Examining the mediating role of learning engagement, learning process and learning experience on the learning outcomes through localized real case studies

Mathews Nkhoma
*Department of Business IT and Logistics, RMIT University Vietnam,
Ho Chi Minh City, Vietnam, and*
Narumon Sriratanaviriyakul, Hiep Pham Cong and Tri Khai Lam
*Business Information Technology and Logistics,
RMIT International University Vietnam, Ho Chi Minh City, Vietnam*

Abstract

Purpose – The purpose of this paper is to understand the impact of real, localized case studies on students' learning engagement, the learning process and learning experience and the role of such case studies in influencing students' learning outcomes.

Design/methodology/approach – Data were collected from 400 undergraduate students through an online questionnaire immediately after discussion of the case in Business Information Systems classes. Student learning from the case study was measured by two components consisting of case knowledge and case perceptions. The student course engagement questionnaire was used to examine engagement in skills, emotions, participation and performance while the study process questionnaire was administered to assess students' learning approaches. Additionally, the seven predominant roles of the feedback were used to analyse students' learning experience. Finally, students' learning outcomes were assessed both in group performance and individual performance. Structure equation modelling was applied to test the causal model.

Findings – The results revealed that the case study had a positive influence on students' engagement in skills and emotions. Moreover, case perceptions led students to surface approach in their learning. Furthermore, case knowledge had a positive impact on the learning experience.

Research limitations/implications – The study suggests that localized case studies should be designed cautiously. Furthermore the method of instruction regarding the method must be clearly explained for undergraduate students. Future research should consider a way of evaluating academic achievement as a result of using localized cases.

Originality/value – The findings reported in the paper contributed to an area of educational research by emphasizing on the mediating role of learning engagement, the learning process and the learning experience.

Keywords Case studies, Business education, Student learning

Paper type Research paper

1. Introduction

Developing a better understanding of the case study method in undergraduate-level education has been identified as an important issue in management information

www.man

systems disciplines (Webb *et al.*, 2005). Case study pedagogy exposes students to real-life situations using business cases through a comprehensive interaction between students and their instructors (Barnes *et al.*, 1994). Moreover, class discussions based on case studies enable students to be proficient in communication, self-management, and decision-making and problem-solving skills through the use of experiential learning (Sawyer *et al.*, 2000). Case-based learning is often designed to deal with commonly faced issues, demand for connecting theory and application, as well as to promote interaction among students (Kardash and Wallace, 2001; Prince, 2004; Yadav *et al.*, 2007). Recent studies shows that case-based learning significantly improves learners' perceptions of satisfaction, and usefulness (Kim *et al.*, 2012).

Constructivism theory explains how learners' knowledge is constructed when human beings use their experiences to form information that makes sense to them instead of acquiring existing knowledge from others. The learner may organize their understanding differently and idiosyncratically and will thus "construct" their own meaning (Eggen and Kauchak, 1994; Prawat and Floden, 1994). In the development of constructivism theory, there are two aspects of cognitive theory which are associated with cognition and instruction within educational psychology (Mayer, 1992). Course content along with individual learning styles are the two main bases of seeking the most effective way of teaching. Because each individual learns more effectively in different ways, some pedagogical strategies are more/less appropriate than others for desired outcomes. Case studies have been demonstrated to be important in enhancing students' cognition, engagement, approaches to learning, experience and outcomes.

Stemming from constructivism theory, the case method is a popular pedagogy in many graduate schools (Sudzina and Kilbane, 1994; Wassermann, 1994). The case method particularly relies on instructors to lead and facilitate students to induce new knowledge (Wassermann, 1994) students will be more engaged in class when instructors consistently signal openness to students' opinions and recognize the instructors role in contributing to students' success (Gasiewski *et al.*, 2011). The case method will also produce useful generative discussions among students (Barnes *et al.*, 1994; Lynn, 1999). There is a growing body of evidence shows that the case study method has a positive effect on learning performance such as grades and critical-thinking skills (Chaplin, 2009; Dupuis and Persky, 2008; Ertmer *et al.*, 1996; Kuhne-Eversmann *et al.*, 2008). Although case studies have been used widely, there appears to be relatively little research on how to measure actual learning outcomes of using case studies. Therefore, for college courses that involve group learning and case studies, validating assessment instruments might become an issue. The case study method includes interaction between students and instructors, and a series of actions in analysing a situation, such as identifying problems, developing alternative solutions and communicating in both oral and written forms. Although there have been few studies evaluating student learning outcomes from case studies (Barnes *et al.*, 1994), one model to meet this challenge is the general support system (GSS) (Mennecke *et al.*, 1992). The GSS model for group learning research presents a way to collect valuable information on both group and individual outcomes. Furthermore, the GSS model is more objective than student-based assessment because it reduces biases by grades, personalities and rigorousness (Peterson and Quarstein, 2001). Hence, this study hypothesized that:

H1. The case study method is positively correlated to undergraduate students' learning outcomes.

Student engagement is considered as a solution to increase academic motivation and accomplishment. Students are engaged when they feel involved in their education, the show this by their willingness, need, desire and compulsion to participate in their educational experiences (Bomia *et al.*, 1997). Engagement can also be seen as a catalyst in the learning process as it moves students to a higher level of thinking. Handelsman *et al.* (2005) identified four components of engagement in the classroom including skill engagement, emotional engagement, participation engagement and performance engagement. Previous studies found that student engagement has a relationship with interaction between teachers and peers in the classroom experience (Guthrie and Anderson, 1999; Skinner and Belmont, 1993). Accordingly, an active learning environment promotes self-efficacy and goal orientation among students as it increases student engagement in classroom achievement (Bandura, 1997; Hsieh *et al.*, 2007; Miller *et al.*, 2011). In addition, learning activities related to learning outcomes enhance learning retention and engagement (Anaya, 1996). From the active learning viewpoint, Heinrich *et al.* (2012) found the case study method increases students' satisfaction and motivates them to study more in class. Thus, obtaining desirable learning outcomes requires an engagement from others and the achieved learning outcomes will support the individuals' engagement in the next action. This statement leads to the following hypotheses:

H2a. The case study method is positively correlated with undergraduate students' learning engagement.

H3a. Undergraduate students' learning engagement is positively correlated with their learning outcomes.

Students' approach to learning theory is conceptualized as students' perceptions and learning-related activities such as constructivism (Biggs, 1999; Dart and Boulton-Lewis, 1998). Research results also showed a relationship between the case studies and students' critical-thinking skills such as analysis and synthesis (Chaplin, 2009; Rybarczyk *et al.*, 2007; Struck and Teasdale, 2008). Students' learning approaches are believed to affect the quality of learning outcomes. The study process questionnaire (SPQ) (Biggs *et al.*, 2001) has been used to evaluate students' deep and surface learning approaches. In general, it is assumed that deep approach learners achieve higher learning outcomes in comparison to surface approach learners (Gijbels *et al.*, 2005). There are several studies that found no relationship between student approaches to learning and learning achievement (Gijbels *et al.*, 2005; Groves, 2005; Jones and Jones, 1996). However, there are also some researches showing a weak, yet significant, relationship between the SPQ and academic achievement in a large-scale data collection (Booth *et al.*, 1999; Ramburuth and Mladenovic, 2004; Snelgrove and Slater, 2003). The results of previous studies demonstrated that student approaches to learning measured by the SPQ are either having no or little significance to academic achievement. For this reason, Choy *et al.* (2012) used achievement-related classroom behaviour as a mediator between student approach to learning and academic achievement. The results turned out to be significant. Consequently, students might change their approach to learning based on the learning environment and interaction in classrooms (Gijbels *et al.*, 2008). Jones and Kerr (2012) also demonstrated that the case study method is proven for improving learning engagement and the learning

process hence facilitates greater student interest, understanding and skills. Thus, this study hypothesized that:

H2b. The case study method is positively correlated to undergraduate students' learning process.

H3b. Undergraduate students' learning process is positively correlated to their learning outcomes.

Feedback is considered as a central element of the student's learning experience. In a case study learning environment, there is a high level of instructor-student interaction where the instructor provides concurrent and formative feedback to students to promote their learning (Michaelsen *et al.*, 2004). Team interaction, where peers provide positive and negative feedback also fosters student participation related to both knowledge activation and knowledge construction (Vasan *et al.*, 2009). Students pay attention to feedback for two reasons. First, many students view feedback as a tool for furthering their academic achievement, and second, as a tool that will assist them with understanding course concepts and ideas (Rowe, 2011). As a result, the processes of monitoring and facilitating feedback are determinant factors for the quality of the case study experiences. According to Lee *et al.* (2009), instructors' and peers' feedback and advice encourage students' learning process and in-depth understanding. This leads us to the following hypotheses:

H2c. The case study method is positively correlated to undergraduate students' learning experience.

H3c. Undergraduate students' learning experience is positively correlated to their learning outcomes.

In order to explore these relationships, this study focused on the direct effects of the case study methods on students' learning outcomes as well as the indirect effects of measuring the extent to which the mediating variables including learning engagement, learning process and learning experience affect learning outcomes. A conceptual model of this investigation is developed as depicted in Figure 1.

2. Data collection and methodology
To collect data for this study, students were encouraged to answer a web-based questionnaire at the end of the case discussion. Participation was voluntary, anonymous and unrelated to their assessment grades. Students had the right to opt in or out, even if they did not complete the questionnaire at all. The questionnaire took approximately 15-20 minutes to complete. In total, 500 web-based questionnaires were sent to undergraduate students studying business information systems courses. As a result, there were about 400 valid questionnaires and the effective response rate was approximately 80 per cent.

To assess the case study method, the central points were to examine case knowledge and case perceptions over case discussions (Webb *et al.*, 2005). At first, students were required to score course concepts related to the case discussed in class. Students were then requested to assess their perceptions of how the case impacted their views about the course. Both sections were developed from a scoring scheme based on
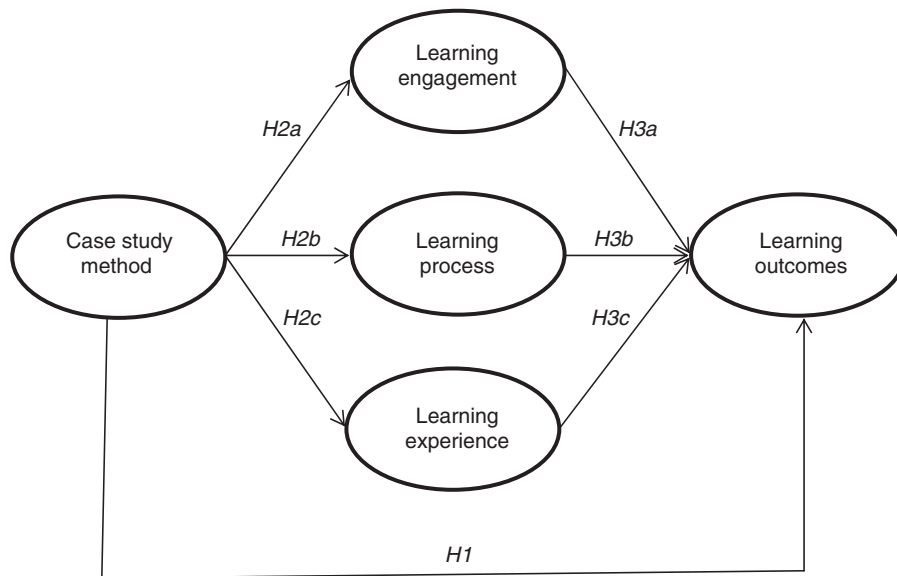
Figure 1.
Path model depicting
relationships between
the case study method,
learning engagement,
learning process,
learning experience and
learning outcomes

discussion questions of the case. For case knowledge, students were given the question: "After studying the case of […], could you assess its relative importance in the course?" and asked to assess its relative value by using a five-point Likert-type scale. For case perceptions, students were given the question: "Degree to which the case of […] enhanced your knowledge of […]" and asked to score agree/disagree on a five-point scale.

The student course engagement questionnaire (SCEQ) (Handelsman *et al.*, 2005) was administered to assess four types of engagement. The SCEQ questionnaire was reduced from an original 27-item instrument to a 23-item instrument. The SCEQ scale measures skill engagement, emotional engagement, participation/interaction engagement and performance engagement. First, the skill engagement consisting of nine items represented student engagement with practicing skills. Second, a five-item sub-scale was used to measure emotional engagement in class materials. The third element was participation/interaction engagement using six items depicting participation in class and interaction with instructors and peers. The final dimension composed of three items was administered to determine the level of performance in class. Each item was designed in a five-point Likert-type scale ranging from 1 = not at all characteristic of me to 5 = very characteristic of me.

The SPQ (Biggs *et al.*, 2001) was implemented to evaluate the learning process in class. The SPQ was revised from the original 43-item SPQ (Biggs, 1987a, b) to the 20-item version. The SPQ measures student's approach to learning according to whether they apply a deep approach or a surface approach to their studies. These two primary factors consisted of motive and strategy components. This revised two-factor version is believed to ideally assess any particular course with other contextual elements in teaching and learning system. In this study, the SPQ was composed of a five-point Likert-type scale ranging from 1 = never or only rarely true of me to 5 = always or almost always true of me.

The seven different dimensions derived from the importance of feedback to students were used to assess the students' learning experiences (Rowe, 2011). The first

dimension perceived feedback as a guide towards good results. When students' assignments go wrong, they will learn from them to get better grades. The second dimension reflected feedback as a learning tool that assisted students to understand course materials better. The third dimension viewed feedback as a means of interaction and participation in the learning process. The fourth dimension valued feedback as an encouragement and learning motivation. In the fifth dimension, feedback acted as an emotion regulator and a means to reduce anxiety. Feedback being an expression of respect due to the learning culture was the sixth dimension. Finally, feedback was used as an expression of caring for personal contact in learning. The importance of feedback from instructors and peers were asked on a five-point scale from $1 =$ not at all important to $5 =$ extremely important.

The GSS model for group learning (Mennecke *et al.*, 1992) was applied to measure students' learning outcomes for both individual and group performance. The assessment items were divided into two subcategories by Peterson and Quarstein (2001). The effects of group-based case study courses on group performance including 11 items were the first assessment. The other assessment was on the individual's positive perceptions of group learning with eight items. Students' responses ranged from $1 =$ totally disagree to $5 =$ totally agree.

Data were analysed using structural equation modelling (SEM) statistical methods. To determine whether learning engagement, the learning process and learning experience are capable mediators between the case study method and learning outcomes, SEM was used to test this mediation model. SEM determines whether relationships exist among the constructs. Software Amos 18 was applied to specify, estimate, assess and present models to show the results of hypothesized relationships among variables.

3. Results and discussion

Following the two-stage analytical procedure (Anderson and Gerbing, 1988), this study tested the measurement model before assessing the structural relationships. The measurement model specified the relationships between the observed indicators and latent variables. In this regard, the validity and the reliability of the indicators of the latent variables were assessed. The convergent validity was assessed by average variance extracted (AVE). Construct validity for the scales used has been established elsewhere. Construct reliability (CR) was measured according to the suggestions of Akter *et al.* (2011). The cut-off values for AVE and CR were 0.5 (Fornell and Bookstein, 1982) and 0.7 (Akter *et al.*, 2011), respectively. As shown in Table I, the AVE values did

	Construct	AVE	CR
1	Case knowledge	0.16	0.08
2	Case perceptions	0.47	0.55
3	Skill engagement	0.30	0.54
4	Emotional engagement	0.24	0.28
5	Participation engagement	0.24	0.32
6	Performance engagement	0.06	0.01
7	Surface approach	0.18	0.29
8	Deep approach	0.22	0.37
9	Learning experience	0.26	0.40
10	Group performance	0.20	0.36
11	Individual performance	0.13	0.14

Table I.
Assessments of
convergent validity and
construct validity

not exceed the recommended cut-off of 0.5 and the CR values were not higher than the threshold of 0.7. As a result, the measurement model indicated that on average, there was an error remaining in the items and the internal consistency was not good enough.

Thereafter, the SEM specified the relationships amongst the latent variables. The results showed that the data matched the hypothesized model respectably, χ^2/df ratio = 2.574, $p < 0.01$, TLI = 0.689, CFI = 0.701, RMSEA = 0.056. The p-value of the χ^2 test was less than 0.01, which meant that the proposed model was rejected. However, χ^2 is highly sensitive to sample size. With a large sample size, the χ^2 value will be statistically significant (Sharma, 1995), thus it might inaccurately imply a poor data-to-model fit. Consequently, researchers turned to another goodness-of-fit indexes rather than the χ^2 value (Bearden et al., 1982). TLI and CFI are correspondingly used as relative fit indexes less sensitive to sample size and the cut-off value of each index is 0.90, indicating good fit (Sharma, 1995). In this study, the value of TLI and CFI did not reach the cut-off value, but leant against strict reliance on cut-offs. Gerbing and Anderson (1992) stated that the value of TLI and CFI decrease as the number of variables in a casual model increases. The RMSEA value in this study was 0.056, which was in the range of 0.05-0.08, and indicated that the data fairly fit the proposed model (Maccallum et al., 1996).

First, there was no direct relationship between the case study method and learning outcomes. A possible explanation is that the variables neglected in this study biased the results of this research (Cellini, 2008; DesJardins et al., 2002). Further, the insignificant results might be caused by different methods in data collection (Zacharias, 2007) and/or instructional issues such as teaching plan, teaching method and assessment scheme, which could also influence learning outcomes (Eggen and Kauchak, 1994).

The causal model, in which a measure of learning engagement was a mediator, is represented in Figure 2. The analysis revealed that both case knowledge and case perceptions had significant and positive relationships with skill engagement and emotional engagement while their effects on participation engagement and performance engagement were insignificant. These findings showed that students engagement in skill and emotional activities would lead to their understanding of the theory learnt in the classroom (Handelsman et al., 2005) as well as complementing students' knowledge and skills (Weinstein et al., 1988) in practice. On the other hand, students were not interested in participation and performance engagement for extrinsic motivation and extrinsic rewards. The first explanation for the insignificance is possibly related to a lack of grading scheme. Previous finding showed that extrinsic motivation is useful for new and interesting materials (Sansone and Harackiewicz, 2000) but most of the assignments should be marked by the instructor (Handelsman et al., 2005). The second explanation is most likely related to on-the-job experiences and research involvement. Miller et al. (2011) found that internship students and undergraduate research students are generally more engaged in learning.

Furthermore, Figure 2 also shows the relationships between learning engagement and learning outcomes. The findings were insignificant. Although case knowledge and case perceptions motivated students' skill engagement and emotional engagement, those two mediating elements did not hold a special attraction for promoting their group performance and individual performance. Ideally, student engagement mediates the relationships between the academic environment and learning outcomes, especially in enterprising disciplines (Pike et al., 2011). A plausible explanation for the insignificant effects is that integrating various technological tools for the case study method enhances
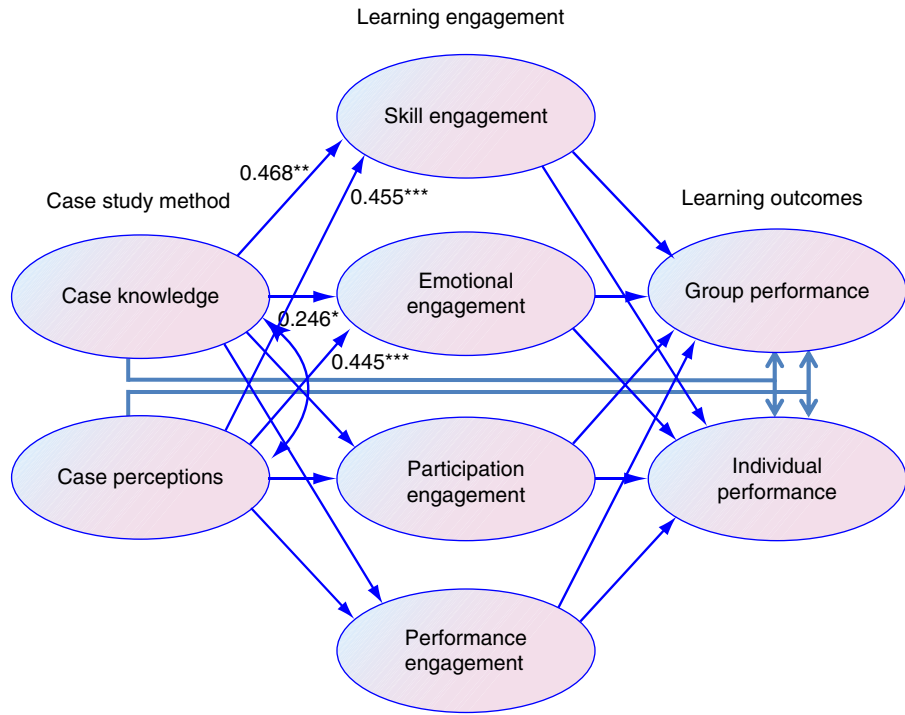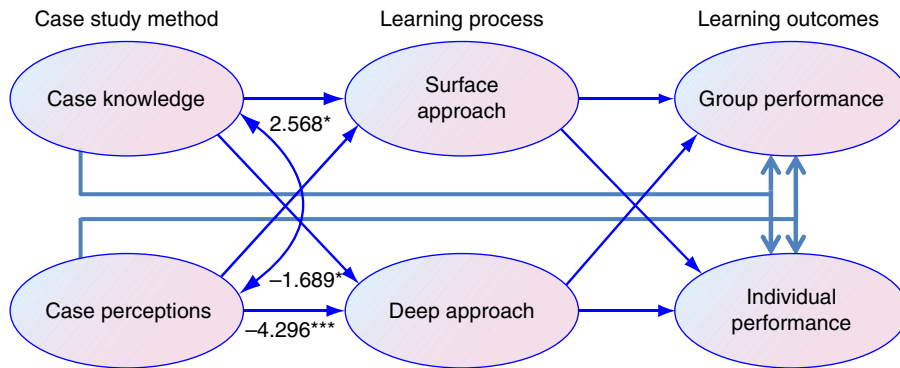
Learning engagement

Figure 2.
Mediating role of learning
engagement between the
case study method and
learning outcomes

Notes: Only statistically significant paths are shown in the path model.
*,**,***Significant at the 10, 5 and 1 per cent confidence level, respectively

student engagement in understanding the construction of knowledge (Lee *et al.*, 2009). The other possible explanation for these results is the case complexity. From a cognitive load framework (Sweller *et al.*, 1998), the case studies might have been creating an extraneous load. The case content was new to the students and the case analysis usually requires an interpretation of the subject matter in order to solve the problem. Thus, students need time to get acquainted with the subject matter and to build strategies for solving the presented issues (Chaplin, 2009).

The other objective of this study was to investigate how the case study method was related to student learning approaches and learning outcomes (Figure 3). The analysis showed that case knowledge had a significantly inverse relationship with deep approach to learning while case perceptions had a significantly obverse relationship with surface approach to learning and a significantly reverse relationship with deep approach. Based on the empirical results, it was obvious that students' cognitive ability, one of the major determinants of academic achievement (Ackerman and Heggestad, 1997), could be dissonant. Undergraduate students have a lower cognitive level of learning activities in tertiary education (Gow and Kember, 1990) since the case study method requires discussion among students and with the instructor in class, a deep approach to learning is expected from the students instead of a surface approach. The inverse relationships between the case study method and deep approach to learning indicated that the students did not understand how to approach the case if they were
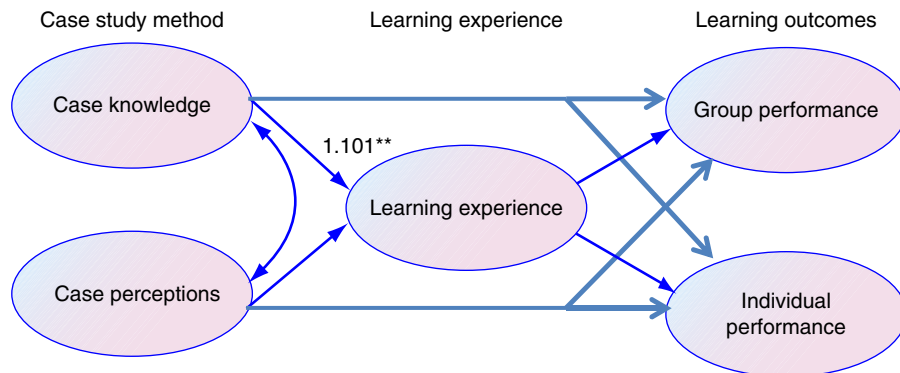
Case study method   Learning process   Learning outcomes

Case knowledge   2.568*   Surface approach   Group performance

Case perceptions   −1.689*   −4.296***   Deep approach   Individual performance

Notes: Only statistically significant paths are shown in the path model.
*,**,***Significant at the 10, 5 and 1 per cent confidence level, respectively

Figure 3.
Mediating role of learning
process between the case
study method and
learning outcomes

supposed to use past experience to actively construct a self-owned understanding rather than to obtain knowledge passively (Eggen and Kauchak, 1994; Prawat and Floden, 1994). Additionally, instructors need to examine methods of teaching, course content and goals to evaluate whether the case method teaching is appropriate for course objectives and expectations (Sudzina, 1997).

The two approaches to learning, as measured by the SPQ, are ineffective predictors of students' learning outcomes (Figure 3). The absence of relationships between approaches to learning and learning outcomes is in line with the works of Gijbels *et al.* (2005) and Minbashian *et al.* (2004). The explanation is most likely related to the absence of some essential skills to work with case studies. Heitzmann (2008) suggested a few necessary steps to solve case studies. Some of these steps are problem understanding, finding assumptions, offering interpretation and solutions. Another possible explanation might be related to the level and quality of instructors' facilitation of case studies. Lee *et al.* (2009) indicate that the instructors' facilitation in the case study method had a strong effect on students' understanding.

According to the experimental results (Figure 4), case knowledge had positive effect on students' learning experience, as measured by the seven themes of feedback. Course

Case study method   Learning experience   Learning outcomes

Case knowledge   1.101**   Group performance

Case perceptions   Learning experience   Individual performance

Notes: Only statistically significant paths are shown in the path model.
*,**,***Significant at the 10, 5 and 1 per cent confidence level, respectively

Figure 4.
The mediating role of
learning experience
between case study
method and learning
outcomes

concepts related to the specific case made students recognize the value of feedback. Previous studies supported that providing feedback assisted in case-based learning activities (Lee *et al.*, 2009) and motivation (Biggs and Tang, 2007; Linnenbrink and Pintrich, 2002). However, in this research model, case perceptions did not have a significant effect on the learning experience. A possible explanation for this insignificant relationship is that students' arrangement for small group discussions were poor to bring out a better learning experience (Flynn and Klein, 2001). In addition, one probable explanation for the insignificant effect on students' perceptions of learning experience was that incentives were not sufficient to motivate students to comment and give feedback on the case analysis and discussions of their peers (Tammets and Normak, 2013).

There were no significant results found between learning experience and learning outcomes (Figure 4). In principle, students' preference for feedback might result in having a positive influence on their learning outcomes (Rowe *et al.*, 2008). A possible explanation for the insignificant findings is a lack of questioning techniques and moderation. Williams (2004) pointed out that a successful case study method requires instructors to employ questioning techniques and to moderate discussions through feedback and support. Another very likely explanation for the insignificant results is the process of giving feedback. The case study method requires a small group to work on the main class activity, where prompt feedback is provided from the instructor regarding performance (Michaelsen *et al.*, 2004).

4. Conclusion

In this study, though some results were statistically insignificant, the study offered confirmation of three findings. First, the case study method encourages students' skill engagement and emotional engagement. Second, case perceptions direct students to apply surface approach to learning. Third, case knowledge intensified learning experience. As noted at the outset, the case study method is perceived as an aid to students' learning outcomes. But the results show that the direct mediating roles of learning engagement, learning process and learning experience did not have direct effects on the learning outcomes through the case study method. As for affective consequences, it might be the forces of inertia factor in the sampled students who are more likely to report positive affective responses following a lecture than following a case (Moore, 1999).

The significant findings suggested that instructors might design an appropriate case and instruct students to analyse the situation of the case as well as to discuss an action plan. In addition, the instructor should work on students' listening and communication skills in group discussions to foster participation engagement. When students understand how to conduct a case as well as work in a group, the instructors need to observe and judge students' performance for enhancing performance engagement and learning process (Choy *et al.*, 2012). At a more general level, the findings confirmed that increasing interaction (Biesta, 2004; Bingham and Sidorkin, 2004), providing feedback (Marcus *et al.*, 2004) and implementing assessment in class (Webb *et al.*, 2005) were essential for learning outcomes. In short, the case study approach to teaching and learning advances the understanding of students' learning engagement, learning process and learning experience in a relatively unexplored effect on the learning outcomes.

Although case-based learning has already been used widely for higher education, how to best utilize this method is an issue that must be studied and improved case by case.

To execute expansive case-based learning, a creative design for instructional materials and comprehensive facilitation are necessary (Garvey *et al.*, 2000). There are some recommendations on a better design for the case study method. First, there needs to be a detailed instruction regarding how to support students learning over the case-based course (Lee *et al.*, 2009). Correspondingly, an explicit grading system of case-based activities can support students in reducing cognitive dissonance and ambiguity in the learning process. Second, cognitive ability and personality traits of students (Choy *et al.*, 2012) should be examined for better predictions of learning outcomes. Accordingly, an appropriate complexity of a case and a proper timing at the end of the semester will allow students to study a case more thoroughly with better understanding.

This study has also got some limitations. The participants were limited to students of business information systems only. In addition, the actual neglect of the instructions and assessment of students' actual behaviours in class might have affected the results of this causal model. As a result, one should be cautious when implying the findings of this study and forwarding it to other programmes of training. However, this experiment is at the beginning of assessing students' learning engagement, learning process and learning experience by employing the case study method to the curriculum. Considering the results of these evaluations and the potential for improvement, further research can investigate academic achievements by observing students' actual behaviours in class (Choy *et al.*, 2012) or assessing a course first without and then with the case study techniques for a robust evaluation (Peterson and Quarstein, 2001).

References

Ackerman, P.L. and Heggestad, E.D. (1997), "Intelligence, personality, and interests: evidence for overlapping traits", *Psychological Bulletin*, Vol. 121 No. 2, pp. 219-245.

Akter, S., D'Ambra, J. and Ray, P. (2011), "Trustworthiness in mHealth information services: an assessment of a hierarchical model with mediating and moderating effects using partial least squares (PLS)", *Journal of the American Society for Information Science and Technology*, Vol. 62 No. 1, pp. 100-116.

Anaya, G. (1996), "College experiences and student learning: the influence of active learning, college environments and cocurricular activities", *Journal of College Student Development*, Vol. 37 No. 6, pp. 611-622.

Anderson, J.C. and Gerbing, D.W. (1988), "Structural equation modeling in practice: a review and recommended two-step approach", *Psychological Bulletin*, Vol. 103 No. 3, pp. 411-423.

Bandura, A. (1997), *Self-Efficacy: The Exercise of Control*, Worth Publishers, New York, NY, available at: http://books.google.com.vn/books?id = eJ-PN9g_o-EC

Barnes, L.B., Christensen, C.R. and Hansen, A.J. (1994), *Teaching and the Case Method: Text, Cases, and Readings*, Harvard Business School Publishing India Pvt Limited, Boston, MA, available at: http://books.google.com.vn/books?id = 32UK0OiZrskC.

Bearden, W.O., Sharma, S. and Teel, J.E. (1982), "Sample size effects on chi square and other statistics used in evaluating causal models", *Journal of Marketing Research*, Vol. 19 No. 4, pp. 425-430.

Biesta, G.J.J. (2004), "'Mind the gap!' communication and the educational relation", in Bingham, C. and Sidorkin, A.M. (Eds), *No Education without Relation*, Peter Lang, New York, NY, pp. 11-22.

Biggs, J. (1987a), *Student Approaches to Learning and Studying*, Australian Council for Educational Research, Camberwell, available at: http://books.google.com.vn/books?id= 7IkfQgAACAAJ

Biggs, J. (1987b), *The Study Process Questionnaire (SPQ): Manual*, Australian Council for Educational Research, Hawthorn.

Biggs, J. (1999), "Assessing for learning quality", in Biggs, J. and Tang, C. (Eds), *Teaching for Quality Learning at University*, SRHE and Open University Press, Buckingham, pp. 165-203, available at: www.ntu.edu.vn/Portals/96/Tulieuthamkhao/Phuongphap giangday/teachingforqualitylearning-j.biggs.pdf

Biggs, J. and Tang, C. (2007), *Teaching for Quality Learning at University: What The Student Does*, McGraw-Hill, Maidenhead, available at: http://books.google.com.vn/books?id =TBadAAAAMAAJ

Biggs, J., Kember, D. and Leung, D.Y.P. (2001), "The revised two-factor study process questionnaire: R-SPQ-2F", *The British Journal of Educational Psychology*, Vol. 71, pp. 133-149, available at: www.ncbi.nlm.nih.gov/pubmed/11307705

Bingham, C. and Sidorkin, A.M. (2004), "The pedagogy of relation: an introduction", in Bingham, C. and Sidorkin, A.M. (Eds), *No Education Without Relation*, Peter Lang, New York, NY, pp. 1-4.

Bomia, L., Beluzo, L., Demeester, D., Elander, K., Johnson, M. and Sheldon, B. (1997), "The impact of teaching strategies on intrinsic motivation", ERIC Clearinghouse on Elementary and Early Childhood Education (ERIC Document Reproduction Service No. ED418925), Champaign, IL, available at: www.eric.ed.gov/contentdelivery/servlet/ERICServlet?accno=ED418925

Booth, P., Luckett, P. and Mladenovic, R. (1999), "The quality of learning in accounting education: the impact of approaches to learning on academic performance", *Accounting Education: An International Journal*, Vol. 8 No. 4, pp. 277-300.

Cellini, S.R. (2008), "Causal inference and omitted variable bias in financial aid research: assessing solutions", *The Review of Higher Education*, Vol. 31 No. 3, pp. 329-354.

Chaplin, S. (2009), "Assessment of the impact of case studies on student learning gains in an introductory biology course", *Journal of College Science Teaching*, Vol. 39 No. 1, pp. 72-80.

Choy, J.L.F., O'Grady, G. and Rotgans, J.I. (2012), "Is the study process questionnaire (SPQ) a good predictor of academic achievement? Examining the mediating role of achievement-related classroom behaviours", *Instructional Science*, Vol. 40 No. 1, pp. 159-172.

Dart, B. and Boulton-Lewis, G. (1998), *Teaching and Learning in Higher Education*, Australian Council for Educational Research, Melbourne.

DesJardins, S.L., McCall, B.P., Ahlburg, D.A. and Moye, M.J. (2002), "Adding a timing light to the 'Tool Box'", *Research in Higher Education*, Vol. 43 No. 1, pp. 83-114.

Dupuis, R.E. and Persky, A.M. (2008), "Use of case-based learning in a clinical pharmacokinetics course", *American Journal of Pharmaceutical Education*, Vol. 72 No. 2, pp. 1-7, available at: www.pubmedcentral.nih.gov/articlerender.fcgi?artid=2384204&tool=pmcentrez&render type=abstract

Eggen, P.D. and Kauchak, D.P. (1994), *Educational Psychology: Classroom Connections*, 2nd ed., Merrill, New York, NY, available at: http://books.google.com.vn/books?id=POQfAAAAMAAJ

Ertmer, P.A., Newby, T.J. and MacDougall, M. (1996), "Students' responses and approaches to case-based instruction: the role of reflective self-regulation", *American Educational Research Journal*, Vol. 33 No. 3, pp. 719-752.

Flynn, A.E. and Klein, J.D. (2001), "The influence of discussion groups in a case-based learning environment", *Educational Technology Research and Development*, Vol. 49 No. 3, pp. 71-86.

Fornell, C. and Bookstein, F.L. (1982), "Two structural equation models: LISREL and PLS applied to consumer exit-voice theory", *Journal of Marketing Research*, Vol. 19 No. 4, pp. 440-452.

Garvey, M.T., O'Sullivan, M. and Blake, M. (2000), "Multidisciplinary case-based learning for undergraduate students", *European Journal of Dental Education*, Vol. 4 No. 4, pp. 165-168, available at: www.ncbi.nlm.nih.gov/pubmed/11168482

Gasiewski, J.A., Eagan, M.K., Garcia, G.A., Hurtado, S. and Chang, M.J. (2011), "From gatekeeping to engagement: a multicontextual, mixed method study of student academic engagement in introductory STEM courses", *Research in Higher Education*, Vol. 53 No. 2, pp. 229-261.

Gerbing, D.W. and Anderson, J.C. (1992), "Monte Carlo evaluations of goodness of fit indices for structural equation models", *Sociological Methods & Research*, Vol. 21 No. 2, pp. 132-160.

Gijbels, D., Segers, M. and Struyf, E. (2008), "Constructivist learning environments and the (im)possibility to change students' perceptions of assessment demands and approaches to learning", *Instructional Science*, Vol. 36 Nos 5-6, pp. 431-443.

Gijbels, D., Van de Watering, G., Dochy, F. and Van den Bossche, P. (2005), "The relationship between students' approaches to learning and the assessment of learning outcomes", *European Journal of Psychology of Education*, Vol. XX No. 4, pp. 327-341.

Gow, L. and Kember, D. (1990), "Does higher education promote independent learning?", *Higher Education*, Vol. 19 No. 3, pp. 307-322.

Groves, M. (2005), "Problem-based learning and learning approach: is there a relationship?", *Advances in Health Sciences Education: Theory and Practice*, Vol. 10 No. 4, pp. 315-326.

Guthrie, J.T. and Anderson, E. (1999), "Engagement in reading: processes of motivated, strategic, knowledgeable, social readers", in Guthrie, J.T. and Alvermann, D.E. (Eds), *Engaged Reading: Processes, Practices, and Policy Implications*, Teachers College Press, New York, NY, pp. 17-45.

Handelsman, M.M., Briggs, W.L., Sullivan, N. and Towler, A. (2005), "A measure of college student course engagement", *Journal of Educational Research*, Vol. 98 No. 3, pp. 184-191.

Heinrich, C., Pennington, R.R. and Kuiper, R. (2012), "Virtual case studies in the classroom improve student knowledge", *Clinical Simulation in Nursing*, Vol. 8 No. 8, pp. 353-361.

Heitzmann, R. (2008), "Case study instruction in teacher education: opportunity to develop students' critical thinking, school smarts and decision making", *Education*, Vol. 128 No. 4, pp. 523-542.

Hsieh, P., Sullivan, J.R. and Guerra, N.S. (2007), "A closer look at college students selfefficacy and goal orientation", *Journal of Advanced Academics*, Vol. 18 No. 3, pp. 454-476, available at: http://education.utsa.edu/documents/ACloserLookatCollegeStudentsSelfefficacyandGoal Orientation.pdf

Jones, A. and Jones, D. (1996), "Student orientations to independent learning", *Higher Education Research & Development*, Vol. 15 No. 1, pp. 83-96.

Jones, O. and Kerr, M. (2012), "Refreshment by the case: use of multimedia in case study assessment", *The International Journal of Management Education*, Vol. 10 No. 3, pp. 186-200.

Kardash, C.M. and Wallace, M.L. (2001), "The perceptions of science classes survey: what undergraduate science reform efforts really need to address", *Journal of Educational Psychology*, Vol. 93 No. 1, pp. 199-210.

Kim, H.J., Pederson, S. and Baldwin, M. (2012), "Improving user satisfaction via a case-enhanced e-learning environment", *Education + Training*, Vol. 54 Nos 2/3, pp. 204-218.

Kuhne-Eversmann, L., Eversmann, T. and Fischer, M.R. (2008), "Team- and case-based learning to activate participants and enhance knowledge: an evaluation of seminars in Germany", *Journal of Continuing Education in the Health Professions*, Vol. 28 No. 3, pp. 165-171.

Lee, S.H., Lee, J., Liu, X., Bonk, C.J. and Magjuka, R.J. (2009), "A review of case-based learning practices in an online MBA program: a program-level case study", *Educational Technology & Society*, Vol. 12 No. 3, pp. 178-190.

Linnenbrink, E.A. and Pintrich, P.R. (2002), "Motivation as an enabler for academic success", *School Psychology Review*, Vol. 31 No. 3, pp. 313-327.

Lynn, L.E. (1999), *Teaching and Learning with Cases: A Guidebook*, Chatham House Publishers, New York, NY, available at: http://books.google.com.vn/books?id=yrCcAAAAMAAJ

Maccallum, R.C., Browne, M.W. and Sugawara, H.M. (1996), "Power analysis and determination of sample size for covariance structure modeling", *Psychological Methods*, Vol. 1 No. 2, pp. 130-149.

Marcus, G., Taylor, R. and Ellis, R.A. (2004), "Implications for the design of online case based learning activities based on the student blended learning experience", in Atkinson, R., McBeath, C., Jonas-Dwyer, D. and Phillips, R. (Eds), *Beyond the Comfort Zone: Proceedings of the 21st ASCILITE Conference, Perth, Vol. 1*, pp. 577-586, available at: www.ascilite.org.au/conferences/perth04/procs/pdf/marcus.pdf

Mayer, R.E. (1992), "Cognition and instruction: their historic meeting within educational psychology", *Journal of Educational Psychology*, Vol. 84 No. 4, pp. 405-412.

Mennecke, B.E., Hoffer, J.A. and Wynne, B.E. (1992), "The implications of group development and history for group support system theory and practice", *Small Group Research*, Vol. 23 No. 4, pp. 524-572.

Michaelsen, L.K., Knight, A.B. and Fink, L.D. (2004), *Team Based Learning: A Transformative Use of Small Groups in College Teaching*, Sterling, Stylus, VA, available at: http://books.google.com.vn/books?id=HjOdPwAACAAJ

Miller, R.L., Rycek, R.F. and Fritson, K. (2011), "The effects of high impact learning experiences on student engagement", *Procedia – Social and Behavioral Sciences*, Vol. 15, pp. 53-59.

Minbashian, A., Huon, G.F. and Bird, K.D. (2004), "Approaches to studying and academic performance in short-essay exams", *Higher Education*, Vol. 47 No. 2, pp. 161-176.

Moore, S. (1999), "Cases vs lectures: a comparison of learning outcomes in undergraduate principles of finance", *Journal of Financial Education*, Vol. 25, Fall, pp. 37-49, available at: www.abe.villanova.edu/FEA/page37.pdf

Peterson, P.A. and Quarstein, V.A. (2001), "Assessment of case study courses", *Quality Assurance in Education*, Vol. 9 No. 1, pp. 46-53.

Pike, G.R., Smart, J.C. and Ethington, C.A. (2011), "The mediating effects of student engagement on the relationships between academic disciplines and learning outcomes: an extension of Holland's theory", *Research in Higher Education*, Vol. 53 No. 5, pp. 550-575.

Prawat, R.S. and Floden, R.E. (1994), "Philosophical perspectives on constructivist views of learning", *Educational Psychologist*, Vol. 29 No. 1, pp. 37-48.

Prince, M. (2004), "Does active learning work? A review of the research", *Journal of Engineering Education*, Vol. 93 No. 3, pp. 223-231.

Ramburuth, P. and Mladenovic, R. (2004), "Exploring the relationship between students' orientations to learning, the structure of students' learning outcomes and subsequent academic performance", *Accounting Education: An International Journal*, Vol. 13 No. 4, pp. 507-527.

Rowe, A. (2011), "The personal dimension in teaching: why students value feedback", *International Journal of Educational Management*, Vol. 25 No. 4, pp. 343-360.

Rowe, A., Wood, L. and Petocz, P. (2008), "Engaging students: student preferences for feedback", *Engaging Communities, Proceedings of the 31st HERDSA Annual Conference, Higher Education Research and Development Society of Australasia Inc, Rotorua*, pp. 297-306.

Rybarczyk, B.J., Baines, A.T., McVey, M., Thompson, J.T. and Wilkins, H. (2007), "A case-based approach increases student learning outcomes and comprehension of cellular respiration concepts", *Biochemistry and Molecular Biology Education*, Vol. 35 No. 3, pp. 181-186.

Sansone, C. and Harackiewicz, J.M. (2000), *Intrinsic and Extrinsic Motivation: The Search for Optimal Motivation and Performance*, Academic Press, San Diego, CA, available at: http://books.google.com.vn/books?id=uM10geBB8o4C

Sawyer, A.J., Tomlinson, S.R. and Maples, A.J. (2000), "Developing essential skills through case study scenarios", *Journal of Accounting Education*, Vol. 18 No. 3, pp. 257-282.

Sharma, S. (1995), *Applied Multivariate Techniques*, John Wiley & Sons Inc, New York, NY, available at: http://books.google.com.vn/books?id=6iURRAAACAAJ

Skinner, E.A. and Belmont, M.J. (1993), "Motivation in the classroom: reciprocal effects of teacher behavior and student engagement across the school year", *Journal of Educational Psychology*, Vol. 85 No. 4, pp. 571-581, available at: http://students.uwsp.edu/kwojn353/soeportfolio/artifacts/Early adolescent ED385/Assessment-11-Motivation-in-the-classroom--reciprocal-effects-of-teacher-behavior--Skinner-Belmont--1993.pdf

Snelgrove, S. and Slater, J. (2003), "Approaches to learning: psychometric testing of a study process questionnaire", *Journal of Advanced Nursing*, Vol. 43 No. 5, pp. 496-505, available at: www.ncbi.nlm.nih.gov/pubmed/12919268

Struck, B.D. and Teasdale, T.A. (2008), "Development and evaluation, of a longitudinal casebased learning (CBL) experience for a geriatric medicine rotation", *Gerontology & Geriatrics Education*, Vol. 28 No. 3, pp. 105-114.

Sudzina, M.R. (1997), "Case study as a constructivist pedagogy for teaching educational psychology", *Educational Psychology Review*, Vol. 9 No. 2, pp. 199-218.

Sudzina, M.R. and Kilbane, C.R. (1994), "New contexts for educational case study applications: from classroom to competition and beyond", in Klein, H.E. (Ed.), *Learning the Doing – Doing the Learning: The Art of Interactive Teaching*, ERIC Document Reproduction Service No. ED 374 121, World Association for Case Method Research and Application, Needham, MA.

Sweller, J., Van Merrienboer, J.J.G. and Paas, F.G.W.C. (1998), "Cognitive architecture and instructional design", *Educational Psychology Review*, Vol. 10 No. 3, pp. 251-296.

Tammets, K. and Normak, P. (2013), "Learning outcomes for blog-based courses: a case study", in Ley, T., Ruohonen, M., Laanpere, M. and Tatnall, A. (Eds), *Open and Social Technologies for Networked Learning, Vol. 395*, Springer, Berlin and Heidelberg, pp. 113-120.

Vasan, N.S., DeFouw, D.O. and Compton, S. (2009), "A survey of student perceptions of team-based learning in anatomy curriculum: favorable views unrelated to grades", *Anatomical Sciences Education*, Vol. 2 No. 4, pp. 150-155.

Wassermann, S. (1994), *Introduction to Case Method Teaching: A Guide to the Galaxy*, Teachers College Press, Teachers College, Columbia University, New York, NY.

Webb, H.W., Gill, G. and Poe, G. (2005), "Teaching with the case method online: pure versus hybrid approaches", *Decision Sciences Journal of Innovative Education*, Vol. 3 No. 2, pp. 223-250.

Weinstein, C.E., Goetz, E.T. and Alexander, P.A. (1988), *Learning and Study Strategies: Issues in Assessment, Instruction, and Evaluation*, Academic Press, New York, NY.

Williams, M. (2004), *Exploring the Effects of a Multimedia Case-Based Learning Environment in Pre-Service Science Teacher Education in Jamaica*, University of Twente, Enschede, available at: http://doc.utwente.nl/41430/1/thesis_Williams.pdf

Yadav, A., Lundeberg, M., DeSchryver, M., Dirkin, K., Schiller, N.A., Maier, K. and Herreid, C.F. (2007), "Teaching science with case studies: a national survey of faculty perceptions of the benefits and challenges of using cases", *Journal of College Science Teaching*, Vol. 37 No. 1, pp. 34-38.

Zacharias, N.T. (2007), "Teacher and student attitudes toward teacher feedback", *RELC Journal*, Vol. 38 No. 1, pp. 38-52.

About the authors

Dr Mathews Nkhoma, Assistant Professor, holds a PhD in Information Security. His major topics of research are: zero day attacks and vulnerability research, information systems security, transparency in information security system design, network security investment model, ethical hacking and network defence, network security management, forensic computing and evidence recovery including mobile devices, cybercrime, identity theft, consumer protection, trust and confidence, impact of ICT in education. His research has been published in journals such as the *International Journal of Information Management and Computer Security* – Emerald, *International Journal of Information Security and Privacy* – IGI Publishing. Mathews has international experience in teaching: leading information systems and computer forensics courses in Africa, Europe, Middle East and Asia at both undergraduate and postgraduate level.

Narumon Sriratanaviriyakul (BA, MS, AdvDip, Grad Cert TTL), Senior Lecturer and early Career Researcher in the Centre of Commerce and Management at the RMIT University Vietnam, has seven years of working experience in IT and tourism and marketing industry and seven years of teaching experience in higher education in international universities.

Hiep Pham Cong is a Senior Lecturer at the RMIT Vietnam University. He has completed a master degree in advanced information systems and an MBA (executive). He is actively conducting research in information management and information security management.

Tri Khai Lam, Research Assistant, has experience and knowledge in quantitative research. Tri will be involved in the process of collecting data and assist in the research report writing.