

# Challenges Faced by Teachers in Integrating 4<sup>th</sup> Industrial Revolution (4IR) Technology in Teaching English as a Second Language (ESL)

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## Abstract

The use of technology for teaching has become an integral part of success in the teaching and learning of the English language which has been demonstrated to be beneficial in many parts of the world. Technology improvements in schooling are exerting an increasing amount of strain and many teachers are facing challenges in integrating it in teaching ESL learners. Thus, the purpose of this qualitative study is to investigate the challenges faced by teachers in integrating 4IR technology in teaching ESL learners. In this context, the study has focused on critical discussion regarding 4IR technology. A qualitative research design is employed by involving 10 ESL teachers from different schools in the same district. Moreover, it has been found that technological implementation has huge benefits for increasing students learning and knowledge. However, several challenges are also associated with this implementation. The findings of this study stated that teachers face varieties of challenges in integrating 4IR technology in teaching ESL learners for example, internet connection, lack of exposure and lack of technology equipment. Theories such as diffusion of innovations and constructivism have been discussed that are supported the ESL learning process. The paper ends with a recommendation for future researchers who wished to delve deeper in the context of this study in terms of the usage of 4IR technologies among ESL teachers.

## Keywords

4IR, ESL Teaching, Challenges, Technology, ESL Teachers

## 1. Introduction

Fourth Industrial Revolution (4IR) is based on the fusion of technological advancements in the fields of robotics, the internet of things (IoT), quantum com-

puting, AI (Artificial Intelligence) and many more. The term was first used by Klaus Schwab in 2016, the founder of “Executive chairman of WEF (World Economic Forum)”. As discussed by [Hussien and Norizan \(2021\)](#), technological advancements have helped different aspects such as business, teaching and learning and many others. Usage of technological devices and software in teaching fields has benefited learners to increase their interest in learning. ESL learning is one of the trending teaching fields globally in growing economic countries ([Abd Rahman et al., 2020](#)). Moreover, the teachers and governments of concerned countries have been paying attention to increasing interest among students to learn more. In addition, 4IR technologies have been implemented by teachers to make their teaching more attractive. The most powerful influence on today’s educational scene is technology. Students are supposed to be prepared with abilities that will enable them to thrive in the period of industrial revolution 4.0, which will see significant advances in science and technology. According to [Alakrash and Razak \(2021\)](#), traditional curricula must be adjusted to make them more technology compatible as part of Education 4.0 and it should be emphasized more with critical thinking, problem solving, communication, teamwork, and inventive thinking abilities. Teachers must be willing to integrate technology into the English classroom if it is to be successful because teachers are considered a vital component in the classroom, ([Razak et al., 2018](#)). According to [Razak et al. \(2018\)](#), teachers are hesitant to include technology into the teaching of English language because they have faced numerous challenges in juggling two tasks at once which are integrating technology and teaching English language.

The fourth industrial revolution, which expressly presents new challenges and cures in changing the standard of living, is following together with technology. Implementation of technologies has been creating issues for teachers in Malaysia. These issues need to be discussed and highlighted and the present study focuses on the same. In some cases, it has benefited the educational institutions to improve teaching and learning, while in others it has created issues and challenges in terms of distraction among students, lack of technological knowledge and many others. Time consumption in the installation of software and hardware devices are another issue for teachers as they do not get enough time to teach due to excessive time consumption in installation. Without appropriate coordination and execution in terms of content distribution, teacher role and facility condition the use of technology in the classroom can be rather daunting, ([Alakrash & Razak, 2020a](#)). According to [Ramorola \(2013\)](#), the finding shows that the schools lacked the necessary resources, such as desktops, printers, and software applications for education that could incorporate technology into their teaching. This presents a difficulty to these institutions and educators as well, because students must work in groups using single computer, and there is large number of students in a class. This could lead to a chaotic situation in the classroom that might affect the teachers during teaching and learning. One of the teachers’ roles is by completing the syllabus at the end of the school year effec-

tively and sufficiently. Somehow according to Appavoo (2020), teachers possess anxiety of not finishing the syllabus on time because they believe that ICT-based education takes longer to prepare and implement. Next, teachers wouldn't be able to utilize new technologies to their full capacity unless they receive good teacher training on them, (Johnson, Jacovina, Russell, & Soto, 2016). Nevertheless, teachers, educational software specialists, school officials, academicians, and education technology professionals will all need to work together to integrate technology into the curriculum.

The most powerful influence on contemporary school scene is technology. According to Johnson, Jacovina, Russell, & Soto (2016), technological integration provides important challenges to teachers in teaching and learning, from the development of new technological tools to the adaption of adequate teaching and learning practices to accommodate advance educational resources. Bringing technology into teaching will give teachers opportunities for building peer-to-peer and student-teacher interactions, along with create a welcoming learning atmosphere for your students. According to Heinrich, Darling-Aduana, & Martin (2020), enhancing chances for peer-to-peer learning and sharing among teachers and students along with developing common instructional technology competencies may serve to minimize technical challenges and delayed teaching time.

Based on the above-mentioned discussion, it could be seen that there are issues faced by ESL teachers. Therefore, this study is conducted to explore the challenges in integrating 4IR technology among the ESL teachers in teaching ESL learners. The study has a huge significance as it addresses the challenges faced by teachers and management teams in the integration of technologies. It has been found that technological integration increases interest among students in learning (Faizah, 2018). The study will be effective and helpful for readers to understand the benefits of technological integration. Teachers and management teams in Malaysia and other developing countries where ESL is conducted will benefit from this study to understand the impact of technology integration in teaching. Moreover, the teachers will be able to know the positive as well as negative aspects of technological integration. The study is effective for understanding the needs of students regarding learning English as a second language. Especially after the outbreak of the pandemic, teaching had become a huge challenge for teachers as mentioned by Faizah (2018). Additionally, technological devices have already been practised for the teaching and learning processes of ESL. The purpose of this study is to investigate the challenges faced by teachers in integrating 4IR technology in teaching ESL learners.

## 2. Literature Review

### 2.1. 4IR Technology in Education

Fourth Industrial Revolution or 4IR refers to the age of intelligence in which continued development of automation and disruptive technologies have changed the conventional industrial and manufacturing processes. 4IR has developed a

way to describe blurring boundaries between biological worlds and physical and digital worlds. This is the fusion in terms of advancements in IoT, genetic engineering, robotics, artificial intelligence (AI) along with many other technologies (Alakrash & Razak, 2020b).

4IR is the collective force for various services and products that have become indispensable in this modern era. For instance, the GPS systems help individuals to get the fastest route for reaching a destination, recommendations from Google, Netflix, recognition face by Facebook and many others. 4IR technologies have been inviting revolutionary margins within industrial practices and help in progress the efficiency of people (Fox & Signé, 2021). In this context, 4IR has introduced several innovative technologies that have radically disrupted every sector of life and business.

#### **Augmented reality and virtual reality**

Augmented reality or AR merges with physical and digital worlds, while virtual reality or VR provides an immersive experience in a digital dataset. For example, several makeup applications such as L'Oreal and others allow users to try the products before buying them. That means the makeup products (Lipsticks and others) can be tried by consumers before they purchase the same. AR and VR prompt the engagement of students and help them to better understand the learning process (Parong & Mayer, 2018). It assists learners with real-time learning and sharing information-based systems that is aiding them to concentrate on the learning method of ESL better.

Apart from this, VR can also be used by teachers in distance learning concerning the post-pandemic situation (Arif et al., 2020). It can be effective for improving collaboration among teachers and students in ESL classes.

#### **3D printing**

3D printing enables businesses and organizations to print different parts or also in the case of construction industries for printing the concerned buildings. Moreover, in the teaching field, it has been used by teachers to develop in-depth learning experiences by students as mentioned by (Jerry & Yunus, 2021). Deep understanding regarding theoretical perspectives can be developed among learners with the help of 3D printing. As per Avelino and Ismail (2021), students will be able to learn the theoretical practice with dimensional parameters through 3D printings that can be beneficial for ESL students.

#### **Robotics**

Robotics considers usage of manufacture, design along with usage of robots for commercial purposes. As viewed by Amo et al. (2021), robotics enables learning mechanisms through artificial intelligence's base and thus the process of ESL learning will be easier to understand by the students. It has already been used by businesses for moving objects and in supply networks. However, it has also been found to be integrated into teaching fields to enhance students' engagement in learning processes.

#### **IoT (Internet of Things)**

IoT sensors are beneficial for monitoring different aspects concerned with the

physical conditions of medical wearable, cars along with other tracking devices that are inserted into parcels. Utilizing IoT learners will be able to understand the communication process with the best practitioners who are great in English (Ratna Rintaningrum, 2021). It helps to build a sense of English within students effectively and prominently. IoT can also be used in educational institutes that are based on monitoring, safety tracking, training, and many others.

As a conclusion, educators should be able to create interesting activities regardless with the type of technology used in their lesson. This is to make sure learners participate actively in the activity as they will feel motivated and perform better. Furthermore, teachers should be given enough training and exposure in using these advance technologies.

## 2.2. Integrating 4IR Technology in ESL Teaching and Learning

Integration of 4IR technologies is beneficial for ESL teaching and learning as it makes the teaching and learning process interesting which is crucial for students. In this context, different aspects of 4IR technologies have been integrated into the teaching and learning processes concerning ESL (Avelino & Ismail, 2021). Teachers, in this regard, have been using featured and short length videos for engaging students to put effort into improving their skills such as comprehension and vocabulary (Karthigesu & Mohamad, 2020). Videos are helpful for students to develop their speaking skills based on natural English. Young children enjoy animated movies as well as short cartoons and older learners can learn significantly with the help of videos and films regarding current events by news broadcasts.

Learning English can be frustrating and tough for students at some points in time. In this context, software applications on tablets and iPads can be effective and helpful for learners to practice English along with having fun during the activity and task. For example, applications such as Grammar Up enable students to test their knowledge in specific areas and topics. As discussed by Arif et al. (2020), the apps have also been found to be tracking the progress of students and allow them to skip several questions by shaking their devices or tablets.

Students can enhance their knowledge and skills regarding grammar, spelling as well as other skills of English through playing games on their mobile or computer devices (Chaka, 2020). Boggle and Scrabble are interesting games that help students develop their knowledge regarding spelling and grammar for learners of all ages. Some of the games can also be connected to interactive whiteboards to increase students' participation.

Web quests create huge fun for students that are based on building proficiency in English via the internet. Students are provided with tasks that rely on their knowledge regarding content along with grasping the English language for completion of the task. In this context, teachers can visit "Web Quests" for accessing databases and tutorials based on previously developed web quests.

Students acquire significant information with the help of experiential learning, yet field trips cannot be taken as an option in case of limited budgets of the school. In this context, digital field trips can be a great option for teachers to

help students acquire new information. Younger students in this regard can learn vocabulary through virtual trips based on “4-H Virtual Farm”. As discussed by [Amo et al. \(2021\)](#), 4IR technologies will be allowing students to learn the topic-related factors from communicating with others and the communication process has been enabled by these technologies highly.

Skype is a beneficial method for learners regarding the practice of their listening and speaking skills. This application can be effectively used by learners and teachers for the teaching and learning processes. This can also be used in the present scenario for ESL teaching and learning. As per the statement of [Abd Rahman et al. \(2020\)](#), Video conferences can be held with the help of this software application and students can be interacted with it. Moreover, a collaborative teaching and learning environment can be developed in ESL.

Overall, technology growth in the modern world is indisputably pervasive in nature, since it has become a part of everyone’s existence. Learners are not only encouraged as learners who obtain essential skills and information under the new learning vision, but they are also accountable for identifying sources that enable them to learn these skills and knowledge. ESL teachers are responsible for facilitating their students’ learners by offering them with the appropriate environment or equipment while also keeping track of their progress.

### 2.3. Challenges in Integrating 4IR in ESL Context

There are several challenges faced by teachers and management teams of educational institutions regarding the usage of technologies for ESL teaching and learning. Some of the challenges are discussed below:

#### **Misuse of technology by students**

The introduction of technology can give rise to negative impacts in terms of misusing technological devices and software. There is a huge possibility of misuse of technology by students and they can use it for entertainment purposes. In this context, teachers need to have significant knowledge regarding the usage of technologies in order to lock the devices of students at specific times when those are not needed for teaching purposes. As discussed by [Avelino and Ismail \(2021\)](#), technologies will contribute to misuse as students share misinformation that might be affecting other students’ learning processes. Moreover, the teachers also need to lock the system while making videos or presentations and when guest lecturers visit.

#### **High costs of required technological implementation**

The cost of the required technology has been found to be high and that can be a huge problem for management teams of the educational institutions. Sometimes due to higher costs students who belong to a lower income group are not able to learn ESL as they cannot pay much for learning ([Manan, 2019](#)). All the schools and institutions may not have sufficient resources for the implementation of the same that can create issues for teachers.

#### **Lack of technical knowledge and understanding among teachers**

Lack of technical skills and knowledge among teachers can cause a huge challenge in technological implementation and practice. Regarding this, prior to the implementation of technology for ESL learning and teaching management teams need to ensure that teachers know using technological devices or software (Chaka, 2020). Some teachers who are not able to handle such higher innovative technologies often face problems in supporting students through technological divisions (Avelino & Ismail, 2021). Thus, the process of learning is ruined, and students often face issues as their problems are not clear to the teachers. In this context, they need professional development before using advanced technology for teaching.

Teachers must be ready to assimilate technology into the English classroom if it is to be productive. Teachers are regarded as an integral part in the classroom. Even if the teachers face those challenges, they need to be able to find for solutions as it will affect their self confidence in using the advance technologies. Teachers who have lack of knowledge or confident in using technology need to receive more support and training in using technology in constructing their lesson.

#### **2.4. Theory of Diffusion of Innovation**

Diffusion of innovation theory has been proposed the patterns and speed at which any new innovative ideas, activities, products, or thoughts have been spread through a population. The main parameters of this theory are innovators, early adopters, early majority, late majority, and laggards (Sartipi, 2020). Innovators are playing to gather knowledge and spread the knowledge through innovations. Persuasion about the innovation has been carried through early adopters who adopt the innovation first. Then the early majority decided to implement those, and the late majority implemented the innovations (Sartipi, 2020). The last parameter laggard has been performed for confirmation of the innovations. In such a practice, a new idea spreads through populations and is adopted by the population.

In the case of the ESL process, teachers are adopting such new ideas to provide lessons through Innovative technologies such as 3D printing, AR, VR, AI and others have been utilized. Students have confirmed whether the technologies are helpful or not. ESL learning process has gained huge technological innovation and earlier the process of learning through utilizing such technologies.

Overall, the diffusion of innovations theory provides useful understanding of the process of societal change, as well as the essential traits that contribute to an innovation's effective diffusion. These include the value of peer-to-peer interactions and peer networks, as well as an awareness of the demands of various user groups.

#### **2.5. Theory of Constructivism**

The theory of constructivism has been addressing those learners are required to gather knowledge instead of just passively derived information. According to



Kimmons (2021), people's experiences have been worked out in favor of gathering new innovative ideas. It has been noticed that the ESL process required gathering some extraordinary knowledge that was infused with some social experiences. Moreover, teachers are social entities with whom all the innovativeness in the learning process has been emerging. Students are an experienced category who extracted knowledge from innovativeness. Utilizing such technologies students will be able to gather the knowledge in a better manner. Constructivism theory has supported the knowledge and experience gathering through utilizing technologies in the 4IR process.

To conclude, constructivism is growing more popular in today's educational environment. In essence, constructivism piques learners' interest in learning more about the world and how it works. The wheel will not be created by the students, but they will attempt to comprehend how it spins and functions.

### 3. Research Methodology

#### 3.1. Research Design

In this study, the researcher used qualitative research method. The researcher will conduct an interview with the participants involved in the research. Interviewing of selected individuals is a very important method often used by qualitative researchers. The reason for using the interview method is to enable the researcher to examine the challenges faced by the ESL teachers towards using technology in teaching ESL. By conducting this interview, the researcher can also determine the ways of overcoming the challenges faced by the teachers in using 4IR technology in teaching ESL. The interviewer asks questions directly to the interviewees and the responses were recorded and then were transcribed.

#### 3.2. Research Participants

Parahoo (2006, as cited in All Answers Ltd., 2018) stated that population is the total number of units from which data can be collected such as individuals (All Answers Ltd., 2018). Population can be understood as the targeted community or group of people which is involved or selected by the researcher for his study. Therefore, in this study, the population was the ESL teachers from schools in Malaysia. There were 10 ESL school teachers. These teachers are those who are only teaching English language and have background in education.

In this study, the sampling technique used by the researcher was random sampling technique for the assortment of the participants. The term "random sampling technique" refers to a number of different selection strategies wherein the sample members are chosen at random but with a known probability of being chosen. Random sampling technique is used to choose 10 ESL teachers from different schools. This means the researcher randomly chose 10 ESL teachers from different schools in a district.



### 3.3. Instrumentation

#### Interview Protocol

This research has also adopted the method of interview where the researcher selected the participants for an interview. Interview method is one of the ways to obtain primary data. Primary data is a data in which it was collected during the conduction of a specific research. Therefore, the interview was conducted through video call and phone calls due to the COVID-19 pandemic. The researcher prepared 5 written questions to the interviewees. This interview is to determine the challenges faced by the ESL teachers in integrating 4IR technology. In this context, the structured interview was used in which the objectives of the study were stated. In addition, the questions were well structured, planned and prepared in line with the objective of the study. This process fortified the participants to answer to the questions as precisely as possible (**Table 1**).

### 3.4. Data Collection

The interview was conducted through video call and phone calls due to the COVID-19 pandemic. A PowerPoint slide that consists of the interview questions were shown to the participants that were interviewed through video call by screen sharing. The researcher explained the need of each question before allowing participants to construct their thoughts. The video call was recorded for further reference. Meanwhile, there were participants who were interviewed through phone calls. The interview session was conducted by one-to-one session. Researcher took note on participant answers. The researcher then analyses the content of the interview verbal answers to ensure the data collected was accurate.

### 3.5. Data Analysis

The recent research assumed the important approaches in analyzing the output from the interviewees. The analysis contains data reduction, transcription of interviews, data display and conclusion drawing. The approach includes arranging the data in order to generate explanations and new finding. The data collected from interview will be organized and briefed on the challenges faced by the primary school teachers using 4IR technology in teaching ESL learners. The researcher then analyzed and construed the information provided by the informers in agreement with the objectives of the study.

## 4. Findings and Discussion of the Study

### 4.1. Introduction

The research findings of the data obtained are presented in this section. The interview is the primary source of information, which is supported with library research. The findings will be discussed in accordance with the study's research objective. The researcher categorized the understanding of the primary school teacher on 4IR technologies as follows.

**Table 1.** Interview questions.

No.	Interview question
Q1	What do you know about 4IR technologies?
Q2	How do you feel using technologies in teaching ESL?
Q3	How do you think using 4IR technologies can help in your teaching?
Q4	What are the challenges you have been faced when using technologies in teaching ESL?
Q5	How do you overcome the challenges that you have faced?

## 4.2. 4IR Technologies

The Fourth Industrial Revolution (4IR) signifies new ways in which technologies such as Artificial Intelligence (AI), digitization, automation, and Internet of Things (IoT) are entrenched in our daily life. 4IR technology has been integrated in education that has made the teaching innovative and creative. 4IR is an age of competitiveness which comes with enormous opportunities and challenges especially for the education sector. In the interview with respondents called Teacher A, Teacher B, Teacher C and Teacher D stated that 4IR is an advancement of technology that is used for teaching and learning. Teacher E and Teacher F mentioned that 4IR is the different kinds of tools used to make lesson more interesting and can be able to pull students' interest and attention. However, Teacher G stated that 4IR is capable to develop students' skills.

*"...using advance technologies tools in providing lecturing."* (Teacher A)

*"4IR technology is rapid change of technology. Advancement of internet, significant change in industrial world."* (Teacher B)

*"It is an advanced era which digitalizes everything including education."* (Teacher C)

*"About the use of advanced technologies in education, specifically augmented and virtual reality."* (Teacher D)

*"4IR technologies are things related to technology which is the varieties of tools like the Internet of things, Cobots, augmented reality and virtual reality, big data and 3D & 4D printing which these could pull students interest in learning."* (Teacher E)

*"4IR technologies are the usage of AI and Internet in our daily life which includes in various tool in various sector."* (Teacher F)

*"...implemented by Malaysian Government to develop students' soft skills in future in which should be instil the skills and talents from school level."* (Teacher G)

Based on the responses above by the respondents, it shows that they understood only part of 4IR technology. The respondents relate 4IR technology with education as they assumed it is only related to education. According to [Xu, Jeanne, and Kim \(2018\)](#), the first industrial revolution started in 1760 with the invention of the steam engine. The second industrial revolution began in 1900 with the invention of the internal combustion engine. The third industrial revolution started

in 1960 and was characterized with the implementation of electronics and information technology to automate production. Under the old ways, making things involved screwing or welding lots of parts together. The fourth industrial revolution now involves computer generated product design and three-dimensional (3D) printing, which can create solids object by building up successive layers of materials. However, the other respondents understood 4IR technology uses variety of tools and develop student's soft skills. The findings are in line with [Van den Berg \(2020\)](#), which reported 4IR technologies like vlogs provide students the opportunity to exhibit and enhance their creativity, originality, critical reasoning, problem solving and analysis skills, which are trending graduate skills for the 2022 workforce.

### 4.3. Teachers' Attitude in Using 4IR Technologies in Teaching ESL

Teachers' responsibilities are changing because of the usage of technology in education. Technology knowledge of teachers is viewed as an important component that should be incorporated in professional competencies. Teachers' abilities and attitudes in the sphere of technological development are intimately linked to their capacity to use technology successfully in educational processes. All the respondents had positive attitude towards using 4IR technology in teaching ESL.

*"...using advance tools like online games could improve learning and can provide interactive learning to both parties." (Teacher C)*

*"It makes learning much easier and competitive. Creates a new environment and increases the attention span of kids. Various websites and online learning applications help with teaching the ESL students on English applications and grasping their attention for a longer period of time. During the pandemic, technology helped in sustaining the education and brought changes in learning environment." (Teacher E)*

*"...helpful, essential in current digitalizing era yet challenging." (Teacher G)*

*"I feel using technologies are highly relevant, especially in teaching ESL to the current generation of digital natives." (Teacher J)*

According to the responses above, all the respondents had positive attitude in using 4IR technologies in teaching ESL. The positive attitude is when the respondents felt it was easier and makes teaching more interesting while using technologies in teaching and learning. This finding is in line with [Anilan, B., Berber, A., & Anilan, H. \(2018\)](#), which reported that with technology use in the classroom environment, the interest, learning, curiosity, and willingness of the students increase, the work of the teachers becomes easier, and a rich teaching environment is provided to the teachers and students. Technologies provide multiple learning environments, meeting the individual needs of students, and increasing their interest are some of the benefits of educational technologies. With educational technologies, it is easier to reach the goals, lessons become more interesting, time is saved, and more permanent learning

can be provided.

#### 4.4. Benefits of Teachers Using 4IR Technologies

The usage of technology enables the teachers to implement teaching methods in an adequate manner. Whereas students can implement effective ways of understanding and learning. In the interview with respondents called Teacher D and Teacher F stated that 4IR technologies creates an active participation in the classroom among the ESL students this could also increase their knowledge. However, Teacher G and Teacher I stated that by using 4IR technology in teaching and learning, it could boost the students' interest in learning ESL. Lastly, Teacher A, Teacher B and Teacher J stated that with the various types of 4IR technology that can be implemented in the classroom could make the lesson more interesting and meaningful.

*“...improves knowledge retention-technology can help to encourage active participation in the classroom which also is a very important factor for increased knowledge retention.” (Teacher D)*

*“The focus of 4IR in education would be the internet and it has made learning much easier. Since everything is one click away on smartphones, the learners are understanding things better since they do not spend much time looking for answers. It creates an active participation among the students.” (Teacher F)*

*“...it helps to boost their interest in learning the language and of course, it also provides and ensures that we are updated with current well beings that's happening around the globe.” (Teacher G)*

*“All of these equipments are able to increase the students' interest in learning as well as familiarize the student in with digital-based learning.” (Teacher I)*

*“...offers a variety of teaching conduct that makes teaching more interesting, from the most basic like creating online games and quizzes to advanced use like game-coding.” (Teacher A)*

*“4IR technology provides varieties of tools that can be used for teaching and learning and may create a positive environment in the classroom in which the lesson would be more eye catchy and exciting.” (Teacher B)*

*“...had given teachers opportunities and ideas to create interesting lesson plans that could pull students attention which is somehow helpful for the teachers as well.” (Teacher J)*

Based on the responses above, it is noted that Teacher D and Teacher F had positive feedback from the students while using 4IR technology in teaching. This was comparable to findings by Anealka (2018), who asserted that students enjoyed the approach of using 4IR technology in class used by the class instructor in teaching the course where they did not feel threaten in the class hence the active participation throughout the whole learning experience. Furthermore, Teacher G and Teacher I was expressing that, students had high interest in learning ESL even though there were students who had low proficiency in English. According

to Kapur (2019), with the advent of technology, they are acquiring elaborate knowledge and providing understanding of the concepts among students. In addition to providing explanation of the concepts to the students, they are also able to show them pictures and images, so they can acquire a better understanding. This can relate with the theory of constructivism in which learners are required to gather knowledge instead of just passively derived information. When the students understand better, it could boost their interest in learning. Finally, Teacher A, Teacher B and Teacher J were stating that students who had low efficiency in English felt bored learning the subject due to the teaching style. But when there is technology allowed in the classroom, teachers have an opportunity to let kids work at a pace which suits them the best without disturbing others. Similar to the finding by Darling-Aduana, Good, & Geraghty (2020), which highlighted that students could look up additional information about a subject they are learning about that day, play educational games that reinforce the lesson, or work on advanced material when using technology in classroom. According to the researcher, the students as well as teachers and other members of the educational institutions can bring about an increase in creativity in their projects, assignments, tasks, and other activities. This is where diffusion of innovation takes place in which teachers could use innovative technologies to create interesting lesson.

#### 4.5. Challenges Faced by the Teachers in Using 4IR Technologies

It goes without saying that technology has shown to be useful in language acquisition. However, it, like all man-made educational techniques, has shortcomings. From the interview session, Teacher B, Teacher C and Teacher D stated that the main challenges that they were facing was the bad connection of the internet. However, Teacher A, Teacher I and Teacher J stated that they were used to traditional method of teaching and there were students who had lack of exposure in using technologies as they were staying in rural areas. Lastly, Teacher E highlighted that the challenges that were faced was the lack of technology equipment in their schools.

*“...the range of internet connection on the learners’ phone or laptop. There could be kids with no internet support due to parents’ income or their place of living doesn’t support good internet connection.”* (Teacher B)

*“...poor internet connection (in school and at home for students).”* (Teacher C)

*“One of the challenges would be the access to the unlimited Wi-Fi/Internet connection. Teachers are expected to use their own Wi-Fi while working from home during this pandemic without any allowances given. If we were to conduct physical lessons at school, access to the Internet is poor.”* (Teacher D)

*“Not everyone has technology at home and due to this they have lack of exposure in using technology. This creates challenges for teachers if they have to set different tasks for different students, or if they avoid setting homework with a*

*digital component.”* (Teacher A)

*“As I mentioned before, I am used to traditional approach in the classroom with minimum usage of technology.”* (Teacher I)

*“...that not everyone has the privilege to explore and experience using technology. The gap between students who live in urban and rural areas are more prominent than ever, with the online teaching and learning.”* (Teacher J)

*“One of the challenges in using technologies is there are many difficulties encountered such as lack of tools, old infrastructure in school.”* (Teacher E)

Based on the responses from the respondents, all of them faced challenges and they also stated on ways to overcome the challenges during the interview session. The main challenge faced by teachers was poor internet connection while trying to brows some online live worksheet. The findings are in line with [Budd \(2001\)](#), which stated that when the groups were supposed to bargain at a later date, one student encountered Internet connection and browser issues and so entered the discussions an hour later. The respondents highlighted that there are ways to overcome these challenges by trying mix method strategy which are offline and offsite method. Teacher can prepare recording of the lesson and upload it for students to view. Next, Teacher A, Teacher I and Teacher J explained that they have lack of exposure in using technologies as well as the students. This finding is in line with [Vaportzis, Giatsi Clausen, & Gow \(2017\)](#), which stated that participants expressed uncertainty and dread about utilizing tablets and technology in general because of a lack of understanding or confidence, as well as the perceived hazards of technical equipment. One of the ways to overcome this issue that was suggested by the respondent was by attending professional training through a variety of conferences, courses, professional literature, and seminars to get a better knowledge in the use of educational technology. Lastly, Teacher E expresses the challenge faced by them is the poor or lack school equipment. This finding was similarly with [Lazar \(2015\)](#), in which was stated that the fact is that under use of educational technology, primarily due to poor school equipment necessary resources, insufficient information and knowledge of teachers and the lack of interest and lack of motivation of teachers to use them. In order to reduce this problem, teachers may make a suggestion with the school management to improve the facilities. Teachers must be motivated to use the same because the use of educational technology in teaching provides better interaction with students, better reception of information because the students receive knowledge visual, auditory, and kinaesthetic way.

According to the results, it's clear that the study achieved its objective of investigating obstacles faced by the primary school teachers in integrating 4IR technology in teaching ESL learners.

## 5. Conclusion and Implication

The purpose of the current study was to determine the challenges faced by teachers in integrating 4IR technology in teaching ESL learners. The most obvious

finding to emerge from this study is that teachers face various challenges in integrating 4IR technology in teaching ESL. Those challenges were lack of internet connection, lack of exposure or knowledge on using technology and lack of technology equipment in school. However, the respondents by some means know the way on overcoming those challenges. In general, therefore, it seems that teachers should prepare themselves to face more advancement of technologies in this era and more challenges in integrating those technologies in future. Teachers should also be given enough training program in integrating E-learning in teaching and learning. Teachers who have lack of knowledge or confidence in using technology need to receive more support and training in using technology in constructing their lesson. The contribution of this study has been to confirm that technology is a positive supplement to bridge the gap between education and the technological world in which we live. Effective teaching is possible while, various types of technology will be integrated. Computer-assisted technologies in schools offer students greater access to information, an eager motivation to learn, a jump-start on marketable job skills and an enhanced quality of class work. A limitation of this study is that challenges faced by the ESL teachers in integrating 4IR technology yet to be narrowed down as there are fewer studies done on the ways to overcome the challenges in using 4IR technologies in teaching ESL in order to increase the quality of the teaching and learning session. Notwithstanding these limitations, the study suggests that students might have the similar challenges in getting in line with the usage of 4IR technology in learning ESL, thus, strategies and actions implemented to overcome these challenges might be adjusted and fixed accordingly. It is hoped that future researcher might explore more ways to overcome the challenges of using 4IR technologies in teaching ESL learners in order to make the lesson more interesting and maintain the teachers' motivation. The findings of this study have a number of important implications for future practice. Firstly, it is important for teachers to have a professional training through a variety of conferences, courses, professional literature, and seminars to get a better knowledge in the use of educational technology. Thus, it is vital for schools' management to implement various training for teachers to improve their skills in using technologies in school. Next, schools should provide more facilities or advance tools for teachers to utilize it classrooms in order to make lesson more noteworthy and to follow in line with the 4IR era.

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### **Conflicts of Interest**

The authors declare no conflicts of interest regarding the publication of this paper.



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