Fostering Deep Approach to Learning for Principles of Accounting through ICT Integration in Malaysian Secondary Schools

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Abstract: This paper discusses about the challenges of fostering students' deep approach to learning for introductory accounting education in Malaysian secondary schools. It also highlights the endeavours undertaken by the Ministry of Education (MOE) to transform the accounting educational landscape with the integration of ICT in teaching and learning. It is believed that students are unable to experience deep approach to learning due to the teacher-centred learning approach which is influenced by the exam-oriented education system and the immaturity of curriculum and assessment design. In view of these problems, the MOE has revised the curriculum and assessment from content-based to skilled-based with the aims of enabling students to practise deep approach to learning with ICT. This is the right step forward to enable students to have a coherent understanding of accounting through enhancing their competencies in preparing a full set of accounts, attaining meaningful learning by relating what they learn in class to the actual working place, and acquiring various soft skills and ethical values of the accounting profession.

Keywords: Deep approach to learning, surface approach to learning, Principles of Accounting, ICT-integration

Introduction

Accounting is widely referred to as the "language of business". Its functions are identifying, measuring, and communicating economic information to permit informed judgments and decisions by users of the information [1]. Introductory Accounting is the first stage of accounting education which encompasses the fundamental knowledge of accounting in identifying and measuring financial information through the application of the double-entry book-keeping system. The formal Introductory Accounting education in Malaysia starts at upper secondary school level (i.e. Form 4 and 5 or Grade 10 and 11) where the fundamentals of accounting knowledge and skills are delivered through the subject of Principles of Accounting. This subject consists of the concepts, principles and accounting methods complemented by the skills in recording, classifying, interpreting, and summarising financial data based on business transactions [2].

Though accounting is a technically-oriented subject, many researchers emphasised that the learning of accounting should not be dominated by procedural rules but students must see the general principles or underlying concepts which organise all the steps and procedures into a coherent whole [3, 4]. In other words, students need to adopt a deep approach to learning through seeking meaning of the contents, trying to relate parts to each other, associating new information with existing prior knowledge or to personal meaningful context. It is in contrast with surface approach which is characterised by the learners' motivation to acquire only sufficient knowledge to complete the task or pass the subject through rote learning [5, 6, 7]. In the book-keeping learning context, the deep

learning approach is especially important as most of the concepts must be mastered through understanding and not by memorising. For example, the process of book-keeping is conducted under the procedures named as accounting cycle which involves a set of steps in preparing the financial statements for a given period. All these steps are inter-linked and one must conduct deep approach to learning on how to master the whole set of accounts throughout the accounting cycle rather than fragmentally studying on each of the accounting procedures. However, there have been various problems in fostering students to adopt such learning approach for the subject of Principles of Accounting which are discussed in Section 2. Hence, the aim of this paper is to discuss about the challenges of fostering deep approach to learning for Principles of Accounting in Malaysian secondary schools and the endeavours executed by the Ministry of Education (MOE) through an emphasis in ICT integration in teaching and learning.

1. Literature Review

1.1 Students' Approaches to Learning

The study of students' approaches to learning was pioneered by the Swedish researchers, Marton and Säljö [5, 8] who studied how students perceived a particular reading task and then handle it. They found two qualitative differences of learning process adopted by students, namely the surface-level and deep-level processing. The former represents learning through memorising and the latter is trying to understand the meaning of the content in the process of learning. The researchers further stress that the way a student conducted a learning processing incorporate an intention to learn in a particular way. This intention leads to a distinctive process of learning. For example, if a student wished merely to display the symptoms of having learned, he or she would adopt a surface-level processing. Whereas, if the intention was to discover meaning, he or she would adopt a deep-level processing to extract maximum meaning by understanding the content. In order to be more appropriately describing these concepts of students' way of learning, the term "level of processing" was renamed as "approach to learning" [9] which embedded both the elements of "intention" and "way to handle" a learning task. This study was cross-nation studied by several other researchers including Biggs [6, 10, 11] from Australia and Enwitsle [12, 13, 14] and Ramsden [15, 16] from the United Kingdom. It focuses on capturing students' voices by orchestrating their learning environment and perceptions of that environment to achieve learning objectives.

1.2 The Impact of ICT in Fostering Deep Approach to Learning in Accounting Education

The use of computer in accounting education has long been implemented since decades ago with the underlying philosophy of using the technology to facilitate the learning of the basic principles and techniques of accounting in order to increase the impact of the learning experiences [17]. It was further advocated that computer was used as a problem-solving tool in accounting education which may foster students to adopt deep approaches to learning through learners' engagement, repeat practices, and reinforcement provided through immediate feedback. In this case, the spreadsheet and simulation of accounting system are the two important learning tools which are always used for enhancing and restructuring the way students think about the content they are studying.

For the spreadsheet programme, students can use the tool to solve various problems encountered as it allows users to format their data any way they like on the cells which are merged by rows and columns. The data can be sorted, analysed, and manipulated easily

and efficiently. For example, in a learning task which requires students to generate the net profit of the financial year, students can calculate it by entering the data related to revenue and expenses with the assistance of built-in formulas which perform the required task automatically faster and in a more presentable manner. This, in turn, helps them to foster deep approach to learning in the comprehension of the underlying principles of accounting without being bogged down by the complex calculation. Likewise, Izard and Reeve [18] recognised that students constructing a spreadsheet template could obtain a comprehensive perspective to a problem by identifying critical inputs and the thought processes for its solution. Thus, the comprehensive and integrative nature of spreadsheets encourage for deep learning approach where it enables the insights of knowledge.

On the other hand, accounting education is always facing the problem to bridge the gap between the classroom and real world and most of the time principles and concepts were taught in an abstract and decontextualised form [19, 20]. Thus, ICT in simulation form has the potential to facilitate for deep learning approach by connecting the subject with real life through obtaining knowledge and skills in contexts. In this vein, Marriot [21] conducted a case study by using a computer simulation and spreadsheet model to simulate small business financial management problems with the aim to overcome accounting educators' difficulties in providing concrete experience in accounting education. The author argues that the use of educational technology is more matched with the learning theories where it presents an opportunity for having deep approach to learning through the development of students' thinking skills such as the enhancement of cognition in understanding the "whole" of a business problem, the mastering of spreadsheet-modelling skills in a realistic setting, and students are able to relate what they have learnt to the actual context as the exercise is able to reflect the reality. On top of this, students are found have reduced the study for extrinsic purpose and developed a deep motive for learning through intrinsic enjoyment in problem-based learning.

Furthermore, with the advent of the Internet, ICT may increase the motivation and engagement of learners for deep approach to learning by having significant interaction between the user and the medium [22]. For instance, students learn better from the discovery process in searching an accounting concept facilitated by a web search as they must be cognitively and physically engaged in the process of traversing the web. In addition, the use of ICT also has the potential to influence interaction between learners with others, thus providing stimulus for deep approach to learning.

Moreover, learning through using ICT either from an accounting software or online learning provides opportunity for learners to learn at their own pace. This gives rise to self-direction in learning and independent learning where it contributes to deep learning approach as learners take ownership of the concepts and skills being learnt [23] and develop their own perspectives and meaningful understanding of subjects being studied. In short, with the assistance of ICT, the landscape of accounting education has been reshaped. Educational technologies are described as the powerful teaching and learning tools or cognitive tools supporting deep approaches to learning.

2. The Challenges in Fostering Deep Approach to Learning for Principles of Accounting

Unlike other discipline, accounting is a technically-oriented subject and hence, the teaching of accounting was found to be dominated by the objective of training students to know facts and solve problems from a procedural perspective [24]. Thus, it was observed by few researchers that students always perceive that learning accounting is simply about

learning a set of rules and evidences suggest that they tend to adopt a surface learning approach compared to other subjects [25, 26, 27, 28].

Similarly, in the Malaysian context, students' learning for the subject of Principles of Accounting have yet to achieve deep approach as it was found that most of the accounting teachers tended to use the teacher-centred teaching methods such as lecture, drill and practice and demonstration of problem solving by teachers [29]. Such methods could lead to surface learning where the lower-level procedural skills are acquired without processing information for meaning. This may be the reflection of the exam-oriented education system which is the common learning issue faced by Asian countries. It affects many teachers unwilling to take the risk of students' failure in examination for attempting innovative teaching. They would rather employ the teaching methods which comply with the requirements of the examination system which is mostly teacher-centred [30].

Furthermore, the former curriculum and assessment of Principles of Accounting (before year 2010) were arranged in such a way that the process of accounting cycle was fragmented by its steps. Students learnt each part of the process through the method of drill and practice where they were exposed to exercises or problems which were related to that portion of process only. In other words, there were different sets of exercises or problems for each of the steps of accounting cycle e.g. exercises for journal entry were unrelated to exercises in trial balance. The division of the book-keeping procedures negates the students' skills and knowledge to relate every aspect of accounting into a coherent whole [31]. Under this learning content structure, students were more oriented towards surface learning as they treated parts of the subject as separate entities and failed to master the full set of accounts. Moreover, Principles of Accounting was perceived as a challenging subject, especially for adolescent students who have little or no exposure to the business environment as they were unable to relate what they have learnt with the actual working place.

On the other hand, students lacked exposure and were not encouraged to engage in deep learning approach through technology [32]. Though the topic of "Use of Computer in Accounting" existed in the syllabus of Principles of Accounting, it was a separate topic and was not integrated in every stage of the accounting cycle. Therefore, it further proves that students are lacking ICT skills to handle a full set of accounts where these skills have long been heralded as a crucial element in both professional accountancy and accounting education [33, 34]. In fact, in the Malaysian accounting education context, the integration of accounting-based ICT in accounting education, remains minimal in the early years after 2000, except for the area of Accounting Information Systems at the tertiary level [32].

3. The Endeavour to Transform Principles of Accounting Education

In view of the aforementioned weaknesses of the Principles of Accounting education, the MOE has committed an effort to transform its curriculum and assessment from content-based to skilled-based from 2010 onwards [35] where deep approach to learning is critical for attaining the desired learning outcomes such as the master of ICT skills, soft skills (e.g. higher order thinking skills, communication skills, problem solving and decision making skills) and ethical values of the accounting profession. This effort was implemented through the "Principles of Accounting International Benchmarking International Project" which started in June 2006 in collaboration between MOE and Accounting Professional Bodies i.e. London Chambers of Commerce and Industry (LCCI), Association of Charted Certified Accountants (ACCA), Charted Institute of Management Accountants (CIMA), Malaysian Institute of Certified Public Accountants (MICPA), Malaysian Institute of Accountants (MIA), and Malaysian Accounting Standards Board (MASB). The

collaboration aims to upgrade the curriculum of Principles of Accounting to be equivalent with international standard [36].

The project was first executed through the supply and installation of 1,365 units of educational accounting software, ASSETBase, in national and technical secondary schools. The software is a computerised educational tool designed to complement traditional teaching and learning of accounting principles which combines subject matter contents and simulation programme on full cycle accounting record keeping processes. Followed by this, training sessions were held for a total of 2,350 accounting teachers nationwide and 109 officers of MOE. To consolidate the effort of ICT integration, a concrete action was taken by the MOE by organising an "ICT-integrated Lesson Plan Writing Competition" which was jointly organised with a software vendor in January 2007 with the objective to stimulate teachers' ideas to create the best practice in the teaching and learning of Principles of Accounting by using ASSETBase and other relevant ICT tools. Through this event, a Guidebook of Lesson Plans with full syllabus coverage was drawn up as a compass for teachers to implement the new pedagogical practice. This recommended Lesson Plan Guidebook was later adopted for a "try-out" project in 150 technical and national secondary schools nationwide [36]. The accounting teachers involved were required to conduct their lessons based on the the Lesson Plan Guidebook which prescribes an ICT-enhanced pedagogical approach that stimulates the deep approach to learning.

On the other hand, besides the accounting software, the non-accounting ICTs are another important technologies to improve the efficiency and effectiveness of teaching and learning which enable deep learning approach. It has been MOE's policy to ensure all students to be ICT-literate regardless of the subjects they study (MOE, 2006). In this vein, various ICT facilities have been set up in school to enable the integration in teaching and learning since the late 1990's which include the setting up of SchoolNet which provided broadband service for schools in rural and urban areas, enculturing the use of the Internet in the process of teaching and learning through the MySchoolNet Project, and the setting up of computer laboratories and supply of computers and servers for schools [37].

Therefore, the skill-based curriculum of Principles of Accounting which emphasised in the mastering of ICT skills involve proficiencies in using accounting software, the Internet, spreadsheet, and other generic software for generating and presentating the accounting information. The new aspect is seen as a means for fostering students' deep approach to learning in terms of enabling them to have a coherent understanding of accounting through the preparation of a full set of accounts, relate what they learn in class to the actual working place and have meaningful learning throughout the learning process with the assistance of technology. Concurrently, the topic of "Use of Computer in Accounting" which existed as a separate topic by itself in the former syllabus was removed and integrated into every step of the accounting cycle in the current skill-based syllabus. This was arranged in order to enable students to learn meaningfully through the "hands-on" and "minds-on" learning activities.

Aligning with the revised curriculum of Principles of Accounting, the assessment format is changed from content-based to skill-based accordingly which was implemented in year 2011. It places an emphasis on assessing the generic skills of an individual such as technology skills, critical and reflective thinking, and communication skills. To achieve these objectives, a school- and task-based project paper that specifically evaluates these aspects of skills was introduced. Students are required to complete a full set of accounts of a sole proprietor in accordance to the accounting cycle by using the facilities of ICT.

4. Conclusion

In a nutshell, the introductory accounting education in secondary schools of Malaysia has been facing challenges to nurture students in employing deep learning approaches, particularly through the use of technology. Among the challenges faced were the constraints in the exam-oriented education system which led to the use of the teacher-centred learning. The immaturity in the curriculum and assessment design was also a problem. However, the MOE has committed itself to transforming accounting education by launching the skill-based curriculum and assessment in 2010. For this reason, the integration of ICT in teaching and learning is the key feature for the whole endeavour. However, much more research needs to be conducted to ensure that ICT works for students. The future studies include the examination of the extent of the impact of ICT as perceived by students on their approaches to learning, the appropriate ways to integrate ICT effectively by teachers in teaching and learning, and the factors influencing the education administrators to cultivate a culture of deep learning through the assistance of ICT.

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