Revolutionizing Assessment: Unveiling the Collaborative Portfolio Assessment Learning System Prototype through Feminist Pedagogy

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ARTICLE INFO	ABSTRACT
	Since 2012, Malaysia has implemented School Based Evaluation (SBA) as a means to enhance the learning and assessment processes for students. Nevertheless, educational institutions continue to face challenges in successfully elucidating and implementing a comprehensive assessment procedure that could enhance the quality of instruction and knowledge acquisition. In addition, they continue to utilize manual file systems for managing and evaluating students' results. Thus, the objective of this project was to develop and apply a concept for a prototype educational system known as Collaborative Portfolio Assessment (CPA) to support students in their knowledge-building drive. Feminist Pedagogy, with its emphasis on collaboration, inclusivity and critical reflection, aligns with the goals of the CPA learning system prototype by empowering Malaysian students to co-construct knowledge through diverse and reflective portfolio processes. By integrating culturally relevant activities and leveraging digital platforms, this approach fosters deeper critical thinking, inclusivity and preparedness for societal and global challenges. The concept for creating this CPA learning system prototype was derived from the knowledge management process model, incorporating the strategies of Computer Supported Collaborative Learning (CSCL) and e-portfolio management system model. This system functions as a tool to evaluate the process by which students construct knowledge within the SBA environment. The study involved a sample of 3 History subject instructors who were interviewed to determine the necessary characteristics for evaluating the SBA e-portfolio management system. In addition, a total of 6 students were engaged to assess the functionality of the CPA prototype learning system. The results suggest that the majority of students agreed that the therapy provided through this CPA prototype learning system was effective in promoting knowledge acquisition during the teaching and learning process. In addition, to establish a cohesive method for developing an educational application, it is possible to integrate a knowledge management model, a CSCL strategy and an e-portfolio management system. This combination facilitates the generation of material through collaboration, encourages thoughtful learning and establishes centralized repositories of knowledge, leading to a thorough and customized learning experience.

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1. Introduction

Assessment is a systematic process of measuring and evaluating student achievement against teaching objectives that include data collection, analysis and translation. Thus, assessment in schools and classrooms refers to the process of gathering, analysing, synthesizing and interpreting information about teaching and learning (T&L) [1]. This process aims to help the school assess the effectiveness of learning and then make improvements in T&L. School-based assessment (SBA) is a type of assessment in which the school plans, administers, scores and reports the results. Implementation of SBA for some subjects was by including assessment of course work, practical, project, module and oral test in the examination.

The school system in Singapore has set its educational objectives to produce students who are highly confident, able to communicate effectively and independent. Therefore, the Programme for Active Learning (PAL) was introduced. This assessment looks more at the potential of students by measuring their abilities and seeing the development of self-confidence in carrying out tasks and activities [2]. Education in Singapore underwent a transformation in 2008 with the implementation of Subject Based Banding (SBB). This initiative replaced the EM1, EM2 and EM3 streams, which were previously used to categorise English and Mother Tongue language proficiency levels in primary schools across the country [3]. SBB was introduced to ensure that students are assessed based on their abilities depending on their interests and inclinations. This is intended to help students realize their potential.

In the meantime, the Hong Kong government has implemented the first large-scale reforms to the education system by introducing a new culture in the assessment system [4]. This is due to public outrage over the education system's former competitive and selective nature. As a result, the school-based assessment system was introduced with a core-competence (core competence) approach, in which basic skills and knowledge will be used as a reference for assessing students' learning. Teachers are encouraged to use a variety of assessment methods to meet the learning objectives of their students at school. Among them is the observation of student performance in the classroom, self and peer assessment, portfolio implementation or participation in project work to promote learning more flexibly [5].

As such, Singapore and Hong Kong are still oriented towards public examinations where SBA accounts for 15-40% of the overall assessment. Assessment in Malaysia must transform so that student involvement is more optimal in efforts to improve achievement and pursue national progress. Changes in the assessment will make the education system in Malaysia comparable to foreign countries. SBA when compared to the previous learning system, is seen to be able to develop the student's potential in total as their performance is not measured and is limited only to exams [6].

In Malaysia, SBA was introduced in 2011 at the primary school level and in 2012 at the secondary school level. This assessment aims to assess intellectual, emotional, spiritual, physical and social aspects in line with the National Education Philosophy to replace the Primary School Achievement Test (UPSR) and Form Three Assessment (PT3). SBA is not a new thing and the empowerment of SBA involves several components such as Classroom Assessment (PBD), Physical Activity Assessment, Sports and Co-curricular and Psychometric Assessment [7]. In the context of PBD, teachers monitor the development, progress and mastery of each student in their learning process including the basic skills of reading, writing and counting [8].

PBD in SBA is seen as an important component in building and developing students' potential, especially with intervention measures. The new PBD reporting for each subject at school has three aspects covering subject mastery, end-of-year tests and student effort components in providing

comprehensive reporting on student performance. With this, teachers can plan and modify T&L methods to help each student improve their learning mastery [9].

Feminist pedagogy emphasizes collaborative learning, inclusivity and empowerment, which align with the broader goals of education system [10]. Within the CPA learning system prototype, feminist pedagogy plays a pivotal role in addressing gender disparities and promoting social justice in digital learning environments. By integrating feminist principles, students can create more inclusive curriculums that encourage diverse participation and foster critical thinking, thus breaking down traditional gender barriers in technology-oriented fields. Integrating feminist pedagogy within the CPA learning system prototype enhances institution's capacity to adapt to evolving digital landscapes while fostering a culture of inclusivity and equity. This approach not only equips students with critical digital competencies but also nurtures a supportive environment that values diverse perspectives and promotes social responsibility [11].

This assessment process affects students through intrinsic motivation and desire which arises because the goal itself will tenure the students to work hard based on the encouragement given by the teacher or environment [12]. There have been some issues and challenges that occur in SBA such as students were not interested in learning, teachers' lack of time to plan assessment activities and the continuation of the process of T&L is often interrupted [13]. Furthermore, not many teachers are ready to implement SBA because they don't have the opportunity to learn the techniques and get proper practice. These have led the teacher to evaluate a product rather than as a process to facilitate T&L [14].

Therefore, Computer Supported Collaborative Learning (CSCL) seems like a perfect learning strategy that can be used to great effect, especially in education professional training and recently beginning to be used commonly in STEM. The implementation of it can be done through synchronous and asynchronous, text and video-based online collaborative learning from a variety of courses [15]. Besides, CSCL research has become persistent in education over the last several decades. Quackenbush [16] reported that when schools were closed due to the COVID-19 pandemic, teachers engaged in activities that promoted reflection, goal setting, planning, monitoring and motivation for T&L in a CSCL environment. Thus, training in CSCL environments is likely to contribute to the instructor's personal knowledge and skills.

Furthermore, CSCL presents technological systems designed to support learning following a set of theories that regard knowledge as social and collaboratively acquired through interaction. Students should be encouraged to become actively involved in the student knowledge construction process, whether it occurs inside or outside the classroom, all the way to their daily lives and become part of the knowledge construction process, which includes direct instruction from the teacher and individual study itself. Technology, like its role in many other fields, can play a significant part in meeting the demands of collaborative learning; however, it must be considered alongside pedagogical strategies, as well as other social and cultural supports for collaborative learning. The support must also be kept at an appropriate level so that they do not interfere with long-term learning objectives [17].

Although collaborative learning with computer support, namely CSCL is an approach that is increasing its use in education, research indicates that the use of it in an Information and Communication Technology (ICT) environment in primary schools is still a challenge for teachers [18]. A study on the use of collaborative learning procedures whether or not with the computer network has identified that there were significant effects on the cognitive and social development procedures of students, but it is not in practice in secondary schools because of the lack of pedagogical skills needed to implement the collaborative learning process and the insufficient materials available for teaching process [19].

The knowledge construction process is described as a break in the form of a description of comprehension questions that need clarification, preparation of answers to arguments or justifications and the presentation of new ideas accompanied by explanations, as well as acceptance or rejection of other ideas accompanied by arguments to do so [20]. The process of constructing knowledge should not be viewed as an individual endeavour, but rather as one of interaction and negotiation with others in the learning environment, including friends, teachers and the teaching materials provided.

The Feminist Pedagogy approach emphasizes collaboration, inclusivity and critical reflection in education [21], which aligns with the objectives of the CPA learning system prototype. In the Malaysian educational context, feminist pedagogy can be applied through collaborative portfolio assessment that empowers students to become knowledge creators. This process encourages students to actively collaborate with peers and educators in building portfolios, which reflect their unique experiences and perspectives. By providing space for students to choose the content of the portfolio based on their backgrounds and interests, this approach not only recognizes diversity, but also encourages reflective learning. Students are encouraged to analyse their learning experiences and evaluate how the knowledge gained can contribute to society, in line with the principles of feminist pedagogy that promote social awareness and critique of power structures [22].

In addition, this prototype also supports collective knowledge construction through technology and adaptation to Malaysian culture. Digital platforms such as ePortfolios allow students to interact, share feedback and build shared understanding, reflecting the principles of collaboration in feminist pedagogy. In the Malaysian context, this prototype can be adapted to include case studies or activities that are relevant to cultural diversity and local values, building deeper connections between theory and practice. By assessing the effectiveness of portfolios based on students' ability to demonstrate critical reflection, inclusive capabilities and social awareness, this approach not only enhances knowledge construction but also produces students who are more empathetic, inclusive and prepared to face global challenges.

This CSCL learning process can be more appealing if it can be used as an interactive process in which students try to understand the information and integrate it into something they already know well. This CSCL method is also expected to help assist the process of assessment which can increase students' motivation to learn better, help teachers to give their lessons more meaningful and make the school system more efficient and to improve students' knowledge construction process more efficiently [23].

Thus, the purpose of this study is to achieve the following objectives:

i. To identify the characteristics of assessment that are needed in an SBA e-portfolio management system through feminist pedagogy element.
ii. To design and develop a learning environment to aid in managing the SBA by implementing the following elements:
- Knowledge management process model.
- CSCL learning approaches.
- Eportfolio as a learning documentation model.
iii. To test the functionality of the CPA prototype learning system.

This learning system is called Collaborative Portfolio Assessment (CPA) prototype learning system. CSCL learning strategies are also frequently used to discuss different perspectives on a problem to build knowledge. Students should be encouraged to become actively involved in the process of student knowledge construction, whether it happens inside or outside the classroom and

to become a part of the knowledge construction process, which includes direct instruction from the teacher and individual study [24]. If this CSCL strategy can be applied, T&L will become more attractive and it can improve student performance. However, collaborative learning by using or not using the computer is not an automatic way to achieve learning objectives. CSCL learning methods should promote knowledge construction by involving students in collaborative learning via computer-mediated networks [25].

2. Methodology
2.1 Participants

Overall, the participants in this research were 3 heads of the History Committee and 6 students from a selected secondary school in Malaysia. Respondents of this study were teachers and students who were involved in the teaching and learning process for History subjects. In addition, these students attend two different schools and experience the teaching and learning process for History subjects in their school computer lab. History is the least popular subject because this subject is concentrating on more information and is less applied in students' daily life [26]. Changing times demand that History teachers be more innovative and creative in designing the T&L process in the classroom. Although the study's small sample size of 3 teachers and 6 students is recognised as a restriction, it is justified due to its purposeful selection, focus on a specific environment and exploratory nature. This approach allows for in-depth observations and informs future research.

2.2 Procedures
2.2.1 Determine the characteristics of assessment that needed in an SBA e-portfolio management system

An interview session with 3 teachers who were the head of the History committee was conducted towards identifying issues on the characteristics of assessment elements that should be included in the SBA e-portfolio management system called the CPA prototype learning system. The interview questions were constructed based on Mohamad *et al.,* [27] study which is based on one of the main concepts in the framework of the implementation of alternative assessment. The interview questions encompassed aspects of records administration, incorporating features such as a dedicated file for storing assessment information, clear visibility of assignments information and the ability to share assignment information with colleagues, administrators and parents. The analysis with the most favourable evaluation of the encoding process of teacher interviews will be utilized to construct this CPA learning system prototype.

2.2.2 Design and develop a learning environment to aid in managing the SBA

The design and development phase are when the theory is put and implemented into practice, where the design phase will be carried out using the real software that was chosen, Moodle. Based on Alavi [28] knowledge management model and Johnson *et al.,* [29] collaborative learning model, the CPA prototype learning system was created, as well as an e-portfolio as a learning documentation model from Barrett [30] as shown in Figure 1.
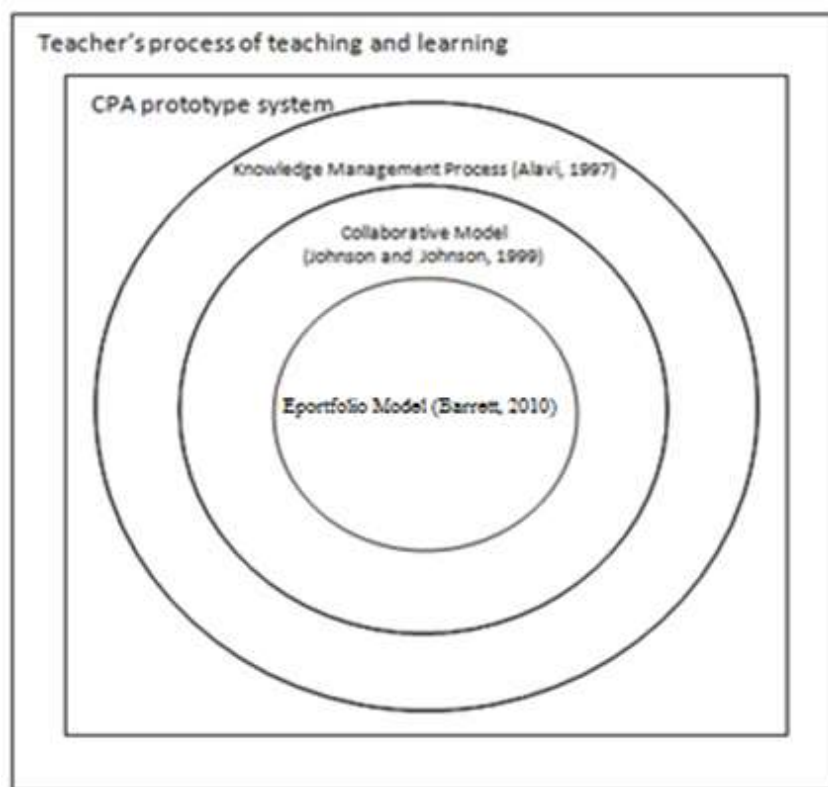
Fig. 1. The CPA prototype learning system conceptual model

Table 1 shows the relationship between the knowledge management model, CSCL model and e-portfolio model that has been implemented in the CPA prototype learning system. Knowledge creation is the process of creating new knowledge and developing content. This is accomplished by distilling experiences of teachers' processes of T&L through this CPA prototype learning system and lessons learned from student engagement projects, collecting, synthesizing and interpreting myriads of information through activities based on elements of positive interdependence, elements of face-to-face interaction with students, elements of interpersonal and small group skills and finally an element of group process.

Table 1
Knowledge management model, CSCL model and e-portfolio model connection

Knowledge management model [28]	CSCL model [29]	E-portfolio model [30]
Knowledge Creation Knowledge is created, shared, nurtured and judged in an organization. The process of knowledge creation can be identified through methods of socialization, disclosure, enlivening and incorporation.	▪ Elements of positive interdependence ▪ Element of face interaction with students ▪ Elements of interpersonal and small group skills • - Elements of group process (reflection)	
Knowledge Storage knowledge is stored in various forms, including written documents, storage of structured information in electronic databases, encoding human knowledge in intelligent systems, procedures and organizational documentation processes.	Element of individual responsibility and group	Teacher: Objective Student: Collection

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Knowledge Transfer	Teacher:
Phase distribution, including packaging and delivery of knowledge in the form of web pages.	Assessment Students: Reflections
Knowledge Application	Teacher:
The level of knowledge received in tacit and explicit forms that will be used in the same situation by other individuals.	Feedback Students: Development

This knowledge creation process includes the development of new things as well as the improvement of the existing content of implicit and explicit information and involves the cognitive processes of the individuals involved. Knowledge is created when two different people share tacit and explicit knowledge, according to the knowledge creation phase. The knowledge storage phase is the process of processing and storing the received knowledge. Usually, each individual will create knowledge and will forget it.

Next, the knowledge transfer phase is a situation where knowledge is disseminated or transferred to parties who require it for use after it has been acquired and stored. Finally, the knowledge application phase determines whether an organization can use the knowledge to become more competitive.

The process of knowledge construction can be a constituent of how students interact and react in the classroom [31]. The knowledge construction that is assumed to happen with others is based primarily on the stimulus provided by others, where prior knowledge is activated, doubts and questions are shared, answers and justifications are collaboratively pursued, information is exchanged and new knowledge is constructed [32].

2.3 Data Analysis

In this study, structured interviews were used to gather information on the qualitative data to help the researchers to gain reliable data that support the findings. Statements from 3 heads of the History committee and 6 students from a selected secondary school in Malaysia have been jotted down as the interview process has been carried out on them. Thematic analysis method has been used as a tool to analyse the data. The study utilized a thorough analytical methodology for conducting thematic analysis. At first, the complete dataset, which included interview transcripts from participants, was carefully acquainted with through many reads. Subsequently, an inductive coding methodology was utilized to identify and assign descriptive codes to significant portions. The codes underwent recurrent refinement and organization to accurately capture patterns and differences in the data, resulting in potential themes. The discovered themes underwent a rigorous review and validation process to confirm their coherence and representativeness with the dataset. Following that, broad themes were formed, including and summarizing the sub-themes to offer a thorough comprehension of the occurrences being studied. The entire procedure was carried out collaboratively by academics to increase reliability and validity. Any differences were handled by consensus talks, resulting in a detailed and comprehensive thematic representation of the data.

3. Results
3.1 The Characteristics of Assessment that Needed in the SBA E-Portfolio Management System

The resulting example from one of the interview questions to identify the characteristics of assessment needed in the SBA e-portfolio management system was listed as followed in Table 2.

Table 2
Example of an interview to identify the characteristics of assessment

Interview question	Sample	Sample Response	Code
If a learning system is being developed, what are the perceived characteristics that can help you save the assessment information that you want to see in the system?	Teacher 1	*If there is a good system that can add evidence to a storage system, I hope the system can help save all the evidence automatically or by dates. For example, if the student has made an assessment for the past 6 months and running, all the evidence will be stored in the computer and we can get the latest evidence.*	*R1
	Teacher 2	*If there was a system that would be developed, just let the system store all the information and data for necessary student evidence without putting them in the file because it will take some time based on the number of students. So, if it is available on the computer online, the work will be easier.*	R1
	Teacher 3	*If there is a system that is easier for all parties such as teachers, parents and students themselves that work easily if the system can display marks, the band has been achieved, the questions in the SBA exam or the questions that follow the format of the actual exam.*	R2, R3, R4 R5

Note: R1: All the evidence must be automatically saved, R2: The system can display marks, R3: The system can display the band that students already achieved, R4: The system can display the test questions, R5: The system can display the exam questions.

The main findings of the analysis conducted found that among the features that can be applied in the SBA e-portfolio management system was the system can automatically save evidence, the user can access their evidence marks and the responsible parties can access the display tasks that have been implemented. The study identified some notable characteristics that can be incorporated into the SBA e-portfolio management system. The system's capacity to automatically save evidence is a notable feature, as it simplifies the documentation process for users. This automation guarantees both the flawless retention of evidence and the reduction of data loss, offering a user-friendly and efficient experience. Users can participate in the portfolio-building process without worrying about losing their work, which improves the overall dependability and usefulness of the system [33].

Another significant discovery was related to the users' ability to access evidence markers. The system's feature that enables users to retrieve their evidence marks promotes transparency and empowers individuals to monitor their progress and performance over a period of time. This feature amplifies the introspective element of the e-portfolio, empowering users to participate in self-evaluation and make well-informed choices regarding their educational progress [34]. The system enhances the learning experience by allowing users to quickly retrieve their evidence marks, creating a dynamic and interactive environment that conforms with the concepts of formative assessment.

Moreover, the analysis emphasised the importance of the system in enabling effective communication and collaboration among stakeholders. Granting responsible individuals, such as instructors or evaluators, the capability to access and assess executed tasks improves coordination and feedback mechanisms [35]. The collaborative element guarantees that the evaluation and assessment components are not separate but are included into a comprehensive framework, fostering a comprehensive comprehension of the learner's accomplishments. The system's ability to

showcase executed tasks establishes a transparent and responsible environment, promoting efficient communication channels among individuals engaged in the educational assessment process. All these elements have been translated into the development of this CPA prototype learning system.

3.2 The Functionality of the CPA Prototype Learning System

Six students were selected as a sample and an interview process have been conducted on them this were some of the responses:

i. "In this system, there are challenging activities and I like challenging activities." (Sample 1, group 1)
ii. "It seems fun and helpful because there are quizzes and games in this system." (Samples 2, group 1)
iii. "The discussions in the system allow me to ask the teacher." (Samples 5, group 2)

Through analysing these interviews, a recurring element that emerged was the concept of 'helpfulness'. Every student who was interviewed unanimously said that the CPA prototype learning system significantly facilitated their learning process, particularly by enhancing their comprehension of historical concepts. During the second interview, it was observed that the topic of the CPA prototype learning system that assists students in understanding the concept in the History subject received the most attention. Approximately half of the interviewed students mentioned this particular aspect. The CPA prototype learning system had quizzes, collaborative activities and discussion sessions as part of its themes. Based on the data from this interview procedure, it is reasonable to conclude that the treatment offered by this CPA prototype learning system was helpful in facilitating knowledge formation during the teaching and learning process.

The study's findings have shown many consequences for the implementation of schooling. Based on the conducted interviews, the teachers have indicated a positive viewpoint towards the implementation of a learning system that employs an e-portfolio system to streamline the assessment process. The aim of this project was to develop an electronic portfolio learning system that assists teachers and students in effectively managing the execution of file tasks, which is a key element of the SBA. This study is crucial for addressing the challenge of effectively managing the assessment process and will aid in the seamless integration of assessment into the learning and teaching process through the learning system.

One of the features to be incorporated into this CPA prototype learning system is the automated preservation of evidence, as indicated by the study. To optimise the teaching and learning process, teachers are no longer need to manually input student data, as the technology can automatically capture students' learning progress. Consequently, teachers will not be eager to quickly input student assessments into the computer system. The interview also disclosed that these lecturers necessitate access to corroborative markers. By employing this method, educators can effectively record the progress of students at suitable intervals and using their preferred methods.

Furthermore, the e-portfolio system provides parents with comprehensive information on their children's academic advancement, encompassing outcomes from monthly evaluations, mid-year assessments and end-of-year examinations conducted by the school. To ensure a seamless application of this innovative SBA concept, it is crucial to systematically provide data and file systems that serve as evidence for each student. Zaharin [36] have listed the benefits of using e-portfolio systems. The benefits include addressing problems such as inadequate written documentation,

plagiarism, storage constraints, costs associated with printing and binding, the completion of multiple forms, human mistakes and the distribution of SBA information to all necessary personnel.

This study examines the design and development process of the CPA prototype learning system, which is based on Alavi's knowledge management model [28], Johnson and Johnson's collaborative learning model [29] and Barrett's e-portfolio as a learning documentation model [30]. The deployment of instructional activities in this CPA prototype learning system, supported by knowledge management theory and collaborative learning, has demonstrated a significant enhancement in students' ability to construct knowledge. Students have the ability to add a specific skill or unique perspective from their individual experiences or areas of growth to collaborative group work through the use of CSCL.

This leads to a recursive process in which the knowledge of many individuals contributes to the creation of collective significance. The purpose of this CPA prototype learning system is to assess talents acquired through many forms of learning, including formal, informal, incidental and indirect learning, by means of an e-portfolio. One of the prerequisites is a learning assignment, such as a task that involves documenting student progress by the classroom instructor or an autonomous task focused on the growth and modifications in knowledge, skills and capacities [37].

The proposed CPA prototype learning system is anticipated to facilitate the evaluation of teaching and learning through the practice of collaborative learning, wherein teachers act as facilitators of continuous knowledge production. Jeong *et al.,* [17] support this claim by stating that technology can facilitate collaboration beyond communication. It can also aid in information sharing, visualising complex concepts, ideas and phenomena, as well as promoting co-construction and community building. The assessment process employed by the CPA prototype learning system offers advantages to teachers who prioritise assessment as a means of learning. It effectively addresses challenges such as lost written documentation, theft, storage space limitations, printing and binding expenses. Additionally, it automatically generates various forms, minimises negligence and ensures efficient dissemination of information to relevant stakeholders.

In addition, like Yusoh [38], this CPA prototype learning system has the ability to establish an optimal learning environment and offer various options for users in terms of location, time and support. Johari [39] found empirical evidence to substantiate this assertion by demonstrating that the utilisation of Moodle resulted in enhanced student performance, with a minimum achievement score of 80 percent seen among the learners. In addition, Chen *et al.,* [40] compared a digital reading annotation system (or e-book) to a paper-based reading annotation technique and found that learners using the digital reading system showed higher levels of reading literacy and metacognitive skills.

The preliminary survey, which involved informal interviews with history instructors, revealed that those in question come from middle-class families and possess an average academic background, as indicated by their performance in elementary school. Rashid [41] suggest that a teacher's description and explanation of a topic can be easily understood when supported by a wide range of materials and equipment that can effectively convey the teacher's goals. Utilising captivating visual aids and tangible examples not only enhances students' comprehension of the topic but also has the capacity to make a profound impact on students' emotions, as it acts as a framework for collaborative knowledge construction [38].

The designed CPA prototype learning system will maintain comprehensive records of all completed student work, which will be evaluated and assigned a score to assess the student's performance as a progress report. According to the results of the interviews, all the students expressed a unanimous opinion that the CPA prototype learning system is beneficial for their understanding of History, particularly in chapters 1 and 2. Additionally, they identified several

sections within the CPA prototype learning system that aid their comprehension of the subject. This discovery suggests that the therapy offered by this CPA prototype learning system was efficacious in facilitating knowledge building for the purposes of learning and teaching.

3.3 Limitations and Future Research Recommendations

Although the treatment provided by this CPA prototype learning system demonstrates an effective medium for knowledge construction in assisting the T&L process, the reliability of this result can still be questioned, particularly its validity, because the respondents involved in this study are only teachers and students from two different schools who carried out the process of T&L of form one History subject. The reliability of the data for respondents from different backgrounds might differ when a larger demographic profile is used to obtain data.

Besides that, these findings only show the effectiveness of CSCL learning strategies to facilitate the learning process, especially in online discussion via social networking tools. Further research is needed to study the effects and patterns of interaction in CSCL learning strategies, especially in the five elements of this learning has been used as one of the aspects that facilitate the learning process of students in online discussions.

Through this CSCL learning strategy, students are given many opportunities to test their knowledge construction process mainly through group discussion. Students also need to get used to common data analysis methods and physical substances, manipulate or be interactive to them generate ideas and new knowledge Teachers also need to provide adequate time for students to assimilate the relationship between the ideas that have been generated to encourage collaborative learning in carrying out certain tasks.

The integration of Feminist Pedagogy with innovative educational strategies and digital tools fosters critical engagement, collaboration and inclusivity, equipping students to thrive in a diverse and interconnected world [42]. CSCL tools like discussion forums and collaborative document editing platforms align with feminist pedagogy's emphasis on dialogue and inclusivity, while ePortfolios offer a space for self-reflection and creative expression. By integrating these elements, students are encouraged to critically engage with content, reflect on their personal growth and contribute meaningfully to collaborative projects. This holistic approach not only enhances knowledge construction but also prepares students for real-world challenges by cultivating skills in critical thinking, teamwork and self-awareness.

In short, this study showed that the treatment provided through this CPA prototype learning system is effective and useful as a medium for the knowledge construction process in assisting the T&L process. This finding is in line with the findings of portal based collaborative learning method developed using a constructivist approach to study the effectiveness of collaborative learning portals based on student achievement through constructivist learning methods [34].

4. Conclusion

Feminist Pedagogy, CSCL strategy and ePortfolio management collectively provide a robust framework for enhancing student knowledge construction. Feminist Pedagogy emphasizes collaboration, inclusivity and critical reflection, creating a learner-centred environment where students actively engage in co-constructing knowledge. This philosophy aligns seamlessly with CSCL, which uses digital platforms to facilitate peer interactions, group problem-solving and shared learning experiences, breaking down traditional hierarchies. ePortfolio management complements these approaches by enabling students to curate, reflect on and present their learning journey,

fostering ownership and deeper understanding. Together, these elements encourage students to critically analyse information, integrate diverse perspectives and connect theoretical knowledge to practical applications.

This study also supports the constructivist theory in learning approaches which emphasizes that the construction of knowledge is better through experience and collaboration. Collaborative learning strategies used through this CPA prototype learning system are seen to address issues of location and time and has advantages in terms of academic, social and psychological impact. Socialization is an important element in the process of knowledge construction. Socialization is the process of learning, where individuals learn about behaviourism, habits and cultural patterns as well as social skills such as speaking, socializing, dressing, eating and many more [35]. Socialization is achieved through communication with other community members. Polarizations of behaviour patterns through this method are hopefully beneficial to be used in a real context.

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