mahdum, Hadriana & Safriyanti, 2019).

Using ICT in education would provide practices that support students' authentic activities, independent work, and students' responsibilities (Ilomäki, 2018). A study by Alkamel and Chouthaiwale (2018) mentioned that implementing ICT in education created a new teaching and learning process where technology changed the world into a small village. The role of ICT in education has become more critical and will continue to grow in the 21st century (Alkamel & Chouthaiwale, 2018). The use of ICT nowadays has

become very important. Most teachers are expected to have modern and traditional ways incorporated into their teaching and learning processes, which necessitates them to be well-prepared and capable of using ICT in their lessons (Alkamel & Chouthaiwale, 2018). ICT has changed how students learn to allow students to deal with knowledge in a proactive, self-directed, and productive manner, as ICT offers powerful learning environments (Roman & Haripriya, 2021). Past studies indicated that students who used ICT to learn would have more significant learning opportunities compared to those who did not use ICT (Roman & Hari Priya, 2021). The effective use of ICT technology is crucial to the teaching and learning process as it contributes to implementing ICT in the education sector (Roman & Hari Priya, 2021).

Furthermore, a past study that aimed to explore the use of ICT among primary school teachers in Kenya reported that most of the teachers had a positive attitude towards the use of ICT in schools regardless of their gender and the different barriers that they faced in using ICT (Murithi & Yoo, 2021). The study also investigated the teachers' capacity as proficient technology users in their lessons (Murithi & Yoo, 2021). The results indicated that inadequate ICT facilities and infrastructures, such as personal computers, laptops and projectors, and other system installations, might prevent teachers from using ICT in their lessons (Murithi & Yoo, 2021). Besides, the research also noted that although teachers had high attitudes toward ICT and had basic computer skills, they lacked pedagogical knowledge on integrating technology in education (Murithi & Yoo, 2021). In order to motivate young teachers to fully utilise ICT in teaching and help the older ones to use ICT in their lessons, this past study suggested that the government should consider providing some

incentives like official rewards or sponsorship to enhance the inclusion of ICT in education training (Murithi & Yoo, 2021)

Another study at the University of Bhutan determined that a VLE provided a platform for teachers to share their work plans, upload exercises and assignments for their students, and analyse students' performance (Choeda, Dupka & Zander, 2016). However, based on the results, the interactivity of ICT implementation via VLE was considered very low as only a few lecturers adopted VLE in their assignments, discussions, quizzes and other performances in their pedagogies (Choeda, Dupka & Zander, 2016). The study also highlighted the four main factors that would influence the utilisation of ICT in education: first, the resources provided by schools or universities; second, the teachers' competence and skills in using ICT; third, the teachers' motivation and attitudes; fourth, the professional use of ICT. These four factors would influence the degree of ICT utilisation in education (Choeda, Dupka & Zander, 2016).

With these emphases, the current study would focus mainly on the use of ICT in a VLE with the recognition that teachers play an essential role in implementing ICT in pedagogy. Therefore, it is significant to study the teachers' perceptions of using ICT-based online learning in education.

2.5 The Use of ICT as a Teaching and Learning Tool in the Malaysian Education System

According to the Malaysian Ministry of Education, the importance of integrating ICT into the national curriculum for primary and secondary schools was acknowledged by including the aspects of ICT as one of the transformative shifts in the Malaysia Education Blueprint 2013-2025 to ensure future developments on the quality of education (Malini, 2016). Recent studies from the Malaysian context found that ICT was a valuable tool for teachers and students in the teaching and learning process because it eased knowledge dissemination and helped students to understand the content. A past study reported that most teachers concluded that using ICT helped them obtain more updated resources from the Internet to improve their teaching skills (Ang & Sandara, 2020). From the students' point of view, ICT-based learning allowed them to be more active and engaged in their lessons for their best learning experiences. The enhanced learning experiences helped the students to broaden and improve their knowledge paradigm, where they could update their knowledge to fit the current learning systems (Ang & Sandara, 2020).

Another past study, which aimed to find out the advantages and disadvantages of using ICT in teaching English as a Second Language (ESL) writing classes, concluded that ICT-based online learning could be defined as a learning environment that employed Internet technology to empower virtual learning classrooms (Ng & Yunus, 2021). By conducting a technology-infused classroom, teachers could upload relevant information and guidelines related to English subjects and relevant reading materials and exercises for their students (Ng & Yunus, 2021). In addition, teachers would construct different quizzes

and tests and require their students to write essays online, after which the students could view the teachers' comments (Ng & Yunus, 2021). In this regard, ICT-based online learning offers an effective way for students to improve their writing skills (Chua, Yunus & Suliman, 2019). Parallelly, another past study by Norizan, Hussien and Yasmin (2018), which aimed to investigate English teachers' readiness for the use of ICT in teaching at International Arabic Schools in Malaysia, also mentioned that despite the benefits ICT offered for both teachers and students in language teaching and learning, majority of English teachers were not ready yet to use the technology due to some reasons: many teachers' preference to stick to the traditional ways of teaching, lack of training in using ICT, and the old infrastructure provided by the schools (Norizan, Hussien & Yasmin, 2018). The researchers recommended that schools provide appropriate equipment so that students would have more opportunities to improve their English Language skills through the use of technology; besides, the teachers should update their teaching skills by using modern styles of teaching methods suitable for the 21st century (Norizan, Hussien & Yasmin, 2018).

The use of technology in the teaching and learning process has improved the quality of education and elevated the field to a new phase in the world (Shirin & Yeo, 2018). Nevertheless, a study by Shirin and Yeo (2018) that investigated the need to use technology in Malaysian public high schools found that teachers' and students' perceptions of ICT did not match their actual practice. In Malaysian high schools, the use of ICT is highly welcomed by the teachers and students; however, there were advantages and disadvantages to the implementation of ICT in the Malaysian education system, such as teachers

and students lacking proper training in using ICT, Malaysian secondary schools had a very light usage of ICT in reality (Shirin & Yeo, 2018). In conclusion, the teachers' role is to teach students knowledge and upgrade themselves to a higher level of competence (Saifolrudin, 2021). Teachers with higher levels of competence will have better quality in teaching and hence, improve the student's academic achievement (Saifolrudin, 2021). Thus, school management and educators should always provide their support to teachers by giving them access to adequate facilities and also training on ICT to develop their competencies in the teaching and learning process (Saifolrudin, 2021).

2.6 The Challenges in Using ICT as a Teaching and Learning Tool in Education

Implementing ICT in education offers many advantages and possibilities to support teaching and learning. However, many educators still need to be made aware of the opportunities offered by ICT as there are significant impediments to ICT implementation, assessment, design and analysis (Ilic, 2021). A study by Kimanga (2018) concluded that the challenges faced by teachers while using ICT inside the classrooms prevented them from adopting the technology despite the many opportunities extended by ICT to conduct their teaching enjoyably. Based on the previous past studies, the challenges faced by teachers while using ICT as a teaching and learning tool in education are as described below:-

2.6.1 Lack of Time

Johnson, Jocovina, Russell and Soto (2016) mentioned that the double innovation problem still led to extra preparation time even though using technology in modern times became easier to learn. It was not surprising that time was one of the most common challenges faced by teachers while integrating ICT into their lessons (Johnson, Jocovina, Russell & Soto, 2016). Another study by Nzwili (2017) found that teachers required more time to prepare when they wanted to use ICT resources in their lessons. Time consumption affects the teachers' willingness to use technology in their teaching (Nzwili, 2017). A study by Kimanga (2018) found that even if the schools provided ICT resources and facilities to teachers, insufficient class time was needed to allow the teachers to access all the resources during the lessons.

2.6.2 Lack of Skills and Competences in ICT

Besides the lack of time that prevented teachers from using ICT in classrooms, a past study revealed that teachers who lacked the skills and competency to adopt ICT into the teaching and learning process would find it difficult to fully utilise ICT in their lessons (Johnson, Jocovina, Russell & Soto, 2016). The older teachers, in particular, those who grew up without exposure to any technological tools like personal computers or even the Internet, were reluctant to yield ICT as a tool to introduce innovation into their teaching; their 21st-century students were 'digital natives with a natural flair for using technology and this intimidated the teachers and made them hesitant to use ICT

in classrooms (Johnson, Jocovina & Russell & Soto, 2016). A study by Gitali (2020) mentioned that lack of knowledge and skills in ICT was one of the main challenges teachers faced when they used ICT in school because they did not have the knowledge to use ICT tools to teach their students effectively (Gitali,2020). Meanwhile, Muslem, Yusuf and Juliana (2018) concluded that one of the challenges in using ICT was the teachers' lack of knowledge about ICT, which made it difficult for them to conduct ICT-integrated lessons; however, the researchers suggested upgrading the teachers' knowledge and skills to master ICT to resolve the conundrum of integrating ICT into the teaching and learning process.

2.6.3 Teachers' Attitudes to ICT

Furthermore, teachers need more confidence, and their attitude towards using ICT was also one of the major challenges preventing teachers from adopting it (Kimanga, 2018). A study by Himanshoo (2021), which aimed to find out the challenges and barriers while integrating ICT in Indian schools, concluded that teachers' and students' negative attitudes and perceptions of using ICT tools, such as viewing the use of ICT as something rigid and complicated, prevented the teachers and students from forming an affiliation with ICT. Furthermore, teachers would also indirectly influence learners' academic performance by expressing their expectations of ICT (Arnesen, Elstad & Christophersen, 2017).

2.6.4 Lack of Infrastructures and Facilities on ICT

Besides that, an exploratory study about the impacts of a shortage of ICT resources in the teaching and learning process by Paul and Thuthukile (2020) in selected South African primary schools indicated that students and teachers were unable to reap the benefits from ICT in classrooms due to the lack of ICT infrastructures and facilities, which undermined their hopes and aspirations. The lack of adequate ICT infrastructures and facilities caused the unsuccessful integration of ICT into the teaching and learning process (Abdi et al., 2021). Another study by Himanshoo (2021), which aimed to determine the challenges and barriers faced by Indian schools teachers on the integration of ICT, concluded that the lack of infrastructure on ICT typically revolved around problems like insufficient computers, spoilt switches, and unplugged wires, which restricted the implementation of ICT in schools.

2.6.5 Insufficient Internet Coverage

Implementing ICT-based online learning requires teachers and students to have a strong Internet network for teaching and learning. Slow or unstable Internet connection would hinder the learning process, such as facing failure in transmitting information during lessons (Maila, 2020). Another study, which focused on the constraints in adopting ICT within Cambodian Higher Education Institutions (HEIs), concluded that ICT usage and accessibility at HEIs were relatively low (Som, Chan & Dumitrascu, 2021). A report that focused on HEIs in 2017 revealed that numerous technical issues had prevented the use of ICT in schools, including the lack of intranet for services,

poor internet connection, and limited access to software (Som, Chan & Dumitrascu, 2021). The poor Internet connection at schools was the major problem for the lack of ICT used in classrooms (Muslem, Yusuf & Juliana, 2018). In addition, a study by Kimanga (2018) showed that many barriers were faced while using ICT in schools, including limited access to the Internet because of the high cost of Internet provision.

2.6.6 Lack of Technical Support and Accessibility on ICT

Another significant problem that prevents teachers from using ICT in teaching and learning is the lack of accessibility to ICT resources (Kimanga, 2018). Sometimes, even with the easy accessibility to ICT resources, the teachers were still unable to use ICT in the classroom as it might be challenging to use technology in school. This dilemma made them highly dependent on the technical support provided by the school management (Kimanga, 2018). Besides that, Abdi et al. (2021) found that schools with outdated hardware, software and slow Internet connections caused a lack of accessibility to ICT, and adequate technical support was required to overcome the problems.

2.6.7 Lack of Training on ICT

Although implementing ICT in schools brought many opportunities for teachers and students, the need for qualified teachers with ICT expertise hindered the full utilisation of ICT in schools (Abdi et al., 2021). The lack of teacher training on ICT reduced the use of technology in school (Kimanga,

2018). Although schools might have access to educational technology resources, teachers must gain pedagogical skills for using ICT resources (Kimanga, 2018). Next, a study by Abdi et al. (2021) concluded that because of a lack of ICT-related training for instructors or teachers, students needed more time to familiarise themselves with ICT in their learning. Another study by Himanshoo (2021), which aimed to investigate the barriers to integrating ICT in Indian schools and the roles of teachers in using ICT in the teaching and learning process, concluded that inexperienced teachers who did not know how to use ICT facilities were unable to help their students to make use of readily available ICT software and hardware.

2.7 The Challenges of Using ICT as a Teaching and Learning Tool in the Malaysian Education System

In Malaysia, the Ministry of Education proposed, promoted and encouraged the use of ICT in Malaysia's education policy, believing that the quality of education could be improved by integrating ICT into the teaching and learning process (Teoh et al., 2021). However, based on a study by Ng & Yunus (2021), which intended to investigate the perceptions and challenges in using ICT among Malaysian teachers and explore the effective ways to implement ICT in the Malaysian education system, showed that there were some constantly surfacing challenges while implementing ICT in Malaysian education. The 21st-century teachers were expected to conduct ICT-infused language lessons successfully. However, past studies have discovered challenges faced by teachers while using ICT (Ng & Yunus, 2021), as elucidated in subsequent sub-sections.

2.7.1 Lack of Time

First, the study by Ghavifekr et al. (2016), which focused on the use of ICT in Malaysian schools, stated that the lack of time was the most common challenging factor in integrating ICT into the pedagogical process. In order to prepare the lesson plans and conduct ICT-based lessons, the teachers needed to spend more time arranging the technical courses, browsing various websites, or using specific educational software (Ghavifekr et al., 2016). In fact, due to the lack of class time, teachers needed more time to explore the various opportunities offered by ICT. A study by Ang and Sandaran (2020) showed that teachers frequently complained about the lack of class time for English lessons as they struggled to complete the syllabus within the inadequately allocated time; hence, they were reluctant to embark on ICT-based language lessons in classrooms and avoid the technology as they did not want to waste their time to set up the ICT facilities, such as computer and projector every time (Ang & Sandaran, 2020). Another study also found that more than half of the teachers believed that ICT was time-consuming, and if a school would like to integrate ICT successfully, then the current school timetables need to be revamped to allocate more time to conduct ICT-based language lessons in English language classrooms (Murithi & Yoo, 2021)

2.7.2 Lack of Skills and competences

A study by Ang and Sandaran (2020), which focused on the teachers' perceptions and practices of using ICT in English language teaching, revealed

that the main issue that reduced the teachers' use of ICT in classrooms is the need for more skills and competence in technology. With this issue, teachers needed more confidence in implementing ICT in classrooms, and the study recommended that school management provide their teachers with more ICT-related training to improve teachers' ICT knowledge and skills (Ang & Sandaran, 2020). Lack of skills and knowledge in using ICT threatened ICT integration. It made teaching less attractive while demotivating students to learn with ICT when their teachers needed to become more familiar with the ICT tools (Kamarruddin, Che Abdullah & Idris, 2017). Therefore, rather than excusing themselves for their incompetence in handling the ICT gadgets in classrooms, teachers should equip themselves with sufficient knowledge to undertake to conduct ICT-based classrooms, which has become a pre-requisite to teaching in the 21st century that sees rapid growth in science and technology (Kamarruddin, Che Abdullah & Idris, 2017).

2.7.3 Lack of Infrastructures and Facilities on ICT

The implementation of ICT into the Malaysian education system has been proposed, promoted and encouraged by our Ministry of Education (Teoh et al., 2021); however, despite the continuous training the Ministry of Education provided for teachers to upskill the skills of ICT, the lack of infrastructures and facilities made the training a failure (James Berok & Yunus, 2019). According to a study by Ng and Yunus (2021), the need for more basic ICT facilities and infrastructures included little computer access and a stable electrical supply. School management should be aware of the importance of

ICT facilities, and they should provide teachers with adequate support and ICT facilities in classrooms, standard power supplies, projectors, computer laboratories and functional devices in order to ensure the successful integration of ICT in schools (James Berok & Yunus, 2019).

2.7.4 Insufficient Internet Coverage

Besides the need for more adequate infrastructures and facilities that hindered the teachers from using ICT materials in schools, another issue that needs immediate attention is the schools' Internet connection (James Berok & Yunus, 2019). Even though 1BestariNet was provided, it failed due to the schools' poor Wi-Fi connection (James Berok & Yunus, 2019). Therefore, upgrading the Internet connection at schools should be prioritised to enable the teachers to integrate ICT in their classrooms (James Berok & Yunus, 2019). In Malaysia, the poor Internet connection has been a persistent problem that not only demotivates the teachers from using ICT in schools but also prevents students from learning with technology; this was proven via the study conducted by Sulaiman and Halamy (2021), which mentioned that students enrolled at Universiti Teknologi Mara (UiTM) Sarawak expressed their difficulties in connecting to the Internet for learning, particularly those who lived in remote areas. Based on the Malaysian Communications and Multimedia Commission (MCMC) report in 2020, Internet users increased from 87.4% in 2018 to 88.7% in 2020, and the use of computers increased from 72.1% to 80% (Sulaiman & Halamy, 2021). Even though the use of technology like the Internet and computer increased in Malaysia, in 2020, the

percentage of Internet users between urban and rural areas had a big difference, in which urban areas had 75.6% Internet users while the rural territories only had 24.4% people with access to the Internet (Sulaiman & Halamy, 2021).

2.7.5 Lack of Technical Support and Accessibility

Furthermore, another challenge confronted by teachers while using ICT tools in classrooms was the lack of technical support and accessibility. A study by James Berok and Yunus in 2019 concluded that the majority of teachers had a positive attitude towards ICT and believed in its ability to provide opportunities for students, as well as to enhance their teaching; however, the lack of technical support forced the teachers to only focus on using Microsoft Office and the available hardware provided by their school management. Most researchers also claimed that network connectivity and power supply were the most fundamental and vital components of implementing ICT in schools (Cha et al., 2020). Therefore, the least developed countries were forced to concentrate on ICT integration in schools in urban environments (Cha et al., 2020). Schools should take technical support and accessibility into consideration as external issues such as low signal, slow Internet access, websites with less user-friendly features, and unattractive online websites could instil negative attitudes towards ICT between students and teachers (Taat & Francis, 2020). Mirzajani et al. (2016) also mentioned that if schools provided good and appropriate technical support and accessibility to ICT, including computer software and hardware, teachers would be motivated to use ICT in the classrooms.

2.7.6 Lack of Training on ICT

Teoh et al. (2021) focused on implementing ICT in rural secondary schools in Kedah, a state in Malaysia. They mentioned that three primary factors hindered the process. These three significant factors included teachers' lack of ICT skills, heavy teachers' workload, and lack of support assistance; with the increase of additional ICT-related training for teachers to help them learn and understand how to use ICT in classrooms, the ICT-based teaching and learning process in rural secondary schools in Kedah would be more effective (Teoh et al., 2021). Another study by Shafie et al. (2019) also mentioned that if teachers were provided with specific training on ICT, they would avoid some difficulties in teaching their students 21st-century skills. This was supported further by Tee et al. (2018), whose research revealed that the lack of ICT training might produce teachers with inadequate skills and competence in using ICT, which would lead to the inability of neither novice nor experienced teachers to transform their pedagogical practices to suit the 21st century.

2.7.7 Conclusion

Based on the studies above, it was concluded that some of the current challenges in implementing ICT in Malaysian secondary schools included unstable Internet coverage, lack of knowledge on the use of ICT, and students' lack of motivation. Further investigation into other challenges will be carried out in the current study, which intends to provide possible solutions to overcome these problems at the end of this research.

2.8 The Use of ICT in English Language Teaching and Learning

The potential of ICT in language teaching has opened a new chapter in this field, and the use of ICT in the classrooms was increasingly examined as an essential qualification for language teachers (Ammanni & Aparanjani, 2016). The Internet has gained tremendous popularity in teaching second or foreign languages, such as English. The importance of ICT in the teaching and learning process has been recognised by different language institutes worldwide (Alkamel & Chouthaiwale, 2018). Based on a study by Puspita (2019), ICT significantly facilitated the topics covered in English teaching and learning. It played an important role in boosting students' enthusiasm to learn English, and some scholars believed that the use of ICT could help improve the English teaching and learning process and students' motivation.

ICT has become a necessary method for the current teaching and learning process, and increasing the standard of education is imperative (Alkamel & Chouthaiwale, 2018). Based on the study by Alkamel and Chouthaiwale (2018), ICT as a teaching method in the 21st century positively influences students' attitudes toward learning a language. Students could learn and practise languages in different ways from available online sources such as audio and video clips, images, and animations (Alkamel & Chouthaiwale, 2018). Besides providing benefits to the students, using ICT in language also helps teachers to prepare their teaching materials more effectively, and second or foreign-language education can be successful with ICT tools and materials, which are freely available online (Alkamel & Chouthaiwale, 2018). A study by a group of researchers that aimed to investigate how students at the University of Bengkulu in the English Education Study Program used ICT applications to

improve their English language skills found that there were fifteen ICT applications the students used in English learning, and the majority of students in this study had positive attitudes towards the use of ICT as they believed this could help them master their English language skills (Adeliani et al., 2021).

Furthermore, there were also past studies that aimed to determine the use of ICT in English language teaching and learning. Alfarwan (2019) concluded that ICT methods, especially electronic devices, were used by students to enhance their English language skills, while Al Arif (2019) found that students had positive attitudes when they used ICT to learn English. Another study focused on high school students found that ICT tools like media programs could help improve students' reading skills (Margareta et al., 2017).

The importance of ICT in language learning has been recognised globally, making the use of ICT in English language teaching an imperative in today's teaching environment; the availability of ICT used in secondary schools and the teacher's proficiency in using ICT methods to teach the English language suggested that government played an essential role in investing in ICT to provide teachers with an alternate platform to teach English (Akpabio & Ogiriki, 2017). At the same time, English language teachers should upgrade their teaching skills with the necessary ICT skills needed to conduct their ICT-based English language lessons. The school library should include relevant ICT information, such as books for teachers.

2.9 Research Gap

Language teachers in the 21st century are expected to implement ICT into their teaching successfully (Adzhari & Rosseni, 2021). However, as reported earlier, the implementation of ICT put the Malaysian education system into a precarious position, and the topic of using ICT in the teaching and learning process has been in constant discussion among educationists for the past two decades (Kamaruddin, Che Abdullah & Idris, 2017).To date, the issues related to ICT-based education are not resolved to the satisfaction of all parties concerned. Therefore, the current study aimed to investigate further the use of ICT in the Malaysian education system, especially in CIHS.

Furthermore, the quality of the English language in Malaysia is still far from encouraging (Santosh & Mohammed Adulkareem, 2018) despite the language being hailed as an important one to be proficient in. CIHS used Mandarin as their medium of instruction as the schools were established by the Chinese community (Yu, 2017), and it became more difficult for the students to improve their English skills. These circumstances led to the necessity of researching the implementation of ICT among CIHS in Malaysia as they might face more challenges in using ICT in the teaching and learning process compared to other schools in Malaysia (Khoo, 2021). Although there were many past studies on the implementation of ICT in Malaysian schools, only a few of them focused on CIHS in Malaysia. Thus, the current study aimed to rectify the gap by addressing the perceptions and challenges faced by the English teachers in CHIS and extracting possible solutions from the teachers that might help to overcome the barriers in practising ICT-based education.

2.10 Theoretical Framework

Incorporating technology into teaching and research is one of the most critical challenges in current education as it is becoming popular and significant in schools. Students are highly adaptive to ICT since they are surrounded by it (Akyildiz & Altun, 2018). Most teachers feel unsure while preparing their teaching materials using ICT, and they are disheartened by the multiple barriers to ICT integration in schools (Akyildiz & Altun, 2018). The current research adopted the theory of Technological Pedagogical Content Knowledge (TPACK/TPCK) (Koehler & Mishra, 2009), as shown in figure 2, as the theoretical framework. This theory's core is to guide researchers in using ICT among teachers in schools (Koehler & Mishra, 2009). The TPACK framework expands Pedagogical Content Knowledge (PCK), a framework introduced by Shulman (1986). PCK interprets a teacher's knowledge of using educational technologies and all connected elements, which enables teaching with technology to be carried out more effectively (Shulman, 1986). There are three significant elements in the TPACK theory: content, pedagogy, and technology of teachers' knowledge in using technology in education (Koehler & Mishra, 2009). The most significant aspect of this framework is the interaction between the body of knowledge and technology, which translates to Technological Knowledge (TK), Pedagogical Knowledge (PK), Content Knowledge (CK), Technological Pedagogical Knowledge (TPK), Technological Content Knowledge (TCK), PCK as well as TPACK (Koehler & Mishra, 2009).

Technological Knowledge (TK) in the TPACK framework refers to the understanding of using ICT software and hardware such as computers,

projectors, speakers, and the Internet and teachers' use of online materials to download documents from the Internet (Joseline & Rowell, 2021). Pedagogical Technology (PK) is teachers' teaching experiences and professional teaching knowledge in students' learning. Content Knowledge (CK) in the TPACK framework refers to how teachers understand the subject but does not consider the subject of teaching (Joseline & Rowell, 2021). Technological Pedagogical Knowledge (TPK) refers to the teachers' technological knowledge that would be used in the teaching and learning process (Joseline & Rowell, 2021). It shows the teachers' abilities to use technology to manage their classes at computer laboratories and how they could use the whiteboard to attract students' attention (Joseline & Rowell, 2021). Technological Content Knowledge (TCK) means using technology to show and bring out the different ways that can help teachers create new content to teach their students (Joseline & Rowell, 2021). Lastly, Pedagogical Content Knowledge (PCK) represents the knowledge of content. It employs pedagogical strategies to help teachers attract students' attention by coming out with exciting and memorable topics (Joseline & Rowell, 2021).

Using ICT in education is considered difficult to be done satisfactorily. To overcome this misperception, the TPACK framework provides some feasibility to promote research in the teachers' use of new technology in education and other research related to this field (Koehler & Mishra, 2009). TPACK framework has been adopted to help schools integrate ICT and support teachers in preparing and implementing ICT in classrooms (Noha, Ali & Fatimah, 2017). TPACK framework provides the knowledge and concepts of using the technologies, the techniques for teachers' use of technologies to teach

specific subjects, the barriers in ICT-based teaching and learning, and information about how these technologies could be employed to improve the existing knowledge or develop new knowledge based on the existing one(Koehler & Mishra, 2009). Therefore, the TPACK framework is significant for implementing ICT in schools as it helps to address the challenges in utilising educational technology and supports teachers in using new technologies in classrooms (Noha, Ali & Fatimah, 2017).

In today's era, our education system is not excluded from being affected by the growth in technology and science (Naaz & Khan, 2018). TPACK framework helps teachers to achieve great success in their teaching and learning process by enabling them to select suitable technological tools to teach specific content in a particular way while providing a platform to develop teachers' technological knowledge (Naaz & Khan, 2018). Ergen, Yanpar Yelken and Kandli (2019) mentioned that while technology is important for teachers in technological, pedagogical and content knowledge, teachers' characteristics, such as gender, might affect their TPACK competency. Past studies emphasised gender as one of the commonly studied variables in education, and the variable remained unchanged before or during the study (Ergen, Yanpar Yelken & Kanadli, 2019). Akyildiz and Altun (2018) attempted to find out whether there was any significant difference between gender and TPACK among teachers in Turkey. Among 329 teachers in Turkey, it was found that female teachers performed better than male teachers in Pedagogical Knowledge (PK), Pedagogical Content Knowledge (PCK), Technological Pedagogical Knowledge (TPK) and Technological Pedagogical Content Knowledge (TPCK). Another study by Ergen, Yanpar Yelken and

Kanadli (2019) found significant differences in the knowledge types of TPACK among different genders. TK, PK, TPK and TPCK affected the male teachers more, while CK, PCK and TCK favoured the female teachers. On the contrary, another study which aimed to find out the impact of gender on TPACK among pre-service teachers showed that both male and female teachers had differences in their Technological Knowledge (TK). However, this TPACK had no significant difference based on their genders (Naaz & Khan, 2018).

A study by Ozudogru & Ozugoru (2019) mentioned that it was crucial to find out whether there was any significant difference between teachers' genders and their TPACK levels. If there were differences, training should be provided to improve the TPACK aspect of the affected teachers. Moreover, another study by Can, Erokten and Bahtiyar (2017) agreed that teachers' TPACK might be influenced by their demographics, such as gender and teaching experiences. Additionally, Bingimlas (2018) also stated that teachers from the Kharj District of Saudi Arabia had significant differences in TPACK knowledge based on their genders, teaching experiences, and the subject they taught. On the other hand, another study by Xu, Zhu and Tang (2018) reported that teachers with excellent TPACK knowledge and competence were not affected by their demographic variables.

Furthermore, in a study by Kartal and Afacan (2017), male teachers had a high level of Technological Knowledge (TK) compared to female teachers, as they showed more confident and optimistic perceptions towards using technology. Another study showed that male teachers had significant differences in TPACK levels compared to female teachers. Therefore gender

segregation in society should be eliminated, and gender equality should be ensured in education (Ergen, Yanpar Yelken & Kanadli, 2019). In addition, past studies also found that teachers' TPACK levels might differ due to their genders and teaching experiences (Ozudogru & Ozudogru, 2019). Male teachers' perception of Technological Knowledge (TK) was higher than that of female teachers. However, the teachers' TPACK levels had no significant differences in their teaching experience (Ozudogru & Ozudogru, 2019).

Furthermore, Kartal and Afacen (2017) found that teachers who had experience in technology had a positive impact on the use of TPACK. The latest study by Fahadi and Khan in 2022 concluded that teachers' perception of using TPACK in teaching was not influenced by their teaching experiences. Meanwhile, another study by Kartal and Dilek (2021) concluded that their teaching experiences might improve teachers' CK and PK knowledge. Regardless of the findings reported in past studies, teachers should change their mindset to switch from traditional teaching methods to ICT-based teaching, making learning more active (Bingimals, 2018).

The current study aimed to find out CIHS teachers' perceptions about the use of ICT in its education system. As concluded from past studies, teachers' demographic variables might have significant differences in technological knowledge; therefore, this study would investigate whether teachers' TPACK competency was influenced by their genders and teaching experience. Besides that, this study also intended to find out the common problems teachers in Malaysia encountered while using ICT and the possible solutions that could help the teachers to overcome these challenges.

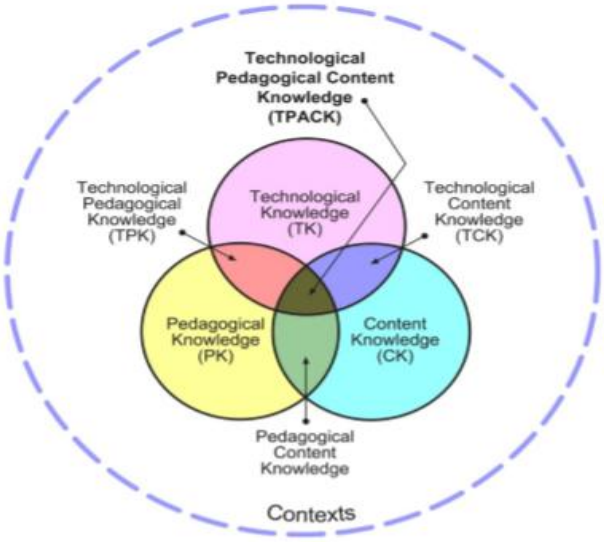

Figure 2. The TPACK framework (Koehler & Mishra, 2009).

2.11 Conceptual Framework

Figure 3 shows the conceptual framework of this study. Three main points are discussed in this study: teachers' perception of ICT integration in school, challenges faced while implementing ICT in school, and possible solutions to overcome the barriers. As mentioned in previous sections, past studies stated that although schools implemented ICT-based online learning in their education system to teach the English Language, they needed to identify the challenges to ensure that the schools and the teachers fully utilised ICT tools.

First, it is crucial to understand teachers' perceptions while implementing ICT in schools to utilise it in the education system fully. Past research revealed that teachers who had negative perceptions towards the use

of ICT were unlikely to commit to conducting ICT-based classrooms (Ang & Sandaran, 2020). Therefore, teachers' perceptions of ICT integration would affect the effectiveness of ICT in teaching and learning (Aslan & Zhu, 2016). In the current study, teachers' perceptions could be considered a moderating factor that would indirectly influence the relevance of the possible solutions proposed by the teachers.

Furthermore, this study also aimed to find out whether teachers' genders and teaching experience influenced their perceptions towards the integration of ICT. A study by Murithi and Yoo (2021) mentioned that it was necessary to understand teachers' characteristics which might affect the integration of ICT in schools. It was significant to establish teachers' characteristics that would encourage them to integrate and use technology in teaching and learning (Murithi & Yoo, 2021). For example, gender was one of the factors that influenced teachers' attitudes toward the use of ICT, and it might have a long-term impact on using ICT in classrooms (Basargekar & Singhavi, 2017). Furthermore, Fomsi and Orduah (2017) intended to find out whether gender influenced teachers' perceptions of the use of ICT. It was crucial to investigate the gender distribution of ICT among teachers to fully utilise ICT properly (Fomsi & Orduah, 2017). Ilomaki (2018) mentioned that male teachers were likely to have higher skills in using ICT than their female counterparts.

The next issue is whether teachers' teaching experience could influence their perceptions of the use of ICT. Existing research showed mixed results on the relationship between teachers' teaching experience and the implementation of ICT in classrooms (Basargekar & Singhavi, 2017). A study by Noureddine

(2017) mentioned that teachers' teaching experience would determine whether teachers used computers in their classes. The research found that teachers with less than 20 years of teaching experience usually used ICT tools to prepare for their classes compared to the ones with more than 20 years of teaching experience (Noureddine, 2017).

Past studies showed that while using ICT to teach students in school, teachers would need some help to conduct lessons with ICT. The challenges of using ICT in education faced by CIHS teachers in Malaysia are divided into internal and external factors. The internal factors included time, attitude, skills, and competence in ICT. First, teachers typically find it difficult to use ICT in their lessons due to the lack of class time, and they need more time to complete the syllabus assigned by the school management (Ang & Sandaran, 2020). Besides preparing for regular classes, teachers must spend extra time preparing for teaching materials when they use ICT in their lessons, which may affect their willingness to use technology in their teaching (Nzwili, 2017). Next, teachers' rejection or acceptance of adopting ICT for teaching purposes depends on their attitudes towards the possibilities of using ICT in education (Ratheeswari, 2018). A study by Kimanga (2018) also concludes that teachers' negative attitudes toward the use of ICT are one of the significant challenges that hinder teachers from using ICT to teach their students, and this may influence the teachers' confidence in ICT and the benefits it may bring to the teaching and learning process. Furthermore, although teachers are required to have skills and competencies when using ICT as teaching materials, they usually need help in operating ICT tools in their teaching due to their lack of competence in this field (Gitali, 2020).

Besides these internal factors, several external factors influence teachers' use of ICT in education. First, the unstable Internet connection remains the main reason why teachers are not able to utilise ICT for online learning in schools fully; the uploading speed is too slow for them to update new information, provide online exercises for their students, or to show extra online information in the classroom (Maila, 2020). Next, lack of technical support at school can also be noted as one of the challenges while implementing ICT. Sometimes, the computers or other facilities may not function well, and many schools need more money to hire a technician to assist the teachers in using ICT in a classroom all the time (Abdi et al., 2021). Moreover, the number of training on ICT provided to teachers is considered very low as teachers need to be qualified in particular use of ICT instead of just being trained on applying basic computer knowledge (Satveer, 2017). Therefore, schools need to offer sufficient training for teachers to improve their competencies and skills required for ICT-based online learning in schools (Satveer, 2017). Shafie et al. (2019) also mention that teachers normally face some challenges while using ICT to teach their students because they need more specific training on ICT. In addition, lack of accessibility is another challenge schools, and teachers face when adopting new technology in the teaching and learning process at schools. This problem surfaces when there is no proper arrangement of power supply to the schools or their computer laboratories (Satveer, 2017). Even if schools provide ICT-related training for teachers, a lack of infrastructure and facilities prevents teachers from conducting ICT-based lessons (James Berok & Yunus, 2019). Paul and Thuthukile (2020) find that teachers and students cannot enjoy the advantages

of ICT because the school management needs to provide adequate ICT infrastructure.

After examining the challenges teachers face, this research proposes some possible solutions to assist schools and teachers in implementing ICT in education, as well as to increase the possibilities of using ICT tools in online teaching and learning. Schools are recommended to maintain and prepare adequate ICT facilities and infrastructures and provide continuous technical support to their teachers to conveniently use ICT (James Berok & Yunus, 2019). Abdi et al. (2021) recommend that the accessibility of ICT needs to be improved, and schools should provide teachers with reliable Internet connections. To successfully implement ICT in education, schools have to show their full support, and the teachers should change their mindset and attitude towards using new technologies in education (Abel et al., 2022).

The three elements (technology, pedagogy and content) in Theoretical Pedagogical Content (TPACK) framework mentioned earlier are considered to be familiar to teachers and will be applied continuously in their lessons (Noha, Ali & Fatimah, 2017). Teachers need to update their technical knowledge and are required to understand the relevant content knowledge (Noha, Ali & Fatimah, 2017). At the same time, teachers need to adapt their technological knowledge and understand how they can transfer this technology content to their pedagogical situation (Noha, Ali & Fatimah, 2017). Teachers must understand the concept of the TPACK framework, which helps them to connect their technological skills and content to their lesson plans (Noha, Ali & Fatimah, 2017). TPACK framework also addresses the challenges in educational technology and supports teachers to utilise new technologies in

their classrooms fully. It is imperative to understand teachers' technological, pedagogical and content knowledge and how the different types of knowledge influenced the internal and external challenges they faced while using ICT for teaching and learning.

If CIHS wants to implement ICT to teach students in school, they must first understand their teachers' perception of ICT integration, then determine the challenges the teachers face and propose possible solutions that help them overcome the barriers. It is a fact that, hitherto, the implementation of ICT in education still needs to be encouraged (Santosh & Mohammed Adulkareem, 2018). Even when teachers positively perceive using ICT in their lessons, the challenges mentioned earlier may discourage them from adopting ICT in classrooms. Therefore, the suggested possible solutions resulting from the current study can guide Malaysian teachers to overcome these challenges and enhance their use of new technology to deliver effective and proficient English teaching in the near future.

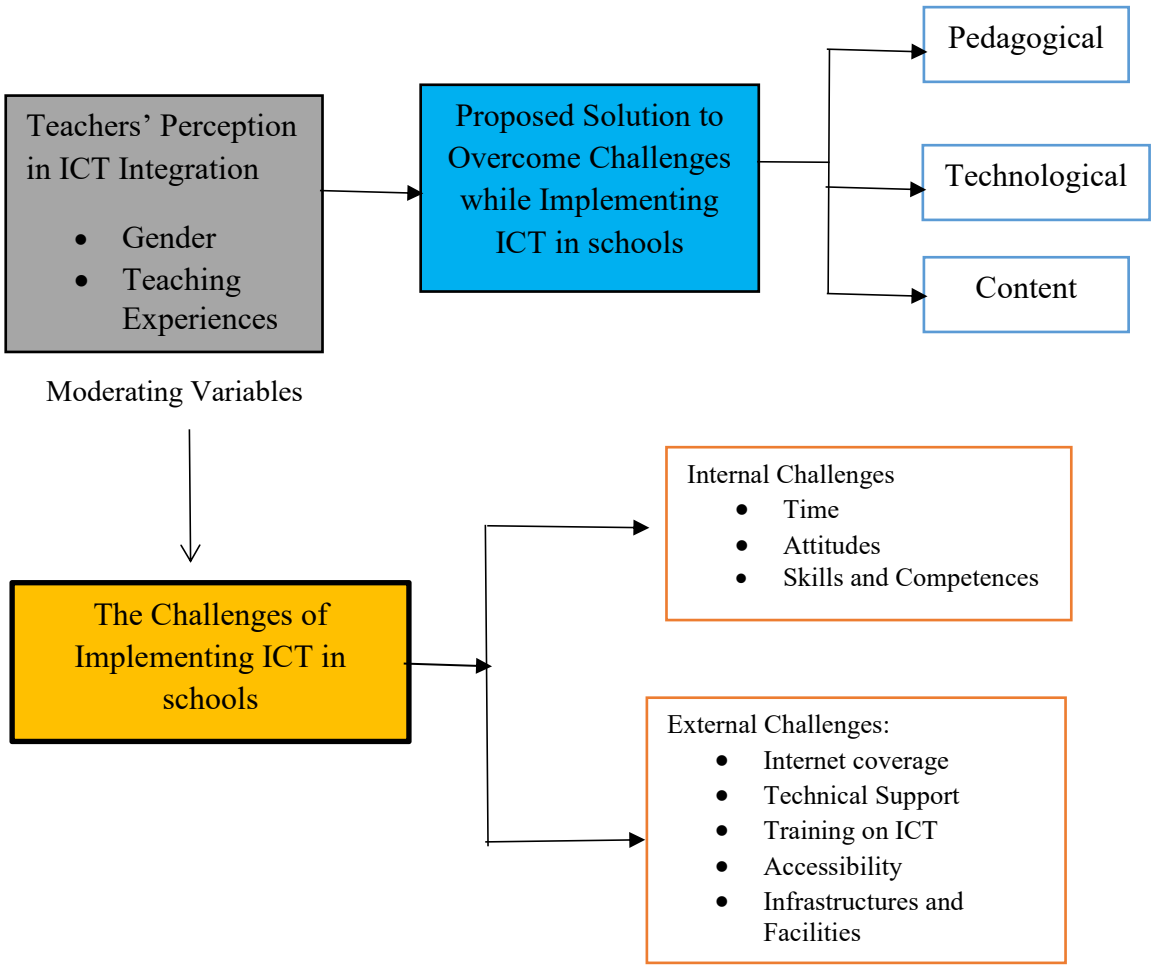

Figure 3. Conceptual Framework

3.0 METHODOLOGY

3.1 Introduction

This chapter discusses the process of data collection employed in this study. It explains the research design adopted for this study and the reason for the choice. It also clarifies the research methods and the instruments selected as well as the procedures that were done to carry out the results of this study. This study used a mixed method approach, where quantitative questionnaires were conducted first and followed by open-ended qualitative interviews to collect data. The questionnaire was adapted from two past studies that discussed the teachers' perceptions and challenges of ICT use in schools. Besides that, this chapter provides information on the sample size and the criteria applied to select the participants for the study: English teachers in CIHS who used ICT to teach their students. 180 English teachers answered the questionnaire, and 24 were involved in the interview sessions. Furthermore, the chapter also explains the tools used to analyse the data collected; SPSS version 24 was used to analyse the quantitative questionnaire results, while interview results were interpreted from the audio recordings during the interview sessions. Lastly, as the results for this study were collected before the Covid-19 pandemic, the results might be different in the post-pandemic era.

3.2 Research Design

This study aimed to investigate the perceptions and challenges of integrating ICT-based online learning in education among English teachers in CIHS in West Malaysia, as well as to suggest some possible solutions to overcome the challenges in executing the ICT-based language classrooms that the teachers shared.

A mixed-method research design was used in this study to gather and analyse the results. Dawati et al. (2021) recommended using two methods to collect data rather than depending on a single method because a mixed-method approach could provide rich insights into the phenomena of research that might need to be fully understood via either quantitative or qualitative methods. A mixed-method approach is designed to integrate and synergise different data sources to study complicated problems (Poth & Munce, 2020; Dawati et al., 2021). According to Creswell and Plano Clark (2018), there are four main categories used to describe mixed-method research design: the triangulation design, the embedded design, the explanatory design and the experimental design. In this study, an explanatory sequential research design was used in which the quantitative method preceded the qualitative method; this sequence helped to explain and receive data to supplement the quantitative results (Creswell & Plano Clark, 2018). The quantitative results provided a general picture of the research. They were used in the current research to investigate the teachers' general perceptions of implementing ICT in schools and to explore the challenges these teachers face while using it. The qualitative data further justified the quantitative results, which provided in-depth information

(Creswell & Plano Clark, 2018). Questionnaires and interview sessions were conducted to collect the data from the respondents.

Before the questionnaires were distributed, a pilot study was done among twenty-five CIHS teachers from West Malaysia to ensure the validity and reliability of the questions. The Cronbach Alpha reliability test result for the questions about the teachers' perceptions and challenges was 3.7.1, while the content validity result stood at 3.7.2.

Next, open-ended interviews were used in this study to provide further explanation for the results obtained via the questionnaire; the interview sessions allowed the respondents to talk about their perceptions of using ICT, the barriers they faced in attempting the ICT-based classes, and suggested solutions to overcome the barriers they highlighted earlier.

The targeted participants for the questionnaire and interviews were the CIHS in West Malaysia, who taught the English language at their schools and had the experience of using ICT to teach their students. 180 English teachers from twelve CIHS in West Malaysia responded to the questionnaire, and 24 of the questionnaire respondents were involved in the interview sessions, representing 13.33% of the survey respondents. Due to the escalating workload and demanding time constraints, many questionnaire respondents rejected the invitation for the interview sessions. They were reluctant to spend time on non-work related tasks like attending interviews for private research.

As this study used the explanatory sequential research design to collect data, the researcher first distributed the questionnaire to collect the teachers' perceptions and challenges. After interpreting and analysing the data from the

questionnaires, qualitative interview sessions were conducted to find in-depth information on teachers' perceptions and challenges. The sequential data collection was necessary because the quantitative method, despite giving large-scale data, only dealt with a numerical value that did not deliver any explanation (Hamed, 2021); therefore, the qualitative method of open-ended interviews accorded the researcher a platform to clarify the numerical findings and strengthen the quantitative results. Besides that, interview sessions allowed the researcher to collect subjective answers from the respondents regarding possible solutions to overcome the challenges faced by the teachers while using ICT. Collecting the possible solutions to overcome the challenges in qualitatively executing ICT-based classes was necessary because the researcher wanted to know the varying points of view among the teachers and their suggestions on overcoming the barriers. The teachers who were selected for the interviews were those who had experience in integrating ICT tools into the education system. They were the ones who faced the problems and understood the proper ways to utilise ICT-based online learning in schools fully.

The purpose of employing a questionnaire in this study was to examine the basic information on the thoughts of CIHS English teachers in Malaysia on using ICT-based online learning in education and their challenges. A past study indicated that it was necessary to understand teachers' perceptions of ICT integration as it helped to determine the degree of acceptance of the use of technology in education among schools (Qasem & Viswannathappa, 2016). If teachers were unwilling to conduct a technology-based classroom, students would not have the opportunity to experience the positive effects of using ICT in their learning (Saputri, Fajri & Qonaatun,2019). Besides, open-ended

interviews were included so that teachers who participated in this study could clarify their points of view on ICT integration in schools. Saoirse and Stian (2019) averred that open-ended questions allowed participants to give their responses spontaneously and in great detail without being influenced by the researcher's biases or expectations; besides, open-ended interviews generated more responses from the interviewees compared to the results from closed-ended interviews.

In this study, the selected interviewees were those English teachers who had experience in using ICT, and any possible solutions suggested by them were based on their own opinions. During the interview sessions, they gave their opinions on ICT integration in schools and accentuated the challenges they faced in the process. The possible solutions suggested by the interviewees in this study during the interview sessions would be significant to teachers to overcome the barriers to implementing ICT-based online learning in the Malaysian education system. Both quantitative and qualitative research methods used in this study helped to support the new perception and descriptions in this research (Gerber et al., 2017). Based on the Malaysian education system, teachers from both rural and urban schools in Malaysia needed to change their teaching modes and adopt ICT in their classrooms to offer the students a more effective learning process (Zainal & Zainuddin, 2020). So, ICT became one of the teaching and learning tools used in CIHS in Malaysia. A document analysis done in Chapter 2 (item 2.2) mentioned that ICT use in CHIS for English lessons was a must, where a majority of CIHS in West Malaysia set up language laboratories for the teachers to use ICT tools to teach. A report by the United Chinese School Committees Association of

Malaysia (UCSCA) (2018), also known as Dong Zong, stated that the Malaysian education system in the English Language requires English teachers to include ICT skills to use new technological tools like the Internet and computer applications such as Microsoft Words and Power-point to teach the related subjects. For example, during the listening lessons, teachers were required to provide extra online listening exercises for their students to acquire correct pronunciation, intonation and word stress.

3.3 Data Collection

In this study, the researcher used a mixed-method approach where questionnaires and interviews were conducted for data collection. The targeted respondents were English teachers from CIHS in West Malaysia. The primary purpose of this study was to investigate the CIHS English teachers' perceptions of ICT integration in schools, find out the challenges they faced in using ICT in a language classroom and present possible solutions shared by the teachers involved in this research to overcome the barriers while using ICT in schools. An explanatory sequential research design was used in which the quantitative method was conducted first to collect numerical data. After that, the qualitative method was conducted to explain and receive more data to supplement the quantitative results (Creswell & Plano Clark, 2018).

Next, besides questionnaires and interviews as the instruments to collect data, other instruments were used fFor data collection. Participant observations, also known as the ethnographic research method that helped sociologists to collect data and recognise the social experience and any issues with natural

behaviours, was used in the current study to examine the teachers' perceptions and the challenges they faced in using ICT in classrooms (Crossman, 2017). However, the risk of the observer's paradox, where the participants' behaviours were altered due to the presence of the researcher, which nullified the recording of the natural behaviour of the participants, was a disadvantage that had to be considered (Brancati, 2018).

Next, focus group interviews, an organised group discussion on a specific topic for research purposes that was useful for examining shared attitudes, behaviours, experiences and perspectives (Gill & Baillie,2018), were also incorporated into the data collection of the current study. Since focus group interviews could flexibly be used independently or concurrently with other methods of data collection (observations or interviews), the procedure led to lively social interaction among the research respondents (Gill & Baillie, 2018). Nevertheless, as focus group interviews required many participants, they were challenging to manage and organise, especially when the discussions involved any sensitive issues; the sessions might cause the participants to feel uncomfortable (Gill & Baillie, 2018). Furthermore, as this study focused on English teachers from West Malaysia, it was challenging to gather all the respondents at once.

3.3.1 Questionnaire

The questionnaire used in the current study was adapted from two past studies relevant to this research. First, for the perceptions part, a past study by researchers from the University of Mysore, India, focused on the teacher's

perception of the integration of ICT through blended learning (Qasem & Viswanathappa, 2016) was selected. Twenty-five questions were selected for this study, and there were slight changes applied to the questions. As this past study was focused on lecturers teaching in the university, words like 'courses' had been replaced with 'lessons' to suit the context of secondary school. Next, the questionnaire used in the study by Salehi & Salehi (2012), which examined the reasons that hindered the teachers from employing ICT-based online learning, was adapted in the current study to investigate the same reasons among the English teachers in CIHS in West Malaysia. There were ten questions about the ICT challenges in education, and 8 of them were adopted from Salehi & Salehi (2012). Another two questions were added based on the conclusion provided by Salehi and Salehi (2012), which emphasised the insufficient Internet coverage at schools and ICT training for teachers that prevented the use of ICT in their lessons. Consent from the researchers of the two studies, from which the questions were adopted and adapted, was retrieved via email before their questions were included in the survey for the current study. Additionally, the researcher of the current study applied for and was accorded ethical clearance for involving human subjects in research by Universiti Tunku Abdul Rahman, the university that the researcher of the current study was attached.

The questionnaire in this study used a 5-point Likert-scale system ranging from "Strongly Disagree" to "Strongly Agree", and it contained three parts: first, the demographic information of the respondents; second, teachers' perceptions on using ICT-based online learning in the Malaysian education system, and third, the challenges that the teachers faced while implementing

ICT in online learning. Besides that, before the actual questionnaire was distributed, a pilot study, as explained in item 3.7 on pg. 62, was conducted to ensure the validity and reliability of the questionnaire.

3.3.2 Open-ended interviews

The open-ended interviews used in the current study focused significantly on the perceptions of the English teachers in CIHS on ICT teaching and the challenges they faced when implementing ICT-based online learning in education. Besides that, during the interview sessions, interviewees were requested to provide possible solutions to resolve the barriers they cited facing when they used ICT-based online learning. The interview questions were derived from the questionnaire; the first and second questions were basic questions intended to know teachers' perceptions of using ICT and the challenges they faced while using ICT tools to teach their students. The questionnaire results indicated that most teachers quoted the lack of ICT training and poor infrastructure and facilities as reasons that hindered them from using ICT tools. Therefore, these issues were discussed during the interview sessions to obtain further clarification. The questionnaire and open-ended interviews indicated that it was crucial to propose possible solutions to overcome the barriers to using ICT in the teaching and learning environment.

3.3.3 Procedures

This study employed a mixed-method approach, and therefore, questionnaires and open-ended interviews were used to collect data from selected English teachers in CIHS in West Malaysia. Before the questionnaire was distributed to the targeted respondents, emails were sent to each school's principal or department of academic affairs to get permission to collect data. Then, 180 questionnaires, with the consent letter attached, were sent out to the twelve CIHS who agreed to participate in the research and were willing to receive and resend the questionnaires by courier. The head of the English department at each school distributed the questionnaire to the English teachers in their schools to collect numerical data. Respondents could indicate either to agree or disagree to participate in the research in the consent form.

After the questionnaires, which focused only on the English teachers' perception and challenges they faced while using ICT in schools, were completed and returned, Statistical Package for the Social Sciences (SPSS) version 24 was used to analyse the results. In addition, open-ended interviews were conducted to obtain more in-depth information on teachers' perceptions and challenges on ICT integration in language classrooms; furthermore, the interviews were also used to find out the possible solutions to overcome the barriers to the integration of ICT in schools. One or two English teachers from the twelve CIHS who had answered the questionnaire had experience using ICT to teach their students. They were willing to share their opinions regarding the use of ICT in education and were selected for the interview sessions. During the interviews, the selected participants were also required to propose suggestions to overcome the challenges they faced in using ICT in their

classrooms. The researcher of the current study visited the 12 CIHS involved in the research and conducted face-to-face open-ended interviews with the selected teachers. The interview sessions took more than six months to be completed.

Every interview session began with a briefing of guidelines. This included general instructions such as the reasons for the interview, the date, time, place, and length of the interview. Each interviewee was also given a consent form, as the participants had the right to accept or reject the involvement in the interview sessions. The interviewees were also informed of the recording of the interview sessions, and the necessity for the interviewer (the researcher) to write specific points during the interview sessions. Each interview session lasted for 30 minutes at maximum.

After the interviews, the recordings were transcribed to find in-depth information regarding the answers to the questions in the current study. The answers provided by English teachers in CIHS in West Malaysia were based on three significant perspectives- perceptions, challenges and solutions. First, teachers' perceptions of the use of ICT were analysed based on the use of ICT in teaching; the use of ICT in learning; the effectiveness of ICT integration in school; teachers' skills and competencies on ICT; negative perceptions of ICT integration in schools, and traditional methods vs ICT-based online learning. Next, the barriers faced by teachers when using ICT in schools were categorised into two major categories- Internal Challenges and External Challenges. The internal challenges included time, attitude and interest, skills and competencies, and teaching experiences; the external challenges included insufficient Internet coverage, lack of technical support from the school, lack

of training on ICT, lack of ICT accessibility, schools' views on ICT, lack of infrastructures and facilities, students' attitude on ICT, as well as lack of privacy in ICT.

The suggested solutions were analysed based on time management, change of attitude, improved skills and knowledge, sufficient Internet coverage, technical support from school management, constant ICT training, good infrastructures and facilities, and secured ICT and classroom management. The analysis would be based on the collected data, and the researcher would examine the best ways to overcome the challenges teachers face at the end of this study. Both questionnaires and interview sessions were done before the Covid-19 pandemic, which might result in different opinions among teachers regarding using ICT in education in post-pandemic environments.

3.4 Sampling Method

In this study, the targeted participants were the English Teachers in CIHS in West Malaysia. According to the statistics provided by Low (2015), there were 61 CIHS in Malaysia, with 39 of them in West Malaysia at the time of the census. The purpose of this study was to find out the teachers' perceptions regarding the integration of ICT in their schools, to understand the challenges faced by them while using ICT to teach their students, and to get their opinions on how to overcome the barriers. To obtain the desired results, this study used a purposive sampling method, a deliberate selection of participants based on their qualities (Ilker, Sulaiman & Rukayya, 2016), to collect data. Any fundamental theories or a specific number of participants

were not required as it was a non-random technique (Ilker, Sulaiman & Rukayya, 2016). The researcher of the current study determined the aim of this research and selected the participants willing to share their information by experience and the virtue of knowledge, as Ilker et al. (2016) explained the non-random sampling technique. The targeted respondents in this study were the CIHS English teachers in West Malaysia who had experience using ICT tools to teach their students and were willing to share their experience and information on ICT.

3.5 Population and Sample Size

There are 61 CIHS in Malaysia (Low, 2015), with 39 of them located in West Malaysia. The targeted respondents for this study were the CIHS English teachers in West Malaysia who used ICT-based online learning in education. Factors like time constraints and finance limited the researcher from including the CIHS teachers from East Malaysia (Sabah and Sarawak) in this research.

It was noted that the total number of English teachers in each CIHS in West Malaysia was different, and not all had experience using ICT in the teaching and learning process. Consequently, it was only possible to include some English teachers in this study. Therefore, the sample size calculated for this study was based on the number of CIHS in West Malaysia. As mentioned earlier, among all 61 CIHS in Malaysia, 39 of them were located in West Malaysia. For sampling, 36 out of 39 schools were selected with a 95% confidence level. In this study, 180 questionnaires were distributed to investigate CIHS English teachers' perceptions and challenges when they used

ICT-based online learning for teaching purposes. Meanwhile, for the open-ended interview sessions, one or two English teachers per school with experience in using ICT to teach their students in a school were selected to answer the questionnaires. All the participants involved in this study were those with different gender, ages, and teaching experiences who used ICT-based online learning to teach English. Twenty-four interviewees were involved in the open-ended interview sessions. The main criterion for selecting the interviewees for the interview sessions was the experience the interviewees had in integrating ICT into their teaching.

3.6 Data Analysis

The quantitative data for the current study were obtained via the questionnaires, which were analysed using SPSS version 24. Before administering the questionnaire to the actual respondents of the research, the survey was piloted among 25 Malaysian CIHS teachers to ensure its validity and reliability to the current study. The results of the pilot test, which highlighted its reliability in this study, were reported in Section 3.7. The pilot test was followed by the dissemination of the questionnaire for actual data collection among the targeted participants, and the results were analysed using descriptive statistics to examine the teachers' perception of implementing ICT-based online learning in the Malaysian education system, and the challenges faced by the teachers while using ICT-based online learning. The questionnaire results were analysed using a t-test to compare the perceptions between male and female teachers. At the same time, the One-way ANOVA test was

conducted to analyse how the teachers' teaching experience influenced their perceptions of the integration of ICT in the teaching and learning process.

Besides perception and challenges, possible solutions were identified based on the open-ended interviews, and in-depth information about the teachers' perceptions and challenges regarding ICT use in education was retrieved from the same method since questionnaires would only provide numerical data. During the interview sessions, the researcher recorded the answers provided by the interviewees and transcribed the audio recordings into the typed text after the interview sessions were completed. During the interview sessions, the respondents expressed their opinions on ICT integration, the barriers they faced while using ICT, and proposed solutions that might help reduce the problems teachers encountered in conducting ICT-based online learning. Upon analysis, the results from interview sessions were grouped into two major categories: internal and external challenges. Internal challenges were based on teachers' selves, including their attitudes, teaching experiences, skills and competencies, and time management. External challenges in adopting ICT in classrooms included insufficient Internet connection, lack of infrastructures and facilities, lack of training on ICT, and students' attitudes. Both internal and external challenges were the common barriers when integrating ICT into the Malaysian education system.

3.7 Pilot Test

Twenty-five CIHS English teachers from West Malaysia were selected to participate in this pilot study before the questionnaire was distributed to the respondents, and the researcher randomly chose them. This helped check the reliability to ensure that the questionnaire was understandable to the targeted population (Johan et al., 2019).

3.7.1 Reliability of the study

In the pilot test, Cronbach's Alpha was used to check the reliability of the data. Table 1 shows the reliable result of the twenty-five CIHS teachers' perceptions of implementing ICT-based online learning in education. The result showed that Cronbach's Alpha for this section was 0.862. Table 2 shows the reliability result of the challenges faced by teachers while implementing ICT-based online learning in the education system. The Cronbach's Alpha was 0.896.

In conclusion, this questionnaire was reliable and suitable for this study as the Cronbach's Alpha readings for the two sections were more than 0.7. After the pilot study was conducted and the questionnaire was confirmed to be reliable and suitable for the data collected, 150 questionnaires were distributed randomly to the CIHS English teachers in West Malaysia.

Table 1

Pilot Study Reliability Test- Perceptions

Case Processing Summary

		N	%
Cases	Valid	25	100.0
	Excluded [a]	0	.0
	Total	25	100.0

Reliability Statistics

Cronbach's Alpha	N of Items
.862	25

Table 2

Pilot Study Reliability Test – Challenges

Case Processing Summary

		N	%
Cases	Valid	25	100.0
	Excluded [a]	0	.0
	Total	25	100.0

Reliability Statistics

Cronbach's Alpha	N of Items
.896	10

3.7.2 Validity of the study

There were three parts to the questionnaire used in this research: the first part was about the respondents' basic information, including gender, teaching experiences, skills, and competencies of ICT; the second and third parts were focused on finding out CIHS English teachers' perception and challenges on using ICT in schools. The perception scale consisted of 25 items, and the scale of the challenges consisted of 10 items. The 5-point Likert scale ranging from 1=strongly disagree to agree 5-strongly was used to assess the response for each item. English teachers in CIHS in Malaysia were purposively selected as the respondents. They were asked to give their feedback and

comment on the relevance of questions and the time allocated to complete the questionnaire. The questions were amended according to feedback, and the revised questionnaire, administered for the actual data collection, had 25 items for perceptions and ten for challenges.

4.0 RESULTS

4.1 Summary of findings

In this study, the quantitative questionnaires were conducted first, followed by the qualitative interview sessions for further elaboration. There were twelve CIHS in West Malaysia participating in the data collection sessions, and most of them were English teachers from larger schools. Before collecting the data, the researcher obtained permission from the school management to conduct the data collection sessions.

In this chapter, the results collected were presented separately based on quantitative and qualitative methods, focusing first on the concept of teachers' perceptions, followed by challenges on the use of ICT. Besides that, the suggestions for possible solutions provided by teachers during the interview sessions were exhibited in this chapter, which would hopefully be adopted as guidelines to utilise ICT in the Malaysian education system in the near future.

180 English teachers from twelve CIHS in West Malaysia answered the questionnaire, while 24 of the 180 respondents participated in the interview sessions. The Cronbach's Alpha reliability test yielded a reading higher than 0.7, proving its dependability in generating accurate and relevant results for this research. Overall, the data from both questionnaires and interviews showed that the majority of the English teachers in CIHS had positive perceptions of the integration of ICT in schools. More than half of the respondents believed that integrating ICT in schools helped support different learning styles and

personalise students' learning. Besides, most of the English teachers in this study were aware of the opportunities offered by ICT.

Additionally, the T-test and One Way Anova in this study showed that the teachers' perceptions of ICT in schools were affected by neither their gender nor their teaching experiences. Next, based on the questionnaire and interview responses, the challenges faced by English teachers when using ICT could be categorised into internal challenges and external challenges. The internal challenges included time management, teachers' attitudes and interests in ICT, teachers' skills and competence in using ICT, and teachers' teaching experiences. The external challenges included insufficient Internet connection, lack of technical support from schools, lack of training on ICT, lack of accessibility to ICT, schools' views on ICT, lack of infrastructures and facilities provided, students' attitudes towards ICT, and lack of privacy in ICT.

Furthermore, the suggested solutions provided by the respondents during the interview sessions were based on the challenges mentioned before. The majority of the interviewees mentioned that schools played an important role in providing training on ICT to help teachers improve their ICT skills and knowledge to teach their students using technology. Besides that, the teachers in this study suggested that schools should provide adequate infrastructure, facilities, and technical support to ensure that teachers can use ICT tools smoothly during their lessons. The school management also needed to provide a stable Internet connection and ensure security for both teachers and students when they used online materials. The teachers who had positive attitudes suggested that teachers with negative attitudes towards ICT needed to change their perceptions as ICT had undeniably changed the teaching and learning

process. Lastly, teachers and schools were suggested to manage their time and classroom well to utilise ICT in schools fully. The analysed data from the questionnaire and the interviews were presented below via tables.

4.2 Post-Study Survey Results

In this study, 180 English teachers from twelve CIHS in West Malaysia were chosen to answer the questionnaires. The questionnaires were divided into three parts. Part A was about the respondents' demographic background and their existing skills and abilities in using ICT tools. Part B consisted of 25 questions to determine the teachers' perceptions of ICT integration in education. The ten questions in Part C targeted information about the challenges faced by teachers while using ICT in schools. The data collected from the questionnaire were analysed using descriptive analysis and SPSS version 24 for Reliability Test, T-Test and One Way ANOVA. In fact, the quantitative questionnaires results have already published by the researchers before and the results were shown as below (Mak, Joanna & Cheah, 2019):

4.2.1 Reliability Test

180 English teachers from 12 CIHS in Malaysia were randomly selected to answer the questionnaire. Cronbach's Alpha Reliability Test was used to ensure a reading of higher than 0.7 for the questionnaire designed for the current study, as any result lower than 0.7 for the test would render the questionnaire unreliable (Keith, 2018).

Tables 3 and 4 above indicated that among all 180 respondents, Cronbach's Alpha for the twenty-five questions about perceptions was 0.850. In contrast, Cronbach's Alpha for the ten questions about the challenges scored 0.866. The score showed that the data for both teachers' perceptions and challenges on integrating ICT in education were reliable.

Table 3

Reliability Test – Perception

Case Processing Summary

		N	%
Cases	Valid	180	100.0
	Excluded[a]	0	.0
	Total	180	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.850	25

Table 4

Reliability Test - Challenges

Case Processing Summary

		N	%
Cases	Valid	180	100.0
	Excluded[a]	0	.0
	Total	180	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.866	10

4.2.2 PART A - Respondents' demographics

This study's first part of the questionnaire was the respondents' demographic data. The respondents were English teachers in CIHS in West Malaysia. Information such as the respondents' gender, teaching experience, qualifications, the school they were attached to, and their existing knowledge and abilities on the use of ICT were collected in this section. Among all these factors, gender and teachers' teaching experience were analysed using SPSS to investigate whether these factors affected the participants' perceptions about and the challenges in ICT integration in schools.

In this study, 140 respondents (77.8%) were female teachers, while only 40 male teachers (22.2%) answered the questionnaires. Among the 180 English teachers, 79 of them (43.9%) have one to five years of teaching experience, followed by 41 teachers (22.8%) who had worked for six to ten years and 38 teachers (21.1%) with more than ten years of experience. The results also showed that only 22 respondents (12.2%) had worked less than one year in CIHS. The participants' academic qualifications could be summarised as 134 (74.4%) with a bachelor's degree, 26 (14.4%) with a master's degree, and only 20 (11.1%) with a diploma. It was noted that there was no respondent with a PhD qualification. The results above showed 135 (75%) respondents were working in larger CIHS, 41 (22.8%) were from schools of medium student occupancy, and only four English teachers came from smaller schools. Since the integration of ICT in CIHS in Malaysia was still not considered the principal tool for teaching and learning, only larger schools could set up ICT tools for the teachers and students to use. In this section, it was crucial to find out the teachers' skills and competencies in using ICT. Based on the results as

shown above, the ability of 176 (21.7%) participants to use Microsoft word was considered the most common computer skill used by the English teachers in CIHS in Malaysia, followed by skills like surfing the Internet at 169 (20.8%), PowerPoint presentation at 165 (20.3%), and emailing at 161 (19.9%). By contrast, only 140 (17.3%) respondents knew how to use Microsoft Excel, the least of the five ICT skills and competencies.

The table results are shown below:

Table 5

Quantitative Respondents' Demographic Profile

Factors	Frequency	Percentage (%)
Gender		
Male	40	22.2
Female	140	77.8
Total	180	100.0
Teaching Experiences		
< 1 year	22	12.2
1-5 years	79	43.9
6-10 years	41	22.8
>10 years	38	21.1
Total	180	100.0
Qualification		
Diploma	20	11.1
Degree	134	74.4
Master	26	14.4
PHD	0	0

Total	180	100.0
School Sizes		
Large	135	75.0
Medium	41	22.8
Small	4	2.2
Total	180	100.0
Skills and Competences (multiple choice)		
Microsoft Word	176	21.7
Microsoft Excel	140	17.3
Power Point	165	20.3
Internet	169	20.8
Email	161	19.9
Total	811	100.0

4.2.3 PART B - Teachers' perception of ICT integration in schools

In part B of the questionnaire, respondents were required to answer 25 questions based on their perceptions toward ICT integration in the Malaysian education system. All the questions were measured by a Likert scale ranging from "Strongly Disagree" to "Strongly Agree". It should be noted that the questions for this section were adapted from Qasem & Viswanathappa (2016). The questions were not categorised into different perspectives as they were the group in the current study. The grouping was necessary as the teachers' views on ICT could be explored from different perspectives, and readers could understand clearly how CIHS English teachers viewed ICT from different viewpoints with precise categorisation. Therefore,

the results of the twenty-five questions were grouped under specific categories during the analysis.

The teachers' perceptions in this study were discussed based on five different perspectives, including teachers' perceptions of the use of ICT in teaching and their perceptions of ICT use in learning. Moreover, teachers' perceptions of the effectiveness of ICT integration in schools and teachers' perceptions of the required skills and competence in ICT were also discussed in this study. Besides that, there were also a minority of teachers who had negative perceptions of the implementation of ICT in schools, and this was also one of the categories discussed in the questionnaire. The researcher did not group the questions into specific categories when surveying to avoid any biased responses and might influence the teachers to give the same answer based on the previous questions. Hence, the perspective categories were only applied in data analysis. The tables below show the results and percentages of all 25 questions in Part B.

4.2.3.1 The Use of ICT in Teaching. Table 6 shows the results of English teachers' perceptions of the use of ICT in teaching. Question 1 indicated that more than half of the 180 respondents agreed that implementing ICT in schools helped them teach their students. 91 (50.6%) English teachers agreed that when using the online materials, it was easier for them to manage a class; in addition, 40 (22.2%) respondents strongly agreed with this statement. Question 2 saw 100 (55.6%) respondents agreeing and 45 (25%) respondents strongly agreeing that the subject that they taught, i.e. the English language, applied to the use of online materials. There were only 12 (6.7%) of them who disagreed with this question. Question 3 enquired if implementing ICT in teaching brought many advantages to the teachers. A total of 132 (73.3%) of

the respondents agreed that it would be effective if they used ICT to prepare some classroom activities. In comparison, only 7 (3.9%) respondents thought otherwise. However, 41 (22.8%) respondents felt unsure whether ICT tools helped make their classroom more effective. For question 4, 141(78.3%) English teachers agreed that it was easier for them to prepare their teaching materials when they used ICT, while only 11(6.1%) of them felt that it was very challenging to use ICT in preparing their lessons. For questions 5 and 6, 131 (72.8%) and 139 (77.2%) respondents respectively agreed that the use of technology could make class time more effective, and if provided with online support in teaching using technology, they could use the ICT tools even more effectively.

Table 6

The Use of ICT in Teaching

No.	Questions in Survey	Strongly Disagree	Disagree	Not Sure	Agree	Strong Agree
1.	Q1: It is easy for me to manage a lesson by using internet applications.	0 (0%)	13 (7.2%)	36 (20.0%)	91 (50.6%)	40 (22.2%)
2.	Q2: I think that the internet applications and resources are available for my subjects.	0 (0%)	12 (6.7%)	23 (12.8%)	100 (55.6%)	45 (25%)
3.	Q6: I think that I can use ICT for instructional design and class room activities more effectively day by day.	0 (0%)	7 (3.9%)	41 (22.8%)	99 (55%)	33 (18.3%)
4.	Q12: I think that ICT usage makes it easier to prepare materials for lesson.	0 (0%)	11 (6.1%)	28 (15.6%)	114 (63.3%)	27 (15%)

5.	Q15: I think technology makes effective use of class time.	2 (1.1%)	9 (5%)	38 (21.1%)	108 (60%)	23 (12.8%)
6.	Q20: I could use ICT if I had online support on instructional technology design.	1 (0.6%)	7 (3.9%)	33 (18.3%)	121 (67.2%)	18 (10%)

Note. ICT = Information and Communication Technology

4.2.3.2 The Use of ICT in Learning. Table 7 shows the teachers' positive perceptions of the integration of ICT in students' learning. The first question asked whether ICT integration supported students in the way they learned and also personalised their learning, and 110 (61.1%) and 31 (17.2%) of them agreed and strongly agreed respectively, while only 6 (3.3%) respondents chose to disagree on this statement. For question 2, 108 (60%) and 30 (16.7%) English teachers agreed and strongly agreed respectively that the use of specific tools like online tools, applications, and simulations helped the students to support their learning with only 4 (2.2%) disagreed, and 38 (21.1%) felt unsure whether ICT tools sustain students' learning. Question 3 saw 107 (59.4%) and 43 (23.9%) English teachers agreeing and strongly agreeing that students were more interested in class when they used ICT tools to teach, while only 2 (1.1%) respondents disagreed with the statement. Question 4 had 93 (51.7%) and 27 (15%) English teachers agreeing and strongly agreeing that while using ICT tools in teaching, the quality of their lessons would increase. Despite 66.7% of respondents agreeing with this statement, 54 (30%) respondents felt unsure if ICT would help them teach their students. For the last question, 115 (63.9%) and 32 (17.8%) of 180 respondents agreed and

strongly agreed respectively that the online resources supported improving productivity as well as promoting academic learning and creativity, while only 1 (0.6%) English teacher disagreed with this statement.

Table 7

The Use of ICT in Learning

No.	Questions	Strongly Disagree	Disagree	Not Sure	Agree	Strong Agree
1.	Q8: I think that ICT integration includes supporting various student learning styles and to personalize learning.	0 (0%)	6 (3.3%)	33 (18.3%)	110 (61.1%)	31 (17.2%)
2.	Q9: I believe that using content-specific tools (e.g., software, simulation, graphing calculators, Web tools) to support learning.	0 (0%)	4 (2.2%)	38 (21.1%)	108 (60%)	30 (16.7%)
3.	Q10: I think that using ICT in learning increases the interest of students toward lessons.	0 (0%)	2 (1.1%)	28 (15.6%)	107 (59.4%)	43 (23.9%)
4.	Q11: I think that using ICT for instructional design increases the quality of lessons.	0 (0%)	6 (3.3%)	54 (30%)	93 (51.7%)	27 (15%)
5.	Q18: I think that the use of technology tools and information resources for increased productivity, promote creativity, and facilitate academic learning.	0 (0%)	1 (0.6%)	32 (17.8%)	115 (63.9%)	32 (17.8%)

Note. ICT= Information and Communication Technology.

4.2.3.3 The Effectiveness of ICT Integration in School. Table 8 above shows the teachers' perception of using ICT, not only in teaching their students but also in their daily lives. 105 (58.3%) respondents agreed, and 35 (19.4%) respondents strongly agreed with Question 1, which stated it was more convenient for them to communicate with their friends and students when they used email, blogs, social media and other communication tools. For Question 2, 129 (71.7%) respondents agreed that they could interact and cooperate with others, such as their friends, audiences, and some specialists, through different types of media. Only 11 (6.1%) disagreed, while 40 (22.2%) respondents felt unsure whether ICT would help them in this situation. Question 3 saw 121 (67.2%) respondents agreeing and 30 (16.7%) respondents strongly agreeing that using technology would be more convenient and more accessible for them to search and determine different sources from different websites. Only 4 (2.2%) English teachers disagreed that technology would help them search for information effortlessly. Question 4 recorded a total of 140 (77.8%) English teachers agreeing that it was easier for them to learn the skills of ICT and use it to teach. Only 10 (5.5%) of the respondents disagreed that learning the skills to integrate ICT in teaching would make teaching easier for them. Question 5, which asked the respondents whether ICT could improve English Language skills, had 101 (56.1%) and 35 (19.4%) English teachers agreeing and strongly agreeing, respectively. This was because when using ICT tools like the Internet, some English websites allowed everyone to learn English online, and it was more attractive compared to the traditional ways. Only 5 (2.8%) respondents disagreed, while 39 (21.7%) were unsure about this statement.

Table 8

The Effectiveness of ICT Integration in School

No.	Questions	Strongly Disagree	Disagree	Not Sure	Agree	Strong Agree
1.	Q4: I believe that the communication tools (e.g., mail, forum, Blog, and chat) will make communication with my peers and students easier.	0 (0%)	9 (5%)	31 (17.2%)	105 (58.3%)	35 (19.4%)
2.	Q16: I think I can use a variety of media and formats, including telecommunications, to collaborate, publish, and interact with peers, experts, and other audiences.	0 (0%)	11 (6.1%)	40 (22.2%)	108 (60%)	21 (11.7%)
3.	Q17: I think that using technology makes it easier to locate, evaluate, and collect information from a variety of sources.	0 (0%)	4 (2.2%)	25 (13.9%)	121 (67.2%)	30 (16.7%)
4.	Q21: I believe that acquiring the skills to ICT integration in teaching will be easy to me.	2 (1.1%)	8 (4.4%)	30 (16.7%)	117 (65%)	23 (12.8%)
5.	Q23: I believe that I can improve my English language skills using the benefits of ICT.	0 (0%)	5 (2.8%)	39 (21.7%)	101 (56.1%)	35 (19.4%)

Note. ICT= Information and Communication Technology

4.2.3.4 Teachers' skills and competencies in ICT. Table 9 below shows the teachers' awareness of the use of ICT. For Question 1, more than two third of the respondents were aware of the benefits of using the computer.

110 (61.15) respondents agreed, 40 (22.2%) respondents strongly disagreed, and only 5 (2.8%) respondents disagreed with this statement. Question 2, which stated one could evaluate and select new resources to obtain information and technological innovations based on their appropriateness to specific tasks, received a total of 121 (67.3%) agreement from respondents, out of which 30 (16.7%) respondents strongly agreed. Only 7 (3.9%) respondents disagreed, and 52 (28.9%) English teachers were unsure whether this was advantageous to them. Even though ICT brought many advantages in everyone's life, as cited in Question 3, 76 (42.2%), respondents were not confident whether they could discuss the diversity issues related to electronic media when using technological tools. Meanwhile, 91 (50.6%) respondents agreed with this statement, and only 13 (7.2%) respondents disagreed. 70 (38.9%) respondents stated that their peers would likely ask for their advice on the use of ICT, indicating that they had enough skills in ICT to teach others. On the contrary, 50 (27.7%) teachers thought their peers would not ask for advice and information from them to conduct a lesson using ICT, while 60 (33.3%) respondents felt unsure.

Table 9

Teachers' skills and competencies in ICT

No.	Questions	Strongly Disagree	Disagree	Not Sure	Agree	Strong Agree
1.	Q3: I am aware of the opportunities that computer offer.	1 (0.6%)	4 (2.2%)	25 (13.9%)	110 (61.1%)	40 (22.2%)
2.	Q5: I can evaluate and select new information resources and technological innovations	0 (0%)	7 (3.9%)	52 (28.9%)	91 (50.6%)	30 (16.7%)

	based on their appropriateness to specific tasks.					
3.	Q7: I can discuss diversity issues related to electronic media.	2 (1.1%)	11 (6.1%)	76 (42.2%)	68 (37.8%)	23 (12.8%)
4.	Q24: My peers often ask me for advice or information on ICT integration in instructional design.	6 (3.3%)	44 (24.4%)	60 (33.3%)	64 (35.6%)	6 (3.3%)

Note. ICT= Information and Communication Technology

4.2.3.5 The Negative Perception of ICT Integration in Schools. Besides looking at teachers' positive perceptions of ICT integration in schools, it was equally important to finding out teachers' negative perceptions of using ICT. In response to Question 1, which highlighted the difficulty of teachers in explaining the use of computer applications to their students, 43 (23.9%) English teachers agreed to this statement, and 45 (25%) of them felt unsure. In comparison, 92 (51.1%) respondents felt that it was easier to explain to their students the use of computer applications. For Question 2, 90 (50%) respondents thought that the courses offered to teachers on ways to use technology were inadequate, while 33 (18.3%) of the respondents felt that the courses were good enough; it was noted that 57 (31.7%) respondents were unsure about the effectiveness of the number of courses provided. Question 3 saw 61 (33.9%) respondents agreeing that teachers lacked interest in technology usage while 43 (23.9%) respondents disagreed, but notably, 76 (42.2%) respondents were not sure about the situation. 108 (60%) English teachers disagreed with Question 4 and mentioned it was a frustrating

experience for them to use ICT, while 30 (16.7%) strongly felt that they enjoyed using ICT in teaching. Only 34 (18.9%) teachers thought that using ICT made them feel irritated. The fifth question in this part recorded 86 (47.8%) English teachers disagreeing with the compatibility of ICT with the lessons they taught, while only 33 (18.4%) of the respondents felt that the lessons they taught should not rely on ICT; 61 (33.9%) respondents were unsure of this statement. The responses in the table above indicated that most English teachers in CIHS had positive attitudes toward ICT integration in schools.

Table 10

The negative perception of ICT integration in schools

No.	Questions	Strongly Disagree	Disagree	Not Sure	Agree	Strong Agree
1.	Q13: It is hard for me to explain the use of computer applications to my students.	16 (8.9%)	76 (42.2%)	45 (25%)	34 (18.9%)	9 (5%)
2.	Q14: I think that there is inadequacy of the courses of technology offered to teachers.	6 (3.3%)	27 (15%)	57 (31.7%)	76 (42.2%)	14 (7.8%)
3.	Q19: I think that there is lack of interest of teachers in technology usage.	5 (2.8%)	38 (21.1%)	76 (42.2%)	50 (27.8%)	11 (6.1%)
4.	Q22: I believe that	30 (16.7%)	78	38	31	3

	using ICT will be a frustrating experience.		(43.3%)	(21.1%)	(17.2%)	(1.7%)
5.	Q25: I think that ICT is incompatible with all the lessons I teach.	20 (11.1%)	66 (36.7%)	61 (33.9%)	30 (16.7%)	3 (1.7%)

Note. ICT= Information and Communication Technology

4.2.4 PART C- Challenges faced by teachers on ICT integration in schools

The last part of the questionnaire consisted of 10 questions about the challenges faced by the teachers when they used ICT in their classrooms. It incorporated a 5-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree", like the previous parts of the questionnaire. Table 11 below shows the results and percentages of all ten questions in this section:

4.2.4.1 The Challenges of ICT Integration in Schools. The results above show that even though most of the teachers had positive perceptions of ICT integration in schools, several challenges might prevent them from using ICT tools to teach their students. The first question obtained 70 (38.9%) and 29 (16.1%) respondents who agreed and strongly agreed that the lack of class time prevented them from using ICT tools to teach. In comparison, a total of 50 (27.7%) respondents disagreed because they felt they could arrange the class time effectively using ICT tools in their teaching. Even though some schools

provided ICT tools like computers, the Internet and the projector to the teachers and students, the result of question two indicates insufficient training to help teachers learn the proper ways of using ICT in teaching. Consequently, a total of 112 (62.2%) respondents agreed that this was one of the significant challenges they faced while implementing ICT in teaching due to their lack of knowledge of ICT. On the other hand, 27 (15%) English teachers disagreed, and 41 (22.8%) of them felt that this might or might not be one of the challenges that prevented them from using ICT tools in school. In the third question, in which the respondents were asked whether the lack of Internet coverage in their schools hindered them from teaching their students using ICT, 70 (38.9%) and 33 (18.3%) of them agreed and strongly agreed, respectively. In comparison, 54 (30%) respondents disagreed with this statement because their schools provided good internet access for teachers to prepare or show online materials to their students during their lessons. For the fourth question, as the integration of ICT in schools was still not that common in Malaysian education, a total of 85 (47.3%) respondents agreed that this was one of the reasons that they did not feel like using ICT tools in the classroom. On the other hand, a total of 59 (32.8%) disagreed with this statement. The fifth question recorded 87 (48.4%) respondents agreeing that one of the problems that discouraged them from using ICT was due to the lack of support from their school management; when it came to technical problems, no one was readily available to help them. However, there was a total of 63 (35%) respondents who thought that this was not a problem.

In the following three questions, i.e. questions 6, 7 and 8, the respondents were asked whether others' opinions, including the views of

societies, colleagues, and schools, about ICT, would discourage them from using ICT tools in teaching. 109 (60.6%) respondents believed that societal views did not influence their perceptions of ICT in teaching, while only 21 (11.7%) respondents thought otherwise. A total of 114 (63.3%) respondents thought that their colleagues' negative views about ICT in schools did not hinder them from using ICT to teach their students, while only 25 (13.9%) English teachers agreed that they would be discouraged by other teacher's negative views in using ICT at schools. Although some schools did not provide full support in integrating ICT to their teachers and students, 93 (51.7%) respondents did not regard this as one of the challenges they faced while using ICT to teach because they had the knowledge and understanding of the advantages of using ICT in teaching. However, it was noted that 50 (27.8%), 41 (22.8%) and 45 (25%) were unsure whether the views of other parties (societies, colleagues, and schools) would affect their perceptions of using ICT. For question 9, although the workload for English teachers was heavy, 83 (46.1%) respondents stated that it was not a problem for them to learn to use ICT during their free time, while 65 (36.1%) respondents agreed that the time needed to learn using ICT discouraged them from using ICT in class. Lastly, for question 10, 79 (43.9%) and 36 (14.4%) English teachers disagreed and strongly disagreed, respectively, that the qualification requirements had discouraged them from using ICT. They believe that teachers nowadays should understand and know how to use ICT tools regardless of their education level, whether they are a diploma graduate or a PhD holder. Only 34 (18.9%) respondents agreed that qualification requirements did matter when it came to

using ICT in class. However, 41 (22.8%) respondents felt unsure whether their qualifications hindered them from using ICT.

Table 11

The Challenges of ICT Integration in Schools

No.	Questions	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
1.	Shortage of class time hinders me to use ICT.	8 (4.4%)	42 (23.3%)	31 (17.2%)	70 (38.9%)	29 (16.1%)
2.	There is no enough training provided for teachers about the use of ICT in teaching.	3 (1.7%)	24 (13.3%)	41 (22.8%)	90 (50%)	22 (12.2%)
3.	The insufficient internet coverage in schools prevents me to use ICT.	6 (3.3%)	48 (26.7%)	23 (12.8%)	70 (38.9%)	33 (18.3%)
4.	Little access to ICT prevents me to use ICT	9 (5%)	50 (27.8%)	36 (20%)	66 (36.7%)	19 (10.6%)
5.	Few ICT technical supports at schools discourage me to use ICT in classroom.	7 (3.9%)	56 (31.1%)	30 (16.7%)	68 (37.8%)	19 (10.6%)
6.	Society views about ICT discourage me to use ICT.	19 (10.6%)	90 (50%)	50 (27.8%)	18 (10%)	3 (1.7%)

7.	Colleagues' negative views about ICT hinder me to use ICT in the class.	18 (10%)	96 (53.3%)	41 (22.8%)	22 (12.2%)	3 (1.7%)
8.	School views about ICT discourage me to use ICT.	21 (11.7%)	72 (40%)	45 (25%)	31 (17.2%)	11 (6.1%)
9.	Time needed to learn using ICT prevents me to use ICT.	13 (7.2%)	70 (38.9%)	32 (17.8%)	57 (31.7%)	8 (4.4%)
10.	Requirements of qualifications discourage me to use ICT.	36 (14.4%)	79 (43.9%)	41 (22.8%)	28 (15.6%)	6 (3.3%)

Note. ICT= Information and Communication Technology

4.2.5 T-test

In this study, an independent samples t-test was conducted to compare teachers' perceptions of male and female conditions.

The result of the independent sample t-test, t (178) = 0.236, p= 0.814, shows that there were no significant gender differences in teachers' perceptions of the use of ICT in Malaysian education.

Table 12

T-Test Results Comparing Males and Females on The Perceptions of ICT

Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Perception	Male	40	3.6540	.35299	.05581
	Female	140	3.6383	.37593	.03177

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Perception	Equal variances assumed	.084	.773	.236	178	.814	.01571	.06652	.11555	.14698
	Equal variances not assumed			.245	66.416	.807	.01571	.06422	.11249	.14392

4.2.6 One-way ANOVA test

Besides the Reliability test and T-test used in this study, a One-way ANOVA test was also conducted to compare the teachers' perceptions of the integration of ICT and their teaching experience. The results are shown in Table 13.

An analysis of variance showed that the teachers' teaching experience and their perceptions of ICT integration in schools had no significant differences, F (3,176) = 1.523, p= .210. Teachers' perception of the integration of ICT would not be affected by their teaching experience.

Table 13

One-Way ANOVA Results on The Perceptions of ICT by Teaching Experiences

Descriptives

perception

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Less than one year	22	3.6655	.35575	.07585	3.5077	3.8232	2.80	4.36
1 to 5 years	79	3.6729	.35349	.03977	3.5937	3.7521	2.76	4.84
6 to 10 years	41	3.6741	.37604	.05873	3.5555	3.7928	2.48	4.40
More than 10 years	38	3.5284	.39698	.06440	3.3979	3.6589	2.72	4.28
Total	180	3.6418	.37005	.02758	3.5874	3.6962	2.48	4.84

ANOVA

perception

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.620	3	.207	1.523	.210
Within Groups	23.891	176	.136		
Total	24.511	179			

4.3 Qualitative Interview Results

In this study, as the quantitative survey only showed the numerical data of teachers' perceptions and challenges on the integration of ICT in the education system, qualitative interviews were conducted in order to get more in-depth information. During the qualitative interviews, the teachers suggested some possible solutions on how to overcome the challenges. In this study, quantitative questionnaires were conducted first to determine the teachers' perceptions regarding the implementation of ICT in Malaysian CIHS education, followed by interview sessions for further elaboration. Therefore, research

question 3, which discussed the possible solutions to overcome the challenges faced by the teachers in using ICT in classrooms, reflected the qualitative interviews as they were meant to add information and elaborate further. A total of 24 English teachers comprising 13 females and 11 males who used ICT to teach students in schools were available for the interview sessions.

There were altogether seven main questions during the interview sessions. In addition, the researcher asked probing questions when necessary to get more in-depth information. The seven questions asked during the interview sessions were: -

1) Explain how Information and Communication Technology (ICT) based online learning helped students improve their English proficiency.
2) Describe the challenges you have faced while using ICT-based online learning in schools.
3) Evaluate how have your school management supported the use of ICT in class.
4) Discuss the training your school management provided on using ICT in class.
5) Describe the infrastructures and accessibility of ICT integration provided by your school management.
6) Please propose any suggestions to overcome the challenges you mentioned earlier.
7) In your opinion, is ICT-based online learning the best method to help students improve their English proficiency? Please propose an alternative, if any.

4.3.1 Qualitative Respondents' Demographic Profile

Based on the quantitative respondents' profile above, 24 English teachers in CIHS in West Malaysia participated in the qualitative interview sessions: 13 female and 11 male teachers. Among the 24 interviewees, 10 of them (41.7%) had around one to five years of teaching experience, followed by five teachers (20.8%) who had been teaching for six to ten years, and six teachers (25%) with more than ten years of teaching experience. Only three teachers had less than one year of teaching experience in the pool of interviewees. Next, based on the respondents' qualification profile, all 24 interviewees (100%) were bachelor's degree holders. Furthermore, the demographic profile above shows that 18 (75%) of the interviewees were working in larger CIHS, and 6 (25%) were from medium schools.

Table 14

Qualitative Respondents' Demographic Profile

Factors	Frequency	Percentage (%)
Gender		
Male	11	45.8
Female	13	54.2
Total	24	100.0
Teaching Experiences		
< 1 year	3	12.5
1-5 years	10	41.7
6-10 years	5	20.8
>10 years	6	25.0
Total	24	100.0

Qualification		
Diploma	0	0
Degree	24	100
Master	0	0
PHD	0	0
Total	24	100.0
School Sizes		
Large	18	75.0
Medium	6	25.0
Small	0	0
Total	24	100.0

4.3.2 Teachers' perception of ICT integration in school.

The tables below show the West Malaysian English teachers' perceptions of ICT integration in schools. The interview results showed that most English teachers had positive attitudes and perceptions of integrating ICT into schools. However, a minority still preferred to use traditional methods to teach, even though the schools had advised them to use ICT in the classroom. In fact, among all these CIHSs in West Malaysia, which were involved in both questionnaires and interview sessions, two-thirds of them were equipped with basic ICT infrastructure and accessibility such as computers, projectors, and Internet connection by their school management. More prominent schools were also equipped with some technological tools and software such as Smart Board; they also had their English Language Centre in schools. These facilities could be found either in teachers' rooms or classrooms. However, some teachers from

other CIHSs shared the equipment with each other. Data from the interviews on teachers' perception of the implementation of ICT in schools were categorised into six categories for better understanding: teachers' perceptions of the use of ICT in teaching, ICT use in learning, the effectiveness of ICT integration in schools, the required skills and competences on ICT, teachers' negative perceptions of the implementation of ICT in schools, and their perceptions on traditional methods and ICT-based online learning.

4.3.2.1 The Use of ICT in Teaching. Table 15 shows the thoughts of CIHS English teachers in West Malaysia about the use of ICT in teaching. Roughly thirty-three per cent of the English teachers in the interview sessions gave their opinions on how they used ICT to teach their students. Respondent 1 mentioned that the computers provided by her school management were equipped with Internet access. Therefore, teachers could search for online information anytime to elaborate on specific topics for students during the lesson. She also agreed that technological devices like projectors and computers would make lesson deliveries much more effortless.

Meanwhile, Respondent 21 mentioned that the computers and projectors provided by his school had made the delivery of classes much more straightforward, and they attracted students' attention to the English lessons. Next, Respondent 4 said that for essay writing, book reviews and article reviews, information was retrieved from the Internet, and the students had to surf the Internet to find some sources related to the topics before they attended class. This could help teachers and students gain knowledge, and teachers no

longer rely on printed materials alone. Similarly, Respondent 24 shared his positive opinion about the availability of information teachers could find on the Internet. Furthermore, Respondent 9 opined that by using ICT to teach, teachers and students could interact and communicate flexibly due to the time constriction faced by the teachers that limited communication with their students. Normally, there would be more than 30 students in one class, and the teachers would not be able to take care of every student during the lesson. ICT made it easier for them to communicate despite the distance between the teachers and the students at any time. The respondent then continued to mention that by showing students some pictures or videos from search engines like Google, students understood the lessons better than verbal explanations. Respondent 13 also stated that ICT made it easier for her to prepare teaching materials and manage her lesson. For example, she could use the teaching and learning applications to modify and design the lessons that she was planning to teach as there were a variety of activities that could be chosen in ICT-based lessons, like games and quizzes and to engage the students actively. The respondent also preferred to show YouTube videos related to her lesson and incorporated the National Geographic channel to teach her students about animals.

Respondent 17 had a contradicting point of view regarding teaching with ICT, in which he stated that ICT-based teaching and learning did not fulfil 100% of the requirements for learning a language. Teachers still needed to combine online learning with traditional methods, as they had advantages too. Respondent 20 found that students were more focused during ICT-based

lessons, encouraging them to build up their confidence level and desire to learn the English language.

Table 15

The use of ICT in teaching

Number of teachers	Excerpt from transcript
8 (33.33%)	**Respondent 1:** "I think with computers and projectors, the delivery of classes and lessons would be much easier" "All of these computers are equipped with internet access so teachers can pull up any website or any link at any time of the lessons (.) to further elaborate or explain a certain topic." **Respondent 4:** "Sometimes we will use advertisement to teach them. "When we do our essay, book review, article review, all these, we always go into the computer like before we teach tomorrow. Students they have to go into the internet to source for all the information before they come to class, then only we start our discussion. They need all these info to support their essay." **Respondent 9:**

	"We teachers also don't have much time to communicate anything with them (students). So, basically, I think ICT helps a lot in that way. Like you just go on Skype and then you have your discussion you can do anything, you know it just eases your burden. Like even if I am in Johor, I still can guide you what you have to do if I have ICT." "For example like Junior one, they don't know what is volcano. When I try to explain it they don't understand, so what I do is just open the Google, when because we have online, you can just use internet, we show them picture, we show them video. So, where we will say pictures speak better, they believe it." **Respondent 13:** "When you use ICT in incorporating it in your classroom to teach grammar, you have a lot of ready- made applications there. All these applications which you can actually modify them and design them, according to your own lesson, whatever topic, grammar topic that you wanted to teach and there are variety of activities that you can actually use that as a game, quiz and so many interesting activities that can be conducted in the classroom in order for the students to actively engage in whatever lesson is being taught." "For the reading comprehension, before I give them the text or passage whatever they need to read, I will show some sort of videos on whatever related to the passage. Okay, maybe example let's say something related to animals, I prefer to go to the YouTube, and then check on the National

	Geographic channels related to it." **Respondent 17:** "I think to learn a new language, the environment plays a very important role but online learning cannot provide 100% of the requirements for learning a new language. We may have to combine both online learning with traditional method with each having its advantages and disadvantages. Combining the two methods will be a better alternative for students to learn English Language in a more efficient manner." **Respondent 20:** "Students will be focus during the class. The class seems to be more privacy and almost at one basis. Secondly, it will encourage mutual interaction, it built up students' confidence level, and the desire to learn…" **Respondent 21:** "Ok, so in our school, for English lesson, there are equipped with computers and projectors.. so the delivery of classes are much easier. It will attract students' attention and will help to improve students' English proficiency." **Respondent 24:** "…for the teachers, it is easier for them to.. find teaching materials. Urmm online.. because there is a bundle of information that can be obtained from the internet.

4.3.2.2. The Use of ICT in Learning.ICT is considered one of the best methods to enhance students learning. Implementing ICT in schools also brings many benefits to students in their studies. The use of technology in teaching and learning encourages students to learn anywhere and anytime. Table 16 below shows the CIHS English teachers' perceptions of using ICT in students' learning. During the interview sessions, Respondent 1 mentioned that with the school management providing facilities, students could do their English exercises anywhere and anytime. ICT aided them greatly in completing their homework. Meanwhile, Respondent 2 indicated that ICT helped students improve their English proficiency in a fun and easy way because they preferred digital materials to books. She then continued that the students were more partial to movies than books as these "digital natives" had their attention grabbed by the colourful pictures and movies online. She also mentioned that when students read English books and find unknown vocabulary, they could check the meaning online quickly. Next, Respondent 10 agreed that students would not feel bored during the English lessons, and Respondent 6 thought that using ICT in learning encouraged the students to search for something they wanted to know. Additionally, Respondent 17 stated that online learning helped students improve their English proficiency effectively as the platform provided a better environment for students to learn the language and interact with peers worldwide. Respondent 19 expressed his opinion that ICT would improve the students listening and reading skills.

Furthermore, Respondent 3, who was a male, stated that although he did not use ICT in his teaching, he was aware that ICT helped students to improve their English proficiency because it made them engaged in the world

around them rather than constricted to their daily life, which might not provide many opportunities to learn English. In his opinion, while using ICT, students were forced to put themselves in an English environment where they needed to listen to native speakers or at least people who spoke English. Similarly, Respondent 12 agreed that computer-based materials were provided in English, which forced them to learn the language to operate the tools. When asked whether ICT improved students' English level, Respondent 7 responded positively that students could learn something through technology compared to the traditional methods. Traditional methods merely asked students to memorise the vocabulary, unlike online language games that made vocabulary learning more enjoyable. Nevertheless, she also opined that the success of learning the language was significantly dependent on the individual student's ability rather than the tools used to learn. She perceived ICT as advantageous for the students to improve their English proficiency, which was highly dependent on their willingness to learn rather than ICT incorporation in learning. She justified her support for ICT-based teaching and learning by citing one of her students who improved his English proficiency due to his interest in playing online games, which provided instructions mainly in the English language. Respondent 9 reiterated the statement about students' willingness to learn predominating the use of ICT in classrooms. She elaborated that integrating ICT would not be successful without the students' interest in computers.

In addition, Respondent 8 revealed that Mandarin was the primary language spoken in CIHS and English was exclusively used in their English classes. She also mentioned that her students with low English proficiency

found it challenging to learn the English Language. Therefore, she agreed that when students used ICT-based online learning, they could learn extra knowledge or do extra exercises during their free time. She also agreed that the students with lower English proficiency showed more interest in learning the language in ICT-based classrooms. Respondents 9, 11 and 12 agreed that ICT transformed the learning methods from teacher-centred to student-centred as students engaged themselves in learning via computers as the young generations were much more technological-based. Meanwhile, Respondent 13 mentioned that owning devices like smartphones made students more comfortable with online learning than in traditional classrooms. She concluded that online applications could help students improve their English proficiency because it was something new.

Furthermore, Respondent 18 mentioned that students' limited learning time in school could be overcome by ICT-based lessons, which they could access anytime. In his opinion, each student had a different learning attitude, especially the slow learners. The slow learners could do more exercises at home, which would be helpful to slow learners. In addition, Respondent 24, a male teacher, concluded that learning English online was very convenient for students. Students might find it interesting to learn online as there would be many exciting topics they could surf the Internet about. Furthermore, online learning could help develop students' independent learning and build students' discipline in learning at home.

Table 16

The use of ICT in learning

Number of teachers	Excerpt from transcript
15 (62.5%)	**Respondent 1:** "I would also say that having this ICT online learning will help(s) students in their homework." **Respondent 2:** "Most of the students they don't really prefer hardcopy. They don't really like books." "If I ask student whether they like the story books or they prefer movie, most of them they will say they prefer movie. The movie can actually visually shown the story, they can see the motion, they can also listen to the voice, ya and you know, very colourful for them, more attractive." "If they don't understand the meaning of the words right, so for hardcopy book they may need to refer to the dictionary, but for e books they can actually click the word right, and then for definition." **Respondent 3:** "I think it helps them to get engage in the world around them then not just in their daily life because they don't have this environment to learn English. Their parents don't speak English at home. In order to understand the context of what they are learning they need to listen to the native speakers or at least people who speaks English and maybe

	look at videos let them try to put themselves in that situation." **Respondent 6:** "This en- encourage the students to go further, ya, to look for something that they want." **Respondent 7:** "They can learn something compare to the conventional method using the books." "I think will be more interesting for them rather than just using conventional method to learn vocabulary. You give and then, you memorize. So this one is much more better I would say. Language games in online using computers." "I feel like this one whether they successfully improve their proficiency or not depends on the student. Like for me I have seen one student who likes playing online games and has a good proficiency of English Language because I think (the) medium of instruction in online games everything is in English, so he has a better language knowledge compare to the other students who don't have."

	Respondent 8: "In our school most students they are very weak in English, due to, you know, this is a Chinese Independent School, so basically, they are using Chinese, for the English period they use English. So If they using ICT in online learning it might help them to have their extra time for them to focus on" "The low ability students also they find it interesting when you use ICT." **Respondent 9:** "Instead of conventional teaching in classroom, where more to teacher centred based of learning. I find that err when it comes to ICT, we can see how the students engage themselves with computers, where it err, it applies the student centred learning but not for every student because some of the students they don't really get interested in computers" **Respondent 10:** "I think it helps them in err, communicative English. The interest will arouse here and the English lesson won't be so boring."

	Respondent 11: "I personally think that err this will be more student centred then, we used to have the traditional teaching method with, where teacher teach and students learn, right? So ICT would be given, will give opportunity for the students to be, more (participative) in the classroom, as we know students are more interested in audios, videos and pictures." "So, they will be more interested in the lessons, so it will definitely help them to enhance their language." "I personally felt that err they did learn a lot of things, even in the classroom, they will be like, they feel very sleepy and all that when you give them the computer and you ask them to do, they will be very excited and they will ask you a lot of questions :"how to do" and all that" **Respondent 12:** "For me, now I think way of learning has changed, so our younger generation they are much more technologically based, so they have different styles of learning. So I think this, they are more familiar with online learning, so I think it will help them in that way (in learning)" "Most of this online learning also focuses a lot on English language, so I think in a way when they are using it, they have to use the English language, so like if they are sitting in front of the computer, it is all English, so they are forced to use it, they have to learn how to

	use English. So this is why I think this helps them." **Respondent 13:** "Now all the students are having their smartphone, and everything. So they are more in all this online based learning rather than the traditional method, they prefer that. The students nowadays they prefer to explore more on whatever advancement of the technology." "There is a lot of applications, which is already there, online, alright? For us to help students to improve their proficiency." "I feel in that way it will be more students centred, because is no more the traditional method. The students are really into the lesson because is something new for them." **Respondent 17:** "In my opinion, online learning helps students to improve their English…. it is a trend (?) to learn English or Mandarin or any other language through online learning. Online learning provides a better environment for learning a foreign language, be it English or Mandarin. It provides a platform for people to interact with each other from all over the world. The process of communication whether in talking, writing or listening through online helps students to improve their English proficiency effectively." **Respondent 18:**

	"Hmm, Seems hmm.. the students have limited amount of learning time in school, hmm every week there will be only at six to seven periods that they can learn English, around like thirty minutes per period. So.. I think urmm by having ICT, they can have more learning at home. Hmm, more one.. one of the good thing is when they are learn at home, each student have different learning , learning phase(?). Some they are fast learners, some they are slow learners. For the slow learners, they can do more exercises at home, so urmm I think it (will be) helpful for slow learners to learn." **Respondent 19:** "I think ICT improving their listening skills and reading skills." **Respondent 24:** "It is very convenient for students to learn English online, because they can log in to urmm the internet, at any place and anytime whenever they are free. This means that they can use English more often. This will greatly improve their English proficiency very much. Students find it very interesting to learn online because they are a lot of interesting topic that they can find from the internet. Students can develop a sense of urmm independent learning by developing urmm by having the initiative and the discipline to learn at home, or at any place convenient, just by themselves."

4.3.2.3 The Effectiveness of ICT Integration in schools. The implementation of ICT has great potential for the dissemination of knowledge as well as for developing more effective education services (Sankar & Gandhi, 2016). Table 17 above shows teachers' perceptions of the effectiveness of implementing ICT in schools. Respondent 1 referred to the teacher-sharing system provided by the school management. As ICT was accessible to all teachers, the teachers could share their materials. Besides that, Respondent 10 also mentioned that the Smart Board in her school made the class time very effective as teachers and students did not have to waste time copying all the exercises. Furthermore, Respondent 2 explained the effectiveness of technology by quoting using the Internet to obtain pictures to describe certain scenes, situations, and specific parts of the stories. Similarly, Respondent 6 agreed that Google made it practical for her to find extra information where it was always available with all their answers. Next, Respondent 7 agreed that ICT facilities helped to grab the students' attention. Meanwhile, Respondent 12 mentioned that online learning provided fun ideas and facts for students. In addition, Respondent 11 believed that online learning helped teachers assess students' progress more efficiently and motivate students in their learning. She mentioned that lower marks demotivated students, and online evaluations encouraged them to improve their lessons.

Table 17

The effectiveness of ICT integration in schools

Number of teachers	Excerpt from transcript
7 (29.16%)	**Respondent 1:** "We have the shared system called "the teacher shared" whereby the teachers can provide Power Points and word documents of related lessons into respective folders and it is accessible to all teachers." **Respondent 2:** "I will also go online, you know, Google search some pictures because (it) is very hard to describe certain scenes, situation certain part of the story so, by using picture, I think it is more effective." **Respondent 6:** "I find it very helpful especially Google anything that you don't understand or you feel that you need to know a little bit more, Google is always available with all their answers." **Respondent 7:** "So when you have these facilities we can show them, try to grab their intention, attention."

	Respondent 10: "We need to give exercises where we don't have to copy ,you know and on the board, we just copy on the board is a waste of time, the students will be wasting their time copying, you know I still have to wait . So is quite time saving if we use the Smart Board" **Respondent 11:** "As we implement online learning, it is easy for the teachers to assess their progress and when they learn through internet, I think all their assessments will be online, so there will be more privacy." "When people know that they got lower marks, they feel bad and they won't be motivated. So I think it will eventually like, help them to enhance their motivation." **Respondent 12:** "Because online learning, is more I think, there is, you can get a lot of fun ideas, you can get a lot of facts."

4.3.2.4 Teacher's Skills and Competencies in ICT. Based on the interview results, only 2 (12.5%) of the respondents mentioned the skills and competence required for ICT integration in schools. Respondent 9 agreed that

ICT skills and competence were mandatory in 21st-century teaching and learning. She also mentioned that people nowadays must have sufficient computer knowledge on how to use Microsoft Word, PowerPoint slides and so on. Besides that, Respondent 13 also gave her opinion that if teachers had enough knowledge of ICT, it would help the students to improve. Teachers in the 21st century need more skills and knowledge of technology. The teachers could not always be the ones who retrieve content from the Internet; they had to be the content creators to cater to the needs of their students.

Table 18

Teachers' skills and competencies in ICT

Number of teachers	Excerpt from transcript
2 (8.33%)	**Respondent 9:** "As we know we are moving into 21st century learning, where, whenever you go, ICT is required. Even for a small purpose of job you need to know how to use your computer, am I right? The normal Microsoft Word, PowerPoint slides, and so on." **Respondent 13:** "We not only can show them some videos, even now we have already with the advancement of technology, we already have the apps where we can create our own videos. So if you make use of all this, if you have enough knowledge to make use of all these I am

	sure it will be effective and definitely will improve.”

4.3.2.5 The Negative Perception of ICT Integration in Schools. This study aimed to understand the teachers' perceptions of the use of ICT. Only three English teachers in the interview had negative opinions of ICT. Respondent 3 said that ICT was a good method to use, but he still preferred to use the basic teaching methods first. He seldom engaged his students in ICT-based lessons. Besides that, Respondent 9 opined that if teachers relied too much on ICT, it would be challenging for them when they faced problems such as no electricity supply. Respondent 10 felt that there was no integration between teachers and students while using technology. In addition, Respondent 22, who preferred to use traditional methods, thought that online learning did not impact improving students' English proficiency.

Table 19

The negative perception of ICT integration in schools

Number of teachers	Excerpt from transcript
4 (16.66%)	**Respondent 3:** “I don't really engage my students using this ICT.” “I prefer to look into the methodology of Teaching and ICT is the good thing to implement in system but I prefer to get the basic right first.”

	Respondent 9: "Too depending on ICT might not really bring up teachers teaching methods as well. Like too dependent on a PowerPoint slides, or too dependent on videos, I feel like, if in case, at particular time, there's no electricity, how the teachers is going to conduct the classroom? That's what I think might be the challenges for the teacher" **Respondent 10:** "I feel that there is no integration between teachers and the students" **Respondent 22:** "oh it makes no difference, because in my opinion online learning is just normal interaction class done via online ,it doesn't effect on anything.. hmm I mean traditional also helps improve students English proficiency…" "For me it is no use to having online learning. I prefer more on traditional which students can be more focus."

4.3.2.6 Traditional Method vs ICT based Online Learning. During the interview sessions, 50% of the respondents gave their opinion on traditional methods and ICT-based online learning in schools. Most of them believed that although ICT-based online learning offered opportunities and advantages for

both teachers and students, the traditional methods could not be abolished. Nevertheless, Respondent 14 gave her opinion that it would be better if the school fully utilised ICT and traditional methods ceased to be used as it would create a positive difference in classrooms. She also mentioned that she felt ICT worked better than conventional teaching.

On the other hand, Respondent 1 stated that it was always good to have choices, and for students to learn from both the traditional methods and ICT-based online learning; the mixture of both methods would benefit the students more. Meanwhile, Respondent 2 also felt that ICT was another way for students to improve their English proficiency. Similarly, Respondent 7 concurred that ICT was just one of the methods that teachers could use in their lessons; however, they should not rely on it 100%. Nevertheless, students would feel bored if teachers used the 100% conventional method. In addition, Respondent 9 felt that conventional and technological methods could be combined in teaching, as the teaching methods were not the only factor to play a part in improving the students' English proficiency. From respondent 21's point of view, ICT was not the best method, as traditional methods were still required. Furthermore, Respondent 18 mentioned that ICT could not be considered the best method because face-to-face interaction between teachers and students was still needed. However, Respondent 24 mentioned that ICT could help students in their English learning because when using traditional classrooms, the time was minimal, and students could only learn English within the limited class time. In online learning, students can learn English anytime and anywhere.

Meanwhile, Respondent 12 felt that other methods might be suitable for the students as they had different learning styles; therefore, a combination of traditional methods and ICT-based online learning would be a better option. Besides that, Respondent 5 believed that primary and secondary school students still required teachers to guide them in their studies. As a result, total dependency on ICT was not advised. Respondent 22, who had a negative perception regarding ICT, concluded that online learning made no difference in students' improvement of English proficiency.

Table 20

Traditional method vs ICT based online learning

Number of teachers	Excerpt from transcript
12 (50%)	**Respondent 1:** "It is always good to have choices, and for students to be able to learn from both the traditional method and also the ICT based online learning. I feel the mixture of it will benefit the students a little bit more. **Respondent 2:** "I think ICT is actually another option for student to improve their English." **Respondent 5:**

	"Teacher is still the best. We have personal guide. You cannot totally depend on ICT." **Respondent 7:** "I will say it is just one of the techniques or methodology you can incorporate in the classroom" "Let's say if you gave online homework, they can just simply "click click click" and then you don't know whether they learn anything or not and then hundred percent traditional method like, I will say is kind of boring." **Respondent 9:** "Basically I think students' proficiency level is not solely dependent on improving ICT. ICT is just a part of improving their proficiency." "At the same time we need to train the students on writing skills, their handwriting, listening ability and so on, so I think yeah, so the combination of the conventional and ICT combine." **Respondent 12:** "I think it is one of the good methods, but at the end of the day, I think there are other methods also, especially like < I mean the old school methods are still beneficial for the students." "I think students have different ways of learning, so maybe for those every time is ICT ICT ICT, then it becomes the same routine, same

	thing, same style of videos or wherever they may be bored also, and if it is fully traditional, because is more of chalk and talk, so they may feel bored also, so with the combination maybe they have better option?." **Respondent 14:** "…for me, I feel ICT works better than conventional teaching. Maybe previous years yes it worked, but now no more. We can't sit too long you know? Looking at the same thing again and again, It will, it will be good if you can do it, you know, fully ICT. No more conventional teaching. I tell you, things will be different." **Respondent 18:** "It is not the best method, but is one of the method, because for some parts we do need e learning , or when it comes to speaking, urmm you need physical teacher, physical person to talk to. Some kind of exercises like we do need the interaction between friends and teachers, we can't do it between the computers." **Respondent 21:** "ICT is not the best method, I think it is just one of the method. Urmm as we still need traditional way." **Respondent 22:** "As I mentioned earlier, online learning makes no difference for this English proficiency. Because for me, it is just like passing of

	knowledge to the students with teachers and the students. It doesn't make any differences compare to traditional…" **Respondent 24:** "…as for with traditional classes, they only learn English during the classes in the school, whereas when it is online, it means that students can urmm learn English at any time at any place is.. as long as they have computer or even a hand phone .." "ICT can helps students to improved their English proficiency because one of the weaknesses of traditional classes … of urmm. learning English will have limited time, because the classes only conducted once or twice a week."

4.3.3 Challenges faced by teachers on ICT integration in school.

During the interview sessions, the researcher intended to find out the challenges encountered by English teachers in CIHS in West Malaysia when using ICT to teach. Internal and external challenges influence teachers' willingness to adopt ICT in their teaching and learning process.

Based on the results from the interview sessions, teachers felt that there was not enough training related to the use of ICT provided to teachers. It was also indicated that teachers might develop negative attitudes towards ICT integration in schools when they do not have enough skills and competencies. The older generation of teachers preferred to use traditional ways of teaching, probably due to their incompetency in using ICT. Furthermore, other challenges, such as poor Internet connection, inadequate support by the school management, and lack of ICT

infrastructures and facilities provided, were mentioned in this study. During the interview sessions, some of the English teachers also pointed out some additional challenges which were not mentioned in the quantitative questionnaire results.

The challenges found from the interview sessions were categorised into internal and external challenges. Internal challenges included lack of time, lack of attitudes and interest, lack of skills and competencies, and teaching experiences; external challenges included insufficient Internet coverage, lack of technical support from the school, lack of training on ICT, lack of accessibility on ICT, lack of infrastructures and facilities, schools' opposing views on ICT, students' attitude and lack of privacy on ICT.

4.3.3.1 Internal Challenges- Time. Table 21 shows that 9 out of 24 respondents in this interview mentioned that the time needed to prepare teaching materials and the limitation of class time were the two main barriers they encountered when using ICT tools to teach. Respondent 2 agreed it was interesting when teachers used technology to teach; however, they needed more time to prepare attractive PowerPoint slides for their students. This was because not all online sources were suitable for every student. Similarly, Respondent 3, a male teacher, also mentioned that it took more time to prepare PowerPoint slides, look for suitable videos and the right content, and prepare the exercises. Besides that, Respondent 19 thought that when teachers did not understand how the ICT platform worked, they might waste their limited class time trying to perform a simple task such as figuring out how to operate the ICT tools.

Respondents 13 and 14 agreed that as teachers in CIHS had bundles of workload, it was not easy for them to use ICT to prepare their teaching materials. Teachers needed to make sure that they provided good teaching and that the materials they provided were relevant. When preparing the lessons, the teacher had to invest more time in finding suitable materials to teach the students. Besides that, Respondent 5 opposed those who thought teaching was an easy job; determining the students' proficiency and preparing lessons that cater to everyone was a challenging task that a teacher had to face. Without proper planning, the lessons would bore the competent and less proficient students.

During one of the interview sessions, Respondent 8 referred to the Smart Board provided by the school management. Although the school management encouraged teachers to use ICT in their lessons, the lack of time for preparation demotivated the teachers from using it. The limitation of class time hindered the teachers from using ICT as they needed to switch on all the ICT tools before starting their lessons, and it was time-consuming. Meanwhile, Respondent 6, a male teacher, mentioned that when teachers were too reliant on ICT, the lessons would be interrupted if there was a power cut. Besides that, Respondent 14 agreed that it took time to set up everything when she wanted to use ICT tools, and usually, the devices would not respond immediately. Because of the limitation of class time, she felt that using the ICT tools was a challenge because the time wasted on switching devices could be spent on better and more critical tasks. This indicated that teachers in CIHS were rushing with their syllabi and did not want to waste their time just waiting for the computers and projectors to be switched on. Respondent 15 mentioned that

when teachers faced some technical problem, there were staff hired by the school management to assist them; however, because of the limitation of class time, the lesson would be interrupted, which would delay the lesson and eventually would hinder the teachers from completing the syllabi assigned to them.

Table 21

Internal Challenges- Time

Number of teachers	Excerpt from transcript
9 (37.5%)	**Respondent 2:** "We have our exam to prepare, you know, we have to prepare our students for exam, and then by using ICT right, well.. is- is quite interesting, but there is still a gap between the assessment.." "…and then Power Point slides, I will say, we need more time to prepare all these, because in order to come out with attractive Power Point slide right, then you need to design, err. So, instead of using the book, well, you know, you don't really need time to prepare but, is boring." **Respondent 3:** "It takes more time preparing PowerPoint slides, looking for the right video, the right content to prepare the exercises as well." **Respondent 5:** "So many people have the wrong idea that teaching is an easy job"

	"It is not easy, you have to do your own work to prepare your work, then you have to see your level of students also if is too difficult they don't understand they become bored. If is too easy, the clever one will be then distracted. " **Respondent 6:** "When you have electricity black out, and if we are too dependent on doing ICT, we find that, you are stuck on it and lesson is discontinued and waste of very precious time." **Respondent 8:** "You know, time. Because we have forty minutes per period, so while, when we enter, open up, you know, switch on and everything. So it takes time for us to conduct the lesson. Sometimes is draggy." "School management really wants the teachers to use err ICT because they have already provided us Smart board." "They want to utilize it but then, we teachers, are lack of time for us to prepare. Sometimes we have a lot of school works and need to mark (paper) , books and everything, so we got no time to upload anything and use ICT. Basically it is time constraint." **Respondent 13:** "When it comes to preparing the lesson, you need to invest more time

	for you to get the suitable material, to teach them actually. So I wouldn't say it is easier but it is effective in a way." "It is not only about preparing the lesson, you still have to mark their essays. You still have to mark their exam papers, prepare the exam papers, monthly test, standardize text as so many things to do. So in order for us to really concentrate on preparing the lesson, there is a bigger challenge I will say. " **Respondent 14:** "You need time to do the preparation, you know, when you want to prepare on lesson we need to do some research. You cannot simply just click on the internet and say, okay this (is) what I am going to teach you, NO. You need to do, you need to study first, what you are going to teach your students, so time constraints, because in Chinese Independent Schools, the workload is heavy. So we are rushing for syllabus, we are rushing for…in completing our assignments or whatever you know? Students' works with datelines. So at the same time, we have to make sure that we give our students a good teaching." "Sometimes when you want to set up your things, it takes time. It doesn't respond immediately, I have to wait for five, ten minutes for it to response, so it takes time. So that is one challenge, because for five minutes I can do other things you know?." **Respondent 15:**

	"We have like staff here and every time when we are having problem with the IT service, we have to actually call them, ask them to come to the class and they will be actually helping us to fix it, and sometimes it will take a lot of time, so there will be delay on the lesson and personally, I couldn't finish my lesson on time because of that." **Respondent 19:** I think some teachers might struggle to understand how the platform works and may end up wasting class time trying to perform a simple task.

4.3.3.2 Internal Challenges- Attitude and Interest. Teachers' attitudes and interests would influence the use of ICT in schools. If teachers had a positive attitude, even if they did not have adequate skills and competencies in ICT, they would still be willing to learn. Comparatively, teachers with negative attitudes would prefer to adopt traditional methods. Table 22 shows that around 41% of the English teachers in the interview believed that teachers with negative attitudes would influence their willingness to use ICT during their lessons. Older-generation teachers usually did not see ICT as an excellent method to teach. First, Respondent 2, a young teacher, opined that the senior teachers did not like technology because they were already used to traditional ways of teaching. Similarly, Respondent 4 argued that ICT-based online learning was not the best method, and she believed students did not really learn

anything from the Internet. The students lacked creativity and critical thinking and would search for answers from the computer without thinking. Furthermore, Respondent 9 mentioned that older teachers usually found technology neither interesting nor friendly and preferred using conventional methods to teach. She also mentioned that older people tended to reject learning something initially without trying. Respondent 7 exemplified her point by quoting her co-worker, a male teacher who had a severe aversion towards using computers and projectors in his lessons. She highlighted the male teacher's seniority in age and experience, which were factors that irritated him when encountering new aspects of education like using ICT, especially when he was approaching his retirement soon. Similarly, Respondent 17 thought that senior teachers would rely more on traditional methods to teach their students as they could not accept the modern concept of new technology-based methods, such as online learning. Some teachers rejected online learning because they did not know how to use computers or access the Internet. Respondent 24 mentioned that many senior teachers did not prefer to use online teaching because they were not good at using computers or software, which led them to perceive ICT negatively.

Next, Respondent 13 mentioned that only a few teachers were willing to learn and implement ICT in classrooms, while others still preferred traditional teaching methods. She also opined that the teachers had little knowledge of ICT, and it was because they were not willing to learn. In addition, Respondent 10, an older generation teacher said that she still used the traditional teaching style as she preferred to explain the lesson using the "chalk and talk" method.

Nevertheless, Respondent 12, a senior teacher, commented that even though some older-generation teachers like her preferred to use traditional teaching methods, they were willing to accept the new teaching methods if someone could teach them. She continued that some older teachers' preference to use the traditional methods of teaching while rejecting the new ones was unavoidable, as changing the mindset of the older generation would be very challenging. Respondent 3, a male teacher who still preferred to use traditional methods to teach, said that some teachers might think that their methods of teaching were more effective than the current methods they pursued; however, he understood that ICT was a suitable method and he was trying to adopt it in his lessons.

Teachers' negative attitudes and lack of interest towards ICT caused them to continue using traditional teaching methods as they did not see the benefits of using ICT. So, they preferred to continue using traditional methods or switch between the two teaching methods.

Table 22

Internal Challenges- Attitude and Interest

Number of teachers	Excerpt from transcript
10 (41.66%)	**Respondent 2:** "(Senior teachers) they are too experienced, so they are too used to their conventional way of teaching, so they don't really like technology stuff." **Respondent 3:**

	"I don't really engage my students using this ICT." I prefer to look into the methodology of teaching and ICT is the good thing to implement in system but I prefer to get the basic right first" "Some teachers may think that their method of teaching is more effective than the current method ... For me, I do feel that way but I try to put in ICT as well, because I understand it takes extra time." **Respondent 4:** "I think they (students) are lack of creativity and also critical thinking, they will search the answers from the computer without thinking." **Respondent 7:** "I have that one colleague before. He has, never, I think I would say yes never used computers, projectors in his class so he is more of a conventional method teacher. This is because he was like an old generations, so he is not explore to the usage, so he is not bothered to learn as he is retired, he has no need to learn to use the computers, he doesn't want to, yeah, change his mind set" **Respondent 9:** "When it comes to older teacher(s) their attitude, I felt like they will like the conventional method on teaching instead of this ICT because they don't find it friendly, because they don't bother to learn, maybe they find it too old for them to get used to it. When you ask old people to learn

	something, the first thing they will reject.” **Respondent 10:** I still use more on traditional style that means we use explanation on the board, we have this whiteboard with us.” **Respondent 12:** “Older generation maybe when we were in school, we used the very traditional way, so maybe like some older teachers may find it (as) a challenge. For me, I am willing to accept, you teach me, I can learn, but some older generation teachers, they may not want to use the ICT. So their old school thoughts are there, they still feel that the traditional way is still the best” **Respondent 13:** “There are very less teachers who are willing to learn and adapt to the advancement of technology or implementing ICT in the classroom but most of the teachers still prefer the traditional method, and it is because they are reluctant to learn, definitely the lack of knowledge is there. ” **Respondent 17:** “Some teachers who are senior teachers still prefer to use traditional teaching method and may not be able to accept the modern concept of online learning. Some of them may reject online learning simply because

	they do not know how to use a computer or how to access the internet." **Respondent 24:** "Many senior teachers are do not prefer to use online teaching because they are not good in using computers or those software programs, they might have negative perception towards ICT urmm.. online learning"

4.3.3.3 Internal Challenges- Skills and Competences.Based on the results in table 23 above, teachers with negative attitudes and interests normally lacked the skills and competence to use ICT. During the interview sessions, 7 out of 16 interviewees talked about the lack of skills and competencies as one of the challenges in their schools. Respondent 1 thought some teachers in her school might or might not be as competent as others. Sometimes, she was required to help those teachers who faced some technical issues. Similarly, respondent 15 believed teachers in her school were not well-trained with IT knowledge. She also mentioned that they needed some time to learn and adopt ICT in their teaching because they could not solve the technical issues they faced when using ICT in classrooms; she highlighted that this problem occurred due to the lack of ICT training provided to the teachers.

Furthermore, Respondent 5, a senior teacher with more than ten years of teaching experience, agreed that older teachers like her were generally not good at using the computer. The respondent humorously emphasised the current generation's flair for using technology compared to the older generation. Next, Respondent 8 mentioned that despite the school management's provision

of ICT tools like Smart Board to the teachers, teachers who had not explored ICT before would still prefer to use traditional ways of teaching. The respondent, who represented the school management, lamented the teachers' reluctance, especially older teachers, to use the ICT tools provided for them due to their lack of interest and knowledge in navigating ICT. Respondent 9 also agreed that some old teachers with more than twenty years of experience in teaching might find ICT too complicated, which would sway them towards straightforward traditional teaching methods. In addition, Respondents 10 and 12 found that technology would be more suitable for the younger teachers because they knew how to use it. Older generation teachers commonly found it challenging to use ICT to prepare their teaching materials. Respondent 12 elaborated on her difficulties searching and downloading materials from the Internet, a task for which she had to approach the younger staff for aid.

Next, teachers who lacked the skills and competence to use ICT would invariably influence their perception of the use of ICT in schools. Respondent 24 concluded that teachers, especially senior teachers, would not prefer online learning as they were not good at using computers and software. This might lead to their negative perception towards ICT. Like Respondent 23, it was difficult for senior teachers to use ICT because it was not easy for them. Respondent 19 concluded that teachers might struggle when using ICT, and this might waste their class time to perform a simple task.

Table 23

Internal Challenges- Skills and Competences

Number of teachers	Excerpt from transcript
10 (41.66%)	**Respondent 1:** "Some teachers may or may not be as competent as others and many a time I am required to come by and help up with some of the technical issues faced by the teachers for example damage projectors or students not being able to access to their accounts." **Respondent 5:** "These older teachers, like us, we are not so good in computer, we can only give you the very basics like that la.." sometimes the students will be better than us when comes to computers right?" **Respondent 8:** "There are teachers that really not explored to ICT. So they tend (to) not use our Smart board, they just use marker pen. " **Respondent 9:** "Some of the old teachers like they have twenty, thirty years, they might not be very good in the usage of ICT. So they find it a little bit difficult, they still prefer the conventional method, compared to the younger ones.

	Respondent 10: "It depends on the age of the teachers actually. For me, I'm so old. I am not very used to all these. To me, I find it very complicated, so if for young teachers maybe is more suitable. "Sometimes we need PPT (PowerPoint) and I don't even know how to use that, so I asked my students to help me." **Respondent 12:** "Maybe I am not very good at preparation with the downloading stuff. I am not that good yet. So sometimes like for me, I need the younger teachers to help me" **Respondent 15:** "Most of the teachers here, we are not well equipped with the IT knowledge you know? We need some time to actually learn and to adopt with all these kind of things because we really don't know how to fix it." **Respondent 19:** "I think some teachers might struggle to understand how the platform works and may end up wasting class time trying to

	perform a simple task." **Respondent 23** "I think in my school some teachers, like old generation teachers they are not familiar with internet? For them it is quite difficult to use online…" **Respondent 24:** "I think most teachers still prefer on traditional method. That is by conduction normal classes in school. Many senior teachers do not prefer to use online teaching because they are not good in using computers or those software programs, they might have negative perception towards ICT urmm.. online learning"

4.3.3.4 Internal Challenges-Teaching Experience. Based on the results from the interviews, none of the teachers mentioned whether their qualifications had prevented them from using ICT. However, 5 (31.25%) of the respondents mentioned that teachers' teaching experience could be considered as one of the internal challenges. During the interview sessions, the researcher found that the older teachers might or might not be willing to adopt ICT as they were primarily more inclined to the conventional way of teaching. Respondent 2 reported her observation that there were two groups of

experienced teachers while using ICT for teaching and learning purposes: the first group of teachers preferred to use conventional ways of teaching because they did not like the technology stuff and another group of experienced teachers who were willing to learn ICT so that they could use it in their classrooms. Next, Respondent 10, with more than ten years of teaching experience, had a different point of view. She agreed that using ICT required teachers to have a basic knowledge of computers and technology. However, without the teaching experience, the respondent emphasised that even using ICT would not help the teachers to teach the students if they did not know what to teach; using movies in classrooms would become a mere movie day at school if the teachers were not knowledgeable in manipulating the ICT materials to teach English. The main purpose of integrating ICT in schools was to help the teachers and students virtually. Therefore, teaching experience plays a vital role in adopting new technologies in teaching and learning.

Furthermore, Respondent 11 found that teachers with more experience were not aware of using ICT and were not interested in new technology even though someone had talked to them about ICT. Nevertheless, respondent 11 felt that younger teachers preferred using the Internet in their lessons since they had ICT skills. Respondent 14 mentioned that some senior teachers were still comfortable teaching conventionally and found it uncomfortable to use computers to teach their students. In addition, when asked whether their teaching experience had prevented the older generation teachers from adopting ICT in their lessons, Respondent 15, with more than ten years of teaching experience, disagreed by stating that the problem in adopting technology into their teaching was not caused by the senior teachers' rigid views about new

ways of teaching but due to fossilised habit of teaching traditionally. The respondent expanded her answer by saying that traditional teaching was more of a system than a method for senior teachers. When they were asked to break that system to favour the new technology, it went against their belief, unlike the new teachers who came into the technology-led teaching field of the 21st century. Thus, teachers' teaching experience might not be the main problem that prevented them from using ICT; instead, they were influenced by their attitudes. Nevertheless, when teachers had enough skills and knowledge of the technology, it would be much easier for them to use ICT tools during their lessons.

Table 24

Internal Challenges- Teaching experience

Number of teachers	Excerpt from transcript
5 (20.83%)	**Respondent 2:** "This is from my observations, some of our very experienced teachers. Actually there are two groups of these kind of teachers, some they, because they are too experienced, so they are too used with their conventional way of teaching, so they don't really like technology stuff, but another kind of teacher right, they are experienced but they are willing to learn all these, so they will come out with their Power Point slides all these to show in the classroom." **Respondent 10:** "Even though you are good in using all these computers, if we don't have

	experience, is quite difficult to teach also. So, the students will take it as having a movie. They don't really know what is being explored out. So it still needs experienced teacher to explain." **Respondent 11:** "Teachers with more experience like in our school we have teachers with twenty, twenty five year experience, but they are the older generation, so they are not aware of the technology and they don't know how to use it and all that." "So when we talk about the technology, internet and all that, they are not interested in that because they don't have the knowledge about that, but I feel like the teachers in this generation they still prefer to use internet and yes, they know about technology" **Respondent 14:** "Some senior teachers, they are very comfortable in teaching conventional way and they find it very awkward to use computer, to teach." **Respondent 15:** "I think we do not have problem with the senior teachers, because they already used to it, this is in our system. So we have to follow the system,

	we couldn't break it. You like it or you don't like it, you have to use it. So, automatically you have to learn but those junior teachers who are newly entering in our JC (Just English Centre) system right? So it will take time for them to learn and to get to know what all these things (are about)."

4.3.3.5 External Challenges- Insufficient Internet Coverage. Besides the internal challenges mentioned above, there were also some external challenges which might prevent the teachers from using ICT even though they were aware of the advantages that ICT provided. During the interview, 50% of the English teachers mentioned that poor Internet connection was their most significant challenge in using ICT in classrooms. Respondent 24 mentioned that online learning required good Internet coverage, which was lacking in most Malaysian schools facing poor and unstable Internet connections.

Respondent 1 surmised that the teachers who relied on ICT-based learning had to battle the persistent technical problems caused by poor Internet connection at schools, which Respondent 16 reiterated by complaining about the connection problem when she wanted to use the computer. Respondents 2 and 12 mentioned that there was no Internet connection in their classrooms, which required the teachers to use their mobile data for ICT lessons whenever there was a connection problem; this drained their mobile data very fast. Respondent 12 stated that it would be a problem when there was no Internet connection in the classrooms, mainly when they had speaking tasks in ICT-based lessons. Besides that, Respondent 7 also mentioned that the Internet

connection was their main challenge. The software used during Easy class would suddenly be disconnected, and the respondent needed to reconnect, which would impact her class management since the students would start talking and make much noise while waiting for the reconnection to be established. Similarly, Respondent 9 had complained about the Wi-Fi connection in her school, too, especially when she wanted to show online videos during the lesson. When the Internet connection became slower, the videos tended to buffer for a long time; a lesson planned to gain the students' attention failed as the students became bored waiting for the videos, and much time was wasted awaiting the videos to be loaded. In addition, Respondent 17 and Respondent 21 complained that the slow Internet connection interrupted their lessons, which was the main challenge they faced. Furthermore, Respondent 8 agreed that the Internet connection in her school was unstable, and teachers always had to devise an alternative plan to teach the students. Respondent 14 responded that whenever there was no connection, her lessons would be interrupted, and she had to have a backup lesson; if that did not work, she had to think of other ways to handle the situation. Similarly, Respondent 15 opined that when teachers planned to show some videos to students and there was a connection problem, they needed to have a backup plan, and the plan change would affect the lesson's purpose.

Table 25

External Challenges- Insufficient internet coverage

Number of teachers	Excerpt from transcript
12 (50%)	**Respondent 1:** "Sometimes even with the internet we have slow internet speed. So, if we would to base all of our learning on ICT based learning, then, technical difficulties may arise. And when they arise we have to think of alternative sources to conduct our lessons." **Respondent 2:** "I have to bring in my hand phone into classroom." "…we have to use our own wifi hotspot." **Respondent 7:** "..the main challenge is the connection you know. When in the normal classroom we have the projector pre-set up there, need to bring your laptop and then you need to connect using the software E-class, Easy class. So when you connect and after that you started your lessons then out of a sudden, you are in the middle of the lesson the connection will be lost, disconnected, and then you need to reconnect again, it will take time. When you are reconnecting the networks then students will ended up talking."

	Respondent 8: “Not really stable” “. So is like we have to always have another plan” **Respondent 9:** “Sometimes you won't get a Wifi.” “Especially sometimes we try to show them some videos, right? Because we want to attract, get attention from them. So it might be, at that particular moment, you started to loading, loading, loading, which I find is a little bit waste of time in that moment.” **Respondent 12:** “Sometimes like in this school, maybe we (are) talking about internet speed also is a challenge.” “Sometimes (it) is very slow. Internet is quite slow. We don't have like any internet connection in our classroom, so I wish we would have, especially for our language classes we have one speaking part.” **Respondent 14:** “The internet accessibility, sometimes there is no connection. So my lesson will be interrupted, so, because of that I have to have a backup lesson, if this doesn't work, I have to think of other way.”

	Respondent 15: "First of all, the internet connection, sometimes it is not stabilized." "So, when we have a plan of showing all these kind of videos or whatever to the students, and when we have a connection problem here, we can't do it, we have to change our plan." "We must have a backup plan and then we will actually affecting our, our goal of the lesson." **Respondent 16:** "When you want to use the computer, it is not working, the line problem, the connection problem and all." **Respondent 17:** "I am also facing this slow internet connection which will affect the smoothness of conducting online classes." **Respondent 21** "Internet connection. The main challenges. Sometimes when we are in the middle of the lesson and the connection will be interrupted, and my

	lesson will be interrupted also." **Respondent 24:** "…when we talking about online learning that means you need to have very good internet coverage, but as we know Malaysia internet connection is still not very good."

4.3.3.6 External Challenges- Lack of Technical Support from the School. Five English teachers mentioned the technical support provided by their school management. If school management did not provide enough technical support, it would be quite challenging for the teachers to use ICT-based learning to teach their students.

Respondent 2 said that the English Language Centre faced myriad technical problems and had to rely on its school management for technical support. Next, Respondent 6 also complained about the Easy Class system provided by the school management made the teachers wait five to ten minutes for the computers to connect to the system. Meanwhile, Respondent 11 mentioned that even though there was a Wi-Fi connection in the classroom, the technical problems hindered the teachers from using technology to teach their students. Respondent 14 also mentioned that sometimes the class had to be postponed when there was an issue with the projector. So, the respondent had to wait weeks for the device reparation and resume the class. Similarly, Respondent 15 was of her opinion that whenever there were technical problems, the technician hired by the school management would come and help her to fix

the issues; however, much time was wasted while waiting for the technician to identify and rectify the problems, which delayed her lesson completion.

Table 26

External Challenges- Lack of technical support from the school

Number of teachers:	Excerpt from transcript
5 (20.8%)	**Respondent 2:** "There are many problems with our computer all these. So we always look for them, for technical support. Especially our demand I mean, this English Language Centre. Our demand is high. So we always look for them, we always complain to them" **Respondent 6:** "Every time we have to spend about five to ten minutes or even more, setting up computers, connect it to system, ya. Sometimes the system like the Easy Class having problems, we have to restart many times before it can, you know, ya, connect." **Respondent 11:** "We do have Wifi access here in the classroom but we seldom use because of all technical errors, problems and all that."

	Respondent 14: "Sometimes when there is an issue with the projector, what I want to teach had to be postponed. So I have to wait for one or two weeks for it to get it done." **Respondent 15:** "I don't think so it is enough, especially when we are actually dealing with this kind of technical problems, we really didn't know how to actually fix it. We have like staffs here and every time when we are having problem with the IT service, we have to actually call them, asked them to come to the class and they will be actually helping us to fix it, and sometimes it will take a lot of time, so there will be delay on the lesson and I personally, I couldn't finish my lesson on time because of that."

4.3.3.7 External Challenges- Lack of Training in ICT. To fully utilise ICT in the teaching and learning process, training on ICT is required for the teachers to improve their skills and knowledge of using ICT in schools (Ang & Sandaran, 2020). Nevertheless, during the interview sessions, 13 out of 24 respondents indicated that the training provided by their school management was not enough. Respondent 2 stated that her school did not offer sufficient training for teachers, and they were not prepared to teach their students using

technology. Respondent 10 stated that there was still an improvement in teachers' training regarding ICT. Besides that, Respondent 11 responded negatively, stating the absence of training and technical support from her school management.

Respondents 3 and 6 answered similarly that the schools only provided training based on their Cambridge syllabus system, which was entry-level ICT training. The schools were keener on selling the books, as highlighted by Respondent 6, a male teacher with more than four years of teaching experience. Also, Respondent 9 mentioned that only the use of Smart Board training was provided, and this was the first and the last training the school offered regarding ICT. Similarly, Respondent 12 replied that the training provided was only based on the use of e-class, and the workshops provided were still focused on traditional methods. This indicated that using ICT in school was still far from encouraging. The respondent even felt that the trainers were not knowledgeable in training. Furthermore, Respondent 17 thought that teachers must be well-trained and should learn the basics of how they could conduct ICT to teach their students; however, it could not materialise with the insufficient training provided by the school management. Similarly, Respondents 21, 22 and 23 mentioned that although the school provided training for them, the training sessions were not related to ICT. This might also lead to teachers' lack of skills and competencies to use ICT in school. Lastly, respondent 14 stated that training was one of the challenges for the teachers to use ICT; therefore, training on ICT was needed to implement ICT in schools successfully.

Table 27

External Challenges- Lack of training in ICT

Number of teachers	Excerpt from transcript
13 (54.1%)	**Respondent 2:** "Maybe our current trend right, they require students, require teachers to, you know, to implement all this so called very high technological way of teaching, but we are not prepared. And the school doesn't really prepare sufficient training for teachers." **Respondent 3:** "We did attend this training for Cambridge, not the ICT, basic training for how to use the Cambridge syllabus system." **Respondent 6:** "So far I don't think so there is any (training) except that when the Cambridge books that is… they came and talked and provided with the pedagogy on how to use their book rather than using ICT. They are more interested in selling their books." **Respondent 7:** "I think so far (there is) is nothing but if the teachers are interested to go for training, maybe like a workshop or seminar, we can

	suggest to the authority, they will be willing to, I mean, to send us." **Respondent 9:** "so far, just specifically for ICT training to use in the classroom, no. But once they just gave training on how to use the Smart Board, that was the one and last they give. " **Respondent 10:** "There is still improvement in that, because they are given the basic, we can't go furthering you know, to search for other things, because for me, I am not very good in computers." **Respondent 11:** "We seldom go for any workshops related to ICT and all that, so I, I think none, there is no support, there is no training provided by the school management." **Respondent 12:** "So far when you asked me when it focuses on teaching and learning, the training here is not good. I mean like they just teach you on how to use the e-class, how to open this, which is already very general, which is we already know about it. So, I don't find

	anything useful here." "…the workshop it is like, how to say? is like normal, like sharing how they are teaching in the class and how the teacher should be doing this and that, they will be discussing about the traditional method." "I feel, yeah, the trainers themselves don't have enough knowledge to give the training." **Respondent 14:** "Training, yes. That is one challenge because our teachers here are not exposed to that. So we need basically, good training in order for us to handle that." **Respondent 17:** "There is not much training provided by my school. Well, I think teacher must be sufficiently trained and learn the basic usage of computer and how to access the proper websites, but the school didn't provide us with all these training." **Respondent 21:** "Hmm. actually no training provided for ICT.. urmm I mean, I

	mean just like normal training, traditional ..” **Respondent 22:** “…schools provide normal training only, no related to online or ICT.” **Respondent 23:** “Training provided.. urmm.. no training related to ICT. I think normal training also not that much.”

4.3.3.8 External Challenges-Lack of Accessibility to ICT. Seven out of twenty-four English teachers in this interview were of the opinion that the accessibility and privacy to use ICT in school were considered as one of the challenges. Most of them thought that if the teachers could not access the ICT tools or felt insecure, it might discourage them from integrating ICT into the education system.

First, Respondent 3 complained that the browsers were not up to date and the system provided by the Management was only accessible to teachers. Although this study was more focused on the use of ICT by teachers, it was still imperative that all students had the opportunity to explore ICT. Besides that, Respondent 7 thought that the previous method provided by the school management was easier to connect and did not interrupt her lessons. Respondents 11 and 15 mentioned that technical problems like non-functioning

speakers when playing videos or audio delayed the lessons. In addition, Respondent 18 also mentioned the speaker and headphones, which were not functioning well. Respondent 24 further elaborated on the malfunctioning projector that created complications in her lessons.

Furthermore, Respondent 15 mentioned that students needed to share the computer with their friends because not all the computers in the laboratories were functioning; the technicians needed to be summoned to solve the issue. Respondent 14 complained that although the E-class system in her school made it easier to show videos to the students, the system was not user-friendly. She mentioned during the interview that the system did not allow her to copy and paste the information or questions she wanted to use, and she needed to type everything one by one.

Table 28

External Challenges- Lack of accessibility to ICT

Number of teachers	Excerpt from transcript
7 (29.1%)	**Respondent 3:** "Internet connection is quite ok now but the problem is with the computers they prepare in classrooms, it is not that up to date and they still use this Internet Explorer (and) even they use Google Chrome it goes very slow." " (related to the MOODLE) teachers can use it, the problem is students can't access it, not all students can access it."

	Respondent 7: "The previous method I find it easier, you just go connect you pen drive, easier, convenient and then it doesn't, I mean, doesn't interrupt your lesson. Like here you keep on like disconnecting, you keep on connect, you also won't be able to finish your lesson whatever you learn for that day. That is the main problem." **Respondent 11:** "There will be a lot of technical errors and even when you want to play some videos and all that, the speakers won't be working on that day and students will not be able to listen to the audio." **Respondent 14:** "The E-class here is, to be very frank, you have to do the typing everything from scratch." "Okay, maybe you can display videos, but question based is still very difficult for me to handle. You don't feel like doing it. Beside doing it I can do something else, or I can just project the question or quiz using Power Point , which is much faster pop pop pop pop pop." **Respondent 15:** "Sometimes most of the computers won't be functioning well. So

	the students, we have to actually ask them to sit with their friends and share one PC. That is because of the technical problem. When we teachers, we are there, we don't know how to fix it. So, we have to call the IT management to come and help us." **Respondent 18:** "Sometimes the speaker may not (be) working, I think the headphones may not be working…" **Respondent 24:** "…sometimes the speaker is not working, and sometimes the projector is not working too."

4.3.3.9 External Challenges- School's Negative View of ICT. Schools' views on ICT are crucial factors that might influence teachers in integrating ICT at schools. If the school had opposing views on ICT, it might discourage teachers from using it in schools. In this study, three respondents mentioned that their schools' negative views of ICT integration hindered them from using ICT as a teaching and learning tool.

Respondent 11 felt that there was no full support from her school on ICT integration. Despite the respondent's observation about the escalating interest in ICT-based English lessons, the respondents' school principal's belief about the ineffectiveness of using ICT in classrooms made the ICT integration challenging to be executed. She also mentioned that a language lab was provided for multimedia lessons; however, the school closed it down in 2018.

Similarly, Respondent 12 talked about the opposing views of the school principal towards ICT because he could not see any positive results while using ICT to teach. The principal rejected the respondent's suggestion of making the Internet connection available in his classrooms for speaking activities due to the principal's misbelief in the futility of using ICT in lessons. Also, Respondent 14 opined that the school did encourage the teachers to use ICT, but there was a lack of adequate support from them.

Table 29

External challenges- School's Negative View of ICT

Number of teachers	Excerpt from transcript
3 (12.5%)	**Respondent 11:** "I heard that they had language lab when I entered the school, I can see the language lab, and we had Multimedia lesson earlier but, we have just abolish it this year (2018)." "Our principal personally felt that it was not effective for students, but I personally believe that the students were more interested in that lesson." "We talk to him and we explain to him but he is not willing to listen. We don't really see any support from the school because our Principal is not giving importance to the ICT learning yet." **Respondent 12:** "We don't have like, any internet connection in our classroom, so I

	wish we would have, especially for our language classes we have one speaking part. I did mention to my Principal, but he doesn't want to have the internet in the classroom." "He said like he couldn't see the results, but for us like we, teachers felt that the students will still learning, but at the end of the day, he said "no, we don't want it", so we cancel it la" **Respondent 14:** "I will say they encourage us, however, in terms of support, I don't seem to see in what way they are supporting us."

4.3.3.10 External Challenges- Lack of Infrastructure and Facilities Provided. In the interview sessions, 9 out of 24 English teachers mentioned that the lack of infrastructure and facilities provided discouraged them from using ICT even though they understood the advantages of using ICT in their lessons.

First, Respondent 2 believed that the school did not provide enough computers for the teachers, and she had to use her laptop; she also commented that although her school was categorised as a bigger school, the facilities provided were more suitable for like mid-sized CIHS. Moreover, Respondent 23 mentioned that schools needed to provide adequate computers or computer labs for English lessons, as opposed to the one computer in every class

provided by his school. Meanwhile, Respondent 24 also mentioned that the school did not provide them with adequate facilities to teach using online materials.

Next, Respondent 6, an older male teacher, replied that besides computers and projectors, other facilities like microphones should also be provided to the teachers by the school management, particularly for an older teacher like him. It was becoming hard for him to speak louder as he did not have strong vocals anymore. Sometimes, when teachers needed to show online videos or audio to the students, it was frustrating to find that the speakers provided by the school management were of low quality. Some respondents revealed that their schools had only three or four computers to be shared by all the teachers to do their work. Respondents 8 and 9 thought it was not enough for all teachers to share, and they had to queue to finish their work. Respondent 9 also mentioned that the teachers had to bring their laptops, a device that weighed considerably, to school; it added to the heavy load of books carried into classrooms. Likewise, Respondent 12 stated that there was insufficient space and computers for teachers to prepare their teaching materials. Moreover, Respondents 17 and 21 complained that school management's infrastructures and facilities were insufficient. Respondent 21 also mentioned that the teachers were forced to share a limited number of computers to prepare for their ICT-based lessons.

Table 30

External Challenges- Lack of Infrastructure and facilities provided

Number of teachers	Excerpt from transcript
9 (37.5%)	**Respondent 2:** "Although our school is big school right but facilities wise, all these are consider middle schools. So, I don't think (it) is enough and even I also use my own computer, my laptop." **Respondent 6:** "The school does not supply us with the microphones. They expect us to use our vocal chords, as for me, I don't think so I have that strong vocal chords anymore." "They do supply speakers but it is all low quality speakers, so the sound sometimes breaks and so high quality speakers I think is required. **Respondent 8:** "For teachers, we have three computers for us to use and share. Basically we don't have our own computer on our own table." **Respondent 9:**

	"We hardly use projectors, computers because the school doesn't provide enough computers for the teachers. For fifty teachers here, we only have like about three or four computers to be shared." We have to bring our own laptop, which is we find it quite heavy. Sometimes you have to carry the books, you have to carry the things with a laptop to the classroom." "So that is particularly very difficult like we have to wait for one teacher to finish his work, then only we can use." **Respondent 12:** "Another thing is because we only got one small room there for our preparation, so sometimes when it is full, it becomes a problem for us also, not enough space, not enough computers." **Respondent 17:** "The support from school management is not that enough yet. I mean, at present, the teaching facilities in schools may not be sufficient yet." **Respondent 21:**

	"Yes, they did provide infrastructures but I think it is still like...urmm not enough? Because all teachers have to share limited amount of computer in schools while they…while they want to prepare for lesson." **Respondent 23:** "School actually did provide computers but only for teachers. I know some schools have this urmm…urmm.. computer lab for English lessons? But my school don't have. The only thing they provide is like each classroom have one computer for teacher to use." **Respondent 24:** "…schools did not provide adequate facilities for teachers to use to teach by online materials…"

4.3.3.11 External Challenges- Students' Attitude on ICT. In this study, most English teachers had positive attitudes and perceptions of ICT integration in schools, and they were already trying their best to use ICT tools in their teachings. On top of that, eight teachers in this study stated that students' attitudes toward ICT might also play an essential role in fully utilising ICT in schools. In respondent 17's opinion, if the school would like to utilise ICT in their education system fully, students need to be much more disciplined and be determined to learn English online. If this could be solved, other problems would naturally be solved.

Respondents 3 and 14 had similar opinions about students' attitudes toward ICT. Both teachers concurred that good and poor classes acted differently while teachers used ICT to teach. Respondent 3 mentioned that students in good classes paid more attention, but the ones from weak classes paid less attention. Respondent 14 also mentioned that students in weak classes found it hard to concentrate because they did not see the importance of English. Respondent 21 disclosed that his students were not enthusiastic about learning English using ICT. Next, Respondent 14 stated her dilemma in motivating the weaker students to learn the language. In addition, Respondent 9 acknowledged the difficulties faced by the teachers in planning ICT-based lessons for weaker students.

Moreover, Respondent 12 thought that the senior students in her school had a negative attitude towards using ICT in their study; they complained that it was a waste of time because it was boring since the content was not gamified for education but merely digitalised for academic purposes. This was equivalent to using digital textbooks rather than following ICT-based classes. Respondent 4 mentioned that the lack of creativity and critical thinking in students would be direr in ICT-based classrooms as the students would be more prone to search the answers from the computer without thinking. She felt that students would go online and search for the information online, then copy and paste the exact sentences or paragraphs as their work. Although this practice might be advantageous for students in continuous assessments, it would be difficult for them to perform better in their summative evaluation, where surfing the Internet to obtain answers was not possible. Respondent 22 mentioned that students might be attracted to non-lesson-related things during online lessons.

Table 31

External Challenges- Students' attitude on ICT

Number of teachers	Excerpt from transcript
8 (33.33%)	**Respondent 3:** "Good classes they are ok, they pay attention to the videos. Look at the normal classes they prefer those animation resources, otherwise they will be making noises. Even we show them animations right, which (has nothing) to do with the topic they still talk about it instead of just listening." **Respondent 4:** "I think they are lack of creativity and also critical thinking. They will search the answers from the computer without thinking." "Instead of reading and then come out with new suggestions, new methods, they really copy and paste exactly what is written. Yes I can give you a high mark because no mistakes, no grammatical mistakes, but when it comes to exam, can you memorize that? When come to exam, they will fail." **Respondent 9:** "For the poor or weaker students, they find it difficult for them to come out with the idea or to use ICT. They really can't get (the) idea how they can implement the usage and so on."

	Respondent 12: "I would say like the students some they feel it is boring and maybe is a software program, so some feel like, there were senior students especially like senior three, they used to complain is a waste of time, so there were maybe they find the software was not suitable for them." "Maybe like if it's a more of a gaming stuff, maybe they will (be) more interested in learning. So because what we had was a very academic language thing." **Respondent 14:** "Like the good classes, I didn't see any issue for that. They are ok. They find it very interesting they want to know. The curiosity is very high, so concentration is good, unlike the bad classes. The kids, very difficult to concentrate. So I don't know how else to motivate our kids, maybe they don't seem to see the importance of English here." **Respondent 17:** "The main issue is whether the students have the heart and determination to learn English online. If and only if the students are disciplined and determined to learn online, other problems would naturally find a solution to overcome them." **Respondent 21:** "…students attitudes. Because I have students who feel that ICT is

	actually quite boring, like hmm.. wasting time? They didn't show their enthusiasm to learn and to improve their English by using ICT." **Respondent 22:** "…the problem I think will be the students.. students' attitudes? When getting these online classes, they will be attracted by other things which are not related to the lesson."

4.3.3.12 External Challenges- No Privacy on ICT. Three English teachers in this study mentioned the privacy issue which might hinder them from using ICT. In their opinion, if teachers felt unsecured while using ICT, they would prefer to conduct traditional classes. Respondent 5 mentioned the privacy of using ICT. When students use school computers to do their homework or search for information, they might accidentally click on private and confidential documents such as examination papers. Next, Respondents 15 and 16 had a similar opinion that if ICT were conducted in classrooms, only one PC would be controlled by the teachers; nevertheless, when the lesson was conducted in Multimedia Language (MML) classroom, every student was equipped with their computer, and it might be difficult for the teachers to control students' online activities. As students had the opportunity to access the Internet, sometimes they might surf inappropriate websites unrelated to their lessons. Lastly, Respondent 16 mentioned that the unrelated videos or information pop-ups during lessons would distract students' attention. Although the pop-ups were not a real challenge in conducting ICT-based

lessons, they would break the flow of the lessons as the students would discuss the pop-ups once they appeared on the screen rather than focusing on the lessons.

Table 32

External challenges-No Privacy on ICT

Number of teachers	Excerpt from transcript
3 (12.5%)	**Respondent 5:** " (it) is good to have your own computer because we have computer here, but sometimes the students may want to come and do a little bit of work ah, then err they may, you know? Accidentally click on to something private, like our exam question paper or anything." "Is not nice la. They have no intention but.. yeah is not private anymore." **Respondent 15:** "We couldn't keep an eye on all the students, so that is one of the main problems here. Unless if we are using it in class, in normal classes like this, we will be already having one PC here, this is for the teachers. So teachers will actually control the PC, but when the students have to go to the MML (Multimedia Language), in order to do all the exercises and so on, they are not under our control anymore because each one of them will be given one PC and they tend to actually do some other thing which is not related to their

	lessons.” **Respondent 16:** “When they are in the computer lab right? They have the access to the internet. So, they will try to Google something else which is not appropriate for them. So they get caught because the disciplinary department always comes to check.” “If I want to project and show them, sometimes err, err they-you know right? When you want to text something in youtube, the only thing which will distract them is the pop up, like videos some obscene videos and stuff like that right? So they get very distracted 'teacher, teacher, what is that?'. So you know, so only that thing, so I feel that err, it is not a challenge but it's very difficult to actually bring them back to our lesson, because they will talk more about that…”

4.3.4 Suggested solutions for the integration of ICT in school

Besides finding out teachers’ perceptions and all the challenges that might prevent them from using ICT in the teaching and learning process, this study also aimed to find possible solutions by inviting any suggestions from the teachers during interview sessions. Past research found that if proper Management of ICT tools was observed, the students would exhibit more tendency towards understanding and applying ICT tools (Zaheer et al., 2021).

During the interview sessions, most teachers suggested that ICT training and improving teachers' skills and knowledge of ICT were two notable solutions to be considered. Other solutions such as time and classroom management, teachers' attitude, sufficient Internet speed and coverage were also suggested by the interviewees.

4.3.4.1 Suggested Solutions-Time Management. As mentioned above, secondary school teachers were busy with many tasks, such as completing their syllabi, preparing the examination papers, and marking students' papers and homework. Most of them felt that ICT was time-consuming. Therefore, some teachers in this study felt that time management was essential to conduct lessons through ICT.

Firstly, Respondents 6 and 7 felt that if all the lessons were set up in advance inside the classrooms, then they would not need to spend five to ten minutes setting up the computers and connecting the lessons to the system. Respondent 7 also mentioned that she tried this method previously, and found it more accessible and convenient, which resulted in uninterrupted lessons. Secondly, Respondent 8 suggested that to avoid this problem, teachers could devise an alternative plan that could be implemented after school or after the lesson to accommodate the plan within the limited time available. Thirdly, Respondent 14 complained about the E-class in her school, for which the lessons were time-consuming to be prepared. She suggested that her school's IT department take actions to save time in preparing the lessons, like allowing the documents uploaded to the systems to be editable rather than forcing the teachers to retype everything from scratch into the system.

Teachers often think using ICT is time-consuming because ICT requires the use of systems like hardware and software. Therefore, most of the solutions mentioned in this table revolve around making it easier for teachers to use the system. For example, one of the participants mentioned that if all the lessons were set up in advance inside the classroom, they did not need to spend five to ten minutes of class time setting up computers and connecting to the system. Besides, the IT department of each school might need to do something to help the teachers save time when using ICT in classrooms so that teachers can easily make use of the class time to finish the lessons.

Table 33

Suggested solutions-Time Management

Number of teachers	Excerpt from transcripts
4 (16.66%)	**Respondent 6:** "Every time we have to spend about five to ten minutes or even more, setting up computers, connect it to system. Sometimes we have to restart many times before it can connect. So is quite a waste of time. So if it is already set up, we just plug it in…" **Respondent 7:** "The previous method I find it easier, you just go connect you pen drive. Easier, convenient and then it doesn't interrupt your lesson. Like here you keep on like disconnecting, you keep on connect, you also won't be able to finish your lesson for that day."

	Respondent 8: "If let's say the teachers manage to prepare everything instead of using Wifi in classroom, because we might not know, so better have another plan. So in order to avoid this distraction, might prepare it after school or after the lesson. So, (be) prepared and then go into the class and conduct the lesson to avoid time constraint." **Respondent 14:** "The IT department has to do something in order for us to save our time, you know for example, you need just copy and paste the document, you just do the editing, you are done, instead of just typing from number one to number twenty."

4.3.4.2 Suggested Solutions- Change of Attitude. Teachers' attitude was one of the critical factors for the school to utilise ICT in teaching and learning fully. In this study, only 3 out of 16 English teachers suggested changing teachers' attitudes toward the use of ICT.

Respondent 11 thought that the teachers who preferred to use the traditional method needed to acquire more knowledge on ICT to build their interest first. Furthermore, Respondent 13 suggested that teachers must change

their mindset to accommodate the shift in the education sector where virtual platforms are rigorously used. Respondent 16 also suggested that teachers with more teaching experience must try to accept ICT integration in schools as ICT would ultimately take over traditional teaching. They should change their mind and learn to accept them. In addition, Respondent 17 thought that teachers must learn and understand the problems and issues while using online learning to teach their students, while Respondent 19 thought that teachers should not reject the idea of online learning which might affect the future of education. Lastly, Respondent 24 mentioned that senior teachers who still prefer traditional teaching methods need to change their perceptions of ICT and adopt online learning at schools.

Table 34

Suggested solutions- Change of attitude

Number of teachers	Excerpt from transcripts
6 (25%)	**Respondent 11:** "I feel like some teachers they still prefer the traditional method of teaching, so I think first they should create the interest among the teachers first, they should have more knowledge on that." **Respondent 13:** "I think it starts from the teachers. The moment you change your mind-set, then you will be requesting for all this infrastructure and facilities on the online based learning. They need to change their mind-set, because, in the future, not even future, even

	currently even now, everything is already online based." **Respondent 16:** "Some people, if they have so many years of experience right? They might not agree with this, but at the same time, I think they should also come to a point where (they have) to accept that. Maybe they have to change the thinking or maybe they have to accept that ICT is actually taking over our traditional classroom teaching. **Respondent 17:** " I think all teachers, including the headmaster, must first learn and understand all the problems and issues in online learning such as internet connectivity problem, slow wifi connection or any other hidden problems that might affect students interests or their keen involvement in online learning." **Respondent 19:** "Well, (the) school should provide training packs both extensive and simplified versions for teachers. I think teachers should also not reject.. reject the idea of online learning and urmmm should embrace(?) the idea and motion that this is how future education could happen." **Respondent 24:** "For senior teachers who are so use to traditional teaching method, that is by conducting classes, they must change their

	perception urmm to adopt ICT online teaching…”

4.3.4.3 Suggested Solutions- Improvement in Skills and Knowledge. In this research, the results indicated that teachers, especially older generation teachers, lacked skills and competence in using ICT. During the interview sessions, five English teachers suggested that teachers must improve their skills and knowledge of new technology.

Respondents 7 and 9 suggested that teachers must improve their skills first to use ICT in their classrooms. Respondent 9 also mentioned that schools needed to provide ICT facilities when all teachers had improved their skills. Furthermore, Respondent 10 opined that knowing how to teach using ICT would enable teachers to deliver practical lessons. Besides that, Respondent 15 replied positively that 21st-century education required teachers to have skills and knowledge in using ICT tools. Similarly, Respondent 16 also mentioned that in this new technological era, teachers had to put in tremendous effort to learn more about the use of ICT.

Table 35

Suggested solutions- Improvement in skills and knowledge

Number of teachers	Excerpt from transcripts
5 (20.83%)	**Respondent 7:** "I will say teachers need to improve their skill, only then they can practice. If (it) is done in the same level also I think it wouldn't be a problem, but the thing, the teachers need to have the skill first, so that they can practice in their classroom." **Respondent 9:** "I think the teacher have to build up their skills." "Like you just providing facilities and the teachers are not building up their skills, (it) will not work out as well. So the teachers have to build their skills first, then provide necessary facilities for ICT according to the teachers' level then will be better. That's what I feel." **Respondent 10:** "How to teach first is more important. If we know how to teach and with ICT integration coming in, your lesson will be more effective."

	Respondent 15: "We are in the 21st century, technology is a must, we have to actually implement it in all the schools and if you want to actually implement it successfully in each of your classrooms, we need to know how to actually handle with this, this kind of gadgets and so on. We need to know how to, actually perform with it, because if you don't have knowledge about this computer PC or whatsoever, we can't do anything in the class." **Respondent 16:** "Now in this technological era, everyone is already using internet. I mean like videos, computers and all. So I think teachers they have to put effort in order to learn more."

4.3.4.4 Suggested Solutions-Sufficient Internet Coverage Provided.

Teachers and students will no longer depend on printed materials when integrating ICT tools into the education system. They can find many resources and information on the Internet (Akyildiz & Altun, 2018). Therefore, a stable Internet connection was an excellent solution to overcome the teachers' challenges in using ICT during their lessons. Nevertheless, only four respondents commented on this possible solution during interview sessions.

When other teachers were asked for suggestions to solve the connection problem, they had no idea about this.

First, Respondent 7 suggested that if the schools could provide them with an ICT room, lessons would not be interrupted even when there was any problem with the Internet. Next, Respondent 9 suggested that Wi-Fi should be upgraded from time to time, while Respondent 12 propounded that the Internet connection should be provided in classrooms, especially for language-speaking lessons. Respondent 15 commented that school management should ensure that the Internet connection was stabilised for the teachers to access information. In addition, Respondents 17 and 21 mentioned that a stable Internet connection would prevent the lessons from being interrupted. Lastly, Respondent 24 gave his opinion that the Government or Internet service providers needed to develop better Internet infrastructures because Internet coverage is the most important aspect of conducting effective online learning.

Table 36

Suggested solutions- Sufficient internet coverage provided

Number of teachers	Excerpt from transcripts
7 (29.1%)	**Respondent 7:** "Maybe prepare an ICT room, so that we don't have trouble with this connection problem which interrupts the lesson." **Respondent 9:** "Maybe we can have better Wifi connections, sometimes

	upgrade the Wifi.” **Respondent 12:** “Because we don't have like any internet connection in our classroom, so I wish we would have (one), especially for our language classes (which) we have one speaking part.” **Respondent 15:** “The management they should actually make sure the connection is stabilized, because whenever we have an internet connection problem here, we couldn't access to all this kind of information and so on.” **Respondent 17:** “Ensure all the teachers and students are able to conduct or attend online classes without unnecessary interruption such as unstable internet connectivity and or missing any important information due to slow wifi connection.” **Respondent 21:** “Alright, the very first thing… the internet connection need..needs to be upgrade, or else the lessons will be

	interrupted.” **Respondent 24:** “I think the most important is to improve internet coverage. Government or those internet service providers are able to develop urmmm.. better internet infrastructures.”

4.3.4.5 Suggested Solutions- Technical Support from School Management. As stated in the study by Sentance & Csizmadia (2017), if there was no technical support, it might lead to technical problems, and teachers would be unable to use computers in their lessons. In this, 5 out of 24 English teachers suggested that school management must provide technical assistance to teachers.

Respondent 11 thought teachers should be able to use the computer and projector with the speakers in the classroom. As computers and projectors were essential ICT tools used in classrooms, the school management had to ensure that all these were well-functioned. Next, Respondent 12 thought that school management played an important role in ICT integration and that they should maintain and upgrade the ICT tools to benefit teachers and students. Parallelly, Respondent 14 stated that school management had to inspect the ICT tools frequently to ensure they were in good condition so that any technical difficulty could be avoided. Respondent 20 suggested that school management create an IT department or help desk to support teachers using ICT to teach

their students. Furthermore, Respondent 15 commented that time would be wasted when the computers were not functioning well. Therefore, all computers should be well maintained.

Table 37

Suggested solutions- Technical support from school management

Number of teachers	Excerpt from transcripts
5 (20.83%)	**Respondent 11:** "First the teacher should be able to use the computer and projector with speakers in the classroom." **Respondent 12:** "I think the school itself has to play a big role in this. I think the school has to encourage ICT (teaching) and then to maintain it and also to keep on upgrading it, so that to benefit the teachers and students." **Respondent 14:** "Frequent inspection. At least weekly, they come and check whether the condition of, what do you call this, the tools, are in good conditions. If they do frequent inspection, then we won't have the issues."

	Respondent 15: "All the computers should be well maintained. Sometimes, some computers will actually functioning weakly, some it will be actually working, functioning very slowly, so a lot of waste of time there." **Respondent 20:** "…to create an IT department or help-desk, to support the teacher to run this ICT online classes."

4.3.4.6 Suggested Solutions- ICT Training Provided. As mentioned above, some teachers commented that their schools did not provide enough training to ensure everyone had the skills and knowledge to use ICT. When teachers do not know how to use ICT tools, they might feel unsure and decide not to use ICT tools in their lessons, or it might lead to a negative perception of ICT integration in schools. During the interview sessions, 10 out of 24 interviewees indicated that ICT-related training was significant for ICT integration.

Respondent 2 suggested that besides training the Cambridge syllabus, school management needed to offer other training related to ICT for teachers. Additionally, Respondent 6, a male English teacher, thought that a workshop plus seminar was a must as it provided the training and practice to ensure that teachers learned something. Next, Respondent 9 thought that besides using PowerPoint slides, training like workshops or seminars on the use of ICT could

help teachers to use other methods to attract students' attention to learning. Respondent 21 mentioned that training should be provided as some senior teachers were not good at technology.

Furthermore, Respondent 11 suggested that teachers should create more awareness of ICT integration, and they were required to understand the benefits of using ICT. Similarly, Respondent 19 suggested that school management should provide both extensive and simplified training for teachers, and teachers should strive to comprehend ICT rather than rejecting it without familiarising themselves. Furthermore, Respondent 12 suggested workshops would be more suitable than seminars as teachers could come out with practical ideas on how ICT could help students in their studies. Respondent 14 felt that the training provided by school management was not enough, so it would be better if teachers could attend monthly programs. Respondent 15 also suggested that teachers should be sent for special training to learn more about ICT skills. Respondent 17 suggested that schools needed to support teachers by providing enough training. Lastly, Respondent 16 felt that teachers should go for training on how to use Microsoft Excel and so on.

Table 38

Suggested solutions- ICT training provided

Number of teachers	Excerpt from transcripts
10 (41.66%)	**Respondent 6:** "Provide on the spot training and practice on what we have learnt and definitely a workshop plus the seminar (must) go hand in hand."

	Respondent 9: "Maybe they can propose some workshops or some seminars on the usage of ICT for teachers as well, like how do we implement ICT in our teaching, instead of just using PowerPoint slides, any other methods that can be used to get attention from the students" **Respondent 11:** "We are supposed to be given some training and all that. Like a workshop on how to implement ICT in our teaching. We have to be sent for more workshops (to) create awareness on the teachers first, how to use it and they should know the advantages of using the ICT first." "Even I myself, I'm not really, I don't really know how to use ICT, I only know few things, and I think I should gain the knowledge first…" **Respondent 12:** "My suggestion would be maybe more training, ok training for teachers, so that we understand what ICT is all about." "I think if the workshop is more of a hands on things, so,

	maybe that will be better because seminar we just listen only, so maybe workshops will (be) much suitable. I think at least with that, teachers will have some ideas also what ICT is all about, and how it can help us use it for our students benefit…" **Respondent 14:** "We do have training, but I would prefer that if you give us a longer, like monthly program, where we do hands on, You know, that will be much more effective." **Respondent 15:** "Teachers should be sent for the special training to get to know more about this ICT skill." **Respondent 16:** "Maybe they should teach us how to use Microsoft Excel, something like that, because PowerPoint, Words, we are quite…we can use that, but like Microsoft Excel is a bit difficult." **Respondent 17:** "School needs to give their support by providing enough training."

	Respondent 19: "Well, schools should provide training packs both extensive and simplified versions for teachers. I think teachers should also not reject ..reject the idea of online learning and urmmm should embrace(?) the idea and motion that this is how future education could happen." **Respondent 21:** "The last thing will be the training. Because.. because some senior teachers don't know how to use ICT this ..this kind of urmmm technology thingy."

4.3.4.7 Suggested Solutions- Infrastructures and Facilities Provided. During the interview sessions, five English teachers suggested that good infrastructures and facilities had to be provided for teachers to make sure that ICT could be fully utilised in the teaching and learning process.

Firstly, Respondent 8 felt that if her school could provide more equipment, such as laptops, each teacher would be more motivated to use ICT in classrooms. She explained that the teachers preferred to have their laptops. Respondent 15 suggested that school management must supply all teachers with well-functioning equipment. Next, Respondent 14 suggested that besides using a projector and PowerPoint slides, school management must allocate a budget to implement ICT in the teaching and learning process. She also

compared the use of ICT in her school with other international schools, which were more advanced in ICT teaching. Moreover, Respondent 7 mentioned that the ICT software introduced by the school management could help students to improve their vocabulary. Besides that, Respondent 6 felt that besides computers and projectors, high-quality speakers were also needed for the teachers because the speakers that school management provided were of low quality.

In addition, Respondent 21 suggested that facilities like enough computers should be provided for teachers. Next, Respondent 23 mentioned that schools needed to give their support by providing enough computers or setting up an English computer laboratory for students. Respondent 24 gave his opinion that school management should ensure that they could provide adequate facilities, such as an audio room or computer laboratory, for teachers and students if they wished to implement ICT programs at schools. Lastly, Respondent 17 suggested that schools provide students with enough computers because if students had to share the computer, it would affect the effectiveness of using technology to learn.

Table 39

Suggested solutions- Infrastructures and facilities provided

Number of teachers	Excerpt from transcripts
9 (37.5%)	**Respondent 6:** "They do supply speakers, but it is all low quality speakers, so the sound sometimes breaks and so high quality speakers I

	think are required.” **Respondent 7:** “Recently they introduce the ICT in class, they said they want to set up like a software for playing English game, I mean, word games. So they said they want to introduce sort of like a competitions for the students whereby which will help their vocabulary knowledge.” **Respondent 8:** “The school need to provide more equipment for us, then the teachers might have motivation to use ICT in classroom.” “You know, Individual computers. So that we (are) able to prepare it instead of depending on the school’s computers that they have provided. We prefer to have our own laptop if the school manages to provide us.” **Respondent 14:** “ I think the school management should at least put some certain budget, so students will be expose. You know, if you go to International School, they are much more far ahead. So I think the school management should look into that now, instead of just using projector and slides, like what else we can do in ICT.”

	Respondent 15: "I think the school management should actually supply us with the well functioned equipment." **Respondent 17:** "School needs to provide adequate facilities for students, for example one student must have one computer each in an online class. If too many students are sharing one computer, the effectiveness of learning is very much less." **Respondent 21:** "…the computers need to be urmm enough for every teacher to use…" **Respondent 23:** "School needs to give their support. Show their support. Like provide more computers? Or maybe set up English computer lab for students." **Respondent 24:** "If the school management wishes to implement ICT online program, they have to make sure adequate support is provided to the teachers as well as to the students. Like provide adequate facilities. Such as the audio room, computer lab."

4.3.4.8 Suggested Solutions-More Security on ICT. During the interview sessions, some teachers felt unsecured when they showed their students' online materials, such as videos, during the lessons. Therefore, it was essential to ensure that students would not be affected by inappropriate information. Respondent 12 suggested that language teachers were required to go for training and learn how to search for pertinent information. They had to learn to filter the websites and information they found and downloaded for their students. Next, Respondent 15 suggested that the school management update the software to prevent students from surfing inappropriate websites. Furthermore, she suggested that school management should update the latest powerful antivirus for the teachers since portable storage devices like pen drives were vulnerable to virus attacks, and the stored information could quickly be deleted upon infection. Similarly, Respondent 22 thought preventing students from surfing other websites unrelated to the subject while they were in the English Lab was vital. Respondent 16 suggested that she would download the videos before the lessons to avoid unnecessary information popping up and affecting students' attention. Lastly, Respondent 1 mentioned how her school managed to avoid problems in cyber security for teachers and students by allowing only the master computer to access the Internet, which would be the device controlled by the teacher; then, the teacher would disseminate the required information for the lesson to the students' computers, which were not equipped with Internet access. This enabled the teachers to block inappropriate websites, and students could not surf non-lesson-related websites during class. Lastly, Respondent 17 suggested that the

Ministry of Education should provide a solid server containing the necessary information to ensure standardised steps and procedures for teachers and students to enter the system when using ICT in their lessons.

The suggested solutions regarding the ICT infrastructure and facilities on ICT, such as hardware like a computer, projector, speaker or other hardware facilities, are provided in Table 39. However, the suggestions in this table are more focused on the safety of using ICT in schools. Schools should provide up-to-date software, and teachers should be aware of students surfing other websites that are inappropriate or not related to the lessons.

Table 40

Suggested solutions- More security on ICT

Number of teachers	Excerpt from transcripts
6 (25%)	**Respondent 1:** "Just to let you know, all of our MML (Multimedia Language) classrooms, only the teachers' computer has access to the internet, for the students' computer, all of them do not have access to the internet except for that particular system that we have." **Respondent 12:** "Maybe like for us language teachers, maybe you can provide us training like, maybe as I said download stuffs, maybe to filter which websites are good, or something like maybe we

	could learn how to distinguish which are good, which are bad, how to find proper slides, maybe, all these type of things la." **Respondent 15:** "If possible, they (management) should actually update a software as I told you earlier, which can prevent students from visiting on those unnecessary websites. If there is any software like, which can actually prevent them from visiting all this kind of websites, that would be better." "They have to make sure that all the computers are up to date with the latest software installation and so on, they have to make sure that they have powerful antivirus, because sometimes when anything in our pen-drive and we slot it in and our pen-drive is getting infected and all the information will be gone." **Respondent 16:** "Maybe we have to (use) computer safely, in order for us to, I mean, I mentioned the pop up thingy right? The obscene videos and all right? So maybe we should know how to, how to move the thing immediately before the student would see or maybe what I can do like usually what I do before I could put the things down in all the projectors. I will prepare the videos earlier. That means I don't need to, open in front of them, and I

	can straight away do it.” **Respondent 17:** “Maybe the Ministry of Education must provide a very strong server to contain all the necessary information and ensure there are standardized steps and procedures for teachers and students to enter the system.” **Respondent 22:** “The most important thing is to solve like .. prevent students from surfing other websites when they are in English Lab.”

4.3.4.9 Suggested Solutions- Classroom Management. Four out of 16 respondents gave their opinion on classroom management while using ICT tools during the lessons. Respondent 1 mentioned that her students understood their responsibility of studying and acknowledged that their school would be the only place to provide the chance for them to use online learning; as a result, most of them paid attention while she used ICT to teach. Next, Respondent 9 suggested that while waiting for the websites to be loaded, teachers had to devise impromptu ideas to prevent the students from making noise. Moreover, Respondent 11 suggested classroom management during ICT-based lessons would be easier with smaller groups compared to the existing large classrooms of forty-eight to fifty students. Similarly, Respondent 13 also felt that it was challenging for the teachers to take care of fifty or sixty students in a class. She suggested that if the school would like to implement ICT, which was more

student centred fully, they needed to limit the number of students in each classroom.

Table 41

Suggested solutions- Classroom management

Number of teachers	Excerpt from transcripts
4 (16.66%)	**Respondent 1:** "Before I conduct any lessons, I would want my students to understand why they are here. I make clear that the reason that they are here is for them to have an alternative way to learn. So with that in mind, the students they do understand that they have a responsibility. They do understand that this is where they have to pay attention, this is the only chance they got to use online learning, things like that and I would want my students to value the time that they have. **Respondent 9:** "When it comes to delay, loading and loading, they started to chit chat and so on. So at that particular moment, the teachers have to do something, find a way, how they can bring in the lesson in a different style or different manner, like impromptu idea must be there for the teacher." **Respondent 11:**

	" I think it will be better if it is in a small group, because in our school, we have forty eight to fifty students in class, so I feel like it is quite a lot, it will be difficult for you to monitor them as well." **Respondent 13:** "Must limit student in classroom for us to use the ICT. Definitely we cannot be handling with fifty five or sixty students in a class. It is a bit difficult. We can only do it like more on the videos and things like that, but for students to move from their places and have like group discussion where it is hundred percent on student centred (teaching), we need the limited number of students per classroom."

5.0 FINDINGS AND DISCUSSION

5.1 Summary of the findings

This study's questionnaires and interview results revealed that 66% of CIHS English teachers had positive attitudes toward implementing ICT in school. In their opinion, students were more attracted to the sounds and visuals used in PowerPoint presentations, online videos and images to teach their students. Using ICT in lessons engaged the students more compared to traditional classes. Reliability tests in both the pilot study and post-study indicated that the questions in the questionnaire had rugged reliability. The Cronbach's Alpha results from the pilot study and the ones administered for data collection regarding teachers' perceptions and challenges on using ICT were more than 0.7. The T-test results showed that teachers' perception of ICT integration in schools was not affected by their gender. The One-Way ANOVA test revealed that the teachers' perceptions would not be influenced by their teaching experience.

This study showed that only a minority of English teachers felt that ICT was a frustrating experience and was incompatible with English language teaching. This study also demonstrated that the school management readily provided basic computers, projectors and Internet connections. In some schools, the management encouraged the English teachers to use ICT and supported them with Smart Board and English Language Laboratory. The adequate facilities and support provided by the school management might help to build confidence and change the mindset of the teachers who perceived ICT usage in schools negatively (Kaur, 2019).

Although teachers in this study had a positive perception of ICT integration in teaching and learning, some challenges influenced them to choose to use or reject ICT in classrooms. The first significant challenge found in this study was the teachers' skills and abilities to use ICT, as schools did not offer the teachers enough training related to the use of ICT. Secondly, unstable Internet connection also hindered the teachers' desire to adopt ICT in class as they needed to establish the Internet connection during the lessons repeatedly. Thirdly, teachers in this study also felt that their school management did not provide enough technical support and facilities to utilise ICT in their lessons fully. Sometimes, the technical issues caused them trouble when they used ICT in the classroom. Besides that, due to the lack of class time, teachers could not finish their syllabus on time when they encountered ICT-related problems during their lessons, as the lesson flow would be interrupted. Therefore, most teachers preferred to use traditional materials to teach their students as they did not need to spend extra time to find online teaching materials.

The possible solutions from the interview showed that most teachers felt it was crucial for the school management to support the teachers in ICT integration. They should also provide appropriate training for the teachers on using ICT in teaching as the 21st century requires the teachers to have skills and knowledge of ICT. When teachers know how to use ICT to teach, the lessons will be more effective. Furthermore, sufficient ICT resources must also be provided for the teachers. Respondents in this research also felt that teachers with negative attitudes and perceptions of ICT should change their mindset and try to accept ICT as an effective teaching and learning tool.

Lastly, the theoretical framework, the TPACK framework from chapter two, aided the teachers in selecting suitable technological tools to teach specific content and achieve great success in teaching and learning (Naaz & Khan, 2018). The three elements in the TPACK framework - Technological, Pedagogical and Content - interacted with each other to deliver the technology-integrated lessons effectively (Joseline & Rowell, 2021). Furthermore, the TPACK framework helped schools integrate ICT and supported teachers in preparing and using ICT in schools (Noha, Ali & Fatimah, 2017). Therefore, the next section, item 5.2, in this chapter discusses the link between the TPACK Framework and the use of ICT in schools. The three elements from the TPACK framework interacted with each other, explaining the teachers' perceptions and challenges in integrating ICT in schools.

5.2 TPACK Framework and the use of ICT in schools

Past studies reported that the TPACK framework was adopted to help schools with ICT integration, support teachers in preparing and implementing ICT in the classrooms, and cover literature reviews related to ICT or using technology in education (Noha, Ali & Fatimah, 2017). The framework is significant in implementing ICT in schools as it helps address educational technology challenges and supports teachers in fully utilising new technologies in classrooms (Noha, Ali & Fatimah, 2017). The three elements (technology, pedagogy and content) mentioned in the TPACK framework are familiar to teachers. They will continue to be applied in their lessons (Noha, Ali & Fatimah, 2017). Teachers need to update their technical knowledge and are

required to understand relevant content knowledge. At the same time, they need to adapt their technological knowledge and understand how to convey this technology-infused content into pedagogical situations (Noha, Ali & Fatimah, 2017). Teachers must understand the concept of the TPACK framework to connect their technical skills and content into lesson plans that would attract their students' attention during lessons (Noha, Ali & Fatimah, 2017). The interaction among the three elements in this framework, Technological, Pedagogical and Content, are componently labelled as Technological Knowledge (TK), Pedagogical Knowledge (PK), Content Knowledge (CK), Technological Pedagogical Knowledge (TPK), Technological Content Knowledge (TCK), PCK as well as TPACK (Koehler & Mishra, 2009).

Technological Knowledge (TK) in the TPACK framework guides the teachers in using ICT software and hardware such as computers, projectors, speakers, and the Internet (Joseline & Rowell, 2021). This helps to strengthen teachers' skills and competencies in using technological tools to teach their students. In this study, senior teachers generally lack the skills and competencies in technology. If schools do not provide adequate and suitable training, teachers rarely use ICT tools to teach their students. Pedagogical Technology (PK) in the TPACK framework relates to teachers' teaching experience and professional knowledge in students' learning (Joseline & Rowell, 2021). As mentioned in this study, although teachers' teaching experiences will not influence their perception of ICT integration, it still stands as one of the internal challenges, as most teachers with more than 5 to 10 years of teaching experience will prefer to use traditional ways of teaching. Technological Pedagogical Knowledge (TPK) refers to the teachers'

technological knowledge that can be used in teaching and learning (Joseline & Rowell, 2021). It shows the teachers' abilities to use technology to perform classroom management skills at computer laboratories and how they could use the whiteboard to attract students' attention (Joseline & Rowell, 2021). Besides teachers' skills and knowledge of ICT tools, the external challenges mentioned in this study, such as technical support and accessibility provided by the school management, will also be considered the essential elements for ICT integration in schools. Teachers in this study mentioned the lack of technical support provided by their school management, which hindered them from adopting the technology into their teaching. Technological Content Knowledge (TCK) can be considered technological knowledge that can help teachers create new specific content to teach their students (Joseline & Rowell, 2021). This shows that teachers understand that using specific techniques can change how learners practise and understand concepts in specific content areas. Most of the teachers in this study used ICT to teach their students because they understood how ICT could help students improve their studies. If teachers cannot access the technology and ICT tools, or if they feel insecure, they will instead choose to use traditional methods like textbooks and workbooks to teach their students. Therefore, it is crucial to provide adequate accessibility and technical support for the integration of ICT in schools.

Content Knowledge (CK) in the TPACK framework refers to how teachers understand the subject but do not consider the subject of teaching (Joseline & Rowell, 2021). This refers to how teachers can understand the subject they teach and relate it to ICT-based teaching. Schools should provide more relevant training for teachers to ensure they can understand the subject they teach using

new ICT tools. Lastly, Pedagogical Content Knowledge (PCK) in the TPACK framework helps teachers to attract students' attention by coming up with exciting and memorable topics (Joseline & Rowell, 2021). This shows the teachers' skills, competence in using technology, and teaching experience in education. If teachers do not know how to use ICT to teach their students, they will have to rely on traditional methods. The TPACK framework is an ideal application, which is vital in the teaching and learning process and helps the delivery of technology-integrated lessons more effectively (Joseline & Rowell, 2021).

5.3 Teachers' perception of ICT

When discussing teachers' perception of ICT integration in schools, all the questions on teachers' perceptions in the questionnaire were categorised into different factors to enhance the understanding of the data analysis. Based on the questionnaire and interview results, teachers' perceptions of the integration of ICT in schools can be categorised into six factors:-

5.3.1 Teachers' positive perception of the use of ICT in teaching

The first factor in perception discussed the teachers' positive perceptions of using ICT in teaching. The teachers' positive perceptions affect how they think about using ICT and how it helps them prepare lessons and conduct interesting classes for their students. Gokhan (2017) reports that teachers with a positive attitude towards ICT view it as a source of knowledge and an excellent guideline provider in teaching and learning. At the same time, this study also shows that teachers believe in ICT as a tool that instructs them,

like teacher guidebooks. Therefore, when teachers positively perceive ICT, they will likely use ICT tools as teaching materials.

5.3.2 Teachers' positive perception of the use of ICT in learning

The second factor is about the teachers' positive perceptions of the use of ICT in learning, which mainly focuses on how teachers perceive ICT in helping to support students' different learning styles and personalise learning. Most English teachers in this study positively respond that students pay more attention when they use ICT to teach. Students show much interest in learning with ICT technology as it can support students with different learning styles and improve the quality of learning. Gokhan (2017) states that ICT is a source of knowledge in the learning process that teachers view as a collection of tools that contain knowledge in ICT-based classrooms. Furthermore, according to Jayanthi and Kumar (2016), ICT is used to teach the English language, as educators understand that ICT creates collaborative and independent learning environments for students to learn English more easily.

5.3.3 The effectiveness of ICT integration in school

The third factor in perception discussed the effectiveness of ICT integration in schools. When teachers have a positive perception of implementing ICT in schools, they understand the effectiveness of using ICT. More than 66% of CIHS English teachers agree that technology makes it easier to choose, evaluate and locate new information from different online sources. Teachers also agree that using ICT can make learning more effective, enhance students' motivation, and make learning more fun and enjoyable (Mahdum et

al., 2019). Implementing ICT in education helps teachers improve their teaching process and students enhance their learning effectiveness. (Hassan et al., 2016).

5.3.4 Teachers' skills and competences on the integration of ICT in schools

The fourth factor of the teachers' positive perceptions of using their skills and competencies in integrating ICT in schools is an essential factor that needs to be discussed. This means that teachers' skills and competence in using ICT help them assess and gather updated information, resources and advanced technological innovations based on specific tasks and their appropriateness. This further strengthens teachers' positive perceptions of the integration of ICT in schools. The opportunities offered by computers and technology require teachers to have better ICT skills and competencies. Results in this study reveal that most English teachers have the skills and abilities to use Microsoft Word, followed by the Internet and PowerPoint. Johnson et al. (2020) state that teachers who lack the abilities and competencies to integrate ICT into their teaching and learning process may find it difficult to properly utilise ICT in their classes, which leads to negative opinions on the use of ICT in education. Additionally, Johannes et al. (2020) mention that the research objectives regarding the use of ICT are related to pedagogical principles utilised to effectively apply ICT, as well as how teachers can be trained to use technology in pedagogically appropriate ways.

5.3.5 Teachers' negative perception of ICT integration in schools

The fifth factor aims to determine how teachers' negative perceptions influence ICT integration in schools based on findings that the barriers to using ICT or some other issues influence the teachers' perceptions of ICT integration. This study indicates that teachers with negative perceptions have little interest in using technology, which echoes the statement by Mahdum et al. (2019). On the other hand, more than half of the English teachers agree that the technology courses offered are insufficient.

5.3.6 Teachers' perceptions of traditional vs ICT methods

Lastly, the respondents mentioned their perceptions of traditional and ICT methods during the interview sessions. Most of the respondents in this study have positive perceptions of ICT- based online learning; however, they also realise that the traditional method could not be abolished. Previous studies have found that the perceived ease of use of technology influences the use of the technology itself because challenges encountered in utilising technology are likely to negatively affect one's behavioural intention in using it, which in turn affects the technology's actual use and acceptability (Daudi & Nzilano, 2019)

5.3.7 Gender vs ICT

In this study, only 40 male teachers, among all 180 respondents, answered the questionnaire. The T-test result reveals no significant gender difference in teachers' perceptions of ICT integration in schools. Both male and female English teachers have similar perceptions of the integration of ICT in

the teaching and learning process. They understand the effectiveness and are primarily aware of the use of technology in education. This reflects the statement by Muslem et al. (2018), which emphasises the lack of significance in the teachers' genders in implementing ICT in the teaching and learning process. The male and female teachers view ICT integration in classrooms positively. This contradicts the findings by Sankar and Gandhi (2016) that state that female teachers show less interest in using ICT in classrooms and seldom conduct ICT-based lessons for their students, which highlights a significant gender influence on ICT integration in education.

5.3.8 Teaching experience vs ICT

The One-Way ANOVA result in this study shows that teachers' perceptions of the use of ICT in school are not affected by their teaching experience. The teachers in CIHS in Malaysia have the same perception of implementing ICT in schools regardless of their teaching experiences. Teachers with different years of teaching experience in this study agree that using ICT helps them in the teaching and learning process. Similarly, recent research reveals no significant difference in teachers' teaching experience; no matter how many years a teacher has been in education, the teachers have the same perceptions of ICT integration in school (Muslem et al., 2018). In contrast, Basargekar and Singhavi (2017) indicate that teachers with longer teaching experience feel unsure about new technologies and view ICT integration in classrooms negatively, while the ones with only a few years of teaching experience are more passionate about using ICT as a teaching tool.

5.4 Conclusion on teachers' perceptions of ICT integration in schools

In conclusion, implementing ICT helps English teachers manage their classes and prepare teaching materials for their subjects. More than half of the respondents in this study have positive perceptions of the online resources and applications that are readily accessible for the subjects they teach. They find it easier to use computers and the Internet as practical tools for teaching. Teachers recognise that using ICT helps them enhance their teaching with updated materials available through online sources. Besides, T-test and ANOVA results in this study indicate that teachers' perceptions of ICT are not influenced by their gender and teaching experience.

Furthermore, this study also finds that technology supports teachers in organising their class time more efficiently and designing different classroom activities. Teachers in this study agree that ICT helps to encourage self-learning and transforms the education system from teacher-centred to student-centred. Samat et al. (2020) find that teachers should play a significant role in conducting enjoyable learning for their students as students' intention to use online learning can be predicted by intrinsic motivation. It is undeniable that online teaching materials and resources are up-to-date, and teachers can refer to the required information to design lessons for students to make them more attractive. In this study, teachers agree that ICT-based online learning enables learners to have better outputs. Students engage and interact more during their lessons and have gained a more comprehensive range of knowledge and information with the integration of ICT in the class.

Hence, it is agreed that using ICT tools in teaching helps promote and facilitate a new way of learning. The results above show that more than 50% of

CIHS English teachers perceive positively that using software, pictures, online tools, or applications will undoubtedly help support students in how they learn. Teachers believe that students engage more and gain a better and deeper understanding of the subject. Moreover, about half of the English teachers in this study have indicated that using technological tools promotes students' academic learning and increases their productivity. Furthermore, the effectiveness of ICT has made communication among teachers and between teachers and students more effortless and more convenient. The results of this study report that teachers believe that they find many interesting topics from audio, video clips and websites available online, and these attracted the students' attention during the English lessons. Hassan et al.(2016) focus on the teachers' acceptance of using ICT in classrooms and conclude that teachers believe the effectiveness of using technology in education increases students' interest and attracts their attention to the subject being taught, which prompts the teachers to transfer traditional lessons into exciting and fun topics for students.

From the results obtained above on CIHS English teachers' perceptions of using ICT in teaching, most teachers have acknowledged that ICT is an effective tool in teaching and learning. Teachers' perceptions of ICT integration in education are influenced by their knowledge of using technology. In this study, most of the English teachers in CIHS can choose and evaluate new online resources and information based on their suitability. Most of them can discuss problems related to online media with their peers and colleagues. More than half the English teachers state that it is easier for them to discuss the use of ICT with their students as most of them possess the skills and knowledge of

computer applications. When teachers have the skills and competencies to use ICT, they have more positive attitudes towards ICT than those who do not know how to use it.

Although ICT has the potential and advantages to provide support in teaching, and most teachers have positive perceptions of the use of ICT in schools, some negative perceptions influence teachers to adopt it in classrooms. It is noted that most of the respondents in this study have positive perceptions of the integration of ICT in schools and do not think using ICT is a frustrating experience. Eickelmann and Vennemann (2017) compare the ICT enthusiasts with partial ICT enthusiasts and conclude that partial ICT enthusiasts have negative attitudes toward the use of ICT in education as they are concerned that students will copy answers for their academic tasks from websites during ICT-based lessons that could result in students' poor writing skills. Teachers' negative attitudes are one of the challenges they face, which prevents them from using ICT and influences their perceptions of the implementation of ICT in school. ICT is considered one of the methods for teachers to teach their students, even if complete reliance on technology is not encouraged. Traditional teaching methods are still crucial for teachers to conduct face-to-face classrooms for their students. A combination of traditional methods and ICT-based online learning is a better option, as choosing only one way of teaching creates rigid classroom patterns and invites students' boredom. The challenges and barriers that prevent teachers from using ICT in their lessons are discussed in the next section, 5.5 challenges on ICT.

5.5 Challenges in ICT

The significance of ICT integration in schools has brought many opportunities for teachers and students in education. Hence, to fully utilise ICT in CIHSs in Malaysia, this study seeks to understand the challenges faced by English teachers. The challenges teachers face in this study have been categorised into internal and external factors. Categorising challenges into internal and external factors enables a better understanding of analysis that aids accurate identification of the challenge with significant impact on ICT integration in schools among the CIHS English teachers.

5.5.1 Internal Challenges on the use of ICT in schools

While using ICT, teachers are the ones who use ICT tools to teach their students, and they are the critical factor to utilise ICT in schools fully. They face many challenges based on their attitudes and perceptions, as well as challenges that are beyond their control. Individuals' ideas about their "capacity to overcome something" are classified as self-efficacy beliefs and fall under internal factors (Nazire & Ugur, 2020). First, the lack of class time is one of the reasons that teachers are unwilling to use ICT in classrooms, as they need time to set up all the tools before the class begins, and much time is wasted. Then, most secondary school teachers have a heavy workload as they must prepare the lessons, complete the syllabus, and mark students' homework and examination scripts within a limited period. Therefore, teachers in this study complain that their arduous tasks discourage them from ICT in classrooms because they are hard-pressed to complete the syllabus before the end of each

academic year; consequently, they have insufficient time to prepare and use ICT tools in their lessons.

Further observation reveals that students are more interested in lessons when teachers use ICT in class compared to traditional methods; however, they tend to make much noise while for the teacher to set up the ICT tools like computer and projector before beginning the lessons. This inevitably affects their concentration when the lessons begin. Teachers need additional class time to calm the students and divert their attention back to the lessons. Next, the integration of ICT requires teachers to have better skills and abilities in using technology in their teaching. This has caused the teachers' academic careers to become more challenging as they need to acquire more knowledge during their teaching tenure. However, as ICT has provided many opportunities in the teaching and learning process, most of the respondents in this study feel that the time needed to learn new technological tools does not affect their enthusiasm for using ICT. Besides acquiring skills and competence in ICT, teachers' attitudes are also considered critical factors influencing their willingness to adopt ICT in schools. In this study, most teachers show positive attitudes. Most English teachers indicate that if their colleagues hold negative perceptions of technology integration in schools, they are prevented from using ICT in their lessons. Most teachers understand the benefits of using ICT and are not influenced by others' attitudes and perceptions.

5.5.2 External Challenges in the use of ICT in schools

Apart from internal factors, there are challenges in using technology external to the teachers. The external challenges include a lack of ICT training, infrastructure and facilities, technical support, and Internet coverage, which are beyond the teachers' control when incorporating ICT in their lessons. First, senior teachers generally lack the skills and competencies to use technology; therefore, if schools do not provide adequate and suitable training, the teachers are hindered from using ICT in teaching. Most of the teachers in this study state that the training on ICT provided by school management is rather insufficient. More than half of the interviewees complain that the training provided by their schools regarding ICT is not helpful and does not help them to improve their skills and competencies in ICT.

In this study, teachers understand that by using ICT in teaching, they can show online video clips or pictures to their students to get their attention during the lessons; nonetheless, without a stable Internet connection, it is difficult for teachers to show the additional online materials to students in classrooms. Teachers in this study also mention that it is inconvenient and difficult to use ICT without a stable Internet connection when they need to use online materials during lessons. Furthermore, electricity is one of the significant infrastructures required to adopt ICT in the classroom.

In this study, the level of technical support by the school management in CIHS is relatively low. It discourages teachers from adopting ICT into their lessons even though they are aware of the great opportunities ICT offers in the teaching and learning process. The participants illustrate some technical problems, such as the non-functioning speakers that hinder them from showing

online audio or videos to their students. Without full support from the schools, it will be difficult for the teachers to utilise ICT fully. Under the circumstance, teachers in this study are afraid to use ICT during their classroom activities because the lack of technical support and regular ICT maintenance from their school management frequently lead to unexpected computer malfunctions. On the other hand, it is noted that 86 out of 180 English teachers or almost 48% of respondents in this study, feel that little access to ICT also prevents them from using ICT in schools.

The results of this study show that although teachers understand the advantages of using ICT in school, they cannot integrate it into their lessons when their schools view ICT negatively. A small number of teachers in this study mention that their school managements do not provide enough ICT facilities for teachers due to their lack of positive outlook towards ICT, discouraging teachers from fully utilising ICT in schools. Moreover, nine out of twenty-four respondents in this study mention that the computers and projectors provided by their school management are insufficient for them to explore ICT-based teaching further. Teachers must bring their laptops or share the computers with other teachers in school.

Besides, the interviewees of this study refer to students' attitudes as one of the external challenges which discourage them from using ICT in their lessons. They mention that when students do not show their interest and enthusiasm in learning with ICT, teachers are discouraged from using ICT in their lessons; they are also misled into adhering to traditional teaching methods as they assume the traditional methods deliver similar results as ICT-based teaching. In addition, students with negative attitudes about learning the

English language find it difficult to concentrate even when teachers use ICT tools in the classroom because these students are not aware of the importance of studying English.

Furthermore, three interviewees thought that the lack of privacy in ICT causes many problems if teachers use ICT in their lessons or at English laboratories provided by their school management for the students. Jamin et al. (2019) are concerned about the security of personal information in ICT like the Internet and social media; the researchers urge the related parties to be aware of the propensity to disclose their personal information to third parties. When it comes to adopting ICT-based teaching, the lack of privacy in ICT makes teachers hesitant to allow their students to use ICT for learning purposes; therefore, students should be aware of the privacy concerns about their personal information, especially when accessing the Internet. Leatham and Robertson (2017) conclude that despite encouragement from district school boards for teachers to use technology in classrooms, insufficient policies to monitor the privacy of students and teachers is a significant gap in adopting ICT in the teaching and learning process.

Furthermore, teachers in this study mention that when students are in a computer or language laboratory, it is difficult for one teacher to manage all the students, causing them to access inappropriate websites or ones unrelated to the lessons. Besides the challenges stated in the questionnaire, other challenges mentioned by the respondents during the interview sessions discourage the teachers from adopting ICT into their lessons. When the schools do not offer enough technical support to teachers or do not provide enough computer facilities for teachers and students in class, students cannot enjoy the

advantages of using ICT during their learning process. Most teachers are discouraged from using ICT due to the lack of infrastructure and facilities the school management provides. They cannot access computers with updated hardware and software.

5.6 Conclusion on the challenges in ICT integration in schools

Past studies indicate various barriers to ICT integration in schools. This research intends to investigate the challenges mentioned in previous studies and if they are still persistent in ICT integration. In addition, this study aims to discover any new challenges that CIHS English teachers face while using ICT in schools. For a more in-depth understanding, interview sessions are conducted. The challenges found in this study are categorised into internal and external challenges. The internal challenges include teachers' attitudes, skills and competencies, time, and teaching experience that influence the teachers' use of ICT in school. These external challenges include a lack of ICT training, infrastructure and facilities, technical support and stable Internet coverage.

In this study, the respondents claim that insufficient class time prevents them from using ICT in the classroom. Ang & Sandaran (2020) conclude that because of time constraints, more than half of the teachers are unwilling to use ICT tools in the classroom to teach their students. They claim they have to rush the lessons to finish the syllabus on time and have no time to waste in setting up the system as they are not ICT experts. Next, teachers' attitudes toward the use of ICT are considered one of the crucial factors in successfully implementing ICT in education. This study notes that a small number of

interviewees have negative attitudes towards using ICT to teach their students. They are more inclined to use traditional ways of teaching, reiterating Ramasivam and Nair's (2019) report that senior teachers do not prefer to adopt ICT tools during their lessons as they think that traditional methods are the best.

Furthermore, a lack of skills and competencies in ICT is also one of the barriers that hinder teachers from using ICT tools in their lessons, and this leads to reasons like schools not providing ICT-related training for teachers. A study investigating teachers' ICT skills in classrooms concludes that teachers' lack of skills in integrating ICT in their teaching due to the lack of training provided by school management is a significant reason that demotivates teachers from adopting ICT (Justice et al., 2018). The school management should organise regular training and workshops on ICT and its integration into teaching and learning to enhance ICT use as a teaching tool in classrooms (Justice et al., 2018). Furthermore, Omito et al. (2019) aim to find out teachers' computer skills in the use of ICT in public primary schools and observe a severely low number of government-funded ICT training provided to the teachers; the researchers recommend that teachers well-versed in using ICT to mentor their colleagues who are unfamiliar in navigating ICT in education.

In addition, lack of accessibility is another issue that schools and teachers must confront when implementing new technology in the teaching and learning processes, like insufficient power supply to the schools or computer labs. (Satveer, 2017).

Next, to successfully implement ICT in schools, it is vital to provide adequate infrastructure and facilities for the teachers. Nevertheless, this study finds that insufficient infrastructure has caused teachers to be hesitant to use

ICT tools to teach their students often. Ang & Sandaran (2020) mention that if the schools provide more facilities and the instructors equip themselves with more ICT abilities, they will undoubtedly employ ICT in their lessons, as they see the value of integrating technology into the classroom. In addition, the lack of technical support and less accessibility to ICT is a barrier that hinders teachers from using ICT. Teoh et al. (2021) note a similar incidence in their research where lack of accessibility to ICT hardware and software affects teachers' enthusiasm and motivation in using ICT in classrooms. Additionally, Suman & Damian (2019) focus on the challenges in using ICT in English as Foreign Language teacher education courses in Nepal and claim that when there is not enough finance for facilities, infrastructures, and access to ICT, educators cannot use the Internet or other technologies in classrooms when necessary. Next, Kamaruddin et al. (2017) aver that more than two third of preschool teachers have problems with technical support that make them reluctant to use ICT in teaching.

Besides the main challenges mentioned above, there are other challenges faced by teachers from different schools, including the opposing views on ICT by the school management, students' attitudes on the use of ICT, and less privacy in using ICT. Overall, the adoption of ICT in classrooms depends highly on teachers' attitudes and positive perceptions of the benefits of ICT-based lessons and the level of support the schools provide for integrating ICT. In this study, teachers are also requested to propose relevant solutions or suggestions based on their personal views to overcome the challenges they mention during the interview sessions, which are elaborated on in the next section.

5.7 Possible solutions to ICT

Saravanakumar (2018) states that ICT influences all aspects of life and is significant to education. ICT helps improve the quality of education by enhancing students' motivation to learn, promoting the results of basic knowledge, and strengthening teachers' training. Therefore, besides understanding teachers' perceptions and the challenges they face, this study also aims to find possible solutions that help teachers overcome the challenges in fully utilising ICT in 21st-century education. During the interview sessions, most teachers provide suggestions to solve their problems.

First, teachers in this study suggest that they must improve their skills and knowledge of ICT to have more confidence in using ICT tools to teach their students. Apart from this, school management plays a critical role in providing ICT-related training for their teachers. The advantages and effectiveness of ICT help teachers in the teaching and learning process and teachers with weak abilities in using ICT are required to attend more ICT training. One of the teachers in this study also suggests that a workshop plus seminar is significant as the training and practical sessions help the teachers to learn about ICT further. Another teacher in this study suggests that a workshop is more suitable for teachers as they can create more ideas on using ICT to help their students academically.

Similarly, Ratheeswari (2018) records that teachers must have the skills and knowledge to use new technological resources and tools. They need to understand the reason for using ICT applications and resources and how to use them to help students elevate their academic achievement. Teachers in this study also mention that by improving teachers' skills and competencies and

providing them with professional ICT training, they understand the importance of using new technological tools for students in their learning; the teachers can overcome the barriers they face in using new technology to teach their students.

Next, some teachers mention that poor Internet connection prevents them from using ICT in classrooms. Thus, the teachers expect the school management to provide a stable Internet connection and upgrade the existing Wi-Fi connection. One of the teachers proposes that school management should provide Internet connection in every classroom, especially for English-speaking lessons.

Furthermore, technical support, as well as infrastructures and facilities supplied by the school management, help teachers fully utilise ICT in teaching and learning. James Berok and Yunus (2019) conclude that school management needs to arrange adequate technical support and training on ICT for teachers to ensure that teachers use ICT in the teaching and learning process. The interviewees in this study suggest the importance of providing enough infrastructures and facilities for ICT use and the significance of school management ensuring that all facilities run smoothly by regularly checking and updating the hardware and software.

As stated in this study's quantitative and qualitative results, negative attitudes in teachers prevent them from using ICT-based learning in their classrooms. Hence, the participants in this study recommend those with negative perceptions of ICT to build their interest in adopting new technology in education, as ICT will eventually take over traditional ways of teaching and learning. Teachers should improve their technical awareness and understand the advantages of using new technology to teach their students in the

contemporary era by introducing them to helpful learning websites and applications for classroom activities. With the proper awareness of the benefits of using ICT in education, teachers can change their attitudes and reap multiple positive outcomes utilising ICT. Teachers' positive attitudes and perceptions of the integration of ICT in school motivate them to use technology in the classroom (Hassan, Ahmad & Rosnaini, 2016).

Furthermore, respondents in this study recommend that school management update antivirus software, which prevents students from searching inappropriate websites. Teachers also need to learn how to filter the websites and information they find before downloading them for their students. They must ensure that students are not affected by inappropriate information due to misuse of online sources. One of the teachers in this study also strongly promulgates providing Internet access to the primary computer used by the teacher, which accords control to the teacher in monitoring students' computer activities while minimising their chances of surfing inappropriate or irrelevant online content.

Lastly, teachers in this study also refer to the challenges of time management and classroom management while using ICT tools. As teachers must finish the syllabi within a tight time frame, the ICT facilities sometimes interrupt their lessons. One of the teachers suggests setting up the lessons in the system before their classes to reduce the waiting time to upload the lessons during the class. Another teacher also mentions that the IT department should help the teachers to lessen their work rather than burden them. Top et al. (2021) recommend easing teachers' workload with better organisation of teachers' administrative and academic tasks by the school management. Besides, school

management should provide flexible schedules and assignments for teachers so that teachers have the opportunity to incorporate ICT resources into the teaching and learning process (Top et al., 2021).

Furthermore, students need to understand their responsibility of being a student and dedicate their time to studying while acknowledging that ICT-based learning exposed to them in schools is the only chance for them to be acquainted with ICT in education. Smaller classrooms and small group discussions are suitable for the teachers to monitor every student. In Top et al. (2021) study, teachers must have general ideas while using ICT to improve teaching and learning. Contrary to the suggestions mentioned above, a minority of English teachers contribute suggestions to help complete the utilisation of ICT in school. One of the interviewees mentions that too many students in a computer laboratory complicate a teacher's class management, a problem that can be easily solved by reducing the number of students per class. Another teacher mentions that while conducting ICT-based online learning lessons, students should be aware of the purpose of adopting technology in classrooms to alert them to their responsibility as students so that they pay more attention to their lessons.

This study adjudges that the integration of ICT in CIHSs is influenced by the school culture, which includes the school's support for using ICT, teachers' self-beliefs, and motivation in using ICT for teaching and learning process. Most importantly, teachers must improve their skills in ICT and change their attitude towards adopting new technology in education. (Henderson, 2020). Additionally, school management should fully support the integration of ICT in school. Top management should encourage teachers to

use ICT in their lessons and convince them of the benefits ICT can bring (Le, 2020).

6.0 CONCLUSION

6.1 Conclusion

The 21st century sees a rapid surge in the development of technology like computers and the Internet in education; printed materials are fast becoming obsolete (Raja & Nagasubramani, 2018). ICT can change the quality of education and improve the learning process for teachers and students while creating a collaborative learning environment for teachers and students.

One of the Malaysian government's transformations includes using ICT in its education system as a teaching aid (Malini, 2016). Muthuprasad et al. (2021) detail that online learning changes traditional ways of teaching and learning as ICT-based classrooms offer many advantages for teachers and students. A past study by Ang and Sandaran (2020) finds that teachers are one of the main factors in integrating ICT in schools, and their opinions play an important role in fully utilising ICT in education (Ang & Sandaran, 2020). Teachers could utilise a large amount of data and information provided by ICT to teach in their classrooms (Akyildiz & Altun, 2018). Students can search for learning sources from different websites by using ICT and critically evaluate the quality of learning materials when they use ICT to learn (Akyildiz & Altun, 2018).

The main aim of this research is to determine the possibility of ICT integration in class. Before embarking on the research, it is imperative to understand teachers' perceptions of using ICT in teaching, followed by internal and external challenges teachers face while using ICT. Finally, participants

suggest some possible solutions overcome all the barriers. Local and global past studies aim to determine the effectiveness of ICT-based online learning in education; nevertheless, only a few researchers integrate ICT in CIHSs in Malaysia. This study, therefore, targets English teachers from CIHSs in West Malaysia. It intends to investigate teachers' perceptions and challenges while implementing ICT-based online learning based on their gender and teaching experience. This study concludes that more than two third of teachers in CIHSs in Malaysia have positive perceptions of integrating ICT in schools. Only a minority of teachers prefer to use traditional ways to teach their students. Based on the quantitative questionnaire results, this research summarises that male and female teachers share similar perceptions of implementing ICT in education. Besides that, their perceptions of ICT are not affected by their teaching experience. However, during the interview sessions, a small group of young teachers demonstrated that experienced teachers are more reluctant to adopt ICT in their classrooms due to their insufficient knowledge of ICT.

The challenges found in this study include teachers' lack of several aspects: time management, training on ICT, stable Internet connection, and technical support by the school management. These challenges prevent teachers from using ICT in the teaching and learning process. Using ICT as a teaching method is complicated and requires teachers to have enough skills and abilities to carry out their tasks successfully. Most teachers opine that if they do not possess the necessary skills and knowledge to use ICT in the teaching and learning process, it leads to unsuccessful integration of ICT in schools. In addition, school management needs to give their full support and encourage teachers to use ICT in their lessons. Some teachers claim that although they

have positive perceptions and willingness to use ICT in their teaching methods, the school management does not provide sufficient technical support or high-quality ICT infrastructures. Some teachers have also mentioned that as secondary school teachers, the amount of work hinders them from using ICT because they have no time to learn or prepare extra teaching materials besides doing the standard paperwork. Moreover, a minority of the teachers also state that using ICT is secure as students can accidentally visit inappropriate websites during the lessons. For these reasons, some teachers prefer to use traditional paper materials to teach their students to curb the hacking of sensitive personal information.

ICT provides students and teachers with more educational possibilities and opportunities (Daudi & Nzilano, 2019). It helps students to learn new knowledge by accessing, making choices, and establishing and interpreting all data and information they find online (Daudi & Nzilano, 2019). To find possible solutions, English teachers from CIHSs selected for the interview session are asked for their opinions on overcoming the problems and challenges they face when using ICT tools to teach. Most of them suggest that teachers must improve their skills first to teach their students more confidently using ICT. As stated in the Malaysia Education Blueprint (2013), teachers must have the knowledge and skills to use ICT. Integrating it into teaching and learning would help improve students' learning outcomes. This also helps teachers with negative attitudes toward ICT change their mindset and willingly use ICT during their lessons. Also, some teachers have pointed out that school management plays an important role in supporting teachers in integrating ICT. To fully utilise ICT in school, the school management should provide adequate

infrastructure and facilities. Some teachers in this study have suggested that school management must make sure that all the facilities provided are well-maintained and well-functioned.

6.2 Recommendation

The ICT integration in education provides teachers with opportunities to teach English effectively and enables ICT to be successfully implemented and fully utilised in CIHSs in Malaysia. Some recommendations are made in this study to achieve the aim of this research. A past study by Le (2020) suggested that schools should increase the accessibility of technology integration and raise the teachers' awareness of the integration of ICT into the teaching and learning process. Also, teachers need to learn about technology use and how to apply it to lessons (Le, 2020). The same researchers also suggest that schools must present integrated views of ICT applications and provide specific examples for teachers based on the premise of strengthening students' learning. Henderson (2020) conclude that teachers should be aware of the importance of ICT integration and upgrade their professional level. The teachers who are weak in using ICT should enrol themselves in ICT training programmes to integrate ICT in classrooms and replace the traditional teaching methods with attractive learning styles (Henderson, 2020. When teachers are equipped with sufficient knowledge of ICT, they are more confident in conveying the knowledge to their students by using ICT. Teachers must change their mindset and improve their knowledge, beliefs and the school culture to

implement effective teaching in schools with technology (Ang & Sandaran, 2020).

Nevertheless, the integration of ICT is undoubtedly expensive. A sound financial plan to integrate ICT is necessary for secondary schools to keep up with improvements and rapid changes in software, hardware and also networks (Wakgari & Ramesh, 2017) because ICT training and seminar, as well as infrastructures and facilities, are costly. Monira & Md. Shahabul (2019) conclude that to establish the integration of ICT in schools or institutions, innovation and renovation of infrastructures are very important because of their newness.

Monira & Md. Shahabul (2019) research finds that implementing ICT has a critical impact on the education system and school management. To secure a better future, government and school management should include ICT as a teaching material to improve education quality (Monira & Md. Shahabul, 2019). Besides the government's initiatives to promote ICT integration and strengthen its capacity in various areas, including education, schools must also put more effort into increasing the use of ICT among teachers, such as providing better ICT facilities in schools (Monira & Md.Shahabul, 2019). Moreover, effective classroom planning and its applicability are crucial in integrating ICT into the teaching and learning process (Le, 2020); therefore, school management must give their full support to the use of ICT in schools for their teachers when teachers are given full support on using ICT-based online learning in schools, their perceptions of ICT change, enabling ICT to be fully utilised in schools.

In conclusion, the environment to implement ICT in education should be technically, managerially, pedagogically, and technically appropriate (Hassan, Ahmad & Rosnaini, 2016). Leong et al. (2016) state that leadership is important in promoting and implementing school reforms through ICT's application in this information age. Qurat et al. (2019) conclude that ICT changes the traditional ways of teaching, and teachers in this century are required to be more creative. They need to learn new teaching methods, and the best way, currently, is to adapt this instrument of ICT to achieve a more effective education system with the new technology.

6.3 Limitation

This study mainly focuses on CIHS English teachers in West Malaysia; therefore, the results do not represent teachers of other subjects and other secondary schools in Malaysia. Furthermore, as CIHSs in Malaysia are established by the Chinese community, the research findings are not generalised to other schools or colleges because Malaysia is these institutions are constructed of a multiracial Malaysian population consisting of Malays, Chinese, Indians and numerous indigenous people, where each ethnic group holds to its religion, its own culture and language and its ideas and ways (Muthusamy & Farashaiyan, 2016). As this study employs questionnaires and interviews to collect data, time constraints are a significant limitation for the researcher as she needs to travel at least two times to the schools chosen for data collection. In addition, the researcher also faces difficulties in arranging a one-time session with all the teachers involved in the research due to each

teacher's conflicting teaching schedule. Furthermore, during the data collection, some schools were not enthusiastic about participating in the research and rejected the invitation for data collection under the pretext of not using any ICT tools in the teaching and learning process. Therefore, of the 39 CIHSs in West Malaysia, only 36 schools can be counted for sampling, and for data collection, only 12 CIHSs can be included in this study with a 95% confidence level. Lastly, data collection for this study has been administered in pre-Covid-19 CIHSs, the results of which may differ to varying degrees in post-Covid-19 CIHSs.

6.4 Future Studies

This study has used a quantitative questionnaire and open-ended qualitative interviews to determine English teachers' perceptions of integrating ICT, their challenges, and the suggested solutions. Nevertheless, this study's results are still insufficient to ensure that ICT-based online learning is fully utilised in the Malaysian education system. Apart from this, future research can focus on teachers teaching other subjects, such as Science or Mathematics, as their opinions may differ from those of language teachers. Besides that, after understanding the teachers' points of view towards the use of ICT, the focus can be shifted to students to investigate their attitudes toward ICT-based online learning. Furthermore, other instruments, such as participant observations, should also be included in future studies so that researchers can understand both teachers' and students' natural behaviours in using ICT-based online

learning in the teaching and learning process. Crossman (2017) justifies participant observation as a method of data collection in research by stating that the method helps researchers find out the exact information on how a program or system is operated.

6.5 Implication

The future education will undeniably become more complex, and students are required to receive more information (Saravanakumar, 2019); therefore, it is necessary to set up an interactive and exciting mode of study for students to make learning easy and enjoyable. This study, which focuses on the CIHSs in West Malaysia, is significant to educationists, researchers and school management to aid them in developing valuable guidelines to assist the teachers in overcoming the challenges of adopting ICT in the education system, especially in CIHS. A standard view asserts that ICT should be integrated, and specific models must be developed for teachers to improve student's learning (Ang & Sandaran, 2020). Ahmadi (2018) also states that using communication technologies has become essential and promotes the learning process.

Teachers' perceptions in this study show that the majority of English teachers in CIHSs have positive attitudes towards the use of ICT, and this invariably promotes and enhances the integration of ICT in schools in the long run. In addition, this study concludes that there are no gender differences between male and female English teachers in CHISs on the integration of ICT. At the same time, other research, such as the one conducted by Nizoloman (2019), illustrates male teachers' tendency to perceive ICT-based classrooms

more positively than female teachers. Furthermore, this study also delineates the teachers' perceptions of ICT in education are not affected by their teaching experiences, contradicting Basargekar and Singhavi (2017), who states that experienced teachers, particularly the old generation teachers, have negative perceptions of the use of ICT in classrooms.

Conducting this study helps to raise teachers' awareness in improving their ICT skills and the school management's awareness of the importance of teachers' improvement in ICT skills and competence. Although some education stakeholders still consider using a computer to teach as a potential threat, they should realise the truth of using technology to conduct practical lessons that motivate the young generation to learn (Malik, 2018). The results of this study have important implications to ensure that ICT can be successfully and effectively used in school. The challenges mentioned in this study can provide some valuable guidelines for CIHSs in Malaysia to understand the challenges faced by teachers when using ICT in schools to ensure that ICT-based online learning can be fully utilised in CIHSs in Malaysia. Besides those prevalent barriers such as poor Internet connection, lack of training on ICT, lack of infrastructures and facilities provided, and teachers' insufficient time to use ICT, this study also finds that students' attitudes and lack of ICT privacy influence the teachers in using ICT in the teaching and learning process. Hence, school management should better grasp their students' needs and attitudes towards integrating ICT in schools. This issue needs an in-depth exploration as the teaching and learning process in the 21st century has been dramatically changed because of the development of ICT (Amuko, Miheso & Neduthi, 2015).

Moreover, during the interview sessions, respondents in this study shared the possible solutions to overcome the challenges faced by teachers while using ICT in schools. Most of the solutions suggested by respondents focus more on the role of school management, justifying the report by Hassan and Mirza (2020), who state that teachers are the primary motivators for school management to implement ICT in school. Teachers' attitudes and willingness to use ICT in their lessons closely relate to how school management contributed to ICT integration. Most of the English teachers in this study suggest that school management should provide training on ICT teaching for those who are weak in using ICT tools. Besides this, school management should provide adequate ICT facilities and technical support for teachers using ICT in classrooms or multimedia rooms. Next, respondents in this study also expect the school management to provide a stable Internet connection to enable the teachers to show more online resources to their students during English lessons. Apart from the solutions revolving around the school management's provisions, teachers should change their attitudes and update their skills and competencies in using ICT.

ICT has changed the education system from traditional books to virtual forms such as videos, audio and other technological methods. Due to the necessities and conformity of today's era, the new trend in education management must correspond to the necessity of globalisation (Prymakova et al., 2021). Henderson (2020) state that it is crucial to integrate ICT into classroom teaching and to learn to improve the capacity of the country's education system; this helps to increase national education ranking globally and generate a better future workforce in the young generation. ICT has

undeniable potential to promote learning outcomes, which allow students to gain more up-to-date knowledge without being hampered by accessibility and distance restrictions, and, at the same time, strengthen students' thinking skills (Malaysia Education Blueprint, 2013). If ICT is integrated into schools properly from the beginning and adequate maintenance is provided, ICT-based teaching and learning would have achieved great success and significantly benefit teachers and learners (Henderson, 2020).

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Appendix A: Questionnaires

Faculty of Arts and Social Science

Dear Respondents,

I am a Master candidate from Master of Philosophy (Social Science), Universiti Tunku Abdul Rahman (UTAR); undertaking a dissertation in the area regarding the implementation of Information and Communications Technology (ICT) in Malaysian Education. The subject population will be the teachers in Chinese Independent Schools (CISs) in West Malaysia.

The purpose of this dissertation is to:

(i) Investigate teachers' perception on the implementation of ICT based online learning;

(ii) Investigate the challenges faced by teachers while implementing ICT based online learning in schools;

(iii) Recommend the possible solutions to overcome challenges while implementing ICT based online learning in schools.

This questionnaire is separated into three parts. Part A is the basic information and background of the respondents. Part B, which consists of 25 statements, has the intention to find out the teachers' perception of implementing ICT in schools. Part C, which consists of 10 statements, is based on the teachers' challenges while implementing ICT in schools. Respondents

are required to complete and sign the consent form if they agree to answer the questions.

All the answers will be kept private and confidential. Thank you for your cooperation and your response is much appreciated.

Instruction:

1) There are THREE (3) sections in this questionnaire. Please answer ALL questions in ALL sections.

2) Please be informed that in accordance with Personal Data Protection Act 2010 ("PDPA") which came into force on 15 November 2013, University Tunku Abdul Rahman (UTAR) is hereby bound to make notice and require consent in relation to collection, recording, storage, usage and retention of personal information.

Acknowledgement of Notice

( ) I have been notified by you and that I hereby understood, consented and agreed as per UTAR notice.

( ) I disagree, my personal data will not be processed.

Part A: Respondents' background/Details

Instruction: Please √ the most appropriate answer to the box.

1) Gender:
   Male
   Female

2) Teaching Experience:
   < 1 year 1-5 years
   6-10 years >10 years

3) Highest Academic Qualification:
   Diploma Degree
   Master PHD

4) School sizes:
   Large
   Medium
   Small

5) Skills and competences in the use of ICT: (answers can be more than one)
   Microsoft word
   Microsoft Excel
   Powerpoint presentation
   Internet
   Email

Part B: Teachers' perception on ICT integration in schools

Instruction: Please √ the box that best reflects your viewpoint about the statement.

1= Strongly Disagree, 2= Disagree, 3=Not sure, 4= Agree, 5= Strongly Agree

No.	Questions	1	2	3	4	5
6.	It is easy for me to manage a lesson by using internet applications.					
7.	I think that the internet applications and resources are available for my subjects.					
8.	I am aware of the opportunities that computer offer.					
9.	I believe that the communication tools (e.g., mail, forum, Blog, and chat) will make communication with my peers and students easier.					
10.	I can evaluate and select new information resources and technological innovations based on their appropriateness to specific tasks.					
11.	I think that I can use ICT for instructional design and class room activities more effectively day by day.					
12.	I can discuss diversity issues related to electronic media.					
13.	I think that ICT integration includes supporting various student learning styles and to personalize learning.					
14.	I believe that using content-specific tools (e.g., software, simulation, graphing calculators, Web tools) to support learning.					
15.	I think that using ICT in learning increases the interest of students toward courses.					
16.	I think that using ICT for instructional design increases the quality of courses.					

17.	I think that ICT usage makes it easier to prepare course materials.					
18.	It is hard for me to explain the use of computer applications to my students.					
19.	I think that there is inadequacy of the courses of technology offered to teachers.					
20.	I think technology makes effective use of class time.					
21.	I think I can use a variety of media and formats, including telecommunications, to collaborate, publish, and interact with peers, experts, and other audiences.					
22.	I think that using technology makes it easier to locate, evaluate, and collect information from a variety of sources.					
23.	I think that the use of technology tools and information resources for increased productivity, promote creativity, and facilitate academic learning.					
24.	I think that there is lack of interest of teachers in technology usage.					
25.	I could use ICT if I had online support on instructional technology design.					
26.	I believe that acquiring the skills to ICT integration in teaching will be easy to me.					
27.	I believe that using ICT will be a frustrating experience.					
28.	I believe that I can improve my English language skills using the benefits of ICT.					
29.	My peers often ask me for advice or information on ICT integration in instructional design.					
30.	I think that ICT is incompatible with all the lessons I teach.					

Part C: Challenges faced by teachers while implementing ICT in schools

Instruction: Please √ the box that best reflects your viewpoint about the statement.

No.	Questions	1	2	3	4	5
31.	Shortage of class time hinders me to use ICT.					
32.	There is no enough training provided for teachers about the use of ICT in teaching.					
33.	The insufficient internet coverage in schools prevents me to use ICT.					
34.	Little access to ICT prevents me to use ICT					
35.	Few ICT technical supports at schools discourage me to use ICT in classroom.					
36.	Society views about ICT discourage me to use ICT.					
37.	Colleagues' negative views about ICT hinder me to use ICT in the class.					
38.	School views about ICT discourage me to use ICT.					
39.	Time needed to learn using ICT prevents me to use ICT.					
40.	Requirements of qualifications discourage me to use ICT.					

1= Strongly Disagree, 2= Disagree, 3=Not sure, 4= Agree, 5= Strongly Agree

Thank you for your participation

Appendix B: Interviews Protocol

Faculty of Arts and Social Science

Dear Respondents,

I am a Master candidate from Master of Philosophy (Social Science), Universiti Tunku Abdul Rahman (UTAR); undertaking a dissertation in the area regarding the implementation of Information and Communications Technology (ICT) in Malaysian Education. The subject population will be the teachers in Chinese Independent Schools (CISs) in West Malaysia.

The purpose of this dissertation is to:

(i) Investigate teachers' perception on the implementation of ICT based online learning;

(ii) Investigate the challenges faced by teachers while implementing ICT based online learning in schools;

(iii) Recommend the possible solutions to overcome challenges while implementing ICT based online learning in schools.

The interview session is basically focused on investigating the challenges of implementing ICT based online learning faced by the teachers in education as well as recommending the possible solutions to overcome the barriers. Respondents need to answer all 7 questions in 30 minutes and all the

answers will be recorded. Respondents are required to complete and sign the consent form if they agree to answer the questions.

All the answers will be kept private and confidential. Thank you for your cooperation and your response is much appreciated.

Interview Protocol

Date:

Venue:

Time of interview:

Duration:

Interviewer:

Interviewee:

Respondents' Demographic:

1) Gender:
   Male
   Female

2) Teaching Experience:
   < 1 year 1-5 years
   6-10 years >10 years

3) Highest Academic Qualification:

Diploma	Degree
Master	PHD

4) School sizes:
   - Large
   - Medium
   - Small

Proposed Interview Questions:

1) Explain how Information and Communication Technology (ICT) based online learning helps students improve their English proficiency.
2) Describe the challenges you have faced while using ICT based online learning in schools.
3) Evaluate how your school management gives the supports on the use of ICT.
4) Discuss the trainings provided by your school management on the use of ICT.
5) Describe the infrastructures and accessibilities on the ICT integration provided by your school management.
6) Please propose any suggestions to overcome the challenges you have mentioned earlier.
7) In your opinion, is ICT based online learning the best method that we can use to help students to improve their English proficiency? Please propose an alternative, if any.

Thank you for your participation

Appendix C: Consent Form for Questionnaire

Faculty of Arts and Social Science

INVESTIGATING THE IMPLEMENTATION OF INFORMATION AND COMMUNICATION TECHNOLOGY-BASED ENGLISH LANGUAGE TEACHING IN CHINESE INDEPENDENT HIGH SCHOOLS IN WEST MALAYSIA

Dear Participant,

We invite you to participate in a research study entitled **INVESTIGATING THE IMPLEMENTATION OF INFORMAITON AND COMMUNICATIONS TECHNOLOGY-BASED ENGLISH LANGUAGE TEACHING IN CHINESE INDEPENDENT HIGH SCHOOLS IN MALAYSIA**. We are currently involved in a research project in Universiti Tunku Abdul Rahman. The purpose of this study is to identify teachers' perception and the challenges that will be faced by the teachers while implementing ICT in schools as well as suggest possible solutions to overcome the challenges.

The enclosed questionnaires (Teacher Perceptions towards ICT Integration: Professional Development through Blended Learning) by Qasem and Viswanathappa (2016) and (Integration of ICT in Language Teaching: Challenges and Barriers) by Salehi and Salehi (2012) have been designed to collect information on the perceptions and challenges of implementing ICTs based online learning in CISs Malaysia.

Your participation in this research project is completely voluntary. You may decline altogether, or leave blank any questions you don't wish to answer. There are no known risks to participation beyond those encountered in everyday life. Your responses will remain confidential and anonymous. Data from this research will be kept under lock and key and reported only as a collective combined total. No one other than the researchers will know your individual answers to this questionnaire.

If you agree to participate in this project, **please tick (√) the box below and a questionnaire will be handed to you.** It should take approximately **10 – 15 minutes** to complete. Please return the questionnaire in a box provided.

If you have any questions about this project, feel free to contact **the research team:**

Dr Joanna Tan Tjin Ai - tanta@utar.edu.my.

Mr Cheah Kok Sung - cheahks@utar.edu.my.

Thank you for your assistance in this project.

Sincerely yours,

Joanna Tan Tjin Ai

Principal Investigator

Please tick (√) one:

( ) Yes, I would like to participate

( ) No, I am not interested

Please return this form to the researcher

Appendix D: Consent Form for Interview

Faculty of Arts and Social Science

INVESTIGATING THE IMPLEMENTATION OF INFORMATION AND COMMUNICATION TECHNOLOGY-BASED ENGLISH LANGUAGE TEACHING IN CHINESE INDEPENDENT HIGH SCHOOLS IN WEST MALAYSIA

Dear Participant,

We invite you to participate in a research study entitled **INVESTIGATING THE IMPLEMENTATION OF INFORMAITON AND COMMUNICATIONS TECHNOLOGY-BASED ENGLISH LANGUAGE TEACHING IN CHINESE INDEPENDENT HIGH SCHOOLS IN MALAYSIA**. We are currently involved in a research project in Universiti Tunku Abdul Rahman. The purpose of this study is to identify teachers' perception and the challenges that will be faced by the teachers while implementing ICT in schools as well as suggest possible solutions to overcome the challenges.

The interview questions are in depth questions derived from the questionnaire. The enclosed questionnaires (Teacher Perceptions towards ICT Integration:

Professional Development through Blended Learning) by Qasem and Viswanathappa (2016) and (Integration of ICT in Language Teaching: Challenges and Barriers) by Salehi and Salehi (2012) have been designed to collect information on the perceptions and challenges of implementing ICTs based online learning in CISs Malaysia.

Your participation in this research project is completely voluntary. During the interview session, answers will be recorded by the researcher. You may decline to answer the interview questions. There are no known risks to participation beyond those encountered in everyday life. Your responses will remain confidential and anonymous. Data from this research will be kept under lock and key and reported only as a collective combined total. No one other than the researchers will know your individual answers to the interview session.

If you agree to participate in this project, **please tick (√) the box below and an interview session will be conducted.** It should take **not more than 30 minutes** to complete.

If you have any questions about this project, feel free to contact **the research team:**

Dr Joanna Tan Tjin Ai - tanta@utar.edu.my.

Mr Cheah Kok Sung - cheahks@utar.edu.my.

Thank you for your assistance in this project.

Sincerely yours,

Joanna Tan Tjin Ai

Principal Investigator

Please tick (√) one:

( ) Yes, I would like to participate

( ) No, I am not interested

Please return this form to the researcher