

# ICT USAGE IN TESL EDUCATION: INSIGHTS AND OBSTACLES FACED BY TEACHER-TRAINEES IN KOTA KINABALU

Vanessa Anak Puteh<sup>1</sup>, Noraini binti Said<sup>2</sup>

<sup>1,2</sup>*Faculty of Education and Sports Studies, Universiti Malaysia Sabah*

<sup>1</sup>[vanessa\\_bp20@iluv.ums.edu.my](mailto:vanessa_bp20@iluv.ums.edu.my); <sup>2</sup>[noraini.said@ums.edu.my](mailto:noraini.said@ums.edu.my)

Received: September 1, 2024 | Accepted: October 20, 2024 | Published: November 12, 2024

DOI: <https://doi.org/10.51200/ijelp.v7i1.5456>

## Abstract

This study explores the integration of Information and Communication Technology (ICT) in English language learning among TESL teacher-trainees in Kota Kinabalu, Malaysia. Since English is a compulsory subject in Malaysian education, the government has been placing increasing focus on ICT use to improve language learning. In the past two decades, much has changed in policy and practice to create more positive perceptions of ICT as a possible solution; but while these shifts may now make sense on paper, several obstacles remain for making changes effectively simply by introducing yet another new technology. The main objectives are to find out TESL teacher-trainees' perception towards usage of ICT in classroom and obstacles in using ICT faced by TESL teacher-trainees in classroom. Shortage of technological infrastructure, technology access, and trained teachers on the usage of ICT are some challenges. In addition, different perceptions among teacher-trainees indicate issues such as low self-confidence in ICT usage. This paper uses a mixed-methods approach, using both quantitative questionnaires and qualitative interviews to capture the trainee experience. Using a purposive sample of 88 TESL trainees, primarily practicum participants in Sabah, this study employed a mixed-methods approach with quantitative questionnaires and qualitative semi-structured interviews. Fifteen trainees were selected for interviews to provide in-depth insights. The significant finding concludes a strong and positive correlation between teacher perception towards ICT usage in the classroom. Nevertheless, lack of resources, and training may hinder the effectiveness of the ICT. The knowledge gained will help to direct policy and curriculum development-informed teacher training aimed at increasing the use of ICT in English instruction.

**Keyword(s):** *Integration, TESL Teacher-Trainees; Perceptions of Teachers Towards Teaching English Language Through Educational Technology, English Language Learning, Educational Technology.*

## INTRODUCTION

Malaysia has been actively involved in the adoption of Information and Communication Technology (ICT) in Education, specifically English language learning over recent years. Almost every one of us knows the relevance of English, in terms of worldwide conversation ability and this is why it has been made a priority by Malaysian authorities to introduce technology as part of language learning solutions among students. It is a basic requirement at national schools that

all primary and secondary pupils need to pass this subject to be promoted in the academic system (Abu Bakar, et.al., 2021). Many schools are faced with several challenges in their technology infrastructure, including insufficient access to up-to-date hardware and software, high-speed internet connections, and trained teachers. The views and beliefs of the teachers in utilizing ICT are important for effective classroom use. Most of the previous research in this area is outdated and has not even been conducted with TESL teacher-trainees (Melor et al., 2012; Mohamed Amin Embi & Azmi Abdul Latiff, 2004; Nair et al., 2012; Raman & Halim Mohamed, 2013; Yunus,). Moreover, the lack of research on teachers' perceptions of ICT in teaching classrooms mainly investigated English language instruction in schools situated Kota Kinabalu Sabah indicates that more inquiry and empirical study are needed to better understand the unique concerns, beliefs, and practices surrounding TESL teacher candidate integration of ICTs in their classrooms within this region. This gap can provide useful information for institutions and teacher-trainees that aim to cater their assistance and techniques according to the concerns of educators in Kota Kinabalu, Sabah. This research aims to provide a basis for informed integration of ICT into TESL education by investigating the issues related to ICT usage among TESL teacher-trainees in Kota Kinabalu's secondary schools by aiming to answer these 2 research questions:

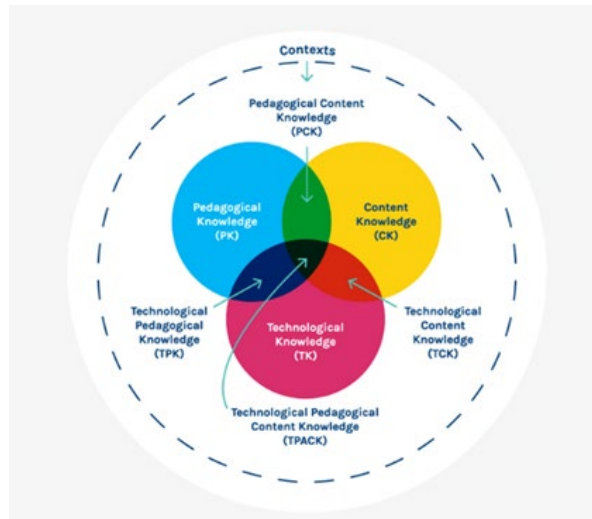
1. What are TESL Teacher-Trainees' perception towards ICT usage in the classroom?
2. What are the obstacles in using ICT faced by TESL Teacher-Trainees?

## **LITERATURE REVIEW**

### ***Technological Pedagogical Content Knowledge (TPACK)***

The TPACK (Technological Pedagogical Content Knowledge) framework acknowledges that these elements can never be separated: TK, PK, and CK constantly interact in dynamic iterations. It helps teachers make good use of technology in conjunction with specific needs in their content areas (Koehler, 2006). TPACK helps teachers to improve teaching and students' learning processes in the classroom (Shafie et al., 2022; Raman, 2014).

Technological Knowledge (TK) Understanding of available technology tools and resources, which are impactful hardware/configurations/software/platforms. Knowledge in PK: Knowledge of the pedagogical strategies and practices used to teach students within a certain age, includes an understanding of instructional design, classroom management control techniques, or assessment. CK has an in-depth familiarity with the content itself and its main concepts, theories, etc. The TPACK framework blends these domains and sets the stage for proactive, productive technology use.



**Figure 1:** Technological Pedagogical Content Knowledge (TPACK)

### ***Technology Acceptance Model (TAM)***

IT User Acceptance Behavior: The Technology Acceptance Model (TAM) as presented by Davis in 1986 argues that user acceptance behavior should be explained through the perceptions of individuals concerning ease of use and usefulness of technology combined (Ma & Liu, 2011). As mentioned earlier, the technology adoption model is based on perceived utility (PU) and ease of use as determinants of adopting a new technology (Liao et al., 2018). These two factors arguably shape the extent to which TESL teacher-trainees are willing and able to embrace new technology. The TAM model has shown numerous theoretical and practical developments of the TAM model (Technology Acceptance Model, n.d.)

### ***Connectivism***

First, connectivism is an attitude to learning that George Siemens suggests should replace 'organized instruction' as the way we address and think about the information overloads in education. It states that we learn by connecting information, and the people from which we find this information (Connectivism n.d.-a). This highlights the importance of placing exact knowledge and competencies of importance in a society oriented toward knowledge (Herlo, 2017).

### ***Social Learning Theory***

The Social Learning Theory by Albert Bandura focuses on the importance of social interaction and observational learning. Social learning theory posits that individuals learn by observing their social milieu and imitating the behaviors of others if they find it to be pleasurable or rewarding (Nabavi & Bijandi, 2011). Thus, the learning environment has to be adjustable and compatible with real-life elements due to infinite technology enhancement (Abdullah et al., 2020).

### ***Technological Pedagogical Content Knowledge (TPACK)***

This model is called the TPACK framework, an invaluable concept for discussing and describing what happens in educational settings (technology pedagogical content knowledge). It posits that these three realms of expertise must all be utilized together for successful technology integration. This research focuses on the outlooks of TESL teacher-trainees towards ICT usage in their classroom and also uncovers some impediments they encounter which are namely attitude, technology access, adequate training to handle it properly without failure as well as language

education approaches are not compatible with the use of ICT. Addressing current research limitations, this study focuses on local educators' experiences in Kota Kinabalu, potentially influencing educational policies, curriculum development, and teacher training programs in TESL and ICT integration.

Arumugam Raman, & Abdul Halim Mohamed (2013) conducted a similar study on ICT usage matters among Malaysian secondary school English teachers. A lack of knowledge of different ICT tools and applications was considered one of the main challenges (Raman & Halim Mohamed, 2013). This paper uses the Technological Pedagogical and Content Knowledge (TPACK) model to help explain satisfaction/usage of Information Technology in ICT teaching by applying thematic analysis. Integrating TPACK, TAM, connectivism, and social learning theory forms a comprehensive framework for effectively utilizing technology in education. TPACK outlines the methodology for seamlessly integrating content, pedagogy, and technology. TAM sheds light on teachers' motivation by focusing on how useful they find the technology and its ease of use. Connectivism emphasizes learning through networks, while social learning highlights collaboration; both are enhanced by TPACK's strategy for creating engaging lessons rich with interactive tech elements.

## **METHODOLOGY**

### ***Research Design***

The design used in this study is a mixed-methods research combining quantitative and qualitative methods. Mixed methods research, MM): marrying qualitative and quantitative inquiry to provide clearer answers (Schoonenboom & Johnson, 2017). The research targets TESL teacher-trainees in secondary schools within Kota Kinabalu, Sabah. This sample is chosen because it includes those who are closely involved and well-experienced in the usage of ICT within educational settings. Currently, about 100 TESL teacher-trainees are on practicum in various schools within the Sabah area.

Purposeful sampling, also referred to as judgmental (Tongco, 2007); These TESL teacher-trainees are currently using ICTs in their teaching approach therefore they serve as a good sample for investigating the practicalities, perceptions, and patterns of ICT accomplishment in education. This group contains 88 people in our sample, making it pretty representative of a variety of experiences and viewpoints.

A structured questionnaire with a Likert scale based on the study by Arumugam Raman and Abdul Halim Mohamed (2013) was used to determine perceptions & concerns in ICT application among TESL teacher-trainees. The responses on ICT in education were tabulated into a five-point Likert scale between strongly agree and to do so will not be too supportive. The survey features different question types; this helps in a comprehensive collection of data.

A set of semi-structured interview questions were written for the qualitative component of the study. The questions are designed to draw out responses that reveal the experiences, difficulties, and opinions TESL teacher-trainees have regarding using ICT in teaching practice. Data Collection Semi-structured interviews (Jamshed, 2014) are a good way of reaching individual concepts with flexibility as participants sometimes find it difficult to articulate their thoughts.

To distribute a survey containing similar question items with the Likert scale format, Google Forms was used to collect quantitative data. This approach guaranteed the organized and smooth collection of data. The qualitative data were collected through semi-structured interviews that took place either face to face or over the Internet using video conferencing according to participants' preferences and practical availability. All the interviews were recorded and then transcribed.

Descriptive statistics were calculated, including means and standard deviations, as well as inferential statistical tests (eg correlation analyses) using SPSS for the quantitative data. Factor analysis and thematic analysis were conducted. Quantitative data were collected using Google Forms to distribute and gather responses to the Likert scale questions. Semi-structured interviews were conducted either in-person or via video conferencing, depending on participants' preferences and logistical constraints.

## FINDINGS

Based on the results shown in Table 1, we can analyze the distribution of the variables of Teacher Perception and Usage using skewness and kurtosis. Firstly, the skewness for Teacher Perception is -0.521 with a standard error of 0.257, and for Usage, it is -0.280 with the same standard error. Since both skewness values are negative, this indicates that both distributions are slightly left-skewed, meaning the data has a tendency to have a longer left tail. Furthermore, looking at kurtosis, Teacher Perception has a kurtosis value of -1.330 with a standard error of 0.508, and Usage has a kurtosis value of -1.423 with the same standard error. Given that both kurtosis values are negative, it shows that the distributions are platykurtic, which means they are flatter than a normal distribution. Therefore, it can be concluded that both variables display distributions that are not perfectly normal, with slight left skewness and flatter peaks.

### *Test of Normality*

Variables	N	Skewness	Std. Error	Kurtosis	Std. Error
Teacher Perception	88	-0.521	0.257	-1.330	0.508
Usage	88	-0.280	0.257	-1.423	0.508

**Table 1:** Distribution based on Skewness and Kurtosis

	Kolmogorov-Smirnov	Shapiro-Wilk
	Statistic	df
Teacher Perception	0.307	88
Usage	0.246	88

**Table 2:** Kolmogorov-Smirnov and Shapiro-Wilk Normality

Table 2 examines the normality of the variables of Teacher Perception and Usage. Based on the results of the Kolmogorov-Smirnov test, Teacher Perception shows a statistic of 0.307 with a significance level (p-value) of less than 0.001, and the Shapiro-Wilk test presents a statistic of 0.819 with a p-value also less than 0.001. Similarly, for Usage, the Kolmogorov-Smirnov test results in a statistic of 0.246 with a p-value less than 0.001, and the Shapiro-Wilk test gives a statistic of 0.871 with a p-value less than 0.001. Since the p-values for both tests and both variables are less than 0.001, we reject the null hypothesis that the data follows a normal distribution. Consequently, it can be concluded that the distributions of Teacher Perception and Usage significantly deviate from normality.

### *Descriptive Analysis*

Variables	Mean	Std. Deviation
Teacher Perception	3.7386	0.79542

Usage	3.8580	0.84891
-------	--------	---------

**Table 3:** Descriptive Statistics

Based on the results in Table 3 and using the mean score interpretation from Nur Farahana (2018), we can analyze the descriptive statistics for Teacher Perception and Usage.

Questions	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	SD
In my view, ICTs are more powerful in teaching English than traditional methods.	5 5.7%	10 11.4 %	15 17.0 %	31 35.2%	27 30.7%	3.74	1.18
In my view, ICTs can complement teachers in teaching English effectively.	2 2.3%	20 22.7 %	7 8.0%	30 34.1%	29 33.0%	3.73	1.21
I acknowledge that ICTs can facilitate the rapid dissemination of knowledge and information.	5 5.7%	7 8.0%	11 12.5 %	35 39.8%	30 34.1%	3.89	1.14
In my view, ICTs are more effective for teaching and learning English than traditional textbooks and printed materials.	6 6.8%	12 13.6 %	9 10.2 %	59 67.0%	2 2.3%	3.44	0.99
I believe that ICT use has significant value for the development of TESL and ESL communities.	4 4.5%	15 17.0 %	10 11.4 %	32 36.4%	27 30.7%	3.72	1.20
ICT use enhances the educational and instructional experiences of ESL learners in learning English.	3 3.4%	9 10.2 %	14 15.9 %	10 11.4%	52 59.1%	4.13	1.21

**Table 4:** Descriptive Statistics of Teacher Perception

Table 4 shows that the highest mean score of 4.13 is associated with the statement "ICT use enhances the educational and instructional experiences of ESL learners in learning English," indicating strong agreement among teachers on the positive impact of ICTs in this context.

Questions	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	SD
ICTs (including computers, videos, hardware, software, and networks enhance my knowledge and skills as a TESL trainee teacher.	2 2.3 %	5 5.7 %	10 11.4%	42 47.7%	29 33.0%	4.03	0.94
ICTs are essential tools for TESL trainee teachers in teaching English.	8 9.1 %	7 8.0 %	8 9.1%	38 43.2%	27 30.7%	3.78	1.23
ICTs can serve as advanced instructional tools for teaching English to ESL learners.	10 11.4 %	8 9.1 %	10 11.4%	32 36.4%	28 31.8%	3.68	1.32

As far as I know, ICTs can be used to manipulate instructional materials effectively in TESL.	8 9.1 %	10 11.4 %	15 17.0%	30 34.1%	25 28.4%	3.61	1.26
ICT use enhances the educational and instructional experiences of TESL trainee teachers in teaching English.	7 8.0 %	9 10.2 %	10 11.4%	30 34.1%	32 36.4%	3.80	1.29
ICTs support TESL trainee teachers in preparing and designing TESL materials more effectively.	7 8.0 %	8 9.1 %	12 13.6%	27 30.7%	34 38.6%	3.83	1.27

**Table 5:** Descriptive Statistics of Usage

Table 5 indicates that the highest mean score of 4.03 is associated with the statement "ICTs (including computers, videos, hardware, software, and networks enhance my knowledge and skills as a TESL trainee teacher," demonstrating a strong consensus among respondents on the beneficial impact of ICTs in enhancing their knowledge and skills.

### *Correlation Analysis*

Dependent Variable	Independent Variable	Correlation (r)	Sig. (p-value)	Strength
Usage	Teacher Perception	0.883**	<.001	Very Strong Positive

**Table 6:** Pearson Correlation

Table 6 shows a significant positive correlation between Teacher Perception and Usage ( $r = 0.563$ ,  $p < 0.01$ ), indicating that a higher perception of ICTs' benefits is associated with higher usage.

### *Semi-structured interview*

	Questions	Answers
1.	Could you kindly furnish me with details on your teaching career and your present status as a TESL teacher-trainee?	<i>"I am currently a TESL teacher-trainee in Kota Kinabalu's high schools area for 3 to 4 months"</i>
2.	Have you had any official instruction or been exposed to information and communication technology (ICT tools and technologies throughout your TESL education?	<i>"Yes, I do have formal training in using various ICT tools during my second and third year in TESL program"</i>
3.	Please provide a detailed account of your utilisation of ICT tools and technology in	<i>"I use a lot of ESL websites and educational platform to make my lesson more interesting. I also use LCD and speakers most of the time to engaging my students"</i>



	your TESL education or teaching activities.	
4.	Could you provide concrete instances of how you have included ICT into your instructional approaches or curriculum?	<i>"I've used Quizizz and Kahoot to include English quiz for my students"</i>
5.	What obstacles or complexities have you faced while using ICT in your instructional approaches?	<i>"My main obstacles that I faced is weak internet connection and sometimes blackout in certain time. Also, I couldn't access some websites since it need to be paid"</i>
6.	Did you successfully overcome these challenges? If so, how?	<i>"Yes, I do always have backup plan such as offline game or use my own internet from handphone (hotspot."</i>
7.	How has the use of ICT influenced the teaching and learning encounter in TESL education, according to your perspective?	<i>"ICT has significantly enhanced my teaching in class since all students could be more engaging during the teaching and learning lessons"</i>
8.	Have you seen any alterations in student involvement, comprehension, or motivation when ICT is employed?	<i>"Yes, I could see students become more enjoyable and participating in the lesson when I included ICT in the lesson"</i>
9.	Which pedagogical techniques or tactics do you consider to be the most efficacious when integrating ICT into TESL education?	<i>"I think the most effective is interactive and student-centered techniques"</i>
10.	Are there any specific ICT tools or resources that you consider particularly beneficial in improving the teaching and learning process?	<i>"Websites like to create slides such as Canva, quiz such as quizizz and Kahoot are really beneficials"</i>
11.	How do you foresee the progression of ICT's involvement in TESL education in the future?	<i>"I believe ICT will become more enhance into TESL education as our ICT will become more advance"</i>
12.	Do you have any suggestions or valuable knowledge to offer	<i>"I suggest maybe more workshop that offer by schools or MOE to teachers so they can</i>



	on the use of ICT in TESL instructional approaches?	<i>always up to date and use those ICT tools in their teaching"</i>
--	---	---

**Table 7: Result of Semi-structured interview**

## DISCUSSION

### *TESL Teacher-Trainees' Perception Towards ICT Usage in the Classroom*

Descriptive statistics for both Teacher Perception and Usage reflected high mean values (3.7386 and 3.8580, respectively across the two scales with a skewed distribution of scores in a direction suggestive of favourable attitudes toward ICT use within classroom practice. This was followed by the statement: The use of ICT enhances ESL learners' learning experience and pedagogy in English (Mean = 4.13. This reveals that most of the teacher trainees trust in the positive effect of ICT on ESL learning. Those positives perceptions of using ICT in the classroom are strongly associated with several educational theories stated in the literature review above: TAM, Connectivism, and Social Learning Theory. According to TAM if ICT tools are perceived as easy to use and beneficial, they are more likely to be adopted in teaching (Liao et al., 2018). Connectivism posits that knowledge is distributed across networks; thus, ICT plays a vital role by providing access to resources and extending learning beyond traditional boundaries. With Social Learning Theory, which stresses interaction-based learning, ICT supports communication among peers and educators by facilitating comfort in learning environment (Nabavi & Bijandi, 2011). Similarly, a study by Nguyen (2021) stated that teachers acknowledge ICT in increasing or improving teacher instructional practices and students' engagement as well as academic achievement.

### *Obstacles in Using ICT Faced by TESL Teacher-Trainees*

TESL teacher-trainees encounter numerous challenges when integrating ICT into their classrooms, largely stemming from scarce resources, insufficient training, and negative attitudes toward technology use. Teacher Perception had a strong positive correlation with Usage ( $r = 0.883, p < 0.001$ ) showing that good perceptions may lead to the use of technology by teachers as well as directly affecting the independent variable Fig On the other hand, negative perceptions or barriers can dramatically impede ICS utilization. Based on the interview, frequent internet connectivity issues and sporadic power cuts pose significant obstacles by disrupting lessons and impeding the regular utilization of digital tools. Furthermore, many valuable educational websites require paid subscriptions, presenting a financial hurdle for trainees seeking diverse online materials. These constraints limit of free resources available to captivate students' interest and diminish the potential effectiveness of incorporating ICT in education.

Another obstacle is the insufficient ongoing training and professional development opportunities. Although trainees receive some ICT instruction during their TESL programs, many believe more frequent workshops or practical sessions would help them remain current with new tools and teaching strategies. In the study, it was also found that teacher efficacy in using ICT and perception of available computer labs is significantly related (Kundu et al., 2020). Additionally, some trainees have noted negative attitudes towards ICT among colleagues who perceive technology as complex or superfluous. For example, Coban and Atasoy (2019) showed that better self-efficacy leads to more proficient usage of ICT in teaching practices. Addressing these

challenges through enhanced resources, continuous training initiatives, and efforts to shift perceptions could greatly enhance the use of ICT in TESL education, fostering more engaging and interactive learning experiences.

### ***Implications of Research***

The positive perception of ICT uses among TESL teacher-trainees implies the willingness to integrate new technologies into teaching. These results might inform policy-makers, to invest enough money and resources in ICT projects so that the use of technology could facilitate better effects on education. The training programs should not only provide technical skills but also focus on the ability and confidence of teacher-trainees in using information tools adequately, including both pedagogical strategies as well. Professional development and access to updated technological resources are necessary in this process for teachers to benefit from ICT correctly.

Furthermore, supporting infrastructure such as internet connectivity, technical aid and upkeep of ICT equipment is equally important to ensure a hitch-proof process in the institutionalization of Smart Education. Future research should identify the real-time hurdles, confronted by teachers and propose appropriate strategies to fulfil the potential of ICT integration across education.

### ***Recommendations for Future Research***

Thus, future research should be aimed at designing integrated training modules for both ICT skills and their pedagogical uses. Research should account for the diversity of educational contexts by conducting studies with a focus on rural and under-resourced schools as well as providing support tailored specifically towards local needs. Comparative studies within the country or internationally can further identify global trends, and good practices in ICT use. So, framing the storyline in this larger concept can lead educators to develop systematic strategies that enhance inclusive and sustainable approaches for ICT adoption, playing a significant role in ensuring an equitable quality educational system worldwide.

## **CONCLUSION**

This study investigates the integration of Information and Communication Technology (ICT in English language learning among TESL teacher-trainees in Kota Kinabalu. Such a positive attitude is contrasted with the findings that there are many obstacles to the effective implementation of ICT as well. These challenges such as weak technology infrastructure, limited access to modern technological tools and high processing speed internet, and unskilled teachers with ICT capabilities. In addition, the heterogeneous perceptions indicate that some teacher-students encounter problems: limited self-confidence in technology use and a lack of computer-assisted instructors.

The research has shown ICT adoption depends heavily on the association of teacher perceptions and thus it indicates positive attitudes toward ICT are a strong predictor for planning to use them in their teaching practices. At the same time, this also means that negative perceptions and encountered barriers could strongly hinder effective ICT use. This study highlights the need for improved training programs for teacher-trainees to effectively integrate ICT in teaching, by enhancing their technical skills combined with pedagogical strategies. To ensure that ICT supports improved educational outcomes, a nation needs to have schemes in place that support continuous professional development; dependable technological infrastructure,

and sufficient support systems. In short, TESL teacher-trainees in Kota Kinabalu agree on the possible advantages of using ICT for English language instruction but equally emphasize that these challenges must be overcome if it is to reach its full promise. Policymakers and educational institutions should rather focus on improving the infrastructure of technology and also to train all teachers about ICT effectively.

## REFERENCES

- Abu Bakar, A. L., Mohd. Esa, S., Ationg, R., & Jawing, E. (2021). The English Language In The Malaysian Education System. *International Journal of Education, Psychology and Counseling*, 6(43), 122–130. <https://doi.org/10.35631/ijepc.643011>
- Coban, O., & Atasoy, R. (2019). An examination of relationship between teachers' self-efficacy perception on ICT and their attitude towards ICT usage in the classroom. *Cypriot Journal of Educational Sciences*, 14(1). <https://doi.org/10.18844/cjes.v14i1.3636>
- connectivism. (n.d.-a).
- Herlo, D. (2017). *Connectivism, A New Learning Theory?* 330–337. <https://doi.org/10.15405/epsbs.2017.05.02.41>
- Jamshed, S. (2014). Qualitative research method-interviewing and observation. *Journal of Basic and Clinical Pharmacy*, 5(4). <https://doi.org/10.4103/0976-0105.141942>
- Koehler, M. J. (2006). Technological Pedagogical Content Knowledge: A Framework for Teacher Knowledge PUNYA MISHRA. *Teachers College Record*, 108(6), 1017–1054.
- Kundu, A., Bej, T., & Dey, K. N. (2020). An empirical study on the correlation between teacher efficacy and ICT infrastructure. *International Journal of Information and Learning Technology*, 37(4). <https://doi.org/10.1108/IJILT-04-2020-0050>
- Liao, S., Hong, J. C., Wen, M. H., Pan, Y. C., & Wu, Y. W. (2018). Applying Technology Acceptance Model (TAM) to explore Users' Behavioral Intention to Adopt a Performance Assessment System for E-book Production. *Eurasia Journal of Mathematics, Science and Technology Education*, 14(10), 1–12. <https://doi.org/10.29333/ejmste/93575>
- Ma, Q., & Liu, L. (2011). The Technology Acceptance Model. In *Advanced Topics in End User Computing, Volume 4*. IGI Global. <https://doi.org/10.4018/9781591404743.ch006.ch000>
- Melor, M. Y., Hadi, S., & Mohamed Amin, E. (2012). Effects of Using Digital Comics to Improve ESL Writing. *Research Journal of Applied Sciences, Engineering and Technology*, 4(18).
- Mohamed Amin Embi, & Azmi Abdul Latiff. (2004). Trainees? Perception on E-Learn: A Malaysian-based ESL Web Site. *Internet Journal of E-Language Learning & Teaching*, 1(2), 48–57. <http://pkukmweb.ukm.my/mojel/pdf/MohamedAmin.pdf>
- Nabavi, R. T., & Bijandi, M. S. (2011). *Bandura's Social Learning Theory & Social Cognitive Learning Theory Title: Bandura's Social Learning Theory & Social Cognitive Learning Theory*. <https://www.researchgate.net/publication/267750204>
- Nair, G. K. S., Rahim, R. A., Setia, R., Adam, A. F. binti M., Husin, N., Sabapathy, E., Mohamad, R., So'od, S. M. M., Md Yusoff, N. I., Mohd Razlan, R., Abd Jalil, N. A., Ariffin, E. F. N. H., & Seman, N. A. (2012). ICT and teachers' attitude in English language teaching. *Asian Social Science*, 8(11). <https://doi.org/10.5539/ass.v8n11p8>
- Nguyen, L. T. H. (2021). Teachers' Perception of ICT Integration in English Language Teaching at Vietnamese Tertiary Level. *European Journal of Contemporary Education*, 10(3). <https://doi.org/10.13187/ejced.2021.3.697>
- Nur Farahana, Z., Wan Norhasniah, W. H., & Wan Norhasniah, W. H. (2018). *Ethnic Tolerance Among Students in Malaysian Public Universities*. <https://doi.org/10.2991/ceed-18.2018.2>

- Raman, A. (2014). TPACK confidence of pre-service teachers in Universiti Utara Malaysia. *Mediterranean Journal of Social Sciences*, 5(22), 167–175. <https://doi.org/10.5901/mjss.2014.v5n22p167>
- Raman, A., & Halim Mohamed, A. (2013). Issues of ICT usage among Malaysian secondary school English teachers. *English Language Teaching*, 6(9), 74–82. <https://doi.org/10.5539/elt.v6n9p74>
- Schoonenboom, J., & Johnson, R. B. (2017). Wie man ein Mixed Methods-Forschungs-Design konstruiert. *Kolner Zeitschrift Fur Soziologie Und Sozialpsychologie*, 69, 107–131. <https://doi.org/10.1007/s11577-017-0454-1>
- Shafie, H., Majid, F. A., & Ismail, I. S. (2022). Developing a 21st Century Technological Pedagogical Content Knowledge (TPACK) Instrument: Content Validity and Reliability. *International Journal of Education*, 14(3). <https://doi.org/10.5296/ije.v14i3.19980>
- Technology Acceptance Model*. (n.d.). <http://open.ncl.ac.uk>
- Tongco, M. D. C. (2007). Purposive sampling as a tool for informant selection. *Ethnobotany Research and Applications*, 5. <https://doi.org/10.17348/era.5.0.147-158>
- Yunus, M. M. (2007). Malaysian ESL teachers' use of ICT in their classrooms: Expectations and realities. *ReCALL*, 19(1). <https://doi.org/10.1017/S0958344007000614>
- Yunus, M. M., Nordin, N., Salehi, H., Embi, M. A., & Mahamod, Z. (2013). Managing problems and planning activities involving ICT tools in teaching ESL reading and writing. *Asian Social Science*, 9(10). <https://doi.org/10.5539/ass.v9n10p222>