Perceived Factors Influencing Information Technology (IT) Skills Development in Undergraduate Accounting Programme

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ABSTRACT

This research attempts to understand the process of enhancing IT skills development in undergraduate accounting programme using grounded theory methodology. It aims to gain an insight into the research area from the perspectives of accounting practitioners, accounting educators and accounting students including alumni. The primary data collection methods are focus group, personal interviews, documents reviews and observations.

This paper discusses the findings on main factors perceived to influence the development of IT skills in the programme. It suggests that university policy, employers' expectation, other universities' IT skills development, quality assurance review and professional examination exemption are the main external factors that influence the IT skills development. More to the point, the internal factors such as educators' personal motivation and interest, perceived to be more influential in the decision to include and develop IT skills in the teaching process. Thus, it is evident that educators are the major actor influencing the IT skills development initiatives in teaching. These findings make significant contributions towards IT skills development and innovation in accounting education.

Keywords: Accounting Education, Information Technology Skill, Grounded Theory.

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  Any remaining errors or omissions rest solely with the author(s) of this paper.

INTRODUCTION

The rapid information technology (IT) advances have extended to the whole aspects of business including accounting profession. The impacts of a dynamic nature of IT on accounting practices force accounting education to reform its programme in order to keep pace with changes in the profession. IT skills become another mandatory skill for practicing accountants (Bouchard, 2005; Kepczyk, 2005) besides other generic skills such as leadership skill, communication skill and general business knowledge (Robert Half International Inc., 2003). Issue of integrating IT skills in accounting education has been a continuing concern of many parties including professionals, educational bodies as well as accounting educators all over the worlds (AAA, 1986; AECC, 1990; IFAC, 1995, 2003; Salleh, 2000; Chang and Hwang, 2003; Ahmed, 2003; Lin *et al*, 2005; Jones and Abraham, 2007).

Academics and professional organizations have called for IT competent graduates and have voiced concerns over whether accounting education effectively and efficiently prepare accountants to meet the challenges (AAA, 1986; AECC, 1990; Johns, 1995; Dearing, 1997; Lyons, 1997; Boritz, 1999; Stoner, 1999; Albrecht and Sack, 2000; IFAC, 1995, 2003; Howieson, 2003; Chang and Hwang, 2003; Lin *et. al*. 2005; Jones and Abraham, 2007). They acknowledge the need for greater development of higher level transferable skills including IT skills in accounting programmes.

Researchers, business leaders, professional, educators as well as academic organisations have made rigorous initiatives and efforts to strengthen IT integration in accounting education. These include, but not limited to Bhaskar, (1982; 1983), Er and Ng, (1989), Collier *et al.,* (1990), Crawford and Barr, (1998) and Salleh, (2000) who discuss alternative uses of computer in accounting education. Besides that, there are professional accounting bodies and academic organisation such as BAA-SIG accounting education[1], BAAEC (1996)[2], Dearing (1997), IFAC (1995, 2003) and QAA (2000a, 2000b, 2000c) that encourage and provide some guidance to integrate IT in accounting programme. For example, Dearing (1997) recommends to establish professional Institute of Learning and Teaching in Higher Education which among its functions is to take a leading role in assisting institutions to exploit the potential of communications and information technology for learning and teaching. Last but not least, some educators (these included, but not limited to Marriot, 1992; Marriot *et al.,* 1999; Sangster, 1992, 1995a, 1995b; Sangster and Mulligan, 1997; Larres and

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[1] Accounting Education Special interest group is established under British Accounting Association to undertake activities such as organising conference, publishing proceeding in the overall aim of enhancing the educational base of accounting practice which includes greater awareness of IT development. http://www.shef.ac.uk/~baa/sigs/accounting_education/accounting_education_sig.htm [accessed 5/5/2005]

[2] BAAEC is abolished in 2001, but its contribution in encouraging the IT skills integration in curriculum through accreditation process is highly acknowledged.

Radcliffe, 2000; Larres *et al.,* 2003; Broad *et al.,* 2004) who report on their actual experience in integrating IT into their accounting units taught.

Despite these motivated and rigorous efforts, accounting education has been criticised for not developing graduates with appropriate IT skills required by employers and a growing gap exists between what accountants do or need and what accounting educators teach (AAA, 1986; Heagy and McMickle, 1988; Larres and Oyelere, 1999; Albrecht and Sack, 2000; Ahmed, 2003; Chang and Hwang, 2003; Lin *et. al*. 2005; Jones and Abraham, 2007). For example, Ahmed (2003), Chang and Hwang (2003), Lin *et al*. (2005) and Jones and Abraham (2007) show low levels of IT skills/knowledge (competency) integration in the accounting degree programmes in UK, USA, China and Australia, respectively. Thus, it is important to investigate the factors that influenced the IT skills development in the degree programme.

The issues identified above have motivated this research, which attempts to understand the process of enhancing IT skills development in undergraduate accounting programme from a broad perspective of three main stakeholders of accounting education, which are students, educators and practitioners. One major research question is what are the factors influencing the integration of IT skills in the undergraduate accounting programme?

This paper reports the study and is organised in five main sections including introduction, which layout the background of the issues that motivate the study. The subsequent sections present the literature review, research methodology choices, and discussion on the main theoretical finding. The final section summarises the research and its key finding before concludes with contribution, recommendation, limitation and suggestion for future research.

LITERATURE REVIEW

The need for IT competency development in undergraduate accounting education is acknowledged in the literature by accounting educators and practitioners, as some mentioned in the background to the study in the introduction section (this is included but not limited to Albrecht and Sack, 2000; Ahmed, 2003; Howieson, 2003; Chang and Hwang, 2003; Lin *et. al*. 2005; Jones and Abraham, 2007). Most of the studies were informed by quantitative approach based on survey data except Albrecht and Sack (2000), which complement the survey data with interviews. Basically, they are investigating the extent to which the IT skills as outlined by AICPA (Albrecht and Sack, 2000; Howieson, 2003; Chang and Hwang, 2003; Lin *et al*. 2005; Jones and Abraham, 2007) and IFAC/IEG-11 (Ahmed, 2003) are developed in the accounting programme in various countries such as USA (Albrecht and Sack, 2000; Chang and Hwang, 2003), China (Lin *et. al*., 2005), UK (Ahmed, 2003) and Egypt (Ahmed, 2003). While the studies reveal the degree of the IT skills

development relative to the guidelines, they fail to discover other important issues for examples, approaches used to develop the skills, awareness of educators on the guidelines, and the reasons of developing as well as not developing the skills.

What IT competencies and how they should be developed in undergraduate studies are two important questions to be explored in order to ensure a successful implementation of embedding IT competencies in accounting graduates. The subsequent subsections review literature on guidelines on IT skills development, possible ways of developing IT skills and issues in implementing them and key success and failure factors.

Guidelines on IT Skills Development

The Dearing committee report (Dearing, 1997), subject benchmark statements (QAA, 2000a), International Education Guideline 11 (IEG-11[3])(IFAC, 1995a; 1999; 2003; 2006), the reports of professional accounting bodies (ICAEW, 1996; ICAA, 1998) and work of individual educators or researchers (for examples, Goldsworthy, 1996; Crawford and Barr, 1997; Sangster, 1991; 1994; 1995a; 1995b; Sangster *et al.,* 1995; Gazely and Pybus, 1997; Crawford and Barr, 1998; Stoner, 1999; 2005, Marriott *et al.,* 2003) on IT-related skills development are reviewed. It is important to reviews the existing guidelines on IT skills development to see what are the IT-related skills required by the profession and could be expected to develope in accounting degree programmes. Most of the literature suggests only on a general IT skills requirement, except for IEG 11(IFAC, 1995a; 1999; 2003; 2006), which provides a quite detailed list of IT-related skills, including IT control-related knowledge, IT knowledge requirements related to business systems, and IT-related skills required for users, managers, designers and evaluators of information systems. However, the IEG 11 and others do not give a specific approach on how to develop the skills, but leave it to the accounting programme to flexibly develop them.

Knowing and understanding the changing nature of IT and its tremendous capabilities, as well as the fixed time frame for accounting programmes, it is impossible to integrate all the required skills needed to develop competitive advantage. Accounting education, just like other education programmes, is found on the aim to promote learning how to learn and to ensure lifelong learning. Basic but highly demanded IT skills at entry-level should be given priority integration. Some such as the use of word processing, spreadsheets, databases, the Internet and accounting packages are identified in the literature reviewed in this study. This review leads the research to further explore the IT skills required for accounting graduates and to what extent they are developed in current accounting programmes.

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[3] The guideline is recently being revised and renamed to IEPS 2.1 (IFAC, 2006) and released in October 2007 (IFAC, 2007).

Possible Ways of Developing IT Skills

Literature demonstrates that IT skills development in accounting programme begins with introduction of some computer science subjects in the programme to reflect the increasing role of IT in the practice of accountancy (Bhaskar,1982, 1983; Er and Ng, 1989; Collier *et al.,* 1990; Reynolds, 1991; Marriott, 1992; Sangster, 1992; Lyons, 1997; Crawford and Barr, 1998; Salleh, 2000). This approach was debatable and later was no longer a convincing approach, since accounting students are not expected to be an IT expert and to understand IT as a separate discipline, disconnected to accounting or organisation (Williams, 1991; Sangster, 1992; Crawford and Barr, 1998).

A holistic integrated approach is suggested and recognised by professional accreditation bodies. For example, the Board of Accreditation of Accountancy Educational Courses (BAAEC) accredited the courses with no separate computing subjects (Sangster,1992). The approach considers the development of IT skills in the whole programme instead of in individual units and focuses on helping students to acquire the IT knowledge and skills relevant to understanding the role of IT in business (Reynolds, 1991). In other words, it is the collective work of all related parties instead of individual educators' work. Moreover, the skills and the way used to develop them should relate to subject knowledge development. However, is this ideal approach feasible? In reality the holistic approach is not financially and operationally feasible and requires long-term commitment. Literature shows that partial and interim initiatives are encouraged, and meaningful integration is emphasised, in a sense related to accounting knowledge and close to accounting practice as demonstrated by Marriott (1992), Sangster (1995a, 1995b), Sangster and Mulligan (1997), Marriott (2004) and Aisbitt and Sangster (2005). Alternatively, educational technology, such as computer-assisted instruction (CAI)[4] was used in the syllabus so that students could work with spreadsheets and databases.

The two dimensions of integration were then suggested, integrating IT skills and integrating IT as an educational support tool (Reynolds, 1991; Marriott, 1992; Sangster, 1992).Generic software such as word processors, spreadsheets, databases and computerised accounting system packages were used in hands-on experience as in the accounting industry (Lyons, 1997; Crawford and Barr, 1998; Salleh, 2000; Monk, 2006). Integrating IT as an educational support tool focuses on using IT as a teaching/learning strategy to improve the learning experience and gain efficiencies in terms of supporting teaching staff (Reynolds, 1991). Does the later approach really help students in developing the IT-related skills? IT as an educational support tool (such as the use of Computer Based Instruction (CBI[5]) or (CAI)) is sometimes

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[4] CAI is using computers to support conventional educator input or support it. (Sangster, 1992)

[5] CBI is instruction using computers without concurrent educator input.

dismissed as part of integration, since it is more appropriate to refer to as 'use' of technology rather than integration (Crawford and Barr, 1998; Williams, 1991). This issue leads the research to focus more on the first dimension, which is integrating IT skills rather than using IT as an educational technology.

Key Success and Failure Factors

Several key success factors of the implementation of IT integration in accounting curricula are identified, including identification of the right skills to develop (IFAC, 1995b; Lyons, 1998), high interest and commitment from the most senior policy makers (IFAC, 1995b; Lyons, 1997), clear communication of requirements (IFAC, 1995b; Aisbitt and Sangster, 2005), usage of commercial software (IFAC, 1995b; Aisbitt and Sangster, 2005), team commitment (IFAC, 1995b; Aisbitt and Sangster, 2005), strong evaluation and feedback instruments (IFAC, 1995b; Aisbitt and Sangster, 2005), adoption of integration across curriculum approaches (IFAC, 1995b), meaningful subject areas (Gazely and Pybus, 1997; Aisbitt and Sangster, 2005), interest and attitude of academics towards IT skills (Gazely and Pybus, 1997) and the optimum benefits of IT (Sangster, 1992; Lyon, 1997).

Some key failure factors revealed from the literature are, staff resistance to the innovation due to the issues such as conflicting demand on staff time, unacceptable learning methods to students, long-serving members of staff and unwillingness to accept other than traditional teaching methods (Sangster, 1992), limited resources both in terms of staff and infrastructure (Gazely and Pybus, 1997), technology infrastructure problems such as software incompatibility, access problems and technical support as the main problems experienced in integrating Internet-based on-line assessment (Aisbitt and Sangster, 2005), overcrowded accounting academic programmes and lack of institutional supports (Long and MacGregor, 1996; Baker and White Jr., 1999; Allen, 2000), and a number of extant educational issues and beliefs, such as change resistance, dominant use of scientific methods in accounting education, which trains rather than educates and passive knowledge acquisition (Kelly *et al.,* 1999).

RESEARCH METHODOLOGY

This study is informed by an interpretive enquiry tradition with the adoption of the grounded theory (Strauss and Corbin, 1998) as the predominant approach in the research process. The grounded theory approach is used because of the nature of the subject enquiry, which investigate the process phenomena of IT skills development. According to Creswell (1998) this type of study, which observes how the people act and react, take actions or engage in process in response to phenomena is greatly benefited from grounded theory approach. Furthermore, majority of the

studies are informed by quantitative studies based on the use of questionnaires as a main instrument. While it can be used for example to detect variations between the elements under investigation such as year of study, courses followed and university attended (Marriott *et al.,* 1999), identify the gap (Ahmed, 2003; Lin *et al.,* 2005), it does not allow for an analysis of why such differences and gap emerge. This issue can be tackled through uses of multi-method qualitative study such as focus group, interviews and observations, which would enable such insights to be gained (Marriott *et al.,* 1999).

DATA COLLECTION

Data were collected using multiple qualitative approaches, including interviews, focus groups, observations and document reviews, focusing respondents in one traditional university in the UK and involving one big four accounting firm. The methods were utilised, as they are better ways of gaining insight in trying to comprehend the issue. The focus groups were used to collect data from students and the personal interviews were employed to gather data from educators and practitioners. Documents reviews and observations were great data collection instruments, which were used to compliment the focus groups and interviews. Table 1 summaries the data collected through out the study.

Data collection has been progressively conducted since May 2004 begins with reviewing documents and attending meeting of Under Graduate Education Committee

Table 1   Summary of Data Collection

Document Reviewed	Focus Group	Interview	Observation
Undergraduate Student Handbook I	3 focus groups (one group for each year)	15 academic staffs	lectures
Undergraduate Student Handbook II	6 focus group sessions	3 supporting staffs	Classroom-based tutorials
Course outline for Accounting and Finance Degree Program	3-5 attendance per session	5 professional	IT-based lab tutorial
Minutes of meeting of Under Graduate Education Committee (UGEC)	20 students in total	7 alumni	Meeting of UGEC
Job application forms	7 Informal Interviews	Total number of formal interviews = 30	

(UGEC). In the time span several documents were reviewed such as students' handbooks, course outline of the Accounting and Finance Degree Programme and job application forms of various organisations. Three focus groups were formed consisting of six to ten students. Two sessions of focus groups were conducted for each group and attended by three to five students per session. The first session was conducted in October 2004 and another session was held in April 2005 for the purpose of validating the data from the first session and seeking for further clarification as well as additional information. Thirty formal interviews in total were conducted with fifteen academic staff, three supporting staff, ten practitioners including two who involved with graduates recruitment and seven alumni graduated from 2001-2005. Besides that, a number of observations were made in some classes and informal discussions with students and educators, which complement the understanding on data, gathered in the formal interviews and documents reviews.

THEORETICAL FINDING: PERCEIVED INFLUENTIAL FACTORS

Several emerging factors perceived in some ways cause the IT skills development initiatives. The influential factors seems related to educators the most compared to other respondents. The data demonstrate that educators have the highest influence in determining the IT skills development in the teaching process. The educator who teaches a particular unit has ultimate control of the unit taught as well as direct involvement in the actual teaching process. Although students were directly involved in the process, they had no direct control over the content of the syllabus or its delivery.

In terms of employers, there was also no experience of direct involvement in the design process of the syllabus. During the time the research was conducted, there was no communication between the employers and educators over the issue, although some contact was arranged between employers and students, especially in terms of career opportunities and placements. Several ideas about employers were based merely on educators' own perceptions and observations. Thus, in this case, the educators who taught the units had the final say on what to teach and how to teach it.

The following discussion is on the factors that were mainly perceived by educators as influential factors in developing IT skills in accounting education. Some of the factors rose from outside sources, which in this case were those sources beyond the control of school and considered as macro conditions. In this study, it is labeled as perceived external influential factors. Some of the causal conditions came from sources close or within the school and regarded as micro, which in this case labeled as internal influential factors. The major factors of both categories are shown in Figure 1.
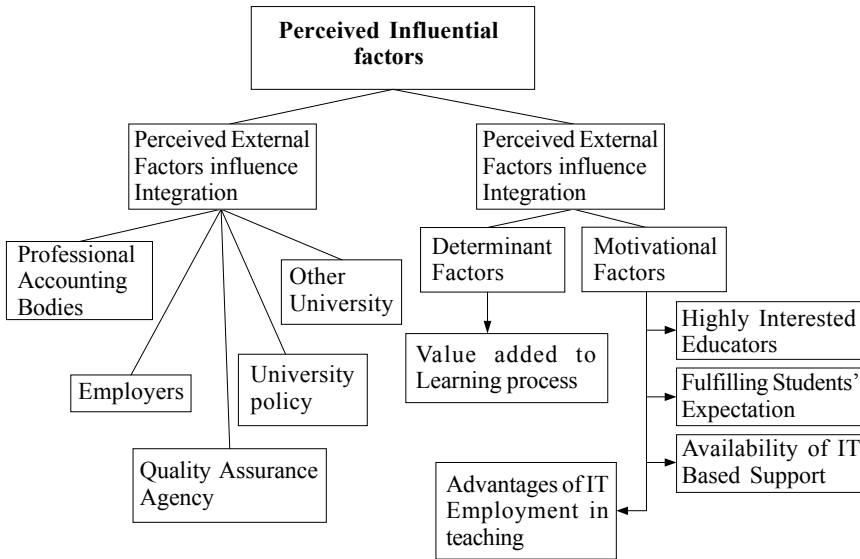
Figure 1   Influential factors of IT skills development

The details of the factors are discussed in the following subsections.

The Perceived External Influential Factors

Based on the data, five major issues raised by educators had been identified and labeled as perceived external influential factors as shown in Figure 1 above. They were university policy, IT skills integration practice in other universities, employers' requirement with regard to IT skills, quality assurance review by quality assurance agency (QAA) and professional course accreditation or professional examination exemption by professional accounting bodies.

Educators believed that issues of university policy, quality assurance review and professional course accreditation gave a direct effect on the curriculum design including IT skills integration but had a different degree of influential forces. They considered that university policy was giving a strong force toward IT integration in educational program because of the view that faculties and schools within the university would carry the policy of the university. If the university had a policy that emphasize on using IT in teaching, the policy would spread over to the faculties, which were responsible to implement it. It was observed that there was no specific indication of policy of the university under investigation on IT development. Quality assurance review was also considered as a strong influential factor on the design of the programme yet at the moment not so strong in term of IT skills development.

This was because, the review for example the one carried by QAA only gave a general guidance or a broad requirement on IT skills in the programme. Professional course accreditation used to have some influential factors by considering some coverage of IT as a unit taught in the programme. However, the requirements kept changing and finally IT coverage was no longer emphasized by many of the professional bodies except Institute of Chartered Accountant of Ireland (ICAI). Hence, at that moment it could be considered as less influential.

IT skills integration practice in other universities was indirectly influenced the integration process yet considered as a strong force. It was considered as indirect since those universities did not have any direct link such as collaboration work between their business schools and school under investigation in developing the accounting degree programme. However, what had been done in other accounting degree programmes gave a great impact in the sense of competition. To stay competitive, the educators believed that they should observed what others were doing and tried to be ahead from them. In the case of IT skills development in the programme, since everybody especially new universities were working toward that, it became a key force for the programme to follow the suit in order to keep in pace with them. Thus, it seemed that this factor strongly influenced the phenomena of IT skills development approach.

Same perception associated with the issue of employers' expectation on IT skills. Educators believed there was no direct influenced from employer, as at the meantime they did not have any liaison with employers. Most of the educators assumed those employers were expecting graduates with IT skills based on their observation and perception on modern IT-based working environment today. Despite of the awareness, educators had no idea what IT skills the employers specifically expected but believed those basic skills such as using word processor, spreadsheet, e-mail and Internet were common skills, important for graduates. Even though, there was no direct relationship between employer and educators, educators considered the perception on the expectation of employers on IT skills was a very strong factor influenced them in integrating IT in their teaching.

All of the above issues are the major issues perceived to instigate the process of integrating IT skills in the programme either direct or indirect. Furthermore each of them had a different influential degree, which varied from less strong to very strong. However, in the overall views, all of them were deemed activated the integration initiative externally.

The Perceived Internal Influential Factors

The perceived internal influential factors represented issues, which were internally raised and generated the development initiatives. The major factors were subdivided into two, which were perceived determinant factor and perceived motivational factors. The perceived determinant factor was a judgment on whether IT could

enhance students' learning or not. Many educators frequently raised this issue when telling their opinion regarding IT skills integration in their teaching. They would consider integrating IT in their teaching if by using IT helped them to add value to students' learning process such as promoting their understanding on academic concepts. Otherwise, they preferred other approaches instead of IT. However, some of the educators simply integrated IT based on their strong interest in it and belief on its benefits although the benefits were not clearly identified at the initial stage. Based of their past experience, it showed that integrating IT did help to enhance students' interest and understanding on the conceptual discussion.

Meanwhile, perceived motivational factors consisted of a few issues. First, interest of educator became one of the major motivating factors toward integrating IT in teaching. Highly interested educators seemed to integrate IT in teaching and witnessed it as something feasible, financially and operationally. Some of educators also proposed that somebody should set a role model or played a role as catalyst who could motivate others to follow the suit. Besides setting as an example, they could share their knowledge and expertise with others. This would motivate educators who wanted to integrate IT in their teaching but had a lack of knowledge and skills to do that. Second, fulfilling expectations of students toward IT was another factor that motivated educators to include IT in their teaching. Educators believed that students were looking to develop some IT skills while studying a degree that could gave them a value added in getting a job. Considering that, some educators felt motivated to incorporate IT in their teaching. Third, availability of IT based support also motivated educators to use IT in their teaching. Some educators argued for the availability and accessibility of the physical facilities as well as knowledge support could motivate them to consider IT in their teaching. Last but not least, educators found that the benefits offered by IT motivated them to use it in teaching. Some of them enjoyed benefits of time saving, managing resources as well as communicating with students.

In general, all of the internal factors directly impacted the integration process. In term of strength, they seemed more influential compared to external factors. All of the internal factors were perceived to have a strong influence especially the motivating factor of highly interested and motivated academic staff, whom was expected to be the catalyst and led the initiative of the phenomena. Thus, it is evident that educators play a major role in the process of enhancing IT skills development in the accounting education.

CONCLUSION

This study seeks to understand the process of developing and enhancing IT skills for accounting graduates through interpretive approach using grounded theory analysis. The emerging substantive theory suggests that factors such as university

policy, employers' expectation and other universities' practices are strong external factors influenced IT skills development. The theory also suggests that internal factors, particularly, highly motivated and interested educators were the most influential factors.

This study makes significant contributions in accounting education development in terms of the factors to be considered to enhance IT skills development and innovation in accounting teaching. Educators become the major focus to ensure the development initiatives and implementation. Thus, educators should be motivated and willing to sacrifice in terms of effort and time in order to learn and implement new things in their teaching. One of the possible ways is through university policy. The policy should put emphasis on the importance and needs of IT skills development and innovation such as by reinforcing the IT skills development in the curriculum, training the educators with the relevant IT skills and knowledge and offering attractive benefits for educators who put efforts on the IT-related innovation. The training should guide educators to construct the required instructional design and implement it. Inclusion of reflection sessions in the training process is a good approach to ensure educators perceive matters in a way that guides them towards designing and implementing the required instructional methods.

Main limitation of the study is it focuses solely on a single university as a case study. Thus, the emergent grounded theory explains the phenomena of skills development substantive to this research setting. Therefore, future research could generalise the theory by considering other setting such as other university educational programme, other potential employers to the extent, other higher institutions in other countries to promote general theory on the phenomena.

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