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Electronic Records Management in Schools: The Case Study of School Examination Analysis System

(Sistem Pengurusan Rekod Elektronik di Sekolah: Kajian Kes ke atas Sistem Analisis Peperiksaan Sekolah)

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ABSTRACT

Many initiatives have been taken to improve the efficiency of teaching and learning (T&L), administration, and management in schools using various ICT systems. Despite continuous training and exposure to undertake T&L activities and management, comprehensive practices on the principles of electronic records and information management (ERIM) at schools still faced many challenges. This paper presents a proposed framework for ERIM implementation using ICT-based systems in schools incorporating ERIM elements, including ICT skills for teachers, improved ERIM knowledge among teachers, enforcement of policies, acts and guidelines, and continuous training. The paper also discusses a case study finding regarding an ERIM implementation, problems in a School Examination Analysis System (SEAS), ICT skills, knowledge and skills of teachers. This study applies a quantitative approach using a survey technique for data collection. A total of 350 questionnaires were distributed to five Malaysian primary public schools and the response rates are 62.85 percent (220 forms). The study found that almost all teachers have good ICT skills but the knowledge and skills of teachers in ERIM were at a moderate level. Most teachers were unaware of acts, policies and guidelines related to ERIM. This study is expected to assist the Ministry of Education in drafting guidelines for the implementation of ICT based system in schools to enhance the efficacy of T&L, administration and management according to ERIM principles.

Keywords: Electronic records and information management; primary school; Malaysia; quantitative approach; framework

ABSTRAK

Banyak inisiatif telah diambil untuk meningkatkan kecekapan pengajaran dan pembelajaran (P&P), pentadbiran dan pengurusan di sekolah dengan menggunakan pelbagai sistem teknologi maklumat dan komunikasi (TMK). Walaupun latihan dan pendedahan yang berterusan diberi untuk menjalankan aktiviti dan pengurusan (P&P), amalan prinsip pengurusan maklumat dan rekod elektronik (PMRE) yang komprehensif di sekolah masih menghadapi banyak cabaran. Kertas ini membentang kerangka yang dicadang untuk pelaksanaan PMRE menggunakan sistem berasaskan TMK di sekolah yang menggabung unsur PMRE, termasuk kemahiran TMK guru, peningkatan pengetahuan PMRE dalam kalangan guru, penguatkuasaan dasar, akta dan garis panduan, dan latihan berterusan. Kertas ini juga membincang dapatan dari kajian kes mengenai pelaksanaan PMRE, masalah dalam Sistem Analisis Peperiksaan Sekolah (SAPS), kemahiran TMK, pengetahuan dan kemahiran guru. Kajian ini menggunakan pendekatan kuantitatif menggunakan teknik tinjauan untuk pengumpulan data. Sebanyak 350 soal selidik telah diedar kepada lima buah sekolah awam utama di Malaysia dan kadar tindak balas sebanyak 62.85 peratus (220 borang). Kajian mendapati bahawa hampir semua guru mempunyai kemahiran TMK yang baik tetapi pengetahuan dan kemahiran guru terhadap PMRE berada pada tahap yang sederhana. Kebanyakan guru tidak menyedari akta, dasar dan garis panduan yang berkaitan dengan PMRE. Kajian ini diharap dapat membantu Kementerian Pelajaran dalam merangka garis panduan pelaksanaan sistem berasaskan TMK di sekolah untuk meningkatkan keberkesanan (P&P), pentadbiran dan pengurusan mengikut prinsip PMRE.

Kata kunci: Rekod elektronik dan pengurusan maklumat; sekolah rendah; Malaysia; pendekatan kuantitatif; kerangka

INTRODUCTION

Various efforts have been taken to improve the quality of teaching and learning in schools but studies have found that the use of ICT is still not at an optimum level. The use of ICT and records/information management (RIM) are interrelated and enable organizations to work efficiently, reduce costs and increase transparency. The implementation of ERIM is crucial to attain these benefits. According to Langemo (2002), the failure to implement ERIM efficiently and effectively in the U.S. could cause 93% of organizations to become paralyzed immediately or within the next two years. This failure was mostly due to a lack of guidelines, procedures and policies. The potential implications when guidelines and policies do not exist for implementing ERIM initiative in the education sector is significant and can cause multiple problems and difficulties for the management of student records (Khdega & Zawiyah 2013). Studies in Arab countries found that most organizations have no specific policy for the management of electronic records, especially email records (Nuwara 2011). In Malaysia, the implementation of ERIM has been arbitrary, and without foundation or clear guidelines, especially for the storage and disposal of records (Nurul, Zawiyah & Umi 2011; Yousef, Zawiyah & Mohd 2013). As a result, the unauthorised disposal of data and records or the destruction of vital records went unnoticed and went beyond the control of the responsible party. In fact, the development and implementation of ICT often neglected the critical aspect of ERIM and instead focussed more on aspects of technology and application to meet the needs of users (Palmer 2000).

Previous work on school ERIM (Cheng 2018; Abreu, Rocha & Cota 2017) have been reported but the published reports remain limited. ICT has become a critical factor in RIM to increase school productivity, efficiency, and competitiveness (Aleksieva-Petrova, Dorothee & Petrov 2019; Jeladze, Pata & Quaicoe 2017). This paper identifies the level of knowledge, ICT skills, obstacles and factors that are required to improve ERIM in the education system. The study focuses on the System Analysis School Examination (SEAS) that was built to facilitate the process of creating, storing analysing student's records. SEAS allow teachers, students and parents to monitor their students' scores online and plan strategies to improve student achievement. The implementation of SEAS requires commitment from all parties such as class teachers, teachers, and school examination's secretariat. Therefore, all users should at least have basic knowledge and skills related to ICT to reduce the knowledge and information gap among teachers (Kler 2014).

ELECTRONIC RECORDS MANAGEMENT IN EDUCATION SYSTEM

Most school RIM systems consist of eight activities, namely: create, store, update, retrieve, use, appraise and retain, archive, and dispose (Figure 1) (UNESCO 2018). An electronic record is defined as records in electronic or digital form that are created, captured, maintained or the government kept carrying out the function in accordance with the definition of records given in the National Archives Act 2003 including school use and reference (National Archives of Malaysia (NAM) 2003; Osakwe 2011). Records include but are not limited to papers, official documents, files, lists, informational materials, books, maps, plans, drawings, photographs and sound recordings in electronic or digital form. ERIM is a form of electronic records management system and may include information in various mediums such as paper records and any computer records (Johnston & Bowen 2005). ERIM is also referred to as a form of automation system that serves to manage the creation, use, maintenance and disposition of electronic records created for the purpose of providing proof of business activity. The system must be able to maintain and protect contextual information (metadata), the sharing of information in the records, access secure, and control the relationship between the records (National Archives of Australia 2005). However, according to the International Standards Organization (ISO 15489 2016), the implementation of ICT can assist ERIM, while its improper design can cause problems rather than supporting its management.

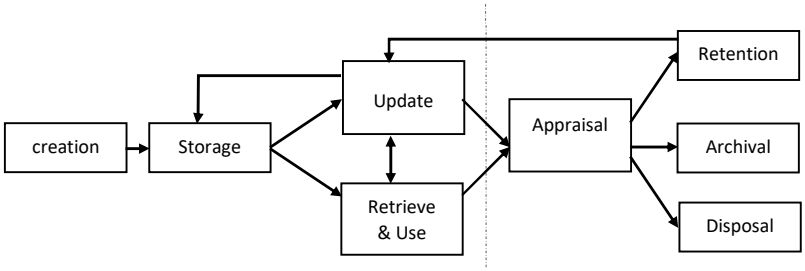

FIGURE 1. Activities in a typical RIM (UNESCO 2018)

An effective school RIM system is defined as the 'organised classification and filing of the school records in a way that makes it easy to search, access, retrieve and use the recorded data and information' (UNESCO 2018). An effective school RIM can ease and support the management of the school and other stakeholders including

policy makers, teachers and parents, particularly in decision making. School records also provide useful data and input for planning and establishment of new programs, activities or policies (Sunmola 2008). Student enrolment and school facilities data from school records can be referred to, to determine the appropriate number of teacher recruitment or justification for upgrading school facilities. Given that schools are accountable for creating, using, managing, classifying, storing, and archiving record and information, all records including student records, student academic files and reports, teacher and staff records, financial records, assets, building and school facilities and school board of management must be managed appropriately in accordance with policy, procedures, Act, and enforced laws (Umi & Zawiyah 2009; Umi & Zawiyah 2017).

Jeladze et al. (2017) identified information management as the most enabling factor for digital learning transformation. Institutions with ineffective and poor RIM are prone to various risks and implications such as record inaccessibility and redundancy, costly maintainability, and institutional inefficiency (Kemoni & Wamukoya 2000). The lack of ERIM awareness in aspects such as record classification, record storage duration, unclear record management policy, limited storage space and skilled officers, training in managing school records, and being overly focused on technology may contribute to the failure of RIM initiatives.

METHODOLOGY

This study employed a quantitative approach using a survey technique to collect data (Creswell 2008). The respondents consisted of teachers in primary schools who are responsible for student examination records. A probability sampling technique was used to determine the sample. Data was collected through a structured questionnaire. The instructions of questionnaire are enclosed to obtain information and to assist respondents in answering the questions (Babbie 1999). The questionnaires for this study were distributed to all participants through selected school headmasters and respondents, and sufficient time was given to complete the questionnaires. This questionnaire is divided into four main components:

1. Public Profile of Respondents containing six basic questions relating to profiling respondents including gender, class, age, duration services, academic qualifications, job category and location of their place in the school.
2. Skill Levels and Knowledge and Perceptions of ICT Teacher consisting of nine items in the form of basic questions using a Likert scale 1 to 5 where the response scales used are 1 = Strongly Disagree, 2 = Disagree, 3 = not sure, 4 = Agree and 5 = Strongly Agree. The questions for this section are designed to answer questions about the respondent's level of skill and knowledge including the ICT skills limit of teachers in the use of ICT or technical skills such as the ability to install and maintain ICT hardware like computers, printers, scanners and LCD projectors.
3. Knowledge and Skills Teacher Ratio ERIM consisting of eight questions using Dichotomy scale, 1 = Yes, 2 = No. These questions were designed to identify the respondent's knowledge on ERIM at schools including use of ERIM; training; briefing; person-in-charge for the ERIM; policies, regulations, Acts, and guidelines e.g. the National Archives Act, Government Records Management Policy, Official Secrets Act and others.
4. ERIM elements in the SEAS and the problems encountered using SEAS consisting of five questions to identify elements of ERIM embedded in SEAS, namely the role and functions of the SEAS; and manual, training or guidance. These questions were designed to identify SEAS elements according to the user's perspective.

Data obtained from the questionnaire responses were collected and analysed using the program Statistical Package for Social Science (SPSS) version 24.0. to perform descriptive and inferential analysis. A framework was proposed and validated by the experts at the Ministry of Education (MOE) as guided by Lauesen and Vinter (2001). The expert evaluation process was conducted using face-to-face, structured interview with a focus on four key components of the framework:

1. Description Framework Implementation of ERIM School System;
2. Indications about the meaning and understanding of each component of the framework;
3. Indication of the suitability and feasibility of the framework; and
4. Indication of any issues, problems and conflicts implementation.

RESULTS

The Ministry of Education (MOE) of Malaysia is committed and progressively strengthening the implementation of ERIM to empower teachers and educators. ERIM is not only a tool for creating, storing, maintaining and reporting information but it also incorporates appropriate and standardised principles and procedures. MOE invested RM1.51 billion to improve ERIM use in schools including RM248 million for smart school programs

and ICT competency training for all teachers between 2013 to 2015 to improve the quality of learning in Malaysia (Blueprint Malaysia 2015). Under Project Preservation of Electronic Records Public Sector (e-SPARK), the National Archives of Malaysia took the initiative to archive electronic records of government agencies and started to revise Act 44/1966 with the Archives Act Malaysia 2003 to streamline the interpretation of public records including electronic records.

The results are presented in tables, pie charts and graphs. A total of 350 questionnaires were distributed in five primary schools (SK Seremban 2A, SK Seremban 2B, SK Sendayan, SK Gadong, SK LB Johnson) and a total of 220 forms (61.11%) were completed by respondents. Analyses on levels of teacher's ICT skill, teacher's awareness, knowledge and experience, and obstacles using the SEAS were conducted.

TEACHER ICT SKILL LEVEL

This section, with twelve questions, sought to identify and analyse the basic ICT skills of teachers in primary schools. The questions contained the respondent Likert Scale which allows respondents to choose a score from 1 = Strongly Disagree, 2 = Disagree, 3 = Not sure, 4 = Agree and 5 = Strongly Agree. The analysis of this question was broken down into three components: the teacher's skill for preparation and use of ICT; the teacher's ICT technical skills; and the teachers' perception of the use of ICT in school. The findings of the analysis are presented in Table 1, Table 2 and Table 3.

According to Table 1, only 43.6% of respondents were actively using ICT-based applications in teaching and learning in class. The remaining were focused on the use of textbooks / reference. Only 76.4% of respondents agreed that it was faster to access information online, the remainder preferred to use text books. A total of 59.1% respondents used ICT in the classroom including through visual presentations, graphics, and audio, which allowed them to be more interactive and stimulating. 67.3% of respondents also agreed with the application of ICT to record a Daily Lesson Plan (DLP), rather than doing it manually. The study found that respondents were proficient in the use of ICT either to make more interactive and interesting teaching, or to record daily teaching plans systematically. However, there are skills that could not be optimised due to limited Internet access which meant they instead reverted to conventional teaching methods such as textbooks / reference.

TABLE 1. Percentage of teacher analytical skills in applying ICT

	Score				
	SNA	NA	NS	A	SA
ICT applications are often solely used when teaching in the classroom than in a textbook / reference	1.4	20.9	34.1	39.5	4.1
Use the Internet to access information easily and quickly	1.4	10.5	11.8	50	26.4
Attempt to create visual presentations, graphics, charts, audio and visual use of ICT applications	1.4	12.3	27.3	51.8	7.3
Use ICT application to record the daily lesson plan	0.9	9.1	22.7	51.8	15.5

SNA= Strongly Not Agree, NA = Not Agree, NS = Not Sure, A= Agree, SA = Strongly Agree

Table 2 analyses technical skills such as the respondent's ICT use, ability to install and connect computers and ICT-based equipment such as LCD projectors and multimedia. 71% of respondents indicated they have sufficient technical knowledge to install, connect and prepare computers and peripherals on their own without anyone's help. 63.7% respondents were able to prepare, connect and use devices such as LCD projector or multimedia projector for teaching in the classroom. 87.3% of respondents agreed that there are certain staff or officers in schools which can be referred to if they have problems in using ICT, Computer Technician Grade FT17 usually help to solve problems that involved the application of the system, hardware or guidance. Respondents have generally high technical skills to provide and operate the application of ICT in schools. A small proportion of respondents were not only able to use ICT for basic applications, but were also able to connect, install and prepare the computer by themselves without the help of technicians.

TABLE 2. Percentage of teacher technical skills in applying ICT

	Score									
	SNA		NA		NS		A		SA	
	N	%	N	%	N	%	N	%	N	%
Attempt to connect computers and peripherals by themselves.	4	1.8	28	12.7	32	14.5	100	45.5	56	25.5
Able to prepare, connect and use the handset LCD or multimedia projector while teaching.	5	2.3	30	13.6	45	20.5	95	43.2	45	20.5
Schools provide a reference if a technical problem using ICT	1	0.5	11	5	16	7.3	128	58.2	64	29.1

SNA= Strongly Not Agree, NA = Not Agree, NS = Not Sure, A= Agree, SA = Strongly Agree

Table 3 shows that 87.2% of respondents have a high interest in ICT. A total of 63.1% of respondents have their own personal computers and often use them for teaching and learning in the classroom. Geissler and Horridge (1993) found that respondents with their own personal computers have better positive attitude than respondents who did not own a computer. Only 53% of respondents have been given and attended ICT courses or training provided by schools. A total of 50.9% of respondents agreed that the hardware-centric ICT in the school is not enough to be used in teaching and learning in the classroom. The majority of respondents have their own computer without relying on computer at school. Respondents also need training to strengthen their skills and improve their knowledge in ICT.

TABLE 3. Percentage of teacher's perceptions on ICT use in school

	Score									
	SNA		NA		NS		A		SA	
	N	%	N	%	N	%	N	%	N	%
I have a keen interest in the field of ICT	0	0	6	2.7	22	10	149	67.7	43	19.5
I can provide teaching and learning using ICT even having the workload on the other.	9	4.1	51	23.2	65	29.5	83	37.7	12	55
ICT-based tools and equipment such as computers, printers and scanners are available at the school.	28	12.7	84	38.2	50	22.7	53	24.1	5	23
I have my own laptop and often use it for teaching and learning in the classroom	7	3.2	31	14.1	43	19.5	98	44.5	41	18.6
I was given training and courses on ICT skills by the school / District Education Officer / State Department	11	5	45	20.5	47	21.5	92	42	24	11

SNA= Strongly Not Agree, NA = Not Agree, NS = Not Sure, A= Agree, SA = Strongly Agree

TEACHERS AWARENESS, KNOWLEDGE, EXPERIENCE, AND EXPERTISE OF ERIM AT SCHOOL

The findings show that 97.7% of respondents acknowledge that they understand the importance and needs of ERIM, as can be seen in Table 4. This proves that almost all respondents are aware of the need to manage records and electronic information properly and perfectly. In fact, 83.2% of respondents possess knowledge and skills in ERIM while 89.1% of respondents managed records and information either in electronic form or online. A total of 75.5% of respondents were exposed to ERIM through briefings, courses or exercises.

Figure 2 also shows that most schools (75.9%) had special officers or specialists who are appointed among data teacher or technician to manage records and electronic information Only 2.3% of 77.7% of the respondents were officers responsible for managing the records and electronic information at the school who do not understand and are aware of ERIM requirements. They justified that the tasks were not related to their real duty; too busy or not interested in knowing it.

TABLE 4. Knowledge on ERIM at school

Teacher's Responses	Percentage	Level
I understand the importance and necessity of electronic records and information management	97.7	High
I have knowledge and skills in the management of electronic records and information	83.2	High
I used to manage records and information whether in the form of electronic media and on-line	89.1	High
I am responsible for managing any electronic records and information in schools	77.7	High
I have school official / special staff responsible for managing electronic records and information	75.9	Moderate
I attend briefings / courses on the management of electronic records and information	75.5	Moderate

Scale Level: 1-33%= Low, 34 – 78% Moderate, 79 – 100% High

The level of respondents' awareness of the importance and need for ERIM is high at 97.7% but Table 5 shows that the average scores of respondents on the five elements of ERIM namely record creation, record maintenance, record keeping, records maintenance and record disposal are only moderate between 2.51 and 2.94. Even the highest level of knowledge of the respondents in the ERIM element was at an average score of 2.94, which is still at moderate level. This finding is consistent with that of Nurul et al. (2011) which found that more than half of the respondents used ICT manage records moderately.

TABLE 5. Level of teacher's knowledge in ERIM's elements

ERIM Element	Min Score	Standard Deviation	Level
Records Creation	2.51	0.98	Moderate
Records Maintenance	2.63	1.04	Moderate
Records Keeping	2.94	0.81	Moderate
Records Preservation	2.83	0.92	Moderate
Records Disposal	2.66	0.97	Moderate

Knowledge Level: 1.00 – 1.50 Very Low, 1.51 – 2.50 Low. 2.51 – 3.49 Moderate, 3.50 – 4.49 High, 4.50 – 5.00 Very High

This paper also examined whether the respondents were aware of the existence of any policies or guidelines for school ERIM. The findings in Table 6 shows that most respondents knew or were aware of ERIM policies or guidelines in Malaysia through six key policy management guidelines and guidelines. Only 39.1% of respondents were aware of the existence of the Electronic Records Management Guidelines by the National Archives of Malaysia, while 40.9% of the respondents are aware of the existence of the Official Secrets Act (Amendment 1986) and 44.5% more about the existence of the National Archives Act 2003 (Act 269). A total of 45% of respondents acknowledged that they knew about the Acts, Regulations, Policies and Guidelines for Records Management as approved by the National Archives of Malaysia.

TABLE 6. Level of teacher's knowledge on the existence of ERIM policies and guidelines

Guidelines	Percentage	Level
Guidelines by the National Archives of Malaysia	39.1	Moderate
Official Secrets Act (Amendment 1986)	40.9	Moderate
National Archives Act 2003 (Act 269)	44.5	Moderate
Acts, Regulations, Policies and Guidelines for Record Management	45	Moderate
Government Records Management Policies	56.8	Moderate
Circular Letter No.1/1997- Preservation of Government Records	58.6	Moderate

Scale Level: 1-33%= Low, 34 – 78% Moderate, 79 – 100% High

The majority of respondents (58.6%) moderately knew about the General Circular Letter No.1/1997- Preservation of Government Records (National Archives Act 2003), as most respondents were (often) exposed, briefed and given courses by the Ministry, Department State Education or the District Education Office. This is followed by Government Records Management Policies (56.8%), Acts, Regulations, Policies and Guidelines for Records Management (45%), National Archives Act 2003 (44.5%), Official Secrets Act (40.9%) and Electronic Records Management Guidelines (39.1%).

OBSTACLES AND PROBLEMS USING SEAS

Findings about the problems and obstacles faced by respondents using SEAS indicated the extent of facilitation of the examination of records management in school since SEAS was introduced. Based on the responses shown in Table 7, most respondents did not face significant technical problems in recording examination scores; only 30.9% of respondents were (often) faced with technical problems during entry and updating the examination scores. 31.4% of respondents also experienced cases of missing records for examination scores.

TABLE 7. Obstacles and difficulties using SEAS

		Percentage	Level
I am often faced with technical problems to update students' scores into SEAS	Yes	30.9	Low
	No	69.1	
SEAS often have problems and difficult to access at certain times	Yes	66.4	Moderate
	No	33.6	
I had to deal with losing records examination scores when using SEAS	Yes	31.4	Low
	No	68.6	

Scale Level: 1-33%= Low, 34 – 78% Moderate, 79 – 100% High

The analysis found significant system access problems, likely caused by slow or interrupted Internet service, especially in rural areas. A total of 66.4% of the respondents agreed that they often have problems to access SEAS especially at the end of the year or during deadlines of examination scores submission. The MOE should pay attention to this matter and the efforts to improve the SEAS must be implemented mainly involving access and retrieval.

H_1 There is a positive correlation between the problems faced by teachers when using SEAS and teachers' skills in managing records and electronic information

A hypothesis about whether a significant relationship exists between the problems faced by respondents and their level of knowledge/skills in managing records and information in SEAS is shown in Table 8.

TABLE 8. The relationship between the level of knowledge /skills of teachers and problems in using the SEAS (Chi-Square Test)

		Low		High			
		N	%	N	%	X^2	P
I am often faced with technical problems to update students' scores into SEAS	Yes	17	25.0	51	75.0	1.86	0.172
	No	26	17.1	126	82.9		
I had to deal with losing records examination scores when using SEAS	Yes	10	14.5	59	85.5	1.63	0.201
	No	33	21.9	118	78.1		

**Significant P<0.05

The analysis found that problems occur when updating student records, or when these records were lost - a level $\chi 2 = 1.86$, P = 0.172 and $\chi 2 = 1.63$, P = 0.201. The significant value to reject H_0 is at P <0.005. This analysis accepts H_0 and affirmed that there is no significant relationship between the problems faced by teachers using SEAS and their skills in managing records and electronic information. The main problem faced by teachers is access (network issues), and it is not related to the skills or knowledge on the management of electronic records and information.

H_2 There is a positive correlation between teachers with basic ICT skills and guidelines on electronic records and information management.

A Chi Square test in Table 9 shows that there is a significant relationship between the level of knowledge and skills of teachers in ERIM, and the policies and guidelines especially the General Circular No.1/1997- Records Government's score ($\chi 2 = 6.20$, P = 0.0013) with significant P value <0.05. In addition, the Government Records Management Policy (2010) also has a significant relationship ($\chi 2 = 4.87$, P = 0.027) and a significant value of P <0.05 and National Archives Act 2003 (Act 629) with the score ($\chi 2 = 4.43$, P = 0.035) and the significant at P <0.05.

TABLE 9. Correlation between teacher's ICT skills with policies and guidelines of ERIM.

		Low		High			
		N	%	N	%	X^2	P
Acts, Regulations, Policies, and Guidelines of ERIM	Yes	14	14.1	85	85.9	3.34	0.067
	No	29	24.0	92	76.0		
National Archives Act 2003 (Act 629)	Yes	13	23.3	85	86.7	4.43	0.035
	No	30	24.6	92	75.4		**
Government Records Management Policy (2010)	Yes	18	14.4	107	85.6	4.87	0.027
	No	25	26.3	70	72.5	73.7	**
General Circular No./1997- Preservation Government Records	Yes	18	14.0	111	86.0	6.20	0.013
	No	25	27.5	66	72.5		**
Official Secrets Act (Amendment 1986)	Yes	12	13.3	78	86.7	3.74	0.053
	No	31	23.8	99	76.2		
Electronic Records Management Guidelines	Yes	11	12.8	76	87.2	4.46	0.107
	No	32	24.1	101	75.9		

**Significant P<0.05

H_0 indicates that there was no significant relationship between ICT skills of teachers and ERIM policies. The influence of knowledge and skills among respondents with ERIM policies/guidelines mainly came from the General Circular No.1/1997, Government Records Management Policy (2010) and the National Archives Act (2003).

H_3 There is a positive correlation between teachers' level of knowledge/skills and ERIM elements in the SEAS.

Table 10 shows the test Chi Square between the level of knowledge and ERIM elements. The study identified five key elements of records management and information contained in the SEAS, namely the creation, maintenance, storage, maintenance and disposal of records. The analysis revealed that the four elements of records

management and information did not have significant relationship to the teachers' level of ERIM knowledge, as the P >0.05. The four elements are:

1. Records Creation ($\chi 2 = 5.32$, P = 0.070);
2. Records Storing ($\chi 2 = 1{:}02$, P = 0.600);
3. Records Preservation ($\chi 2 = 0{:}41$, P = 0816); and
4. Disposal of Records ($\chi 2 = 1.29$, P = 0.525)

However, the element of Records Maintenance as reported appears to be significant ($\chi 2 = 11.12$, P = 0.004) with the P value <0.05.

TABLE 10. The relationship between the level of knowledge and skills of teachers with ERIM elements in the SEAS. (Chi-Square Test)

		Low		High			
		N	%	N	%	X^2	P
Creation / Records Creation (Record and student profile created to record the information and exam scores)	Yes	36	17.6	168	82.4	5.32	0.070
	No	3	42.9	4	57.1		
	Not Sure	4	44.4	5	55.6		
Records Maintenance (Record student are well maintained regularly and updated)	Yes	31	16.0	163	84.0	11.12	0.004*
	No	5	50.0	5	50.0		
	Not Sure	7	43.8	9	56.3		
Record-Storing (Records of students and students' scores are stored in the main server by MOE and accessible at any time)	Yes	37	19.6	152	80.4	1.02	0.600
	No	3	30.0	7	70.0		
	Not Sure	3	14.3	18	85.7		
Records Preservation (records of students' scores are in good condition, can be accessed, are not lost and will not be changed arbitrarily	Yes	36	19.1	152	80.9	0.41	0.816
	No	3	30.0	8	72.7		
	Not Sure	4	14.3	17	81.0		
Records Disposal (Table disposal of records that are not required and expired are systematically implemented)	Yes	25	17.4	119	82.6	1.29	0.525
	No	3	21.4	11	78.6		
	Not Sure	15	24.2	47	75.8		

** Significant P<0.05

Since four out of five elements showed no significant relationship with the teachers' knowledge/skill, the study accepts H_0 and asserts that there is no significant relationship between the level of ERIM knowledge of teachers with four key elements of ERIM in the SEAS, namely creation, storage, preservation and disposal of records in the SEAS. However, the knowledge and skills of teachers in ERIM are very helpful in maintaining student records in the SEAS, which requires special skills when dealing with student's examination scores especially for transfer students.

PROPOSED FRAMEWORK

A framework was proposed by considering four important components of any system development i.e. ICT design; a prerequisite; elements of the lifecycle management of records; and additional administration required, while the other four main factors that contribute to the feasibility of this framework are: user ICT skills; user knowledge and ERIM skills; policy, act and circulars; and training and guidance.

The proposed framework depicts in Figure 2 was based upon the existing framework that is currently enacted by the National Archives of Malaysia through the implementation of the Electronic Records Management System (System Specification for Public Offices) Version 3.0 (2011), the Digital Archives of Australia Framework (2004), James Cook University Record Management Framework (2013), and e-SPARK Information Management Infrastructure (National Archives of Malaysia 2003). All of these frameworks do not have an integral integrated element that can be used as a single reference in constructing an ERIM framework in a school setting.

This study proposes four major factors affecting the development of ICT system developed and used based on ERIM principles namely:

User ICT Skills There is a significant relationship between the teacher's ICT skills and the level of teacher's knowledge in records management and electronic information. Teachers with skills and knowledge in ICT are able to manage their records and electronic information. Findings by Luo & Bu (2016) attest that ICT skills help in sharing and managing knowledge effectively. Consequently, users who master ICT skills should be able to operate and use the ERIM-based system comprehensively in accordance with ERIM principles and practices.

User Skills and Knowledge The results showed that the average score of the respondents for the five elements of ERIM, namely the records creation, maintenance, storing, preservation and disposal, was at moderate levels

ranging from 2.51 to 2.94. This shows that there is room for enhancing the user's knowledge in order to be more comprehensive so that the operation of the ICT information system is successful. Nurul et al. (2011) affirms that more than half of respondents use ICT in moderation in carrying out records management tasks. Further studies by Nurhidayati and Zawiyah (2013) reveals that ERIM practices in schools and colleges were conducted without any guidance and direction and were handled by unskilled officers and ERIM practitioners.

Formulation and Enforcement of Policies and Act Malaysia has yet to have a comprehensive records and information management policies other than the Record Management and Electronic Archive Policy and the Electronic Records Management Guidelines by the National Archives of Malaysia. There appears to be a relationship between the knowledge and skills of ERIM by users with existing policies and guidelines through the emphasis on guidelines General Circular Letter No.1/1997- Preservation of Government Records on all civil servants through compulsory course (induction). Special emphasis and focus on ERIM-related policies and guidelines should be encouraged by the relevant parties to ensure that users' awareness and knowledge do not only focus on technical aspects and technology but also on the importance of managing valuable records and information. If Malaysia is not ready to devise a specific policy regarding a comprehensive national information policy, the disclosure and explanation of the ERM's policies, acts and guidelines relating to ERIM should be made more widely, even if it is necessary to implement the assessment, compliance and enforcement by agency / related party.

Training and Guidance According to Zainudin (2008), information technology courses are still unable to cater for the needs of all teachers in schools because only a handful of teachers have the opportunity to attend ICT courses that are conducted from time to time. Yahya et al. (2015) argues that the current course on information technology provided cannot meet the needs of teachers in schools. Continuous training, on-the-go training and guidance on the user is crucial to ensure that ERIM is well-organized. This finding is supported by that of Norsheila's (2009) which reported personnel responsible for handling the records and information did not immediately understand the meaning of the records and had very low knowledge and understanding of ERIM due to lack of training and ERIM-related disclosures.

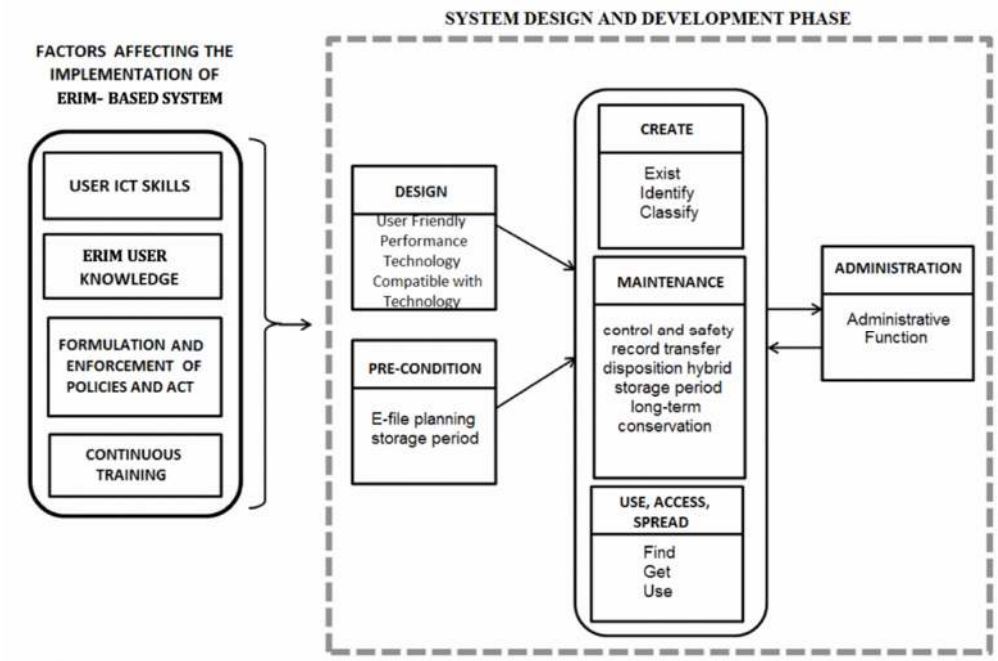

FIGURE 2. Framework of ERIM-based system in schools

DISCUSSION

This study evaluated the implementation of ERIM through reference and compliance with the ERIM implementation framework, particularly in the education sector involving teachers. Firstly, the findings of this study can be utilized by MOE to assist in designing, formulating, streamlining and planning strategies and initiatives to enhance the integrity of the ICT teachers in line with the implementation of the ERIM principles on

ICT-based systems at schools such as SEAS. This is in line with the governance model of Smallwood (2014) which emphasizes that information governance is actually above the information technology. The findings of this study emphasized that aspects of any ICT-based system design, training pattern and guidance, hardware and software and technology that are used should focus on records management and electronic information especially in schools as the role of teachers is beyond R&D implementation.

Secondly, any introduction or implementation of a new ICT school system provided by MOE should be referred to and adhered to ERIM principles and elements as set forth in the Electronic Records Management and Archives Policy and Electronic Records Management Guidelines set by National Archives of Malaysia that are included in the proposed ERIM implementation framework. A manual form, user kit and training of the ERIM system must be provided to ensure that the ERIM principle is aligned with MOE. These records and information need to be managed and maintained according to the principles of records management and information; failure to do so may cause loss, damage and destruction of critical records (Cox 2002).

Thirdly, the findings of this study can guide the Human Resource Management Division, the Teacher Education Division, the Teachers Education Institute of Malaysia and the Training and Competency Division of MOE to review, develop and re-structure the curriculum structure, training, Teachers in ICT and records management and electronic information should emphasize policies and guidelines related to ICT and records management other than General Circular Letter No.1/1997- Preservation of Government Records and Official Secrets Act (Amendment 1986) in the series of Induction and Competency Courses Teaching. Since teachers are always involved in the management of records and information at school, the party responsible for designing training needs at the ministry and district/state levels should provide reference terms and specific training provisions to all, instead of selected teachers in the field of records management and information. For this purpose, strategic alliances with the National Archives that have access to knowledge and skills on the principles of records management and electronic information can be encouraged to devise a set of course modules or training s. Such training and courses can enhance teachers' awareness, knowledge and understanding of the importance of records management and electronic information at schools.

Fourth, the results of this study can be used as a reference by the Information Management Division and the Education Policy Planning and Research Division, MOE, in drafting and preparing the annual budget to consider the factors and principles of records management and information on investment that can be used optimally. Investment in ICT hardware solely for the purpose of administration and management efficiency such as computer procurement, printers, upgrading of computer labs and the implementation of school programs without paying attention to the elements of records management and electronic information such as investment in server upgrades for purposes of storage and archiving of critical records and Data Recovery Centers can result in the loss of important organizational data. Rusnah (2001) believes that Malaysia faces the risk of loss or destruction of critical records due to the use of unstable software and because it does not consider long-term storage and recovery practices and weak data and record conservation.

Fifth, schools can use these research findings to overcome the problems and improve the weaknesses in ERIM through the analysis of training needs related to ICT every year. School administrators can organize skills development programs such as the in-service Training (LDP) program at to expose teachers to records management guidelines and procedures. Changes in ERIM aspects are essential so teachers have the knowledge, skills, strategies and skills to protect important school records.

Lastly, the findings of this study can also benefit parents and communities. SEAS provide an example how well managed records and student examination information enabled parents to easily and remotely access their child's information; the scores analysis for each subject, the examination of the child's exams according to the type of exams, classes, years and schools. Effective, efficient and reliable management of records and electronic information indirectly encourages more parents, communities and school management in proper dissemination information of their children's education and academic information.

CONCLUSIONS

This study sought to identify ICT skills, awareness of knowledge, experience, expertise, and obstacles of implementing ERIM. The correlations between various variables as discussed earlier. It is important that teachers possess knowledge and skills in ICT including ERIM to prepare themselves with rapid technological advancement. Teachers also will become accustomed to various ICT applications to improve the quality of teaching and management in schools. This initiative is in line with the three phases plan from MOE via Malaysia Education Blueprint 2013-2025. The blueprint emphasizes improvements to teacher's knowledge and skills in ICT, ICT innovations and maintain widespread use of innovative ICT systems. The findings can be used to improve current procedure and implementation of ICT systems with emphasis on efficient management according to correct and guided principles.

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