

# The E-Teaching Portfolio: Exploring Digital Teaching Document Management for Malaysian Educators

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The digital/electronic document management system (DDMS/EDMS) is a green movement. The implementation of DDMS is absent in some Malaysian public universities especially when focusing on teaching records for auditing purposes. The objective of the present study is to rectify this gap through unfolding the nature, attitude, and acceptance of Malaysian educators towards teaching portfolio (TP) reporting using DDMS. The problem here is the readiness in work shift, along with the technical and facilities supports from the institutions. An adapted questionnaire was distributed to random Malaysian tertiary educators. Descriptive statistics and correlation analysis were used in the analysis process. Findings suggest that the implementation of an electronic version of TP is feasible for Malaysian tertiary educators with more positive than negative impacts. The present study is, therefore concluded with an innovative working model of this digital/electronic teaching portfolio (e-TP) and a users' scope of e-TP.

**Keywords:** *E-Teaching, Digital Teaching, e-TP (electronic teaching portfolio), education*

## **Introduction**

Record management is almost mandatory in some fields. This evidence protects personnel in terms of work performance and execution. In the field of education, record management is not only limited to institutional information but rather influence future risk management efforts and assist education success projections. With technological advancement and better environmental awareness, DDMS is a preferred choice as it saves physical space, ease of accessibilities and minimises cost. DDMS offers a faster, safer, and manageable working environment, and it is efficient, effective and can adequately secure abundant data. Yet without proper adoption of models and considerations, DDMS will merely serve as storage and retrieval purposes (Umi & Zawiyah, 2016).

### ***Digital Document Management System (DDMS)***

DDMS is an electronic “scalable and comprehensive” method to keep a record of institutions’ or individuals’ development (Pablo, Agudo, Sánchez, Rico, Hernández-Linares, 2013, p.1169). It has been broadly adopted in various institutions; private and government-based. There are several platforms for DDMS operation in organisations. Serving as e-portfolios management systems (EMS) are Epsilen, Mahara, PebblePad and Taskstream and secondly, for learning management systems (LMS) or virtual classroom (VS) platforms are Exabis, Moodle, Fronter and Sakai which enable e-portfolios to be adopted or complemented as modules (Pablo, et al., 2013, p.1173). Some educators have shown minimal desire to incorporate LMS in the classroom due to (1) little job significance or accomplishment; (2) small LMS efficacy; and (3) low LMS alleviation of operation degree (Schoonenboom 2014, p.247). In these cases, “interaction re-configurability” (Wang, Doll, Park & Yang, 2013, p. 146) is the most significant feature that must be incorporated when using LMS. Next, integrated systems which comprise content management systems (CMS) such as Drupal ED, Factline and Movable Type, may offer secondary e-portfolio purposes. Lastly, other systems, like Elgg and WordPress, can also be adopted. Yet, specified criteria is demanded distinctive purposes may not be available thus requires self-tailored platforms. This has led to the present study.

### ***Electronic Teaching Portfolio (e-TP)***

A portfolio is usually formative and summative, whether it is benefitted by the educators or students. The purposes are almost similar despite different targeted output. The use of e-portfolio among students is consistent with the growth of technology and knowledge on technology and that its integrations between one platform to another inspire greater streamline in teaching and learning processes (Aitdaoud, Bentaib, El Kouali, Talbi & Namir 2015). This led to a user-centred portfolio which is assumed vital as it encourages creativity

and gives satisfaction. E-portfolio has solely been used for students' evaluation and to boost students' learning processes despite its wider functions and roles (Pablo, et al., 2013).

Teachers' TP can be both progressive and summative. The initial contains teaching materials which are constantly updated and improved while the later serves a career based purpose. These purposes rely on institutional demands, whether to act as a medium of evidence to teaching execution or ensuring the latest teaching documents are employed in classes. Other purposes, such as professional development and accreditation, are also to be included (Pablo, et al., 2013). The present study focuses on e-TP as a professional work performance record and auditing review for educators.

### ***Problem Statement and Study Gap***

There are many hurdles among Malaysian educators to implement e-TP despite its usefulness claims (Sharidatul, Wan & Hazira, 2012). The present low integration of ICT in schools is led by poor training which will only fail to fulfil the inspiration of the Malaysian education ministry (Irfan & Amat, 2015). The readiness of shift in work style among educators and technical and facilities supports from the administration are also rather vague. Thus, not all areas of education practices have embraced this green movement in education.

Malaysian education stakeholders "must work collectively to settle anxieties presented by complete inconsistencies in diverse activity systems, which structured institutions' ICT traditions" (Asiah, Habibah, Krauss & Nor Aniza, 2018, p.17). The research gap here is the willingness level to implement digital document management (DDM) among Malaysia educators. Thus, this led to certifying and rectifying the gap through unfolding the nature, attitude and acceptance of Malaysian educators towards e-TP preparation and reporting specifically using DDMS.

### ***Research Objectives***

As Koraneekija and Khlaisang (2014) aimed to develop an e-portfolio management system based on Thailand's qualification framework (TQF) higher education, two significant areas in e-TP which are "the e-portfolio system and the rubric creator system, and one reference page as the TQF guidelines (p.1420)" were explained. These are the wider objectives of the present study. The objectives of the present paper are, however, to firstly, to describe the present convention and acceptance of DDM in Malaysian education scene. Secondly, to analyse the possible effects and consequences of adopting digital document in Malaysian education.

### ***Research Questions***

The questions that the study hope to answer here are firstly, what is the current attitude and acceptance of DDM in the Malaysian education system? And next, what are the possible effects and consequences of adopting digital document in the Malaysian education system?

### **Literature Review**

Worldwide, DDMS, LMS even CMS have been extensively adopted. This section looks into the Malaysian context as to fulfil the need to understand the local Malaysian scene. Sharidatul et al. (2012, p. 978) define e-TP as “not only about the technology but the evidences of someone teaching, a reflection on their past experiences, a self-assessment on what they have done before, a collaboration among their communities, a tool for future empowerment and also as an important tool to support lifelong learning.” Through this definition, an e-TP does not have to be complicated nor adopting latest technology which will only hamper the motivation of a much simpler and direct e-TP. Depending on needs and requirement, an e-TP can be tailored to suit academic uses and functions (Tajul, Ruhizan & Rohani, 2015).

In a study to measure e-portfolio for Malaysian technology and vocational education training (TVET) students’ assessment, Mohd, Ruhizan, Norazah, Helmi, Faizal & Tajul (2015, p. 296) identified three fundamentals and 17 markers in the development of an “e-portfolio system for Malaysia Malaysian Skills Certification (MMSK).” These are (i) recognition of prior achievement (personal details, academic qualification, non-academic qualifications, prior experience, core abilities and declaration authorisation); (ii) virtual learning space (learning management, exhibition, learning assessment and personal space); (iii) competency assessment (competency information, achievement record and achievement evidence); and (iv) operating system (information sources, information management, communication and reflection)” (ibid.). Beyond these, Noraini and Ruzy (2011) found that e-portfolio is employed to explore Malaysian students’ psychological state. Thus, e-portfolio for students can serve as research data for inspiring educators to understand their target learners further.

For teacher trainers, Tajul et al. (2015) conceptualise a framework that consisted elements of execution, process, and assessment while the implementation is based on intention, user satisfaction, and net benefit. For educators, e-TP assessment criteria may vary according to purpose and auditing bodies. These usually include indicators of personal details, academic qualification, learning management, students’ learning assessment, students’ and lecturers’ achievement record and achievement evidence, information sources, information management. For teachers’ professional building and achieving performance indicators, Muhammad and Mahbub (2012) found pre-educators are approving the use of e-portfolios

because their accomplishment and execution can be timely observed. E-portfolios also serves as a supervising tool by identifying learning progress, potencies, and flaws. Several hurdles such as soundness and consistency disrupted internet connection, negative perceptions, time limit, work capacity and moral issues were also witnessed. A boost in teacher capabilities is, however, found in teachers who applies e-portfolios. These are (1) instilling effectiveness; (2) boost teaching materials; (3) accelerate communicative competence; (4) realising content knowledge; (5) acquiring ICT talents; and (6) acknowledge mindsets change (Muhammad & Mahub, 2012, p.1007). Willingness to undergo mindset change is a necessitate component. Negative behaviours and rejections will surface if without cooperation. Thus discrepancies in abiding by the demand of a paperless working environment shall not prevail.

If e-portfolio operates as a collection of teaching materials, computer-mediated communication (CMC) purposes or technology literacy (LC) than Shalini, Wan, Mahani and Mohamad (2012) qualitative study on teachers who produces e-portfolio found that these Malaysian teachers became technology-competent and it initiates professionalism. Constructively, this could initiate all-time learning, alliance even broadening prospects (Shalini et al., 2012) yet dissimilar philosophical and individual magnitudes of progression into electronic-based learning (Airil & Zarlina, 2012) delay such migration. After five years, Airil and Zarlina (2012) findings are still valid citing “a number of methodological and practical issues that impact upon this venture as a preparation to meet the future head-on for university academics (p.70)” when Low, Mok, Moomala, Lilliati and Aralas (2017) still suggested teacher anxiety, low technological skills, poor technological support among others have always been the excuse to avoid such advancement to electronic-based documentation and record in Malaysian education. Although e-portfolio reduces significantly the “usage of files, flexible, manageable and accessible” (Tajul et al., 2015, p. 1268), the above mentioned, excuses still surface.

For teachers’ professional development, e-TP positive effects surpass the negative consequences (Umed, Daler, Moomala, Lilliati & Dalia 2017). Professional development process here is termed as aside from formal new knowledge seeking and improving endeavours, “informal experiences, such as having discussions in a collegial atmosphere, observing fellow workers, reading specialist publications and researching subjects of interest on one’s own initiative” (ibid, p. 411). Umed et al. (2017) study are, however, conducted based on secondary data and outdated literary reviews; thus, such generalisation is rather inconclusive.



## **Methodology**

This is an exploratory study. It is a quantitative study using an adapted questionnaire from De Rijdt, Tiquetb, Dochyb & Devolderc (2006). This google form questionnaire was distributed using social media Facebook and What's App groups to reach random Malaysian educators.

### ***The Instrument***

The questionnaire has six sections. Part A was on demographic; part B seeks to unfold the use of TP, part C explores the functions of e-TP in the view of the respondents and part D questions the reasons for one to start using e-portfolio. Part E is divided into two sections duelling on possibilities and projected outcome of positively and negatively evaluated e-TP. Part F deals with possible experiences or effects of using e-TP. Lastly, part G reveals the attitudes of educators on the realisation of e-TP.

### ***Subjects***

The respondents are 25 males, and 30 are females. From this samples, 31.5% has 1-5 years teaching experiences, 24.1% with 6-10 years teaching experiences, 31.5% with 10-20 years teaching experiences, and 13% has more than 20 years of teaching experiences. Respondents demographic includes 9.3% has a degree, a vast majority of the respondents has a master's degree (77.8%), and 13% has a PhD. Out of these numbers, a majority of 87% think to have a TP assist their teaching progress.

### ***Data Analysis***

Google form enables automated calculation of basic percentage, Likert scale based responses summary and produces suitable graphs. However, some outputs are analysed using SPSS software as a basic percentage count does not assist in answering the research questions. Here, only 51 complete data are analysed. The descriptive output allows better representation. Correlation, cross-tabulations and compare means are used where applicable. The report made here is only to answer the research questions dealt with in this paper. Other findings are discussed elsewhere.

## **Findings and Discussion**

Fifty-five responses were gathered in this exploratory study. Yet only 51 has complete data suitable for SPSS analysis. To answer question one; what is the current attitude and acceptance of DDMS in Malaysian education scene, 46.3% of the respondents are currently using completely paper version TP and an equal number are using partial paper, partial

electronic version. 7.4% of the respondents are already adopting a complete electronic version. Yet surprisingly, 51.8% preferred an e-TP. This opens great possibilities for change despite a 32.7% preferred a partial paper-electronic version. A small 13% would like to remain using the paper version. However, when a cross-tabulation with the statement “I do not agree with the use of e-TP,” was constructed, only 5.6% agree, and 9.3% agrees. This totalled up slightly more than the 13% who prefers using paper-based TP. Thus, there is a willingness. The motivation to take a paradigm leap and a change of mindset to achieve excellence has initially been addressed (see Muhammad & Mahbub, 2012).

A mean of  $\bar{x}=2.22$  (SD 1.233) is received for the statement “I do not agree with the use of e-TP.” This shows an agreement to migrate to e-TP in the future as the majority are willing to go green. This is further supported by a high mean  $\bar{x}=4.10$  (SD 1.100) in “e-TP helps to simplify record management for promotion purposes.” This is further strengthened when only 1.9% disagree and 5.6% disagree that e-TP may assist in simplifying promotional purposes. Another reason for approving the use of e-TP is they can easily load and access e-TP whenever they wish. As Tajul et al. (2015) noted, accessibility is the key to any DDMS migration. 37% of the respondents agree, and 42.6% agree yet 7.4% remain neutral, and 11.1% disagree while 1.9% of the respondents’ reject e-TP as loading and access still rely on good internet services and skill. These hurdles regularly arise in many initial studies (see Muhammad & Mahbub, 2012; Asiah et al., 2018; Low, et al., 2017). This may just be a fossilised outlook as many pieces of training have been conducted, and internet connection has constantly been improved.

Table 1 below shows a report of mean comparison between the agreement to adopt e-TP to positive feedback or evaluation. Those who perceive “I will receive the incentive as a reward of a positively evaluated e-TP” has a high neutral leaning towards agrees to adopt e-TP ( $\bar{x}=3.75$ , SD.851). However, those who are inclined towards e-TP also agree to “a positively evaluated e-TP is no different to a paper-based” with mean  $\bar{x}=4.00$  (SD.963). Those who are neutral about adopting e-TP show a high neutral means  $\bar{x}=3.64$  (SD .505) towards this statement. This goes back to changing mentalities. Those who disagree to e-TP shows high neutral to “there is no consequence of a positively evaluated e-TP”  $\bar{x}=3.60$  (SD .894) and  $\bar{x}=3.80$  (SD 1.304) to “positively evaluated e-TP is no different to a paper-based.” Those who strongly oppose e-TP also say that “there is no consequence of a positively evaluated e-TP”  $\bar{x}=4.67$  (SD.577) with similar mean to “positively evaluated e-TP is no different to a paper-based.” This shows although some are sceptical about the positive consequences in adopting e-TP, they are still willing to migrate to e-TP. Yet, those whose convictions are firm on rejecting e-TP are also rejecting its possible benefits. This is still parallel to findings in Muhammad and Mahbub (2012).

**Table 1:** Compare Means

I do not agree with the use of e-TP		I do not agree with the use of e-TP	There is no consequence of a positively evaluated e-TP	A positively evaluated e-TP is no different from a paper-based
Strongly Disagree	Mean	3.75	3.15	3.35
	N	20	20	20
	Std. Deviation	.851	.988	1.226
Disagree	Mean	3.33	3.58	4.00
	N	12	12	12
	Std. Deviation	1.371	1.311	.953
Neutral	Mean	3.18	3.09	3.64
	N	11	11	11
	Std. Deviation	1.079	1.221	.505
Agree	Mean	3.40	3.60	3.80
	N	5	5	5
	Std. Deviation	1.140	.894	1.304
Strongly Agree	Mean	3.00	4.67	4.67
	N	3	3	3
	Std. Deviation	2.000	.577	.577

Despite the data in Table 1, the findings in Table 2 below shows only one item correlates to another. “Positively evaluated e-TP is no different to a paper-based” significantly correlates with “there is no consequence of a positively evaluated e-TP.” This shows that educators may still change their perceptions if proven wrong. This calls for a well-organised e-TP platform and evaluation must have a significant impact on their career. E-TP may boost professionalism (Shalini et al. 2012), thus materialising a sufficient method and platform determines its success.

**Table 2:** Correlations between assessment items

		I do not agree with the use of e-TP	There is no consequence of a positively evaluated e-TP	A positively evaluated e-TP is no different from a paper-based	I will receive the incentive as a reward of a positively evaluated e-TP
A positively evaluated e-TP is no different to a paper-based TP	Pearson Correlation	.250	.438**	1	.225
	Sig. (2-tailed)	.077	.001		.112
	N	51	51	51	51

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

To recognise educators' attitudes towards DDMS in education, the present study found, 50% of the respondents who have used e-TP is based on self-initiatives. 24.1% of the respondents are obligated by the institutions, while 48.1% is recommended by the institutions. The balance of 24.1% is recommended by their colleagues. This finding offers the potential for a paradigm leap. Malaysian educators are having great potential to willingly accept e-TP and can be motivated by self, colleagues, and institutions.

The respondents show 27.8% strongly disagree, and 22.2% disagree with the notion that e-TP will be appealing only to the young educators. 22.2% of the respondents remain neutral, while 16.7% agree, and 11.1% strongly agree. This opinion has no correlation to years of teaching and education level. This is also another positive finding that e-TP may succeed. The pressure is on the wholesomeness of the digital platform rather than the users.

The rejections of e-TP may be led by overwhelming of the unforeseen work designated upon the educators. 55.6% of the respondents highly demand training on e-TP, 38.9% demands training, while 3.7% is neutral, and 1.9% disapprove to training. From the response, 29.6% contemplate if e-TP increases the existing administrative work of a lecturer, similar feedback of 25.9% of the respondents agrees and neutral yet 11.1% disagree and 7.4% believe e-TP will not accumulate educators' managerial work. 40.7% agrees, and 27.8% agrees that e-TP is not a guarantee of good work. 14.8% of the respondents remain uncertain, but 16.7 % says that it can reflect educators' excellent performance.

Table 3 below shows that those who claim they need to spend time to convert document has no rejection of using e-TP. This strengthens the need for e-TP as educators are willing to migrate to paperless- digital document management.

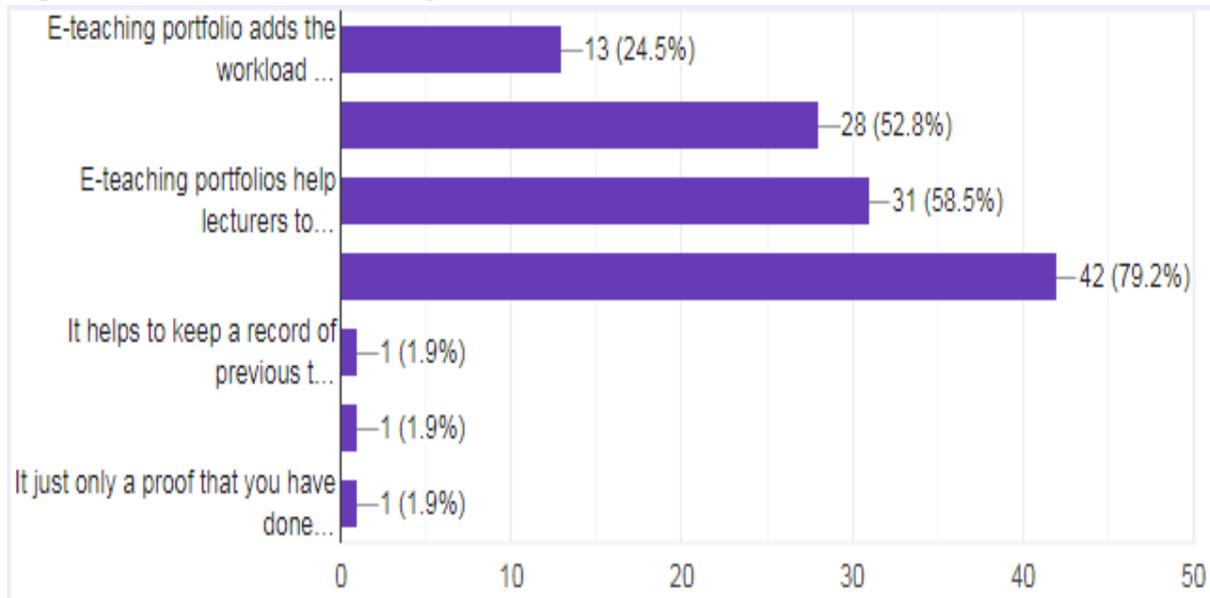
**Table 3:** Cross-tabulation between time spent converting documents\* agreement to use e-TP

		I do not agree with the use of e-TP					Total
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	
I need to spend a lot of time converting my documents to PDF	Strongly Disagree	5	0	0	1	1	7
	Disagree	7	3	2	0	0	12
	Neutral	0	1	1	1	1	4
	Agree	3	4	3	1	0	11
	Strongly Agree	5	4	5	2	1	17
Total		20	12	11	5	3	51

In short, the overall attitude and acceptance toward e-TP are positive. A wider sampling may conclusively suggest Malaysian tertiary educators are willing to adapt to the new environment and support this green movement. With ample training on e-TP, many are willing to participate in this initiative. Therefore, facilities support from institutions and auditing bodies are expected.

Figure 1 below assist in answering the second question; what the possible effects and consequences of adopting digital document in the Malaysian education system. Here, 24.5% perceived e-TP intensifies the workload of an educator. 52.2% of deems e-TP will only alleviate lecturers with the management of their lesson plans. The statement “e-TP may assist lecturers in continuing their everyday works,” achieve to receive the second-highest response of 52.8%. The enquiry “e-TP help lecturers to be more organized” constitutes the highest response which is 79.2%. An additional 1% of each comment was added by the respondents. These are additional comments such as “*Serabut lah* (this is annoying), just another meter for documentation...” and “it is just proof that you have done your work.” This attitude has been highlighted recently (see Low, et al., 2017). The rejection number is, however small, as the majority will abide by changes although work happiness index may suggest otherwise.

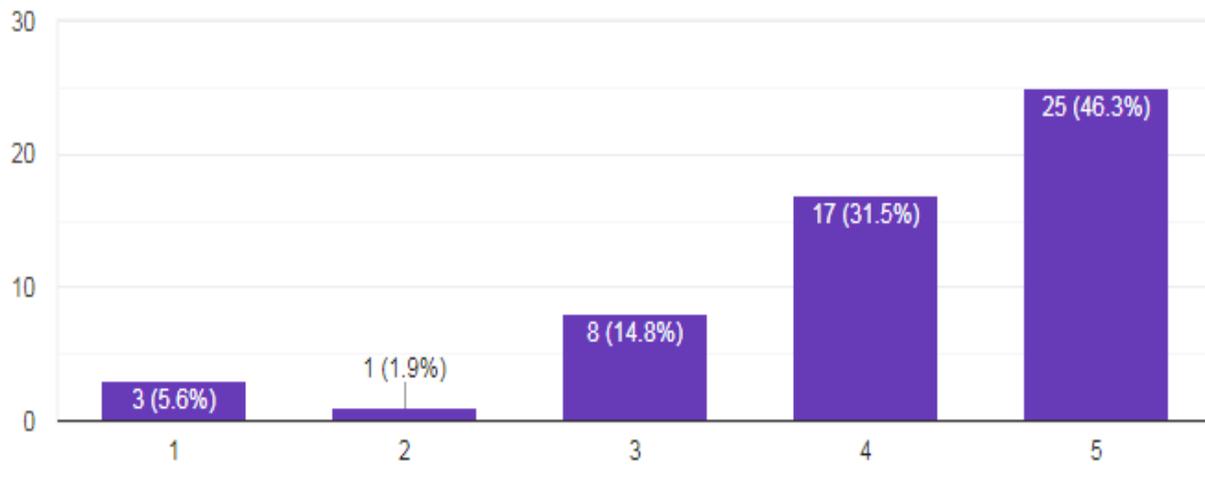
**Figure 1.** Reason for “I do not agree with the use of e-TP.”



Feedback is vital in education as it may improve teaching, thus boosting learning experiences. 22.2% suggest that e-TP can give a large contribution to self-evaluation and feedback for a lecturer. Another 53.7% agree, while 18.5% remain uncertain. The similar 3.7% and 1.9% inhibit the negative feedback. Feedback can be obtained from various sources, including auditing bodies, colleagues, even students. This finding is parallel to Muhammad and Mahbub (2012).

Of the respondents, 29.6% strongly agrees, and 51.9% agrees if they use e-TP, they will have to follow the guidelines of the policymakers. 13 % remain neutral, while 5.6% disagree. Figure 2 below may explain such output. 46.3% of the respondents and 31.5% constitute the most agree to e-TP shall assist the respondents in simplifying the management of record for promotional purposes. Thus, it explains why abiding by the policymakers’ guidelines is vital. 24.1% of the respondents like, and 31.5% would like their teaching to be evaluated through e-TP. Yet, 25.9% of the respondents remain neutral, and the balance constitutes the disagree response. A positive correlation  $r=0.525$  (significant at the 0.01 level 2-tailed) between item “e-TP is one of the ways for a teacher to reflect on his/her educational practice” and “I would like my teaching to be evaluated through my e-TP”. Table 4 below suggests that those who believe in e-TP will reflect their teaching also feels that it is the channel to evaluate it. However, a similar number of 3.7% of the respondents (2 masters’ holders with 10 to 20 years of teaching experience) strongly disagree with these items.

**Figure 2.** E-TP helps to simplify record management for promotion purposes



**Table 4:** Correlations between evaluation and reflection items

		I would like my teaching to be evaluated through my e-TP	e-TP is one of the ways for a teacher to reflect
I would like my teaching to be evaluated through my e-TP	Pearson Correlation	1	.525**
	Sig. (2-tailed)		.000
	N	51	51
e-TP is one of the ways for a teacher to reflect	Pearson Correlation	.525**	1
	Sig. (2-tailed)	.000	
	N	51	51

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

One consequence of e-TP that the majority agrees is they will not be burden with a thick file (81.5%). While others are sceptical, 5.6% of the respondents disagree, and 1.9% disagree as they perceive e-TP is not a guarantee for low weight burden. 25.9% agree, and 37% agree that e-TP will give them extra work, especially during audit seasons. An equal 14.8% of the respondents are neutral and disagree, while 7.4% disagree. e-TP should ease audit as educators do not have to bring their thick paper-based TP for auditing as it is accessible online. 35.2% agree while 22.2% of the respondents agree that they might need to spend time converting document to pdf to be uploaded yet a similar 22.2% disagree and 13% disagree. Of the respondents, 7.4% remain uncertain. Skill and knowledge are significant here, and there are abundant of software that can simplify this need.

Another positive effect projected by the respondents are e-TP helps to improve course materials as storage of various types of media is possible, easily share the lesson plan with students, share teaching strategies and course materials with my colleagues. 38.9% really agree while 42.6% agree that as storage is enhanced, teaching materials will also be improved. 40.7% really agree, and 48.1% agree that sharing with students is simplified. 48.1% of the respondents really agree, and 33.3% agree to share materials with colleagues is also efficient. Although there are sceptical opinions and rejections to these items, the numbers are insignificant.

In short, e-TP is feasible for Malaysian tertiary educators, yet it possesses some positive and negative effects and consequences. These effects and consequences must be dealt with professionally and dedicated to the Malaysian context.

### Research Implication and Contribution

The research findings above assist in guiding a model towards innovating an e-TP suitable for Malaysian educators. The objective behind this innovation are:

- (a) to create a paperless environment among educators where record management is required;
- (b) to simply teaching record management suitable for audit purposes; and
- (c) to ease accessibilities of teaching content, thus ensuring the latest syllabus is used.

As any DDMS, the present Malaysian system for higher education e-TP uses the base of digital storage through the uploading of fundamental courses information in a form-based template. This template is created to align with the criteria specified by the institution suitable for audit purposes. Conceptual framework of this e-TP is shown in Figure 3 below.

**Figure 3.** E-TP conceptual framework (adapted from Mohd, Ruhizan, Norazah, Faizal Amin Nur, Tajul, 2013)

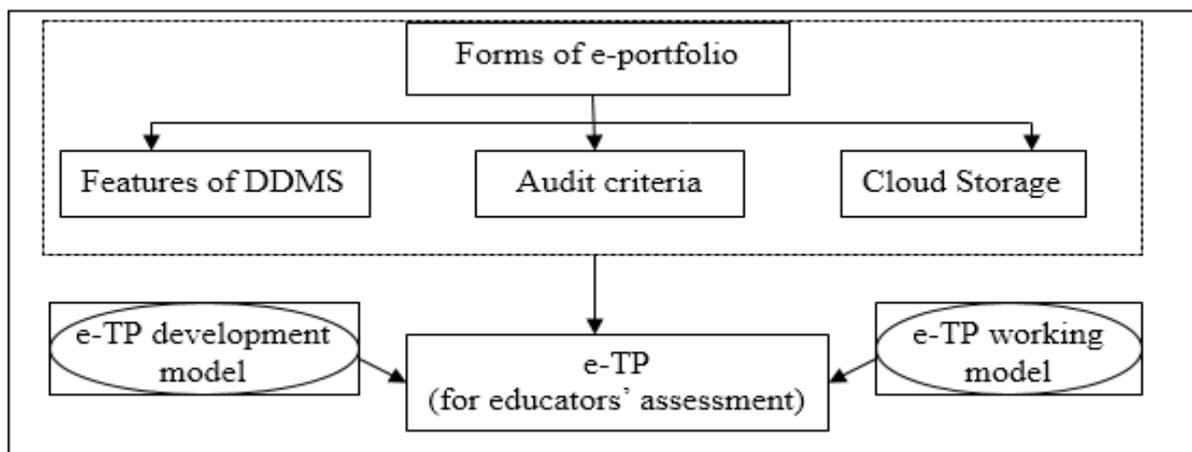


Figure 3 displays the present e-TP adopts a direct approach. Although products suggested by (Pablo et al., 2013) were considered, a simple and direct approach was adopted as the current need request for a simpler platform. Features of DDMS, which usually include scan, register, index and store, and retrieve are considered a form-based template yet is created to fulfil the need for a much simpler way to accomplish demand of audit criteria. Thus cloud storage serves as an easier data safeguarding as it utilises the storage provided by the institution. The audit criteria include the availability of (1) latest syllabus, (2) course content, (3) scheme of work, (4) lesson plan, evidence of students' (5) assessments and (6) attendance, evidence of (7) teaching materials, and (8) some professional demographic information.

Any e-portfolio requires thorough preparation so that a comprehensive development model is created (Tajul et al., 2015). Airil and Zarlina (2012) qualitative study reported the lament of some Malaysians educators in being abreast with e-learning citing training and support are two influential factors. This is parallel to the research findings above which suggested that (1) willingness to migrate to e-TP is one of the essential key factors to ensure the success of such initiative; and (2) the administration must take a paradigm leap in materialising the effort. This platform must be (1) adaptive to needs; (2) simplified; (3) user-friendly; and (4) maintained. As willingness from the educators is guaranteed, maintenances will also be willingly undertaken, which will determine the success of such a project. Maintenance includes not only updating of data but also support and training. The complicated medium of e-TP shall only burden support and training. As support may include licensing, expertise and cost, thus free access easily medium of e-TP is essential. Training of a complicated medium of e-TP may also be exhausting and costly. e-TP has to be hassle-free, does not incur more work or tools and reduce the time used. This would lead to a timely construction of e-TP, preparation and auditing process. These considerations are shown in Figure 4 below presented as the e-TP development model.

**Figure 4.** E-TP development model

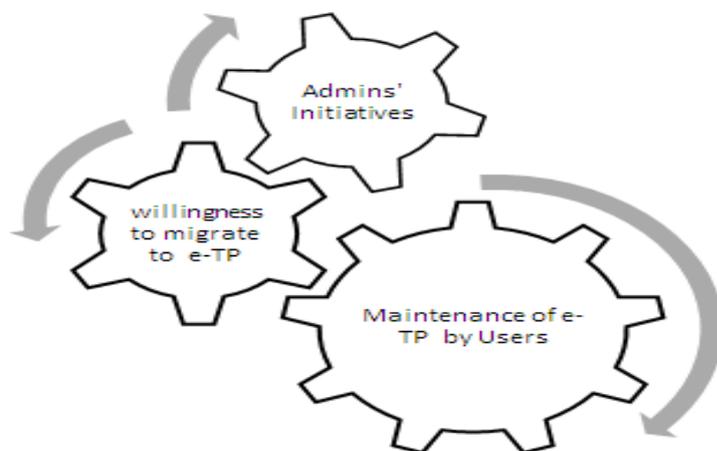


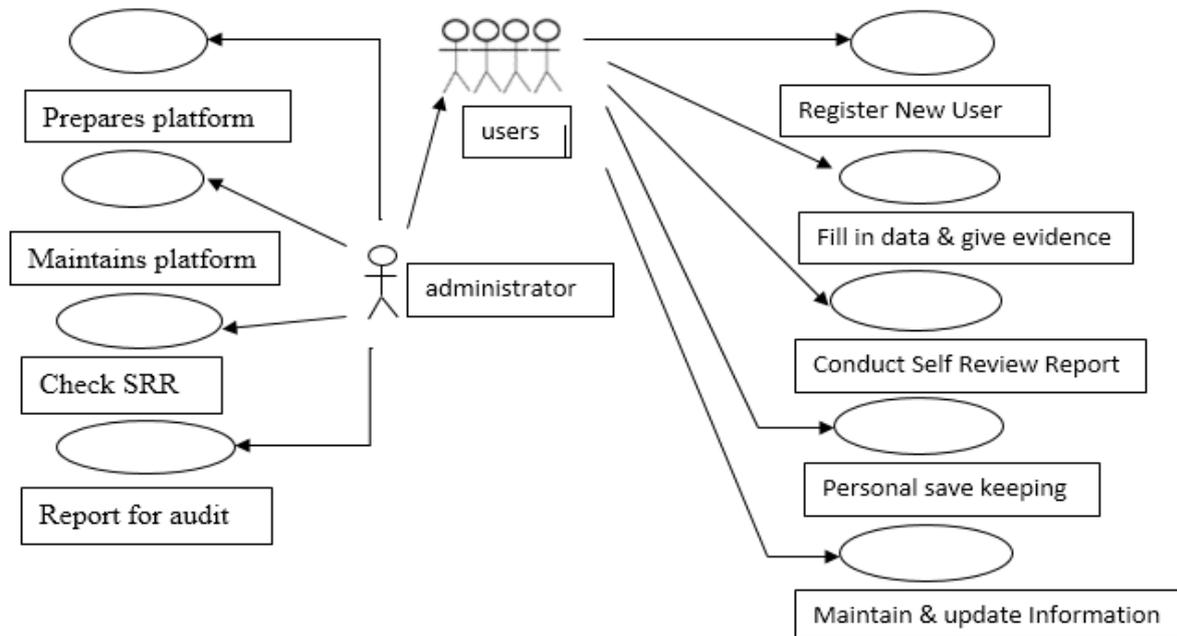
Table 5 below assist in identifying the users' scope of e-TP. The roles and responsibilities of the admin and users are compared and contrasted. Users roles and responsibilities include registering and fill in required items in the e-TP. Evidence has to be uploaded by the users. The evidence here is the syllabus and other academic documents, materials and proof of attendance. Users are to also conduct a self-reported review (SRR) to their e-TP. This responsibility certifies educators' professionalism and ethics. Shared roles and responsibilities include both parties have to view the data. The users have to ensure content validity and reliability before the admin views for content validation. This will endorse that teaching has been executed according to specified standardisation. Maintenance of evidence is also monitored by both parties. The latest updates will be received from the resource person, and it is mandatory to implement it accordingly and timely. Reports are essentials for auditing purposes. Therefore, both parties are to produce and submit reports.

**Table 5:** Users' scope of e-TP

Admin	Users
View Evidence	
Maintenance of Evidence	
View & Generate Report	
	Register & fill in e-TP
	Upload evidence
	Conduct Self -Review Report (SRR)

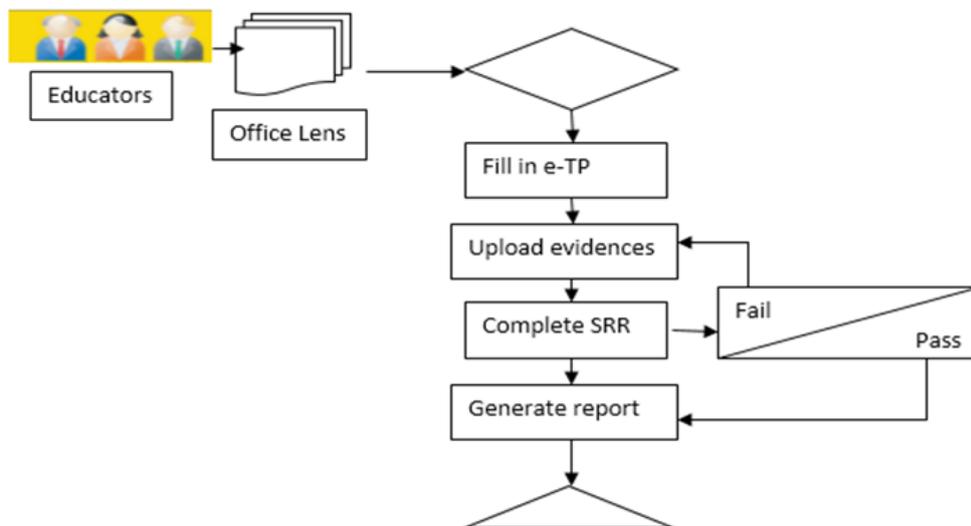
Figure 5 below shows the e-TP working model. The admin will have four tasks in certifying the form of e-TP. The key role of the admin is to prepare and maintaining the e-TP platform. He then checks the SRR and prepares a full generic report for the whole faculty members for auditing. The users have five key duties to perform. Another key duty is to save personal e-TP for promotional purposes. The admin would not operate this.

**Figure 5.** E-TP working model



Users' work flowchart is presented in Figure 6 below. The educators will first generate pdf files using any scanner or available software like Office Lens. Next, they will fill in the required information in the e-TP. This information includes, among others, latest syllabus, course information, test specification, students' attendance list. Where required, educators must upload evidence. Upon failing to upload the evidence, the system will reject the submission, thus generating SSR is impossible.

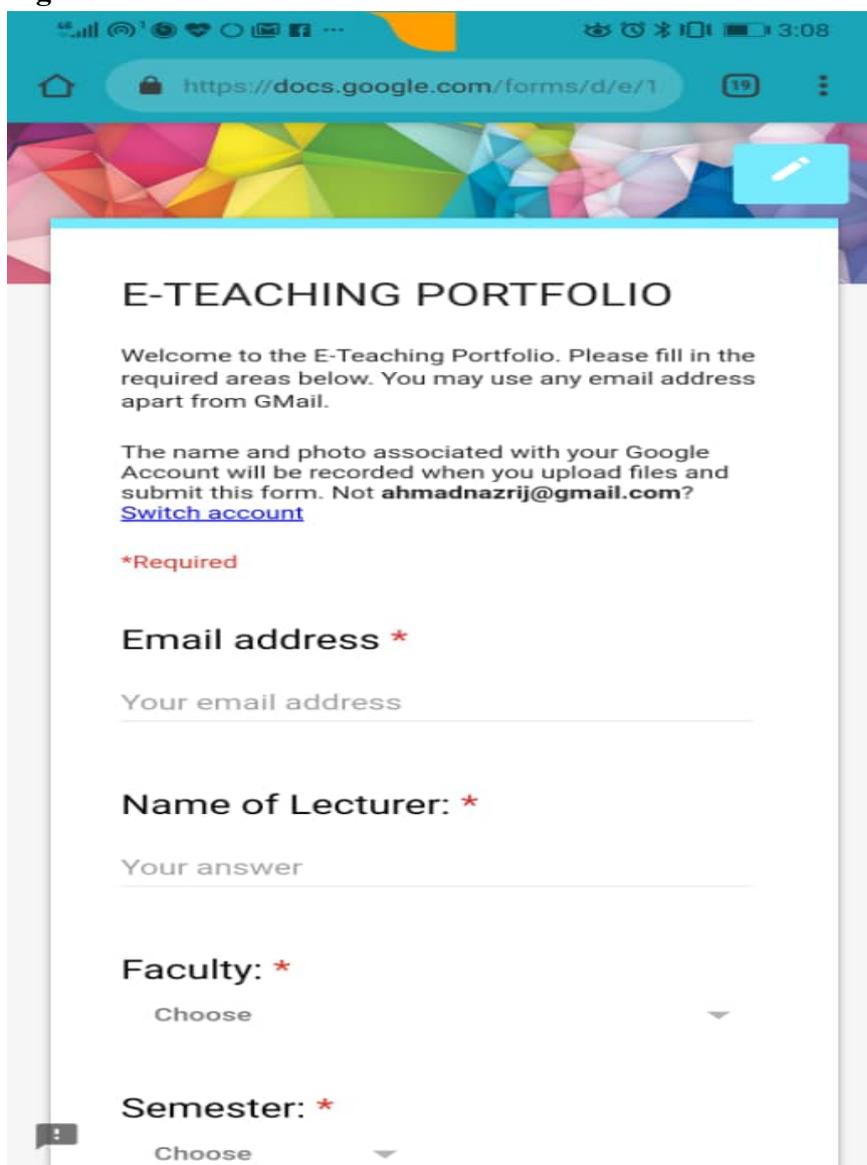
**Figure 6.** Users' work flowchart



Although Siti and Mohd Heikal (2018) suggested the use of NPC for secured DDMS, the present e-TP has not demanded it as such need for a mobile user has not yet extensively adopted in Malaysia. These, however, are future considerations.

Figure 7 below shows the google form interface. Lecturers must fill in the required data and thus upload teaching evidence after scanning them as most materials are already in pdf forms, minimal efforts in scanning a few other documents. These include students' assessments, such as assignments, tests, and class attendance sheets.

**Figure 7.** E-TP interface



**E-TEACHING PORTFOLIO**

Welcome to the E-Teaching Portfolio. Please fill in the required areas below. You may use any email address apart from GMail.

The name and photo associated with your Google Account will be recorded when you upload files and submit this form. Not [ahmadnazrij@gmail.com](mailto:ahmadnazrij@gmail.com)? [Switch account](#)

**\*Required**

**Email address \***

Your email address

**Name of Lecturer: \***

Your answer

**Faculty: \***

Choose

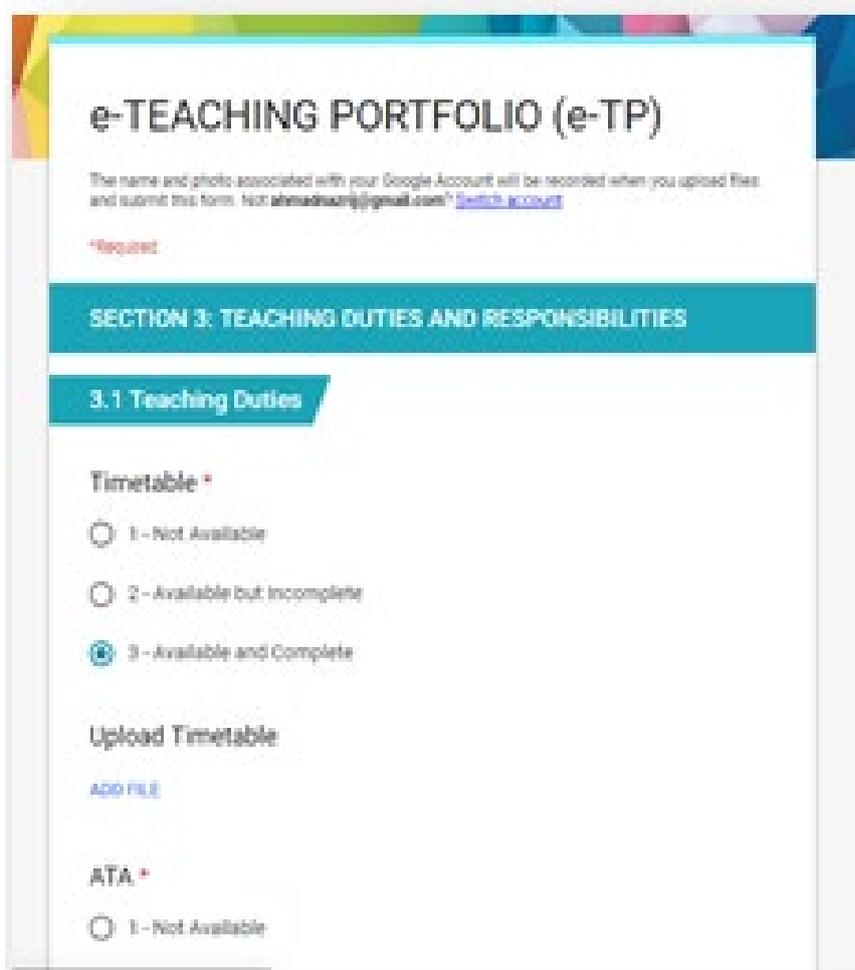
**Semester: \***

Choose

Figure 8 is an example of the working platform of the e-TP interface. It is simple, precise, and concise, thus has low maintenance. It enables self-assessment and auto-generate

calculation of marks for audit purpose. This eliminates the need for in-house faculty audit personnel.

**Figure 8.** E-TP



In short, e-TP has reduced paper used in producing a collection of teaching evidence and documents. However, there are always rooms for improvement. Future suggestions include uncomplicated in-house platform rather than using google form and security features.

## Conclusion

Asiah et al. (2018) call for some constructive transformations to a managerial procedure, or no such green culture can be conceived. Through e-portfolio, teachers' reflective teaching can be collaboratively improved as students and parents can offer feedbacks, assist teachers in keeping abreast with technology and enabling professional development among Malaysian teachers (Low et al., 2017).



These findings assist in building a model to enable e-TP to be materialised and tested for efficiency. An assessment-based e-TP may serve as an official standardised systematic record of teaching processes suitable for audit purposes. Despite being less comprehensive as academic, professional output such as publication in journals, records of research grants, contribution in community services, or industrial consultations records are not mandatory in the present e-TP, these can be supplementary features if educators are willing to include such data.

### **Acknowledgement**

We would like to acknowledge Universiti Teknologi Mara specifically Cawangan Pahang for any kind of financial assistance in the publication of this paper. e-teaching portfolio (e-TP) is now a registered intellectual property of the authors under the Intellectual Property Corporation of Malaysia (MyIPO). All details and figures are not to be duplicated.

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