Attitudes and skills of Tamil language teachers towards the use of ICT in teaching and facilitation

Tamilmullai Thannimalai [1], Kartheges Ponniah [1, *], F. M. Nawastheen [2]

[1]Faculty of Languages and Communication, Sultan Idris Education University, Tanjung Malim, Malaysia
[2]Faculty of Education, The Open University of Sri Lanka, Colombo, Sri Lanka

ABSTRACT

This study was conducted to find out the attitudes and skills of Tamil teachers towards the use of Information and Communication Technology in Teaching and Facilitation. To achieve the objectives of the study, the Technology Acceptance Model (TAM) was used. This study is a quantitative study involving a survey. The present modern world meets a lot of challenges in adopting technology in education. Teachers find the modernized use of information and computer technology (ICT), as a difficult task. Many works have been carried out in the field of ICT-related teaching and learning throughout the globe. These researches talk about the use of computer-based teaching aids, motivation to use technology among teachers, stages of using ICT, training for teachers, facilities available, and school infrastructure. When compared with other studies, this study deals with the attitudes and skills of Tamil language teachers in using ICT. The findings of the study also show that the cooperation of all parties is a factor behind the success of implementing ICT in Tamil teaching and facilitation. And also, the usability factor (PU) is also a motivator for teachers to show a positive attitude towards the use of ICT.

1. Introduction

To meet the challenges of today's modern world, many developing countries have modernized the field of education in line with the needs of today's world. In an increasingly challenging era of economic modernization, education has become the key to opening the door to economic and technological development. This is because knowledge is the measuring stick and the main instrument for the development of a country. In line with this statement, the Ministry of Education Malaysia (MOE) has taken various efforts in ensuring that the country's education continues to grow to compete on the global stage (Islam et al., 2019). For example, the MOE has introduced the Malaysian Education Blueprint 2013-2025 to incorporate Information and Communication Technology (ICT) in education in all schools in Malaysia. The school's pedagogical approach has shifted from teacher-centered teaching to student-centered teaching through Collaborative Classrooms.

Information and Communication Technology (ICT) has the potential to improve all aspects of our social, economic, and cultural life. After ICT was introduced in all schools in Malaysia, this scenario has changed the way learning and facilitation (PdPc) is implemented in the classroom. These developments indicate that teacher-centered teaching began to erode after the introduction of ICT. In ICT, the teaching and learning process will be done through various teaching aids; radios, televisions, computers, overhead projectors, fiber optics, fax machines, CD-Roms, the Internet, electronic notice boards, slides, digital multimedia, video/VCD machines, etc. ICT has also paved the way for new pedagogical approaches in which students will engage more actively in learning in the classroom than ever before (Comi et al., 2017).

Technology is known as part of the tool in society and technology in education is the foundation for countries to improve students' academic interests at K-12 schools. Vesudevan (2021). The present-day education system and its needs have changed drastically, with the advent of information and communication technologies and their application in teaching and learning. The use of traditional methods has gradually been replaced information-

based methods in delivering information to students. In response to the call, the Ministry of Education of Malaysia has formulated the Malaysian Education Development Plan 2013-2025, aiming at encouraging the utilization of ICT among the teachers in their teaching practices (Ambikapathy, 2020).

Starting from the success of the Smart Schools Pilot Project, MOE has launched the National Education Development Master Plan in 2006-2010 to transform all schools in the country into Smart Schools by 2010. However, the National Education Development Master Plan was repealed in 2011 due to all teachers in Malaysian schools not being ready to teach in their teaching using ICT technology; a limited number of computer labs especially in rural schools; teachers 'lack of understanding of computer use, and their perception that computer technology is difficult to use. To address the problem, the Malaysian Education Blueprint 2013-2025 was introduced in 2012 to educate teachers and students to transform the country's education in stages.

However, after the introduction of the Malaysian Education Blueprint 2013-2025, there are still some researchers who report the problem of minimum use of ICT applications among teachers in the classroom to guide students. For example, Gil-Flores et al. (2017) and Istifci (2019) have reported that the level of use of ICT among language teachers for teaching and learning is unsatisfactory even though they are equipped with laptops by the MOE. At the same time, Drossel and Eickelmann (2017) and Comi et al. (2017) found that the attitude of school teachers in the use of computer technology is only to perform side activities such as keeping records and school management grades whereas most teachers do not use ICT applications to reach their full potential. Based on the above issues this study aims to find out the acceptance of Tamil teachers towards the use of Information and Communication Technology (ICT) in PdPc by using the TAM model.

Indeed, school teachers are responsible for teaching certain subjects to pupils in schools and providing PdPc in line with the school syllabus as prescribed by the Center for Curriculum Development. They need to be skilled in implementing teaching and learning according to the 21st century so that they can achieve the objectives of the syllabus set by the MOE. The workload of teachers is more challenging in schools now because the job of a teacher is not only to be a teacher or disseminator of knowledge to students but they are also burdened with other tasks such as; facilitators, motivators, academic planners, curriculum advisors, club or association leaders, Uniform Unit Advisors, sports coaches and more. In addition, Wong et al., (2018) stated that the current educational challenges, require active participation by teachers to use ICT technology in the teaching process. This statement is confirmed by Wei et al. (2016) where teachers' acceptance of ICT is highly dependent on the teacher's attitude towards ICT technology. Referring to the above issue, it is important for us to

know whether there is a relationship between the level of mastery with the attitude of teachers in the use of Information and Communication Technology (ICT) in PdPc Tamil in the classroom.

Indeed, it is undeniable that the implementation of ICT in schools has changed the teaching process from conventional teaching methods to computer learning methods. According to Raman and Shariff (2018), developing countries need more teachers who have skills in mastering the field of Information and Communication Technology (ICT). Therefore, Raman and Shariff (2018) recommended that it is important to produce teachers who are qualified and capable of operating computers and at the same time will make full use of the ICT facilities available in schools for efficient teaching and learning. At the same time, the results of Halili and Suguneswary (2016) showed that teachers working in Tamil Cluster Schools in Pahang do not have a negative attitude towards using facilities such as audiovisual materials and only a handful of teachers undergo ICT training in integrating ICT in the teaching and learning process and the rest stated that their ability to use ICT in PdPc depends on leisure time i.e. after the end of extracurricular activities and also depends on the speed of the internet line. As such, this study aims to find out whether there is a relationship between Perceived Ease of Use and Teacher Attitudes in Tamil PdPc in the classroom.

Nachiappan et al. (2017) found that school teachers are usually burdened with many school tasks and this scenario can reduce their focus on the main task. This statement is supported by Johari et al. (2018) who stated that in addition to the academic field, teachers also have to take on other duties whether academic or non-academic assignments such as serving as committee chairman in different duties in the school. This issue directly reduces the time of primary school teachers to use ICT in handling the teaching process. At the same time, Halili and Suguneswary (2016) also stated that the use of computer-based teaching aids (TA) for Tamil PdPc is a recent trend that is not uncommon for Tamil teachers. Therefore, the researcher has to find out whether there is a relationship between the practices of Teaching Aids (TA) of teachers with the attitude of teachers in PdPc Tamil in the classroom.

One of the causes that cause teachers to face stress in school is as a result of teachers 'involvement in school activities which often causes them to have to work during school holidays to ensure the lesson plan from the Department of Education runs smoothly as planned (Johari et al., 2018). Thus, teachers need to be given more autonomy while performing their work. Consistent with this problem, Zamir and Thomas (2019) and Ali et al. (2017) asserted that highly controlled and complicated work will impede teachers' freedom and creativity and this can result in several undesirable outcomes including a lack of focus in teaching that ultimately results in low performance amongst students. In this regard, this study is determined to find out whether there is a relationship between the

level of preparation with the attitude of teachers in PdPc Tamil in the classroom.

According to Goyal and Arora (2012), failure to achieve the right balance in terms of effort and reward is closely linked to a lack of control over workload and a lack of energy in meeting personal needs and commitments. An imbalance between these two factors will result in fatigue, impaired performance, and a deteriorating quality of life. Concerning this, Johari et al. (2018) revealed that almost 90 percent of primary school teachers serving in Batu Pahat, Johor have made the consideration to give up their careers within two years due to high workload. At the same time, Zamir and Thomas (2019) have reported that one of the reasons for work stress among teachers is due to a very heavy workload. This statement is supported by Ali et al. (2017) who agreed that a heavy workload will affect employee morale, quality of life, and job satisfaction. In the context of teachers, such adverse effects will affect the quality of teaching in particular and the quality of national education in general. As such, this study is determined to examine what are the hindering factors of Tamil Language teachers in the use of Multimedia Technology in Tamil PdPc in the classroom.

This study uses four variables from the TAM model, namely usefulness and usability factors. TAM is a model used to predict consumer acceptance of technology based on two variables, namely perceived usefulness (PU); Perceived ease of use (PEU); Teacher's Attitude toward Use (attitude, ATT), and Behavioral Intention to Use (BI). In this study, the TAM model is used in determining which factors influence the intention of computer use by teachers in PdPc Tamil in the classroom. Several local studies have used the TAM model in measuring the level of teacher acceptance of ICT, including Yeop et al. (2019) and Yim et al. (2019). These studies were conducted to determine the level of acceptance of ICT by teachers in terms of motivation; stage; training and school infrastructure. But if reference is made to the studies conducted on Tamil Schools, it can be proved that no study answers the level of acceptance of Tamil teachers with student motivation simultaneously. This can be seen from the following studies; Shanmugam and Balakrishnan (2019) studied the use of ICT during PdPc Science by Tamil School teachers; Poobalan et al. (2019) Interest of Tamil school students towards 3D animation. This study will answer the mediator relationship between the Usefulness Perception factor and the Ease of Use Perception factor with teachers 'attitudes towards teachers' behavior in Tamil PdPc in the classroom.

Based on the above problem statement, several research objectives have been outlined to solve the research problem. The method that will be used in this study to collect data is a quantitative method that includes questions 1, 2, and 3. The objectives of this research are as follows:

- Objective 1: To identify the relationship between Teachers 'Perception of Usefulness (PU), Level of Mastery (LM), Teaching Aids (TA) Practice with teachers' attitudes in Tamil PdPc in the classroom.
- Objective 2: To identify the relationship between Perception of Ease of Use (PEU), Level of Preparation, Frequency of Use with the attitude of teachers in Tamil PdPc in the classroom.

In other words, each step of the research process is guided by stated research questions, including participant sample, research design, data collection methods, measurement instruments, data analysis methods, possible outcomes, and possible conclusions.

1) Is there a relationship between the Perception of Usefulness and the attitude of the teacher in the Tamil PdPc in the classroom?
2) Is there a relationship between the Level of Proficiency and the Attitude of teachers in the use of Information and Communication Technology in Tamil PdPc in the classroom?
3) Is there a relationship between the practices of Teaching Aids (TA) of teachers with the attitude of teachers in PdPc Tamil in the classroom?
4) Is there a relationship between Ease of Use and the attitude of teachers in PdPc Tamil in the classroom?
5) Is there a relationship between the level of preparation and the attitude of teachers in PdPc Tamil in the classroom?
6) Is there a relationship between the Frequency of ICT Use and the attitude of teachers in PdPc Tamil in the classroom?

Fig. 1 shows a theoretical framework of the study.

2. Methodology

This study aims to examine the issue of the level of teacher preparation in the use of Multimedia Technology in Tamil Teaching and Facilitation (PdPc) in the classroom. The variables of this study are related to the use of Multimedia Technology in teaching and its contribution. Variables for improving student achievement require a dynamic research approach firmly rooted in qualitative and quantitative epistemology. Respondents in this study extracted subjective and magnitude views (Tamil School Teachers) on the phenomena studied, while the objectivity of the entire research enterprise of this study is described in detail in the following sections.

2.1. Research design

This study uses the Technology Acceptance Model (TAM) in determining the level of preparation of teachers in the use of Multimedia Technology in Teaching and Facilitation (PdPc) Tamil in the classroom. The use of Multimedia Technology in Tamil PdPc in the classroom is a process that requires very in-depth knowledge. The teaching and learning of Tamil cannot be done based on textbooks

alone in the classroom. This model (TAM) clearly illustrates the knowledge that Tamil teachers need to understand in order to effectively integrate technology into their classrooms.

The authors of this study have emphasized how the use of Information and Communication Technology (ICT) in the classroom has become a uniquely 21st-century trend in teachers 'mastery of using Multimedia Technology in Tamil PdPc pedagogical approach in the classroom. The TAM model has sought to compile key qualities of knowledge to teachers so that they can integrate technology into their teaching and learning environments. Design (TAM) presents teachers

'practice in the use of Multimedia Technology in Tamil PdPc in the classroom to effectively integrate technology, specialized knowledge related to the affairs of combining technology with the learning environment. Furthermore, Ghavifekr et al. (2016) argued that the practice of use of Multimedia Technology in PdPc by Tamil teachers has produced the idea that teachers should have knowledge related to content and pedagogy, and education in in-service professional development programs should provide learning of the use of Multimedia Technology in Tamil PdPc in classes for teachers develop this field.
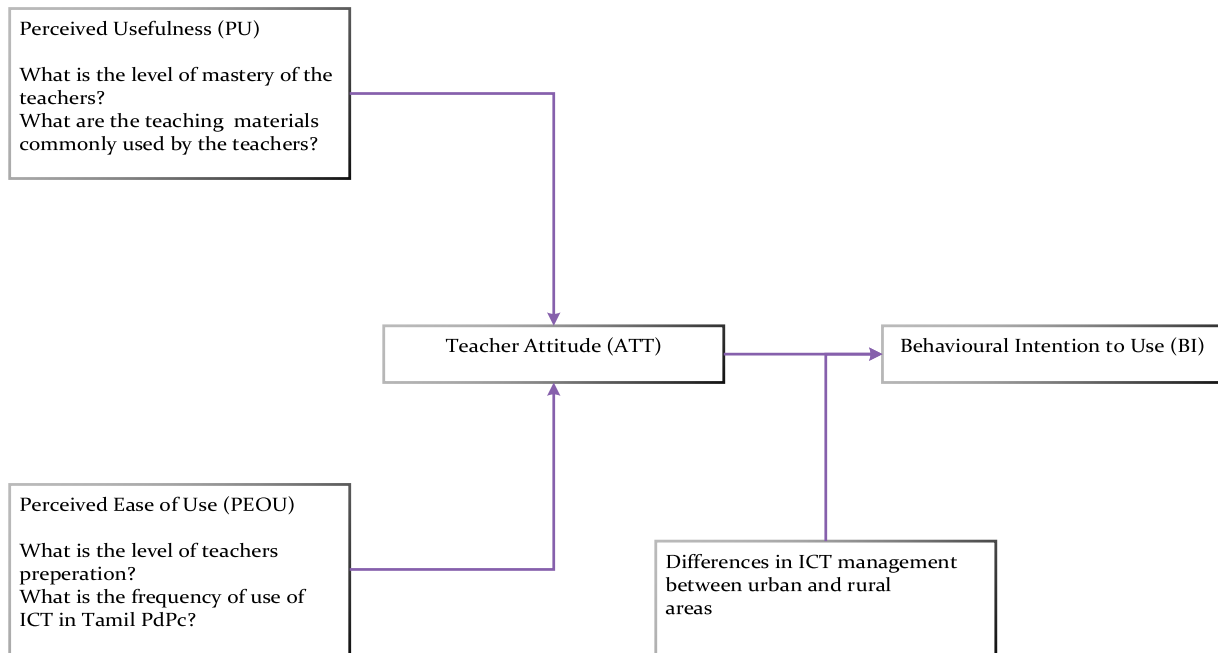
Fig. 1: Theoretical framework of the study

2.2. Study sample

In this study, the researcher selected Tamil school teachers in Selangor as the population sample of this study. From the data obtained by MOE, the researcher found that a total of 600 schools operate in Selangor, and out of the total number of schools a total of 800 teachers have served as Tamil language teachers. In this regard, in this study, a total of 800 Tamil teachers have been identified and from the population, a total of 260 teachers will be selected as the sample of this study to collect data. This situation allowed the researcher to distribute a total of 260 questionnaire forms to collect data.

2.3. Study instruments

2.3.1. Questionnaire

This study uses two methods in collecting information, namely questionnaires and interviews. The next description will detail each of these instruments in great detail.

Referring to Table 1, we can see the summary of the instruments of this study. Overall, we can see

that there are 4 parts. This questionnaire design study to extract information on the Use of Multimedia Technology in PdPc by Tamil Language teachers in the classroom. This information can be seen from the descriptions shown in parts A, B, C, D, and E where the researcher has divided this research instrument into 4 parts to extract the issues: 1) Perceived Usefulness; 2) Perceived Ease of Use responses; 3) Attitude and 4) Behavioral Intention to Use. Referring to Table 1 above we can see that Section A is about Respondent Demographic Information while sections B to E are specially designed to measure the objectives of the study.

Table 1: Questionnaire form information

Part	Description	Total Questions
A	Respondent's Demographic Information	6
B	Perceived Usefulness	19
C	Perceived Ease of Use	19
D	Teacher's Attitude	4
E	Teacher's Behavioural Intentions to Use	9

3. Findings

The results of the analysis have been discussed in the following sections.

3.1. Descriptive analysis

Table 2 shows a summary of the genders of the respondents involved in this study. Referring to Table 2; we can see that overall, the number of female teachers is higher compared to the number of male teachers in this study. This statement can be seen from the number of female teachers which is 205 teachers compared to male teachers which only consists of 55 people.

Table 2: Gender formulation

		Frequency	Percent
	Male	55	21.2
Valid	Female	205	78.8
	Total	260	100.0

Table 3 shows a summary of the ages of the respondents involved in this study. Based on Table 3, we can see that the majority of respondents in this study are teachers in the age range of 32-42 years which is 108 teachers and the second highest is from the age range of 43-53 years which is 91 teachers while the third-highest is from the age range 53 years and above, which is 36 teachers. Finally, only 25 teachers were identified from the 21-31 age category.

Table 3: Age distribution

		Frequency	Percent
	21-31	25	9.6
	32-42	108	41.5
Valid	43-53	91	35.0
	53 above	36	13.8
	Total	260	100.0

Table 4 shows a summary of the teaching experiences of the respondents involved in this study. The majority of the respondents of this study who have teaching experience from 1-5 years are as many as 95 teachers and further, as many as 88 teachers stated that they have work experience from 6-10 years. In addition, only 40 teachers stated that they had less than 1 year of experience and only 37 teachers stated that they had teaching experience of more than 10 years.

Table 4: Summary of teaching experience

		Frequency	Percent
	<1 Tahun	40	15.4
	1-5	95	36.5
Valid	6-10	88	33.8
	>10	37	14.2
	Total	260	100.0

Table 5 shows a summary of the school areas involved in this study. Referring to Table 5 above we can see the conclusion that the school area of the respondents of this study are mostly teachers in urban areas which is 167 people while the respondents from rural areas are 93 teachers.

Table 5: School areas

		Frequency	Percent
	City	167	64.2
Valid	Rural	93	35.8
	Total	260	100.0

Table 6 shows a summary of the teaching methods used by Tamil teachers in teaching Tamil subjects. Overall, we can see that the majority of respondents in this study use modern methods in teaching that is as many as 148 teachers use computer aids in teaching Tamil and for the traditional method also recorded the number of teachers as many as 112 teachers who stated that they use traditional methods of teaching using a whiteboard or textbook in class.

Table 6: Summary of teaching methods

		Frequency	Percent
	Traditional	112	43.1
Valid	Modern (ICT)	148	56.9
	Total	260	100.0

Referring to Table 7, we can see a summary of the level or ability to handle ICT in the classroom by Tamil teachers. Overall, we can see that most of the teachers in this study have a moderate ability in handling ICT to conduct PdPc Tamil which is 112 teachers. Meanwhile, another 76 teachers stated that they are good at using ICT in teaching Tamil and only 72 teachers stated that they use less ICT in teaching Tamil in the classroom.

Table 7: Summary of ability to control ICT

		Frequency	Percent
	High	76	29.2
Valid	Medium	112	43.1
	Low	72	27.7
	Total	260	100.0

Based on Table 8, we can see a summary of the types of software that are frequently used by Tamil teachers in teaching Tamil. In total, there is 4 software that got the highest response in this study namely; Powerpoint (50 teachers); MS Word (54 teachers); Google classroom (25 teachers); Google Drive Social Media Application (16 teachers). While the type of software that received less attention by Tamil language teachers is the software (E-books; Recording; Live worksheet online assignments; Audio Clips; Photos) that are each only 4 teachers have given support.

Table 8: Summary of apps used in PdPc

		Frequency	Percent
	Google Classroom	25	9.6
	Google meet	14	5.4
	TV Pendidikan	12	4.6
	WhatsApp	12	4.6
	Telegram	12	4.6
	Youtube	9	3.5
	Facebook	6	2.3
	E-mail	10	3.8
	Drive	16	6.2
	E-permainan	8	3.1
Valid	Apps Playstore	4	1.5
	Video	8	3.1
	E-buku	4	1.5
	Rakaman	4	1.5
	Live worksheet –tugasan dlm talian	4	1.5
	Klip Audio	4	1.5
	Photos	4	1.5
	MS Word	54	20.8
	PowerPoint	50	19.2
	Total	260	100.0

3.2. Factor analysis

Table 9 shows the results of factor analysis conducted on 35 items in this study. Overall, the results of factor analysis for all items in this study showed a significant KMO value was more than p<0.50 which is 0.555. While the value of loading value for all 35 variables of this study is larger that is more than p<0.50 compared to the minimum value recommended by Hair et al. (2018). In addition, the researcher did not find any cross-loading problem (item value less than 0.5) on 35 variables from the results of factor analysis.

Table 9: Factor analysis

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.555
Bartlett's Test of Sphericity	Approx. Chi-Square	8806.947
	Df	1275
	Sig.	0.000

Communalities		
	Initial	Extraction
PU1	1.000	0.770
PU2	1.000	0.779
PU3	1.000	0.842
PU4	1.000	0.739
PU5	1.000	0.841
PU6	1.000	0.818
PU7	1.000	0.886
PU8	1.000	0.814
PU9	1.000	0.779
PU10	1.000	0.873
LMG1	1.000	0.941
LMG2	1.000	0.903
LMG3	1.000	0.813
LMG4	1.000	0.684
LMG5	1.000	0.618
TA1	1.000	0.896
TA2	1.000	0.894
TA3	1.000	0.636
TA4	1.000	0.727
TA5	1.000	0.739
PEU1	1.000	0.683
PEU2	1.000	0.605
PEU3	1.000	0.678
PEU4	1.000	0.674
PEU5	1.000	0.663
PEU6	1.000	0.677
PEU7	1.000	0.773
PEU8	1.000	0.635
PEU9	1.000	0.686
LM1	1.000	0.644
LM2	1.000	0.681
LM3	1.000	0.707
LM4	1.000	0.706
LM5	1.000	0.707
KP1	1.000	0.598
KP2	1.000	0.774
KP3	1.000	0.795
KP4	1.000	0.729
KP5	1.000	0.576
ATT1	1.000	0.820
ATT2	1.000	0.884
ATT3	1.000	0.851
ATT4	1.000	0.674
BI1	1.000	0.648
BI2	1.000	0.501
BI3	1.000	0.886
BI4	1.000	0.862
BI5	1.000	0.720
BI6	1.000	0.738
BI7	1.000	0.727
BI8	1.000	0.911
Extraction Method: Principal Component Analysis		

3.3. Reliability analysis

Reliability analysis was conducted to determine the reliability of each variable in this study. Table 10 shows the Reliability analysis in this study. After conducting regression analysis on all 8 variables, this study found that the Cronbach alpha value for all variables was more than 0.5 and no items were discarded due to low Cronbach alpha value or no cross-loading problem. Thus, we can find that all of these variables show a higher Cronbach alpha value

than the minimum value recommended by Hair et al. (2018).

Table 10: Reliability analysis

Code	Description	Cronbach Alpha value
PU	Perceived usefulness	0.739
LMG	Teacher's level of mastery	0.733
TA	Teaching Aids (TA)	0.739
PEU	Perceived Ease of Use	0.688
LM	Teacher preparation level	0.771
KP	Frequency of use of ICT	0.768
ATT	Attitude	0.898
BI	Behavioral Intention	0.698

3.4. Correlation analysis

Correlation analysis is usually done to find out if there is a multi colinearity problem among the variables of this study. Table 11 shows the correlation analysis found in this study. Overall, in this study, the results of correlation analysis on all variables show that no multicollinearity problem has been found on all variables shown in Table 11.

Table 11: Correlation analysis

					Correlations				
		PU	LMG	TA	PEU	LM	KP	ATT	BI
PU	Pearson Correlation	1	0.393**	0.134*	-0.035	0.051	0.263**	0.206**	0.239**
	Sig. (2-tailed)		0.000	0.031	0.074	0.014	0.000	0.001	0.000
	Sum of Squares and Cross-products	31.613	18.557	5.113	-1.253	2.241	10.610	12.496	9.244
	Covariance	0.122	0.072	0.020	-0.005	0.009	0.041	0.048	0.036
	N	260	260	260	260	260	260	260	260
LMG	Pearson Correlation	0.393**	1	0.123*	0.055	-0.046	0.192**	0.066	0.292**
	Sig. (2-tailed)	0.000		0.048	0.074	0.060	0.002	0.087	0.000
	Sum of Squares and Cross-products	18.557	70.652	7.009	2.960	-3.030	11.592	6.014	16.879
	Covariance	0.072	0.273	0.027	0.011	-0.012	0.045	0.023	0.065
	N	260	260	260	260	260	260	260	260
TA	Pearson Correlation	0.134*	0.123*	1	-0.042	0.031	0.214**	0.028	0.401**
	Sig. (2-tailed)	0.031	0.048		0.097	0.018	0.001	0.052	0.000
	Sum of Squares and Cross-products	5.113	7.009	46.279	-1.832	1.656	10.442	2.062	18.788
	Covariance	0.020	0.027	0.179	-0.007	0.006	0.040	0.008	0.073
	N	260	260	260	260	260	260	260	260
PEU	Pearson Correlation	-0.035	0.055	-0.042	1	0.090	-0.051	-0.072	-0.082
	Sig. (2-tailed)	0.074	0.074	0.097		0.047	0.016	0.045	0.085
	Sum of Squares and Cross-products	-1.253	2.960	-1.832	40.527	4.499	-2.316	-4.966	-3.616
	Covariance	-0.005	0.011	-0.007	0.156	0.017	-0.009	-0.019	-0.014
	N	260	260	260	260	260	260	260	260
LM	Pearson Correlation	0.051	-0.046	0.031	0.090	1	0.103	0.097	-0.031
	Sig. (2-tailed)	0.014	0.060	0.018	0.047		0.096	0.018	0.015
	Sum of Squares and Cross-products	2.241	-3.030	1.656	4.499	61.294	5.812	8.212	-1.690
	Covariance	0.009	-0.012	0.006	0.017	0.237	0.022	0.032	-.007
	N	260	260	260	260	260	260	260	260
KP	Pearson Correlation	0.263**	0.192**	0.214**	-0.051	0.103	1	0.084	0.191**
	Sig. (2-tailed)	0.000	0.002	0.001	0.416	0.096		0.075	0.002
	Sum of Squares and Cross-products	10.610	11.592	10.442	-2.316	5.812	51.594	6.540	9.436
	Covariance	0.041	0.045	0.040	-0.009	0.022	0.199	0.025	0.036
	N	260	260	260	260	260	260	260	260
ATT	Pearson Correlation	0.206**	0.066	0.028	-0.072	0.097	0.084	1	0.149*
	Sig. (2-tailed)	0.001	0.087	0.052	0.045	0.018	0.075		0.016
	Sum of Squares and Cross-products	12.496	6.014	2.062	-4.966	8.212	6.540	116.393	11.099
	Covariance	0.048	0.023	0.008	-0.019	0.032	0.025	0.449	0.043
	N	260	260	260	260	260	260	260	260
BI	Pearson Correlation	0.239**	0.292**	0.401**	-0.082	-0.031	0.191**	0.149*	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.085	0.015	0.002	0.016	
	Sum of Squares and Cross-products	9.244	16.879	18.788	-3.616	-1.690	9.436	11.099	47.410
	Covariance	0.036	0.065	0.073	-0.014	-0.007	0.036	0.043	0.183
	N	260	260	260	260	260	260	260	260

**. Correlation is significant at the 0.01 level (2-tailed); *. Correlation is significant at the 0.05 level (2-tailed)

3.5. Regression analysis

The researcher of this study has conducted a regression analysis on PU (Perceived Usefulness) and ATT (Teacher Attitude). Table 12 shows the regression analysis of PU and ATT found in this study. The results of the regression analysis show that there is a significant relationship between PU and ATT parts. This can be seen from the results of the analysis that the value of Sig 0.001 is less than the value of Sig p<0.005. Moreover, we can also see that the beta value is 0.206 and this value proves that PU has a correlation of 0.206% against ATT.

The authors of this study conducted a regression analysis on LMG (Teacher's Level of Mastery Level) and ATT (Teacher Attitude). Table 13 shows the regression analysis of LMG and ATT found in this study. The results of the regression analysis study proved that there was a significant relationship between the LMG and ATT parts. This can be seen from the results of the analysis that is the value of Sig 0.003 which is less than the value of Sig p<0.100. Moreover, we can also see that the beta value is 0.066 and this note proves that ATT has a correlation of 0.066% against LMG.

Table 12: Regression analysis between PU and ATT

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
					Change Statistics					
1	.206[a]	0.042	0.039	0.65726	0.042	11.433	1	258	0.001	2.228

a. Predictors: (Constant), PU
b. Dependent Variable: ATT

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	4.939	1	4.939	11.433	0.001[b]
	Residual	111.454	258	0.432		
	Total	116.393	259			

a. Dependent Variable: ATT
b. Predictors: (Constant), PU

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	2.382	0.453		5.255	0.000					
	PU	0.395	0.117	0.206	3.381	0.001	0.206	0.206	0.206	1.000	1.000

a. Dependent Variable: ATT

Table 13: Regression Analysis between LMG and ATT

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
					Change Statistics					
1	0.066[a]	0.004	0.001	0.67019	0.004	1.140	1	258	0.003	2.208

a. Predictors: (Constant), LMG
b. Dependent Variable: ATT

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.512	1	0.512	1.140	0.003[b]
	Residual	115.881	258	0.449		
	Total	116.393	259			

a. Dependent Variable: ATT
b. Predictors: (Constant), LMG

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	3.574	0.316		11.317	0.000					
	LMG	0.085	0.080	0.066	1.068	0.003	0.066	0.066	0.066	1.000	1.000

a. Dependent Variable: ATT

The authors of this study conducted a regression analysis on TA (Teaching Aids) and ATT (Teacher Attitude). Table 14 shows the regression analysis of TA and ATT found in this study. The results of the regression analysis show that there is a significant relationship between the TA and ATT parts. This can be seen from the results of the analysis that is the value of Sig 0.007 which is less than the value of Sig $p<0.100$. Moreover, we can see that the beta value is 0.028 and this note proves that ATT has a correlation of 0.028% against TA.

Table 14: Regression analysis between TA and ATT

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
					Change Statistics					
1	.028[a]	0.001	0.003	0.67140	0.001	0.204	1	258	0.007	2.210

a. Predictors: (Constant), TA
b. Dependent Variable: ATT

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	0.092	1	0.092	0.204	0.007[b]
	Residual	116.301	258	0.451		
	Total	116.393	259			

a. Dependent Variable: ATT
b. Predictors: (Constant), TA

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	3.738	0.379		9.852	0.000					
	TA	0.045	0.099	0.028	0.451	0.007	0.028	0.028	0.028	1.000	1.000

a. Dependent Variable: ATT

The authors of this study conducted a regression analysis on PEU (Perceived Ease of Use) and ATT (Teacher Attitude). Table 15 shows the regression analysis of PEU and ATT found in this study. The results of the regression analysis show that there is a significant relationship between the PEU and ATT parts. This can be seen from the results of the analysis that is the value of Sig 0.002 which is less than the value of Sig p<0.100. Moreover, we can see that the beta value is 0.072 and this note proves that ATT correlates 0. 072 % against PEU.

Table 15: Regression analysis between PEU and ATT

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
					Change Statistics					
1	0.072[a]	0.005	0.001	0.66991	0.005	1.356	1	258	0.002	2.191

a. Predictors: (Constant), PEU
b. Dependent Variable: ATT

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	0.609	1	0.609	1.356	0.002[b]
	Residual	115.784	258	0.449		
	Total	116.393	259			

a. Dependent Variable: ATT
b. Predictors: (Constant), PEU

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	4.375	.403		10.862	0.000					
	PEU	-.123	.105	0.072	-1.165	0.002	-0.072	-0.072	-0.072	1.000	1.000

a. Dependent Variable: ATT

The authors of this study conducted a regression analysis on LM (Teacher Preparation Level) and ATT (Teacher Attitude). Table 16 shows the regression analysis of LM and ATT found in this study. The results of the regression analysis show that there is a significant relationship between the parts of LM and ATT. This can be seen from the results of the analysis that is the value of Sig 0.001 which is less than the value of Sig p<0.100. Moreover, we can see the beta value is 0.097 and this note proves that LM correlates 0. 097% against ATT.

Table 16: Regression analysis between LM and ATT

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
					Change Statistics					
1	.097[a]	.009	0.006	0.66848	0.009	2.462	1	258	0.001	2.215

a. Predictors: (Constant), LM
b. Dependent Variable: ATT

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1.100	1	1.100	2.462	0.001[b]
	Residual	115.293	258	0.447		
	Total	116.393	259			

a. Dependent Variable: ATT
b. Predictors: (Constant), LM

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	3.401	0.326		10.424	0.000					
	LM	0.134	0.085	0.097	1.569	0.001	0.097	0.097	0.097	1.000	1.000

a. Dependent Variable: ATT

The authors of this study conducted a regression analysis on KP (Frequency of ICT Use) and ATT (Teacher Attitude). Table 17 shows the regression analysis of KP and ATT found in this study. The results of the regression analysis show that there is a significant relationship between KP and ATT parts. This can be seen from the results of the analysis that is the value of Sig 0.002 which is less than the value

of Sig p<0.10. Moreover, we can see that the beta value is 0.211 and this note proves that KP has a correlation of 0.211% against ATT.

Table 17: Regression analysis between KP and ATT

					Model Summary[b]					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	0.084[a]	0.007	0.003	0.66927	0.007	1.851	1	258	0.002	2.230

a. Predictors: (Constant), KP
b. Dependent Variable: ATT

	ANOVA[a]					
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.829	1	0.829	1.851	0.002[b]
	Residual	115.564	258	0.448		
	Total	116.393	259			

a. Dependent Variable: ATT
b. Predictors: (Constant), KP

	Coefficients[a]										
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	3.422	0.360		9.513	.000					
	KP	0.127	0.093	0.084	1.361	.002	0.084	0.084	0.084	1.000	1.000

a. Dependent Variable: ATT

The authors of this study conducted a regression analysis on PU, LMG, TA, and ATT (Teacher Attitude). Table 18 shows the regression analysis of PU, LMG, TA, and ATT found in this study. The results of the regression analysis show that there is a significant relationship between the parts (PU, LMG, TA) and ATT. This can be seen from the results of the analysis that is the value of Sig 0.011 which is less than the value of Sig p<0.100. Moreover, we can see that the value of F is 3.805 and this note proves that ATT has a correlation of 3.80% against (PU, LMG, TA).

Table 18: Regression analysis between PU, LMG, TA, and ATT

					Model Summary[b]					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.207[a]	0.043	0.031	0.65974	0.043	3.805	3	256	0.011	2.237

a. Predictors: (Constant), TA, LMG, PU
b. Dependent Variable: ATT

	ANOVA[a]					
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.969	3	1.656	3.805	0.011[b]
	Residual	111.424	256	0.435		
	Total	116.393	259			

a. Dependent Variable: ATT
b. Predictors: (Constant), TA, LMG, PU

	Coefficients[a]										
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	2.410	.565		4.268	.000					
	PU	.408	.128	.213	3.183	.002	0.206	0.195	.195	0.838	1.193
	LMG	-.022	.086	-.017	-.260	.795	0.066	-0.016	-.016	0.841	1.189
	TA	.003	.098	.002	.029	.977	0.028	0.002	.002	0.976	1.024

a. Dependent Variable: ATT

The authors of this study have conducted regression analysis on (PEU, LM, KP) and ATT (Teacher Attitude). Table 19 shows the regression analysis of PEU, LM, KP, and ATT found in this study. The results of the regression analysis show that there is a significant relationship between the parts of ATT and (PEU, LM, KP). This can be seen from the results of the analysis that is the value of Sig 0.004 which is less than the value of Sig p<0.005. Moreover, we can see that the value of F is 1.828 and this note proves that (PEU, LM, KP) there is a correlation of 1.82% towards ATT.

The authors of this study conducted regression analysis on (PU, LMG, TA, ATT) and BI (Behavioral Intention to Use). Table 20 shows the regression analysis of PU, LMG, TA, ATT, and BI found in this study. The results of the regression analysis showed that there was a significant relationship between the parts (PU, LMG, TA, ATT) and BI. This can be seen from the results of the analysis that is the value of Sig 0.000 which is less than the value of Sig p<0.001. Moreover, we can see that the value of F is 20.338 and this note proves that BI has a correlation of 20.3% against (PU, LMG, TA, ATT).

Table 19: Regression analysis between PEU, LM, KP, and ATT

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
					Change Statistics					
1	.145[a]	0.021	0.010	0.66718	0.021	1.828	3	256	0.001	2.236

a. Predictors: (Constant), KP, PEU, LM
b. Dependent Variable: ATT

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.441	3	0.814	1.828	0.004[b]
	Residual	113.952	256	0.445		
	Total	116.393	259			

a. Dependent Variable: ATT
b. Predictors: (Constant), KP, PEU, LM

Coefficients[a]

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.	Zero-order	Partial	Part	Tolerance	VIF
							Correlations			Collinearity Statistics	
1	(Constant)	3.496	0.604		5.789	0.000					
	PEU	-.131	0.105	-0.077	-1.246	0.002	-0.072	-0.078	-0.077	0.988	1.012
	LM	.134	0.086	0.097	1.552	0.001	0.097	0.097	0.096	0.980	1.020
	KP	.106	0.094	0.070	1.131	0.003	0.084	0.071	0.070	0.986	1.015

a. Dependent Variable: ATT

Table 20: Regression analysis between PU, LMG, TA, ATT, and BI

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
					Change Statistics					
1	0.492[a]	0.242	0.230	0.37544	0.242	20.338	4	255	0.000	2.361

a. Predictors: (Constant), ATT, TA, LMG, PU
b. Dependent Variable: BI

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11.467	4	2.867	20.338	0.000[b]
	Residual	35.943	255	0.141		
	Total	47.410	259			

a. Dependent Variable: BI
b. Predictors: (Constant), ATT, TA, LMG, PU

Coefficients[a]

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.	Zero-order	Partial	Part	Tolerance	VIF
							Correlations			Collinearity Statistics	
1	(Constant)	1.176	.333		3.536	.000					
	PU	.107	.074	.087	1.441	.151	0.239	.090	.079	.806	1.240
	LMG	.169	.049	.206	3.462	.001	0.292	.212	.189	.841	1.190
	TA	.366	.056	.361	6.545	.000	0.401	.379	.357	.976	1.024
	ATT	.069	.036	.108	1.931	.055	0.149	.120	.105	.957	1.045

a. Dependent Variable: BI

The authors of this study conducted a regression analysis between (PEU, ATT, LM, KP) and BI (Behavioral Intention to Use). Table 21 shows the regression analysis between PEU, ATT, LM, KP, and BI found in this study. The results of the regression analysis showed that there was a significant relationship between the BI and (PEU, ATT, LM, KP) parts. This can be seen from the results of the analysis that is the value of Sig 0.003 which is less than the value of Sig p<0.10. Moreover, we can see that the value of F is 4,189 and this note proves that (PEU, ATT, LM, KP) there is a correlation of 4.18% to BI.

4. Discussion of study findings

This study also examines which variables are "Perceived Usefulness" (PU) or "Perceived Ease of Use" (PEU) which greatly influences the attitude of Tamil teachers towards the use of ICT in the classroom. The results of the analysis show that Perception of Usefulness (PU) has a high influence on (ATT) teachers 'attitudes in the use of ICT in Tamil PdPc classes. This can be seen from the results of regression analysis which showed that the value of F for (PU) is 11.433) and (PEU) is only 1.356. Therefore, this study concludes that (PU) influences (ATT) teacher attitudes by 11.34% compared to (PEU) only influences (ATT) teacher attitudes by 1.35%. At the same time, if we look at the results of mediator analysis between (PU, LMG, TA, ATT) and (PEU, ATT, LM, KP) on (ATT) Teacher's Attitude and (BI) Teacher's Behavioral Intention to Use in the teaching and facilitation process of Tamil in the classroom, we can see that (PU, LMG, TA, ATT) have a high influence on (ATT) teacher's Attitude and (BI) teacher's Behavioral Intention to Use. This can be seen from the results of regression analysis of F values for (PU, LMG, TA, ATT) is 20,338 and (PEU, ATT, LM, KP) is only 4,189. Therefore, this study

concludes that (PU) has a high influence on (BI) Attitudes and (BI) Behavioral Intentions of Teachers in the use of Information and Communication Technology (ICT) in Tamil PdPc.

Table 21: Regression analysis between PEU, ATT, LM, KP, and BI

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
						Change Statistics				
1	.248[a]	.062	.047	.41768	0.062	4.189	4	255	0.003	2.287

a. Predictors: (Constant), KP, PEU, ATT, LM
b. Dependent Variable: BI

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	2.923	4	.731	4.189	0.003[b]
	Residual	44.486	255	.174		
	Total	47.410	259			

a. Dependent Variable: BI
b. Predictors: (Constant), KP, PEU, ATT, LM

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	3.342	.402		8.311	0.000					
	PEU	-.063	.066	-.058	-.951	0.342	-.082	-.059	-.058	.982	1.018
	LM	-.051	.054	-.058	-.944	0.346	-.031	-.059	-.057	.971	1.030
	ATT	.086	.039	.135	2.209	0.028	.149	.137	.134	.979	1.021
	KP	.175	.059	.182	2.978	0.003	.191	.183	.181	.981	1.020

a. Dependent Variable: BI

Referring to the results of a study by the Ministry of Education Malaysia in 2010, it was found that the use of ICT in schools is limited. Only 80% of teachers use ICT less than one hour a week and one-third of students stated that their teachers frequently use ICT in the classroom. MOE has managed to identify the cause behind this scenario, namely all teachers give the reason that the cause behind the limited use of ICT is due to limited training and support services from MOE. Concerning the above statement, the results of this study managed to get the latest answer that is contrary to the findings of the Ministry of Education Malaysia. The results of this study successfully prove that all urban and rural teachers often use ICT in the classroom. As evidence of the results of the quantitative analysis showed that as many as (73%) of teachers in urban areas and (67%) teachers in rural areas are skilled in handling ICT in the classroom.

In conclusion, this study has revealed that the use of ICT does motivate teachers in teaching Tamil. Despite some problems faced by teachers while implementing distance teaching activities (during the Covid-19 pandemic) yet they managed to find solutions in the implementation of ICT in Tamil PdPc. Because the teachers believe that the use of ICT can transform their teaching methods, they show positive intentions and attitudes towards ICT. In addition, strong incentives and support from the MOE have given positive results in the frequency of use of ICT by teachers in the classroom. At the same time, the researchers of this study found that there are still small barriers that need to be overcome such as limited knowledge and skills of students and parents in operating ICT, especially in rural areas that can be obstacles to the effectiveness of distance education. This study is limited to a small sample of Tamil teachers in the Selangor districts and for the future other researchers can develop the idea of this study by conducting studies throughout the state to gain greater knowledge on the implementation of ICT in future studies.

Compliance with ethical standards

Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

References

Ali SRO, Nordin NC, Said NSM, Manaf SMA, and Musa WMW (2017). Work related stressor and job performance among secondary school teachers in Malaysia. Journal of Applied Environmental and Biological Sciences, 7(12): 152-156.

Ambikapathy A, Halili SH, and Ramasamy MD (2020). Kemahiran TMK dalam kalangan guru-guru bahasa Tamil sekolah menengah [ICT skills among secondary school Tamil language teachers]. Muallim Journal of Social Sciences and Humanities, 4(3): 99-114. https://doi.org/10.33306/mjssh/85

Comi SL, Argentin G, Gui M, Origo F, and Pagani L (2017). Is it the way they use it? Teachers, ICT and student achievement. Economics of Education Review, 56: 24-39. https://doi.org/10.1016/j.econedurev.2016.11.007

Drossel K and Eickelmann B (2017). Teachers' participation in professional development concerning the implementation of new technologies in class: A latent class analysis of teachers and the relationship with the use of computers, ICT self-efficacy and emphasis on teaching ICT skills. Large-Scale Assessments in Education, 5(1): 1-13. https://doi.org/10.1186/s40536-017-0053-7

Ghavifekr S, Kunjappan T, Ramasamy L, and Anthony A (2016). Teaching and learning with ICT tools: Issues and challenges from teachers' perceptions. Malaysian Online Journal of Educational Technology, 4(2): 38-57.

Gil-Flores J, Rodríguez-Santero J, and Torres-Gordillo JJ (2017). Factors that explain the use of ICT in secondary-education classrooms: The role of teacher characteristics and school infrastructure. Computers in Human Behavior, 68: 441-449. https://doi.org/10.1016/j.chb.2016.11.057

Goyal M and Arora S (2012). Harnessing work: Family life balance among teachers of educational institutions. International Journal of Applied Services Marketing Perspectives, 1(2): 170-176.

Hair JF, Sarstedt M, Ringle CM, and Gudergan SP (2018). Advanced issues in partial least squares structural equation modeling. SAGE Publications, Thousand Oaks, USA. https://doi.org/10.1007/978-3-319-05542-8_15-1

Halili SH and Suguneswary R (2016). Teachers' acceptance on using information communication and technology (ICT) in teaching Tamil language. The Online Journal of New Horizons in Education, 6(2): 101-111.

Islam AA, Mok MM C, Gu X, Spector J, and Hai-Leng C (2019). ICT in higher education: An exploration of practices in Malaysian universities. IEEE Access, 7: 16892-16908. https://doi.org/10.1109/ACCESS.2019.2895879

Istifci I (2019). A comparative study on language teachers' perceptions of ICT self-efficacy. In: Ørngreen R, Meyer B, and Buhl M (Eds.), The ECEL 2019 18th European Conference on e-Learning: 231-238. Academic Conferences and Publishing International Limited, Oxfordshire, UK.

Johari J, Yean Tan F, and Tjik Zulkarnain ZI (2018). Autonomy, workload, work-life balance and job performance among teachers. International Journal of Educational Management, 32(1): 107-120. https://doi.org/10.1108/IJEM-10-2016-0226

Nachiappan S, Osman Z, Hassan NM, Jamil N, Hussien H, Othman M, and Suffian S (2017). The implications of using teaching aids in the teaching of the science and technology component in Malaysian preschools. International Journal of Academic Research in Business and Social Sciences, 7(11): 2222-6990. https://doi.org/10.6007/IJARBSS/v7-i11/3485

Poobalan N, Zaharudin R, and Voon YT (2019). Penggunaan bahan multimedia interaktif 3D animasi ('Scratch') dalam kaedah pembelajaran teradun terhadap minat dan pencapaian murid Tahun 5 bagi mata pelajaran Sains. Jurnal Pendidikan Sains Dan Matematik Malaysia, 9(1): 49-56. https://doi.org/10.37134/jpsmm.vol9.1.6.2019

Raman A and Shariff BS (2018). Relationship between technology leadership, ICT facility, competency, commitments towards effectiveness of school management tasks in schools. PEDAGOGIA: Jurnal Pendidikan, 7(1): 4-11. https://doi.org/10.21070/pedagogia.v7i1.1292

Shanmugam K and Balakrishnan B (2019). Designing an ICT guiding framework for science teachers in rural Tamil schools in Perak [Pembinaan kerangka panduan ICT bagi mata pelajaran sains untuk guru-guru SJK (T) di luar bandar di negeri Perak]. Muallim Journal of Social Sciences and Humanities, 3(4): 441-458. https://doi.org/10.33306/mjssh/34

Wei LM, Piaw CY, Kannan S, and Moulod SA (2016). Relationship between teacher ICT competency and teacher acceptance and use of School Management System (SMS). Malaysian Online Journal of Educational Technology, 4(4): 36-52.

Wong CY, Ibrahim R, Hamid TA, and Mansor EI (2018). Mismatch between older adults' expectation and smartphone user interface. Malaysian Journal of Computing, 3(2): 138-153. https://doi.org/10.24191/mjoc.v3i2.4889

Yeop MA, Yaakob MFM, Wong KT, Don Y, and Zain FM (2019). Implementation of ICT policy (Blended Learning Approach): Investigating factors of behavioural intention and use behaviour. International Journal of Instruction, 12(1), 767-782. https://doi.org/10.29333/iji.2019.12149a

Yim JSC, Moses P, and Azalea A (2019). Predicting teachers' continuance in a virtual learning environment with psychological ownership and the TAM: A perspective from Malaysia. Educational Technology Research and Development, 67(3): 691-709. https://doi.org/10.1007/s11423-019-09661-8

Zamir S and Thomas M (2019). The effects of university teachers' perception, attitude and motivation on their readiness for the integration of ICT in classroom teaching. Journal of Education and Educational Development, 6(2): 308-326. https://doi.org/10.22555/joeed.v6i2.2712