

Received : February 01, 2021
Accepted : February 05, 2021
Published : February 24, 2021

**Conference on Management, Business,
Innovation, Education and Social Science**
<https://journal.uib.ac.id/index.php/combines>

The relationship between preschool teachers' teaching experience and belief and their usage of ICT and the Internet in early childhood education.

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Abstract

The Malaysian Government has put effort into Information and Communications Technology (ICT) for educational purposes encompassing the preschool setting. Regardless of the benefits of ICT to children's learning development and the purpose of advocate integration of ICT in the education field, the usage of ICT by preschool teachers in the classroom was still not significant. The objective of this study was to examine the relationship between preschool teachers' teaching experience and beliefs and their usage of (ICT) and the Internet in early childhood education (ECE). Results showed that there was no significant relationship between preschool teachers' teaching experience and beliefs and their usage of ICT and the Internet in ECE. The findings recommend the policymakers to supply more ICT facilities for teachers to well integrate ICT and expose children to Virtual Learning Environments (VLEs).

Keywords: *Preschool teachers, teaching experience, ICT beliefs*

INTRODUCTION

The first computer system was applied in Malaysia in 1999. Since then, the productivities in the fields of agriculture, business, communication, education, industry, transportation, and life, in general, improved. Today, ICT has been broadly used in these fields and life in general (Lateh & Muniandy, 2010).

According to the Auditor General (AG) report (2013), less than 5% of Malaysian teachers use ICT tools daily, therefore, the usage of ICT is extremely low in Malaysian schools. Lack of teachers' beliefs, confidence, and motivation in ICT usage is one of the factors that influence the integration of ICT in the classroom (Basargekar & Singhavi, 2017). For example, a case study in Malaysia showed that 1,856 teachers still need helps to make sure ICT work smoothly during their process of teaching in the classrooms (Hassan, 2009).

Although there are barriers to using ICT tools, ICT is remarked to bring a positive influence on teachers' teaching, and ICT is also remarked to affect their students' learning (Hassan, 2009).

Critical factors that influence ICT usage are the teachers' teaching experience with ICT in school, teachers' belief in ICT capability, teachers' ICT specialized development, and teachers' attitude towards ICT tendency usage in ECE (Kerckaert et al., 2015). The barrier of teachers' ICT usage and the Internet in ECE from the past study was teachers' perceptions or beliefs (Nikolopoulou & Gialamas, 2013). The teachers' beliefs and the presence of ICT tools and the Internet resulted in increasing teachers' ICT and Internet usage in the classroom. One study found that there was a significant difference in the influence of Malaysian teachers' beliefs towards the usage of ICT in the classroom compared to the Singaporean by which the purpose of using ICT was significantly affected by their perspective towards the use of the computer when options are given (Teo et al., 2009).

Consequently objective of this paper to examine the relationship between preschool teachers' teaching experience and beliefs on their usage of ICT and the Internet in ECE and to examine the relationship between preschool teachers' teaching experience and beliefs on the barriers of technology in ECE.

LITERATURE REVIEW

ICT in the Early Years

Europe started to implement ICT technology into the ECE setting in 2000, which is directly related to children. The ICT technology used included hardware and software such as computer games, cameras, electronic whiteboards, interactive storybooks, Internet, printer, programmable toys, scanner, telephones, and so on (Corr, 2006).

ICT technology is beneficial in the ECE setting, with advantages for young children's cognitive and social development. Preschool teachers now pay more attention to how to involve ICT efficiently for young children's learning and development process (Wang & Hoot, 2006).

ICT in the early years also benefits young children in four domains of language and literacy - listening, reading speaking, and writing (NAEYC, 2012). This is because ICT facilitates lively learning, communication, exploration, and increase children's expressiveness (NAEYC, 2012). ICT could be facilitated as an instrument to improve children's language and literacy, but not to substitute individual communication (NAEYC, 2012). Therefore, ICT integration in the classroom develops self-confidence and interpersonal skills in terms of language (NAEYC, 2012).

Teachers' Teaching Experience and Beliefs on ICT Usage

Teachers' beliefs towards ICT play a significant role in the integration of ICT in the classroom because beliefs may affect their practice in determining using ICT in their classroom teaching. Teachers' beliefs and perceptions influence their practices in combining ICT in their teaching process with traditional pedagogy and consequently, the children's development process. Beliefs can trigger the opinion of learning should be integrated with

ICT in the curriculum, which causes teachers' practices ICT implementation in the classroom teaching process (Nikolopoulou & Gialamas, 2015).

Regarding the teachers' teaching experience and beliefs on ICT usage, most of the studies have examined the preschool, primary, and secondary settings (e.g. Bakr, 2011; Liu et al., 2014). The research in Greece investigated whether the beliefs on ICT usage are distinguished by a variety of factors such as years of teaching experience, the usage of ICT with the Internet connection at home or classroom, current training in education, and their experience on ICT usage, as well as their opinion about the integration of ICT usage into ECE setting. The findings have shown that preschool teachers have positive beliefs towards ICT usage although there was inadequate access to ICT tools. There were obvious impacts on teachers' beliefs and practice in the classroom by the usage of ICT with the Internet connection at home or classroom, current training in education, and their experience on ICT usage (Tsitouridou & Vryzas, 2003).

Factors Influencing ICT Usage

Age

Age was one of the factors influencing ICT usage. One of the studies investigated the competency of ICT usage among 157 teachers in India. The findings showed that the age of teachers below 30 years old had a positive view of ICT usage and practice more ICT usage in their teaching process compared to the age of teachers above 30 years old. This was because younger teachers might easily start with a close-to-zero learning curve when using ICT, as they had been used to ICT during and before they engage in the teaching field (Nagamani & Muthuswamy, 2013). However, there is research that disagrees that age was a factor that would influence a teachers' view of ICT (Chow, 2015).

Gender

Venkatesh et al (2000) examined age and gender influence the ICT usage in the workplace by using the Theory of Planned Behavior (TPB). This study involved 355 teachers who were investigated on their behaviour of ICT usage over 5 months. The findings showed that the younger age male teachers were more intensely influenced by their behaviour toward ICT usage compared to female teachers. Another study found that male teachers have a higher level of ICT usage compared to female teachers. (Tezci, 2011).

Teachers' Confidence in ICT Usage

Findings from an American study have shown that teachers' confidence in ICT usage could influence the teachers' beliefs in using ICT in classroom teaching. Teachers who had a higher confidence level in using ICT conveyed more positive beliefs on ICT usage in the classroom practices compared to teachers who had a lower confidence level (Blackwell et al., 2014).

ICT Accessibility

A study on the factors that influence teachers' beliefs on ICT usage in the classroom conducted in Syrian schools reported that 57% of the participants owned ICT tools at home while only 33.4% of the participants only can expose ICT at school. This outcome indicated that there was a lack of ICT tools at Syrian schools, especially for teachers to integrate into their classroom teaching process (Albirini, 2006).

ICT Training

Insufficient training was one of the barriers for teachers to integrate ICT usage in classroom

practices that results in negative beliefs on ICT usage among preschool teachers in their classroom practices. Teachers who have received ICT training more efficiently integrate ICT usage in their classroom practices compared to teachers who did not receive any ICT training. Teachers who have received ICT training perceived more positive beliefs on ICT usage (Winzenried et al., 2010) and more significant integration of ICT usage in classroom practices. (Baylor & Ritchie, 2002).

The theoretical framework (see Figure 1) of this research was based on TAM (Davis, 1989). TAM is a research framework applied to identify teachers' beliefs towards ICT (Teo et al., 2009).

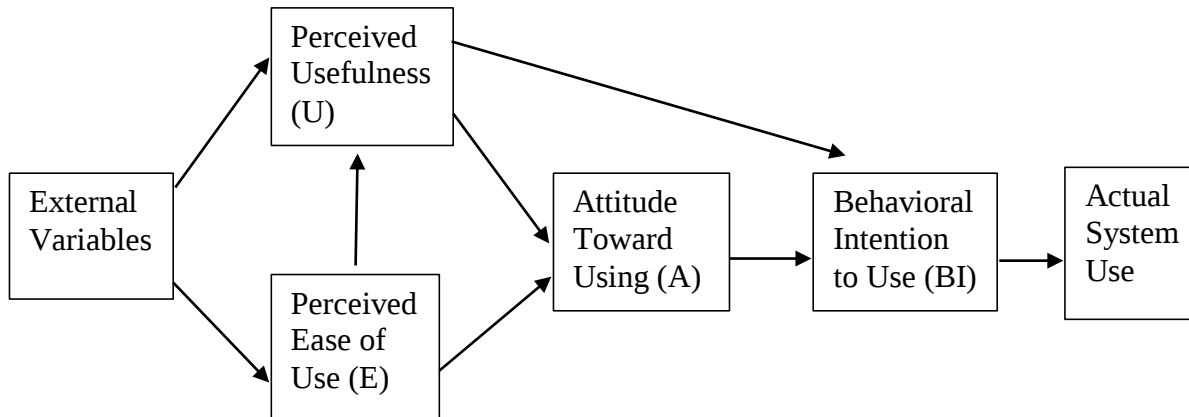


Figure 1: Technology Acceptance Model.

Source: Adapted from "User Acceptance of computer technology: A comparison of two theoretical models" by Davis et al., 1989, *Management Science*, 35(8), p. 985 (<https://doi.org/10.1287/mnsc.35.8.982>). Copyright 1989 by The Institute of Management Sciences

Conceptual Framework

In the conceptual framework of this study (see Figure 2), the independent variables were preschool teachers' teaching experience and teachers' beliefs. The dependent variable was the usage of ICT and the Internet, which referred to the level of preference of the existence and usage of ICT and the Internet in classroom practices among preschool teachers by Comfort With ICT (CWICT) Scale developed by (Zaki, 2013). The CWICT Scale is explained in detail in the next chapter.

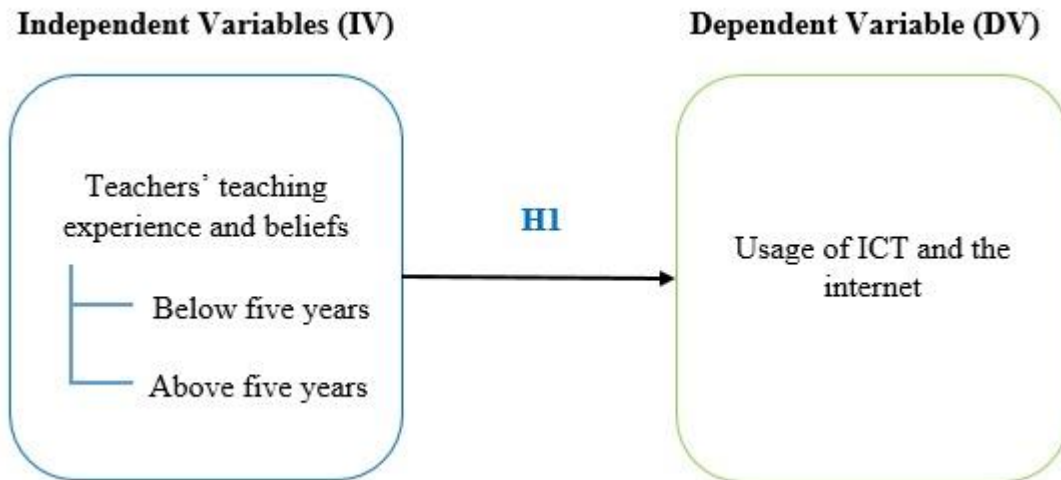


Figure 2: Conceptual Framework.
Source: Developed for the research

RESEARCH METHOD

This study was conducted using the quantitative method. The quantitative method examined the relationships among variables by using either causal-comparative research, correlation research, experimental research, single-subject research, or survey research (Neuman, 2011). More particularly, a survey research design was used for generalizing the population (Neuman, 2011) by collecting data from preschool teachers.

A cross-sectional research design was used in this study to collect information from preschool teachers teaching at different preschools at a single time (Setia, 2016). This research design was used because it saves time and cost (Alexander et al., 2014).

Respondents were reached using a non-probability sampling method, the convenience sampling method. According to Albert et al. (2010), this sampling method allows researchers to choose the nearest respondents until the ideal sample size is reached. The researcher targeted a total of 90 preschool teachers, however, only 70 were willing to spend their time to participate in this research. Seventy is an acceptable number for a target sample because generally sample size enough for the researcher as it lies between 30 and 500 which at a 5% confidence level (Delice, 2010). However, due to the nature of convenience sampling that depends on the availability of the respondents, this study would have a higher representation of some cultural backgrounds over others.

Questionnaires are used to collect quantitative data. A questionnaire was chosen as the research instrument because it provides calculable data, data that are comparatively easy to analyze, use less time compared to interviews or observations, and could easily have a large number of respondents. (Mukherji & Albon, 2018).

The questionnaire used in this study is the CWICT Scale (Zaki, 2013). The objective of this instrument was to examine teachers' beliefs on ICT and Internet usage in the classroom among the teachers. This instrument has also been used in Australia (Zaki, 2013). The CWICT Scale consisted of 26 main statements.

All the data collected for this study were analyzed using Statistical Package for the Social Sciences (SPSS) version 22.0 and Google Forms summary of data. Both descriptive and inferential statistical techniques were included in the analysis of quantitative data in this study.

In this study, the descriptive analysis was manipulated to analyze the demographic information of the respondents. It provided the researcher with the original character of a group of individuals (Best & Kahn, 2006, p. 356).

In this study, the variables are teachers' teaching experience and teachers' beliefs, and their usage of ICT and the Internet. According to Kumar (2011), a correlation test is used to test the statistical relationship between two variables for inferential statistics. Specifically, a Spearman's rank correlation test was used in this study to examine the relationship between preschool teachers' teaching experience and beliefs in their usage of ICT and the Internet. Spearman rank correlation is a type of non-parametric test that is used to measure the degree of relationship between two variables in a study (Salkind, 2010).

RESULTS

A total of 70 responses were collected. From the responses, 3 were male (4.3%) and 67 were female (95.7%) with a majority of the respondents were female. Half of the respondents was age of 30 years old and above with 50.0%, 21.4% are from 20 to 25 years old and 28.6% are 26 to 30 years of age.

The majority of the teachers' highest qualification level was the bachelor's degree ($n=26$), with a percentage of 37.1%. More than half of the teachers ($n=45$) with a percentage of 64.3% were belonged to above 5 years of teaching experience, which showed that they have teaching experience which was more than 5 years of teaching. While 35.7% ($n=25$) of the teachers were belonged to below 5 years of teaching experience, which means they were in their first 5 years of teaching which was less teaching experience.

More than one-third of teachers have above 5 years of working in their current place of work which was 38.6% ($n=27$). More than half of teachers have above 5 years of working experience with children aged 0 to 5 which was 52.9% ($n=37$). While 20.0% ($n=14$) of the teachers have below 1 year of experience with children aged 0 to 5 years. There are 12.9% ($n=9$) of teachers who have 1 to 2 years of experience with children aged 0 to 5 years. The least of the teachers who have experience working with children aged 0 to 5 years were under categories of three to 4 years and 4 to 5 years, with the same percentage of 7.1% ($n=5$) respectively.

Most of the teachers ($n=59$) with a percentage of 84.3% reported that they had Internet access at home. However, only 15.7% of teachers ($n=11$) reported that they had no Internet access at home.

The demographic distribution of the respondents is as per Table 1 below.

Table 1: Preschool teachers' demographic profile

Variables	Descriptions	Percentage
Gender	Male	4.3
	Female	95.7
Age	20 – 25 years old	21.4
	26 – 30 years old	28.6
	30 years old and above	50.0
Teachers' educational Level	SPM	15.7
	STPM	1.4
	Teaching Certificate	7.1
	Diploma	25.7
	Bachelor Degree	37.1
	Postgraduate Degree	5.7
	Other	7.1
Teachers' Years of Teaching Experience	Below 5 years	35.7
	Above 5 years	64.3
Teachers' Years of Working in Current Workplace	Below 1 year	10.0
	1 – 2 years	22.8
	3 – 4 years	20.0
	4 – 5 years	8.6
	Above 5 years	38.6
Teachers' Years of Working with Children Aged 0-5 Years	Below 1 year	20.0
	1 – 2 years	12.9
	3 – 4 years	7.1
	4 – 5 years	7.1
	Above 5 years	52.9
Teachers' Internet Access at Home	Yes	84.3
	No	15.7

Source: Developed for the research

Table 2: Distribution of mean scores on comfort with ICT scale

Scale	Frequency (<i>n</i>)	Mean (<i>M</i>)	Standard Deviation (<i>SD</i>)
Comfort with Internet score	70	1.7000	0.98319
Comfort with Technology score	70	2.8214	1.21594
Total Technological Comfort	70	2.5000	1.17646
Beliefs (Internet is useful)	70	3.3571	0.99325
Beliefs (Barriers)	70	2.9214	0.92327

Source: Developed for the research

Based on the means of each scales, it can be concluded that there was a positive result that showed the teachers' comfort with ICT with a total mean score of 2.5000 and a standard deviation of 1.17646. There were three subscales under CWICT Scale, which was Comfort with Internet (Section A statements 3, 5, 6), Comfort with Technology (Section A statements 1,2,4,7-13), and Beliefs that Internet is Useful (Section C statements 2, 4, 6, 7, 9-19). Table 2 has clearly stated that teachers scored highest in the aspect of the belief with a mean score of 3.3571 (SD=0.99325), followed by the comfort with technology aspect (M=2.8214, SD=1.21594) and comfort with Internet aspect (M=1.7000, SD=0.98319) which means that the teachers had higher beliefs and comfort to work with ICT compared to their teaching experience towards ICT in this study (see Appendix H). It could be concluded that if the provides their teachers with ICT facilities, the teachers will feel comfortable using it even though they were less teaching experienced.

Table 3: Teachers' ICT and Internet usage based on their beliefs and teaching experience

Spearman's rho		1	2	3	4	5	6
1. Teaching Experience	<i>Correlation</i>	1.000	0.153	0.137	0.018	0.161	-0.062
	<i>Coefficient</i>						
	<i>t (r)</i>						
	<i>Sig. (2-tailed)</i>	-	0.207	0.259	0.879	0.183	0.613
2. Comfort with Internet	<i>Correlation</i>	0.153	1.000	0.749**	0.494**	-0.112	-0.094
	<i>Coefficient</i>						
	<i>t (r)</i>						
	<i>Sig. (2-tailed)</i>	0.207	-	0.000	0.000	0.357	0.440
3. Comfort with Technology	<i>Correlation</i>	0.137	0.749**	1.000	0.795**	0.043	0.037
	<i>Coefficient</i>						
	<i>t (r)</i>						
	<i>Sig. (2-tailed)</i>	0.259	0.000	-	0.000	0.724	0.760
4. Total Technological Comfort	<i>Correlation</i>	0.018	0.494**	0.795**	1.000	0.089	-0.014
	<i>Coefficient</i>						
	<i>t (r)</i>						
	<i>Sig. (2-tailed)</i>	0.879	0.000	0.000	-	0.463	0.906
5. Belief (Internet is Useful)	<i>Correlation</i>	0.161	-0.112	0.043	0.089	1.000	-
	<i>Coefficient</i>						
	<i>t (r)</i>						
	<i>Sig. (2-tailed)</i>						0.337*

	<i>Sig. (2-tailed)</i>	0.183	0.357	0.724	0.463	-	0.004
6. Belief (Barriers)	<i>Correlation</i>	-0.062	-0.094	0.037	-0.014	-	1.000
	<i>Coefficient</i>					0.337*	
	<i>t (r)</i>						
	<i>Sig. (2-tailed)</i>	0.613	0.440	0.760	0.906	0.004	-

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

Source: Developed for the research

Table 3 illustrated a weak positive correlation between teaching experience between comfort with the Internet, comfort with technology, overall technological comfort, teachers' beliefs about the Internet is useful, referring that teachers with more teaching experience likely to report less significantly have comfort with technology. Weak negative correlations between teaching experience and teachers' belief barriers. Teachers' beliefs about barriers to ICT use were not significantly correlated with teaching experience.

The results of Spearman's correlation showed that there was no significant relationship between preschool teachers' teaching experience and beliefs on their usage of ICT and the Internet in ECE. The p-value of the belief that the Internet is useful ($p=0.183$) and the belief on barriers of technology ($p=0.613$) is not significant in this study. Therefore, the H_a of this study failed to be accepted.

DISCUSSION, IMPLICATION AND RECOMMENDATIONS

In accordance to the result above, there is no significant relationship between preschool teachers' teaching experience and beliefs on their usage of ICT and the Internet in ECE, which means that whether or not they have less or more teaching experience is not significantly related to their beliefs on both the usefulness and barriers of ICT and the Internet. This result could possibly be due to the study being conducted during Movement Control Order (MCO), when most of the preschool teachers had no choice but to use the technology platform to continue their teaching from home (Tan, 2020).

Although 84.3% of teachers reported that they have Internet access in the classroom, their usage of Internet in classroom practice did not match the beliefs of their usage of ICT and the Internet in the classroom which has no significant relationship in this study. Therefore, although teachers' beliefs about ICT and the Internet are important in ECE, this did not directly impact their practice in the classroom. Even though ICT use in the classroom was supported in some early childhood curriculum, there was also a gap between educational policy and availability of ICT and Internet tools to support existing ECE classroom practices in the Malaysian context (Zaki, 2013).

According to the TAM, the attitude and intention to use ICT were influenced by the external variables. The external variable in this study is the independent variable which was the

teachers' teaching experience. The results show that perceived usefulness and perceived ease of use which were the beliefs in ICT and Internet usage in ECE had influenced attitude towards using and will impact on their actual use of ICT in the classroom practice.

Implication

Results from this study found that there is no significant relationship between preschool teachers' teaching experience and beliefs on their usage of ICT and the Internet in ECE, and there was insufficient ICT infrastructure in many preschools. In references to this result, it is proposed to preschool principals although there has the Internet in the classroom, ICT infrastructure also should be well provided in the classroom (Zaki, 2013).

Teachers have a weak positive correlation towards their beliefs, although some teachers have less comfortable in using ICT, this was weakly correlated with their teaching experience. This implies that preschool teachers with less confidence with ICT usage required to receive professional development to gain more ICT knowledge (Nikolopoulou & Gialamas, 2015).

Although Teo et al. (2009) and Sang (2010) stated that there was a strong positive relationship between teachers' beliefs about ICT and the Internet usefulness in classrooms and their purpose to encompass ICT and the Internet into classroom teaching (Teo et al., 2009; Sang, 2010), there was still a huge gap between teachers' positive beliefs towards the usage of ICT and the Internet in the classroom and their reported classroom integration. Moreover, a low percentage of teachers who less than 10.0% frequently practice ICT use in the classroom every day in this study. This finding implies that the preschool governance the required motivation for teachers to encourage them to integrate ICT and Web-based programs in their teaching process (Ivan, 2010).

Though ICT was rapidly developed in Malaysia, the teachers' beliefs on ICT usage was still insignificant in the Malaysian context compared to other countries such as China. Thus, this study proposed the policymakers can take prompt action by providing educational guidelines on how to effectively integrate ICT with their teaching for both experienced and less experienced teachers (Evgueni & Mariana, 2002).

Recommendations for Future Research

From the overall findings of this study, there are four recommendations for future research. These recommendations are for sample size, sampling method, research instrument, and research time.

Future research could use a larger sample size than this study. A larger sample size allows the sample size to be saturated and the outcomes can be generalizable to preschool teachers who are in areas other than the Klang Valley (Vasileiou et al., 2018).

Also, the random sampling method can be applied to future research whereby each respondent is chosen by probability therefore each respondent has the same opportunity to be chosen as a sample in future research. This method is a benefit to reduce unfairness (Lammers & Badia, 2013).

Instead of using only a qualitative research instrument, future research could use blended qualitative and quantitative methods to collect the data. The qualitative method such as interviews lets the potential respondents have room to express their opinion regarding the questions and enable the researcher to support the outcomes of quantitative data (Johnson & Christensen, 2012).

Sufficient time is crucial for the researcher to produce high-quality research (Jagadeesh et al., 2013). As such future research could consider allowing a longer time than 14 weeks for data collection.

CONCLUSION

In addressing the limited literature available about preschool teachers' teaching experience and beliefs on their ICT and Internet usage in the Malaysian context, this study was conducted in the Klang Valley area and found that there was no relationship between teachers' teaching experience and beliefs and their usage of ICT and the Internet in ECE.

With the recommendations for future research provided above, future research that takes into account a bigger sample size, a more appropriate sampling method, more robust research instruments, and a more productive timeframe could be able to examine this research topic even further, especially in Malaysia. Doing so would contribute to ensuring Malaysia achieves its goals for "maximize the use of ICT for distance and self-paced learning to expand access to high-quality teaching regardless of location or student skill level" (MoE, 2013, p. 20).

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