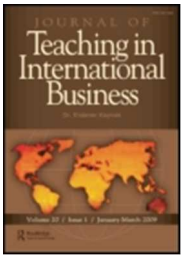

The Problem of Constructive Misalignment in International Business Education: A Three-stage Integrated Approach to Enhancing Teaching and Learning

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Abstract

Past evidence suggests that constructive *mis*alignment is particularly problematic in International Business (IB) education, though this paradigm has received limited research attention. Building on the literature of three independent teaching methods (threshold concept, problem-based learning, and technology-based learning), this study contributes to the IB education literature by integrating the three existing methods in a co-complementary and co-supporting manner, and carefully implementing them across three subsequent stages spanning across the length of the IB course. Empirical evidence on student satisfaction and assessment performance shows its usefulness in reducing the negative effects of constructive misalignment among the sampled students. The approach provides practitioners with refreshed insights into how the three independent methods can be integrated to create greater value for learners.

Keywords: Constructive alignment, threshold concept, problem-based learning, technology-based learning, international business education

Introduction

Constructive alignment is an important perspective in management education research for enhancing quality of practice and learning experience (Biggs 1996, 2003). The paradigm which focuses on bridging *theory* with *practice* calls for education practitioners to consider and assess the appropriateness of some existing forms of teaching and assessment, whereby course redesign may be necessary. Apart from evidence from a few recent studies discussing effective methods such as threshold concepts, problem-based learning, or online simulations, to existing practices (i.e. Vitale 2010, Blasco 2012, Wright & Gilmore 2012, Wright, Nichols, McKechnie, & McCarthy 2013), there still remains limited interest from practitioners in terms of embedding this view in course design and development.

Constructive misalignment, on the other hand, is expected to have negative impact on the effectiveness of professional practices and quality of learning experience (Biggs 1996, 2003; Barry, Murphy, & Drew 2015; Kwan 2015; Nkuyubwatsi 2016). Despite this recognition, the matter remains largely persistent in modern higher education (Jackson 2002, Vitale 2010, Blasco 2012, Wright & Gilmore 2012, Wright, Nichols, McKechnie, & McCarthy 2013), and is particularly evident in some subject areas such as International Business (IB) (Kobe 2011). For instance, one of the major commonly-identified problems among practitioners from this subject area is learners' knowledge 'gap' between appreciating the theory and applying in practice. The exercise of 'linking' the two areas of expertise is generally a major challenge (Korthagen & Kessels 1999; Norman & Schmidt 2016) of learning as well as teaching. This problem is particularly prone in the case of IB for the reason that the subject area is multidisciplinary in nature, requiring possession of a critical mind and ability to comprehend extensive new knowledge. However, recent education literature suggests that the existing teaching approach of one-direction in-class lecture, predominant across social sciences, is potentially (partially) ineffective in delivering positive learning experience (Sinkovics, Haghirian, & Yu 2009; Howard 2015). Consequently, the challenge for many IB practitioners becomes the use of the 'right' tools to make positive changes in course design and delivery.

This paper aims to develop a three-stage integrated approach for the purpose of enhancing teaching and learning of IB course. The approach is to specifically address the key learning issue of a knowledge 'gap' in IB courses. By drawing on the broader education literature, this study assesses the different design and delivery methods in management education where it is proposed three of them to be complementary to one another in forming an integrated approach in addressing the gap. Against this background, this paper addresses one major research question, i.e. whether and to what extent is the proposed three-stage integrated approach effective in enhancing IB teaching and learning?

Contribution is made to the education literature on constructive alignment as an useful paradigm to unveiling the problem of a knowledge 'gap' and enhancing the quality of teaching and learning in IB courses in business schools. Whilst previous literature evidences the value of this approach, limited studies have focused on the specific context of IB which is particularly prone to the problem of misalignment between theory and application (Sinkovics, Haghirian, & Yu 2009). The second contribution is that, by drawing on the constructive alignment perspective this study proposes a three-stage integrated approach to IB course design for enhanced learning experience. Previous studies focusing on the teaching and learning quality of IB course have mainly addressed the issue of learner experience by introducing single methods (e.g. Alavi & Gallupe 2003; Vidal, Smith, & Septic 2015; Sadlo 2016). Instead, the study draws on useful techniques found in the broader education literature to present a more integrated approach specific to IB course design and delivery. Third, this paper contributes in the way of providing empirical evidence of the usefulness of such a perspective in IB course design exercise whereby the problem of misalignment is reduced. This way, learners' ability to construct their own critical view of the subject enables advancement from 'surface' to 'deep' learner (Fox 1983; Kwan 2015).

The article proceeds with key literature on constructive alignment and relevant alignment methods is consulted, which is followed by the proposition of an integrative three-method approach to IB course design. The paper then moves onto the implementation and multiple evaluations of a number of course changes and assessment of quality enhancement of teaching and assessment. The paper concludes with some teaching implications for those that are responsible for IB course design and delivery.

Literature Review and Conceptual Development

Constructive Alignment in Teaching and Learning

Biggs (1996, 2003) was one of the first contributors to explicitly discuss and address the perspective of constructive alignment in contemporary higher education. The paradigm starts with the learner constructs their own learning through relevant learning activities, which cover lectures, seminars, assessments, and off-campus independent study in the traditional form. Within it, the instructor is responsible for creating and facilitating an effective environment that supports enhanced learning activities to achieve the intended learning outcomes of a course or programme (Biggs 1996, 2003). It fundamentally calls for the curriculum to be evaluated, including teaching methods, forms of assessments, and outcomes intended and achieved. Vitale (2010) provides a strong argument for effective alignment among these factors to be important for the teaching and learning '*system'* to function effectively (Figure 1). This should also include setting appropriate 'barriers' for free-riding learners whereby a clearly mapped route from intended learning outcomes to outcomes achieved is

provided to enable higher motivation and focused learning. In contrast, a poor 'system' is one in which those key factors are not cohesive and attuned to support high-level learning.

Insert Figure 1. Here

In order to constructively align all teaching and learning activities to the intended learning outcomes, in general there are three incremental steps in course design and delivery (Biggs 2003; Vitale 2010). First, an instructor needs to specify the outcomes of the teaching in terms of topic content and the expected level of understanding intended for learners to achieve. This is followed by the creation of an effective learning environment which maximizes the likelihood of learners engaging in the activities designed to achieve the outcomes. Forms of assessments should be appropriate to reflect how well individual learners have attained these outcomes. To implement these steps appropriately, literature relating to a number of key methods which have been identified as widely-adopted is reviewed.

Threshold Concept

The method of threshold concept is concerned with supporting learning and assessment in the way of identifying subject threshold concepts to guide the teaching process. In contrast to the 'stuffed' course design, it promotes a less-is-more approach (Davies 2003, Davies & Mangan 2005, Cousin 2006; Meyer et al 2016; Meyer & Timmermans, 2016) whereby subject boundaries are defined by identified threshold concepts and that these concepts enable a deep cognitive understanding of the subject area (Davies 2003; Meyer et al 2016; Meyer & Timmermans, 2016). To identify these concepts in a subject five key characteristics are required (Cousin 2006). For one, it needs to be *'transformative'* in turning learners' understanding. It also cannot be forgotten by learners by '*reversing'* their understanding. Third, it needs to be '*integrative'* by exposing learners to hidden interrelatedness across different topics. It also needs to be troublesome knowledge which is '*counter-intuitive'* for learners. Finally, the concept needs to be '*subject boundary defining'* for learners.

In the context of course design to embed threshold concepts, the concept identification process requires the course instructor to undertake a deep and ordered- cognitive conceptualisation (Cousin 2006; Meyer & Timmermans, 2016). The instructor must consider not only the subject but the role a learner plays in the identification process (Davies & Mangan 2007) (Figure 2). Instructors should first recognize that learners are likely to join the course with basic and partial knowledge (i.e. basic concepts), who can only make sense and appreciate the origin and formation of the subject area by studying the instructor-identified threshold concepts (i.e. threshold concepts). Learner-led

application of the learnt concepts is then facilitated by the instructor (i.e. procedural concepts). Through this conceptualization process, the instructor can design a course which focuses on the 'jewels' in the subject area, listens for understanding of learners, creates a confusion-tolerating environment for learners, as well as allows for recursive and excursive learning.

Insert Figure 2. Here

Problem-based Learning and Assessment

Problem-based learning approach has long been established in the higher education sector (e.g. Peterson 2004; Brzovic & Matz 2009; Liu & Olson 2011; Marra, Jonassen, Palmer & Luft 2014). The approach is seen as an instrumental method whereby student learning takes place in the context of solving an *authentic* problem. It was initially developed out of the need to help medical school students to learn basic science knowledge in a way that is more lasting and to develop clinical skills simultaneously (Marra, Jonassen, Palmer & Luft 2014; Wood 2015). In business and management education, this approach has been used in the way of asking students to solve ill-structured business problems. This method is found to be highly effective in the study of Hung, Jonassen, & Liu (2008).

Marra, Jonassen, Palmer & Luft (2014) argue that the theoretical underpinning of problem-based approach is constructivism. Generally speaking, constructivists tend to hold a number of key beliefs as 'facts'. For one, knowledge is believed to be *constructed* via human interactions with the real environment. Two, the 'truths' about the world is dependent on how the knower perceives it in his or her mind. Three, meaning and thinking are distributed among the culture and community in which one exists and the tools one uses. Fourth, knowledge construction is *stimulated* by a question or desire to know. Fundamentally, what problem-based learning promotes is situated cognition whereby meaningful and lasting learning takes place best when it is embedded in a social and physical context as similar as possible to that in which the learning would be applied (Brown, Collin & Duguid 1989; Wood 2015). More specifically, for effective learning to occur, a problem-based learning environment must satisfy a number of 'constructivist' conditions: 1) Problem-focused, that is, the content and skills to be learned are organized around specific problems; 2) Learner-centred, that is, the instructor does not dictate but support the learning activities; 3) Self-directed, that is, learners are responsible for generating learning issues through self and peer assessments; 4) Self-reflective, that is, learners monitor own understanding and learn to adjust learning strategies; 5) Facilitative, that is, the instructor supports and models reasoning processes and provides no direct answers to questions (Peterson 2004; Marra, Jonassen, Palmer & Luft 2014).

Technology-led Learning and Assessment

The e-learning method is not new to higher education and has increasingly been seen as a necessary development (Alavi & Gallupe, 2003). The more recent fast advancement of information and communication technology networks, as well as multimedia is pushing instructors in the direction of adopting e-learning methods (Almarabeh 2014; Tsai, Tsai, & Lin 2015; Gündüz, Alemdağ, Yaşar & Erdem 2016). While the traditional form of education still dominates, technology is argued to be effective in facilitating learning and assessment (Lai, Luo, Zhang, Huang, & Rozelle 2015, Sinkovics, Haghirian, & Yu 2009). Some prior literature adapts the constructivist view to argue that effective learning should be the main driver in the selection of technology to enhance design of goals, standards, and assessment (Quellmalz & Kozma 2003; Tsai, Tsai, & Lin 2015). When such a technology is effectively integrated in a specific course, leaners can develop into capable users, including roles of information seekers, analysts, evaluators, problem solvers, decision-makers, creative users of productivity tools, and communicators, collaborators, publishers, and producers.

For example, an empirical study conducted by Almarabeh (2014) found that students in higher education institutions are not only highly qualified and accepting users of e-learning systems but with the desire to utilize them in even more advanced manners. In support of this finding, Sinkovics, Haghirian, & Yu (2009) and Lai, Luo, Zhang, Huang, & Rozelle (2015) find empirical evidence which suggests that e-learning environment (i.e. technology-facilitated situations) is more effective than non-technology-based traditional classrooms in terms of arriving at deeper learning, whereby students appear to engage in thinking and responding to questions differently across these two environments. Students in e-learning environment have more intention to engage in innovative and critical thinking than those in traditional classroom. The identified cause for this is the greater confidence of students gained through numerous trial and error exercises, away from instructors' monitoring.

Conceptual Development: A Three-stage Integrated Approach

Following the review of relevant literature on constructive alignment, discussion of the knowledge 'gap' in IB education, and three teaching methods, this study proposes a three-stage integrated approach for designing and delivering IB courses (Figure 3). The proposed framework in Figure 3 shows that the approach is an integration of three independent methods (threshold concepts, problem – and technology-based learning) in a three-stage consecutive fashion. It provides three sub-types of threshold concepts to be taught across three consecutive periods of the course. Each period is supported by the use of relevant case problems and educational technologies. In Figure 3, it is proposed that period one and two are concerned with basic and discipline concepts. Formative case studies should incorporate these concepts and are delivered via the means of basic educational

technologies. Period three deals with discipline models, which should be incorporated into more complex formative and summative case studies. These are delivered via advanced educational technologies. Fundamentally, the three-stage integration is intended to co-complement and co-support each of the three independent methods for creating greater value for instructors and learners.

Insert Figure 3. Here

Stage 1: Identifying and embedding threshold concepts in IB course

To carry out an effective three-stage integrated approach in course design and delivery, it is proposed that the first stage involves instructors drawing a clear boundary of the area of learning for new learners, by identifying and embedding threshold concepts into the course content at the outset. This includes both teaching sessions and assessments (examples of IB threshold concepts can be found in Figure 4). To implement this change, apart from drawing on the method proposed by Barradell (2013), it is suggested that instructors should reviewing relevant literature found in journal articles and textbooks to identify the most relevant and recent threshold concepts in IB. During this process, three distinct groups of concepts should be identified. The first group can be considered the 'basic concepts' which are the least complex concepts (see Figure 4 row 1). This allows learners new to the course to be better-channeled into deeper learning subsequently. The second group can be those concepts that are considered by the instructor as 'discipline' concepts, characterized as having discipline-defining effects (examples are those in the second row of Figure 4) but are made partially easier as they are built upon the understanding of the 'basic' ones. This group allows the learning process to transit into the third and most complex group. The third group of concepts is considered as 'discipline-models' which should be widely applicable to addressing most critical IB issues (examples can be found in the third row of Figure 4), which must be thoroughly understood (as a result of learning about first two groups). Careful identification of the three groups of concepts during the course design phase is the basis to which learners new to the content can gradually develop cognitive capability from basic conceptualisation towards discipline conceptualisation, and finally arrive at discipline modelling.

Insert Figure 4. Here

Next, it is argued that timings for introducing learners to the three groups of concepts should be spread across three phases, in the order of complexity. Specifically, since it is expected that prior

IB knowledge of new learners to be limited, the way to structure the learning activities of the course is to first introduce those basic concepts during the first few sessions to allow the learners to grasp some basic definitions. It is proposed that a more informal and interactive dialogue should be used instead of a well-structured session on any specific topic. Interaction allows new learners to accept a variety of basic concepts more openly. During the next period, more structured sessions should be in place to introduce them to discipline threshold concepts. These sessions should each be centred on one or two (if closely related) threshold concepts. By building on basic knowledge gained in the first period, this study argues that learners can effectively deepen their understanding (from basic to discipline) in the lecture/seminar setting. During the final period of the course, the most critical subject knowledge should be gained and analytical thinking can be developed. Application of discipline models should be considered as the focus. This involves designing a series of complex IB cases (e.g. internationalization strategy of a family business from Africa, rescue plan of a multinational corporation subsidiary) which require critical analysis and justified solutions from learners. Instructors can revert back to informal session where interactive environment is more effective in facilitating learners to work in teams and trial-and-error their answers. This period particularly requires the complementary use of problem-based method.

Stage 2: Embedding problem-based approach in discipline model application

While the first two periods of the course allow learners to develop more basic cognitive capabilities to ensure learners grasp the basic and discipline concepts, less complex case studies can be used to integrate the concepts in order to test learners' knowledge, the final phase is arguably the most challenging for both instructors and learners. Based on two empirical studies conducted by Liu & Olson (2011) and Brzovic & Matz (2009) about case study being an effective platform for experiential learning of business courses by embedding targeted cases which students can easily relate to (for example, Facebook, Twitter, Apple Inc) during learning sessions for the purpose of explaining key models, students can better grasp the link between concepts and practices. It is proposed that instructors should maximize the use of this approach by offering extensive cases (real or scenario-based) associated with each of the discipline models to learners. During this period, the focus is on learners working independently to provide possible solutions or answers to the cases as their away tasks (so trial and error is encouraged away from monitoring). With the best possible answers/solutions, an interactive dialogue between the instructors and the learners takes place in class to exchange views on the solutions/answers. In this process, a tolerating and encouraging atmosphere should be considered as well as a dual-learning mentality (learners and instructors both gain from the discussions and no 'clear cut' answers should be given). It is argued that by integrating the problem-based approach with the discipline model application, a deeper appreciation of the usefulness of the models in practice and enhanced critical analytical skills can be gained.

Moreover, this study proposes that a problem-based approach along with discipline models should also be used in designing assessments. Assessments should entail learners to solve highly complex IB problems by applying more than one model and more extensive analysis. For instance, in the case of individual essays, learners are required to assess the appropriateness of a given IB model when applied to case companies and offer of alternative models with clear justification. In terms of group presentation coursework, learners can be instructed to work in small teams to identify a recent IB problem faced by a company of their choice and propose one or more solutions derived from their application of relevant models and critical analysis. The additional benefit of this type of assessment is the peer motivation and support gained during the cognitive thinking process of the team members.

Stage 3: Integrating a technology-based approach into the discipline model application and problem-based learning and assessment

Building on the view of constructivism, it is argued that learners gain knowledge more effectively by being in real situations and hands-on, so they can construct their own views of the 'world' through their unique experiences. Learning is thus considered an active and constructive process (Tsai, Tsai, & Lin 2015). Along this line of thinking, educational technology becomes a necessary tool in transforming real IB situations into the virtual world where no 'real' consequences can be caused. Instead, multiple attempts at resolving the same IB problem are granted to allow for the best possible solutions or decisions to be identified. It is argued that the technology-based approach should be extensively applied to IB courses (particularly) during the third period of learning to facilitate problem-based learning using discipline models. This is argued to be particularly useful in addressing the knowledge 'gap' between concepts and practices, since most learners lack real IB experiences (apart from MBAs) and therefore fail to appreciate the link. Virtual IB exercises can help to establish cognitive 'realism' and construction of own experience in the way of linking concepts and practices.

In many cases virtual exercises or business simulation games (BSG) in business and management can be categorized into two types: the basic-level games (which are intended to introduce instructors and learners to this method of teaching and learning; for those more capable users); and the advance-level games (which entails more complex navigations, requires quicker responses, or highly challenging cases). It is proposed that both types of games are useful in complementing threshold concept and problem-based approach. During periods one and two, new learners can be introduced to the more basic games where they can learn to navigate in the simulations, and trial and error in an easier virtual environment. This type of games should incorporate less complex case problems for learners to resolve. As mentioned in Stage 2, such cases should incorporate basic and discipline concepts. As these are simple games, they should be used to formatively assess learning outcomes. The design focus should be on supporting effective learning of basic and discipline threshold concepts, and identifying missing knowledge. The advanced games

should be considered in the third period of learning. They offer highly complex simulations of IB cases. These cases bring problem-based learning to 'life' to offer learners the best possible 'real' experiences. It is proposed that instructors should consider the selection of such games carefully - the chosen simulations should best reflect IB problems and discipline models. Furthermore, advanced games can also be used for assessment whereby learners are required to attempt resolving a given IB case in a limited time.

Overall, it can be argued that the advantages of technology-based approach (in particular IB simulation games) can be maximized to complement problem-based approach by giving learners 'real' life experience, which in turn can fundamentally support effective learning of boundary-defining threshold concepts. In summary, this study proposes an 'onion-rings' effect of the three complementary approaches (Figure 5).

Insert Figure 5. Here

Whilst the three approaches discussed are informed by different streams of literature, this study has proposed an alternative way of maximizing their advantages. It may be that effective learning of threshold concepts cannot be without appropriate problem-based learning and assessment in place, and problem-based learning and assessment cannot be effective without appropriate technology-based environment in place. Fundamentally, the interaction of these three methods is fundamentally intended to improve teaching and learning experiences in the way of eliminating or minimizing the constructive misalignment problem found in IB courses.

Methodology

To investigate the effectiveness of the proposed approach, learner satisfaction and performance were examined. For assessing satisfaction, learners were surveyed through a two-stage process, stage one consisted of questionnaires and two consisted of semi-structured interviews. The questionnaire, which was formulated to evaluate learning experience against the three integrated approaches used in the course, was distributed both in-class and online[1] (see Appendix 1 for the list of questions) at the end of the one-year course. The items used in the questionnaire were built upon previous literature where possible. The questionnaires were administered in English and multi-item scales were used to capture maximum benefits of each of the integrated approach. All measures were

[1] Mixed method collection was used in order to capture information from students who were absent in class. Tests were carried out and no statistically significant differences between data from in-class and online survey were found.

assessed using a five-point Likert-type scale ranging from 'definitely agree' (point 5) to 'definitely disagree' (point 1)[2]. This type of survey can be a useful device to identify whether and how effective a teaching method is (Simpson & Siguaw, 2000). At stage two, interviews with the surveyed students were carried out. Development of the interview questions was also based on the questionnaire items to ensure relevance (see Appendix 3 for the list of questions).

For assessing learner performance, assessment data was collected and analyzed. Both the satisfaction survey and assessment data collection were carried out at a major business school in the U.K., spanning across two years of teaching periods, one cohort studied for one year on the course prior and another cohort studied after the approach was implemented. Final year of undergraduate students of an IB course were the main participants in the research. Students of this level were chosen because effective constructive alignment is particularly important in the final year when compared against year one and two. In total, 81 valid questionnaire responses and 132 assessment data collected from each year were selected according to a number of comparable characteristics. Table 1 statistically summarises the characteristics of the chosen sample groups and the respective overall population.

Insert Table 1. Here

This step ensured that an equal sample size for a more straightforward comparison is achieved (Fraenkel, Wallen, & Hyun 1993). In terms of sample comparability and representativeness, they are assessed by a number of factors. For one, both cohorts were made up of around 60% of male students and 40% of female students. Two, the age range of both cohorts is between 20 and 24 years old. Three, the academic performances of both cohorts at the end of year two were similar in results. Four, both cohorts had not experienced any of the three methods extensively during their year one and two studies. Five, both cohorts were exposed to the three methods (however, the cohort pre-implementation experienced the methods in a highly fragmented and less extensive fashion). For semi-structured interviews, a representative number of 36 students (50% female and 50% male) were chosen from the cohort with experience of the three-stage approach to participate in the interview. They all participated in the first stage questionnaire survey. To avoid potential bias during interview

[2] Respondents were asked to select 'definitely disagree' when a questionnaire item about a particular learning activity is not relevant or used, as well as highly ineffective.

data collection process, face-to-face interviews were mainly carried out by independent researchers from the school in support of this study[3], and away from the instructor.

For quantitative data analysis a series of statistical tests were carried out. Using survey data from both years, item means were first tested in order to compare the average score prior and after the implementation of the approach. Since here the given median score on the five-point Likert scale is '3' ('neither agree nor disagree') and the highest score given is '5' ('definitely agree'), a high item mean score indicates a higher level of satisfaction. Second, when a difference in satisfaction mean scores of the two sample populations is identified, test for its significance using two-sample t test is carried out via Minitab. As for the purpose of comparison in this study, these tests were chosen as the most appropriate. Any other types of analysis were therefore not considered. Next, the same tests, means and two-sample t test, were applied to the three integrated methods (threshold concepts, problem-based, and technology-based learning).Based on prior studies on each of the three methods, relevant items (e.g. questions on basic concepts and discipline models) were grouped into each method (e.g. threshold concept). For assessment data, three sets of numbers (i.e. overall completion rate, pass rate, and overall grades) between the sample populations were compared by calculating their mean scores.

Since the interviews were intended to gather in-depth and qualitative information into the potential effects of the three-stage approach, this study used thematic analysis and Nvivo software to carry out the analysis (Kapoulas, Murphy & Ellis 2002; Mitic & Kapoulas 2012). Under the semi-structured interview design and the methods being the focus, the relevant questions were categorized into their respective method theme (e.g. questions relating to threshold concept are categorized into the 'threshold concept' theme) as well as a course evaluation theme. All answers relating to each of the themes were analyzed simultaneously, making the process easier to identify any differences or similarities amongst respondents. The findings from the interview data can provide deeper understanding of the quantitative results (Saunders, Lewis & Thornhill 2009).

Findings and Discussion

Learner Satisfaction: Questionnaire

Individual learning activity comparison

First, this study unfolds the degree of learner satisfaction of the two samples in the way of assessing their ranking of usefulness of each of the 16 learning activities. Table 2 clearly shows that based on the means calculated, learner satisfaction is experienced variably across the two periods (ranging from 1.000 to 4.605). For instance, the median of items (e.g. case-model application, problem-based

[3] On two unavoidably occasions, interviews were carried out by the instructor. No significant differences in findings were identified.

coursework) relating to applied problem solving and practical knowledge are generally lower (a large proportion is in the range of 2.000 and 3.000) prior the new approach, indicating a lower satisfaction with most learning activities. BSG items have the lowest median of 1.000 which is expected as such methods are not implemented. Additionally, summative case is the only item with the highest median of 4.000, indicating problem case solving as the most effective form of summative assessment. The 'after' period shows most median scores are 4.000. BSG is the only activity with the highest median of 5.000, indicating its high effectiveness in helping learners to develop practical knowledge.

Moreover, it is noticed from the means presented in Table 2 that there is discrepancy, which suggests differences in the means between the two samples for the same activity questions. The calculations of mean and standard deviation of each item show the presence of deviation from the mean of the corresponding sample. This quantifies the difference in learner experience with regard to the effectiveness of each activity and provides a measure of the variability of responses in each question. In particular, for sample 1 basic concepts is the item with the greatest variability in responses (± 1.050) whilst for sample 2 additional problem cases is the item with the greatest variability in responses (± 0.985).

Insert Table 2. Here

In order to evaluate if the observed differences in satisfaction shown in Table 2 are statistical significant, item mean score comparisons between the two samples are performed using two-sample t test (Table 3). The negative values indicate that learners who experienced the new approach scored higher than the other group of learners, which implies that the new approach is more effective in facilitating learning on the IB course. In the analysis, no positive mean difference values were found, leading to the conclusion that the new approach improves all 16 learning activities. This conclusion holds true when the summative case item is excluded. The p-value calculated for this item is 0.746, indicating no significant difference between the two periods.

Insert Table 3. Here

Three-method comparison

In the second stage of analysis, the study compared the results of the two samples per method average score to identify if the differences in factors are statistically significant (Table 4 and 5). For mean

differences, statistically significant negative results reflect greater impact of the methods (the 'after' period) on learners whereas statistically insignificant results to suggest concordance between the two. Results in Table 5 shows for all three methods, we have all negative values in the difference (-1.173, -1.496, and -3.426, with the same p-values 0.001), thus sample 2 perceive the new methods to be highly effective in facilitating learning.

Insert Table 4 and 5. Here

Learner Satisfaction: Interviews

The interview data provides some important detailed explanations to the significant improvement in learner satisfaction found in the questionnaire results. The group of 25 interviewed students who experienced the three-stage approach was noticeably positive about their learning on the course. Following data analysis using thematic analysis and Nvivo, findings are discussed according to the four themes.

Theme 1. IB course evaluation

The positive impact of the three-stage approach proposed is clearly reflected in the interviews with the students. For instance:

> *"[…] I feel extremely satisfied with the learning experience the course has offered me… I have enjoyable learning on this course very much…This course has been the most interesting course for me this year […]"(A24, male, age 21)*

> *"[…] The course exceeded my expectation…This course stands out as my best learning experiences in the university. Given what I have learnt on this course, I feel my knowledge will be extremely useful to my future career in international management […]"(A16, female, age 21)*

These findings reflect not only the positive impact of the approach but the enthusiasms and a sense of achievement students have developed for the subject area.

Theme 2. Threshold concept

In terms of each of the methods introduced at each of the three stages, the breakdown of the learning content into a time-informed structure helps students to manage their own expectations and learn in a more effective and efficient way. For instance:

> *"[…] The way that various concepts and models were introduced to me hugely stimulated my interest in the course. Especially I found the learning process from easier concepts to more complex models allowed me to learn very effectively […]"(A13, male, age 20)*

> *"[…] The early phase of the course mostly introduced me to basic concepts, which I felt were very easy to conceptualize even with my limited subject knowledge at the time. The later phase introduced more complex and applied models and theories, which I was surprised that I did not find them to be very difficult to grasp, a lot was built upon the basic concepts I previously learnt […]"(A32, male, age 21)*

Apart from the usefulness of threshold concepts at different phases of student learning, these findings reflect the important role of instructors in providing clear and well-structured guidance, which in turn promotes an increased level of self-awareness and confidence amongst the students.

Theme 3. Problem-based learning

Students find the second method of problem-based learning to be noticeably challenging. However, their learning experience has been unanimously positive as their ability to solving problems was enhanced, through constant case exercises to better connect theories with practices. For instance:

> *"[…] I felt a real sense of accomplishment when I came up with a good solution for a case study... Creating good solutions for a case study was not as challenging as I thought […]"(A2, female, age 23)*

> *"[…] I found concepts and models very useful when I had to find a well-justified solution to a case problem… The interactive workshops presented me with many different and interesting problems to solve […]"(A27, female, age 20)*

> *"[…] The many case studies I had to solve really pushed me to practice the art of applying models and theories. I feel a lot more confident now in drawing my own conclusions of any business problem…The extensive exercise of solving numerous business problems has opened my eyes to what real business problems are really about […]" (A10, male, age 20)*

This method not only complements threshold concept but equally important, these findings reflect an increased level of confidence amongst students in terms of both theoretical and applied knowledge. The latter will be particularly useful in their future career.

Theme 4. Technology-based learning

The usefulness of technology-based learning to complement threshold concept and problem-based learning is clearly reflected in students' experience with BSG. For instance:

> *"[…] The business simulation games were a huge motivating factor for me…Using information technology to facilitate learning was hugely attractive to me….The opportunities to trial and error as many times as I wanted were encouraging for me […]"(A8, male, age 22)*

> *"[…] The importance of certain theories or models we studied was emphasized in the simulation games. I had to think very carefully which theories or models to use and why…The quality of online feedback I received when I made a wrong business decision was excellent […]"(A 21, female, age 21)*

> *"[…] Knowing I was allowed to make mistakes, I felt encouraged to apply concepts and models when using simulations in search of a right answer…I gained most practical skills using simulations to analyze and solve real business problems […]"(A3, female, age 20)*

These findings show that technology-based learning and particularly BSG in IB course is very useful in providing a tolerating and encouraging learning environment, which IB students particularly need in order to gain best applied knowledge. Technology-based learning supports the learning of threshold concepts and development of problem-solving skills.

Assessment Performance Comparison

In terms of assessment, the average scores of each of the three factors (completion rate, pass rate, and grade) are calculated and compared across the two samples (Table 6). It is clearly evident that all three areas are improved after the approach is implemented, particularly a more significant improvement in the pass rate for the course (from 86% to 92%) and student overall grade (from 55.6% to 67%).

Insert Table 6. Here

In the case of the IB course, these analyzed results clearly show the positive impact of the approach on student learning experience and academic achievement. In terms of improving the theory-practice misalignment problem in IB education which this study initially set out to address, the

experiment has provided some useful insights worth discussing. For one, the introduction of threshold concepts (from basic concept in stage 1 to discipline model in stage 3) generated significant benefits in terms of enhancing students' academic knowledge relating to the subject area. This change is in line with an empirical study conducted by Wright & Gilmore (2012) that made similar changes to their management courses and found positive outcomes of the changes. It is also worth noting that both problem-based and technology-based methods have also significantly contributed to students' understanding of the subject (including key theories, models, and frameworks), practical business skill development (such as problem solving, research and analysis, and critical thinking), and the development of a more effective mind-set which can better appreciate the linkages between theory and practice. This implementation is in line with the two separate streams of literature, one suggests that problem-based learning enables better cognitive constructive of the 'real world' (Hung, Jonassen, & Liu 2008; Marra, Jonassen, Palmer & Luft 2014) and the other argues technology-based learning environment can enhance learning experience (Sinkovics, Haghirian, & Yu 2009,Lai, Luo, Zhang, Huang, & Rozelle 2015).

This paper adds to these streams of literature by offering an integrated and overarching approach to enhancing learning using these methods. Based on the findings, it is argued that the adoption of any one stand-alone method is likely to be useful though its value and usefulness in addressing theory-practice knowledge gap is greater when the three methods are carefully integrated in a manner that simultaneously complement and support each other.

Conclusion

This paper first reviews some common problems associated with constructive misalignment found in prior literature. Since there has been limited research and interest in addressing the knowledge 'gap' problem prominent in IB education, this study propose a three-stage integrated approach, encompassing the use of threshold concepts complemented by problem-based learning using simulation games. Although the three methods have been well documented in previous studies for their benefits and impact on learning, it is argued that their value can be enhanced significantly when implemented in an IB course in a complementing and co-supporting manner.

Following the empirical analysis and evaluation of the impact of the new approach discussed in the previous section, he proposed three-stage approach has some important merits. Taking the learner perspective, the assessment results of the final year students reflects increased confidence in their subject knowledge and ability to resolve IB problems. For instructors and course designers, the exercise of identifying and embedding threshold concepts into the course brings a key benefit of providing a well-defined structure to the course (from basic concepts in period one to discipline models in period three). However, in some cases IB courses are taught in a shorter time span (e.g. one

semester) where learning and teaching objectives may be comparatively less complex. It is thus recommended that instructors intending to apply the three-stage approach to be careful in selecting and embedding the more relevant threshold concepts in problem-based learning, and a BSG which is less complex to implement and allows for quicker completion.

As with any empirical research, there are limitations with this study. Student satisfaction as a measurement embeds some weaknesses as a main source of information on quality of teaching and learning outcomes. This is because learners are nowadays overloaded with standardized questionnaires (at course, programme, and institutional levels) of this type, causing potential response bias. It is also recognized that the assessment data as a measurement can only partially capture student learning (Marsh and Roche 1997). To compensate for these potential problems, it is suggested using future research adopting secondary qualitative-based methods such as in-class observation. This would provide for a useful addition to standard questionnaires and help to gain qualitative insights into learner satisfaction under the three-stage approach. Furthermore, sample from one social context in this study may not represent learners from other institutions or countries. Fundamentally, a careful generalization is needed when applying to other contexts when differing criteria for satisfaction and outcomes are sought. Moreover, this study has focused on the recently prominent business simulation games as the main teaching technology for IB courses; it is recommended future studies to examine the other available technologies such as the (upcoming) web-based cross-country business challenges and virtual discussion platforms. It is recommended that future studies should explore the effectiveness of new technologies as they advance. To conclude, this study has developed an integrated approach useful for IB course design. It is believed that this new approach is likely to help instructors and learners to achieve intended outcomes more effectively by better addressing the common issue of constructive ‘misalignment’ in IB education (Figure 6).

Insert Figure 6. Here

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Appendix 1. Questionnaire Items

For each of the statements listed below, show the extent of your agreement by marking the one box which best reflects your *current view of this course*. Please mark your responses by placing a cross in appropriate boxes, like this [×].	Definitely agree	Mostly agree	Neither agree nor disagree	Mostly disagree	Definitely disagree
○ The early lectures were very useful as they introduced me to some basic concepts	[ ]	[ ]	[ ]	[ ]	[ ]
○ The later lectures were very useful as they introduced me to discipline related models and theories	[ ]	[ ]	[ ]	[ ]	[ ]
○ The business problems helped me to make the connections to the theories	[ ]	[ ]	[ ]	[ ]	[ ]
○ The outside-class cases further helped me to make the connections	[ ]	[ ]	[ ]	[ ]	[ ]
○ The interactive workshops presented me with interesting cases and complex problems to solve	[ ]	[ ]	[ ]	[ ]	[ ]
○ The interactive workshops allowed me to apply and critique models and theories in a friendly environment	[ ]	[ ]	[ ]	[ ]	[ ]
○ The workshops allowed the tutor and peers to feedback on my solutions	[ ]	[ ]	[ ]	[ ]	[ ]
○ The team project challenged me to conduct quality research and analysis	[ ]	[ ]	[ ]	[ ]	[ ]
○ The team project allowed me to make a clear link between knowledge and practice	[ ]	[ ]	[ ]	[ ]	[ ]
○ The team project challenged me to examine real business problems	[ ]	[ ]	[ ]	[ ]	[ ]
○ The individual projects challenged me to think independently and critically	[ ]	[ ]	[ ]	[ ]	[ ]
○ The individual projects allowed me to make a clear link between knowledge and practice	[ ]	[ ]	[ ]	[ ]	[ ]
○ The individual projects gave me opportunities	[ ]	[ ]	[ ]	[ ]	[ ]

to apply knowledge and find the best possible solutions					
○ The business simulation games (BSG) allowed me to trial and error to identify the best possible solutions	[ ]	[ ]	[ ]	[ ]	[ ]
○ The BSG hugely facilitated my development of applied knowledge	[ ]	[ ]	[ ]	[ ]	[ ]
○ I feel more confident in addressing real business problems	[ ]	[ ]	[ ]	[ ]	[ ]

Appendix 2. Interview Questions

No.	*Items*
1	In a few sentences, how would you evaluate this IB course overall?
2	In a few sentences, how would you evaluate the time-informed structure in which simple IB concepts were first introduced, followed by more and most complex ones?
3	In a few sentences, how would you evaluate the usefulness of case studies in your learning and did you find knowledge of IB concepts helpful to you in addressing some of the case problems? How?
4	In a few sentences, how would you evaluate the usefulness of BSG in complementing your learning of concepts and problem-solving?

Figures and Tables

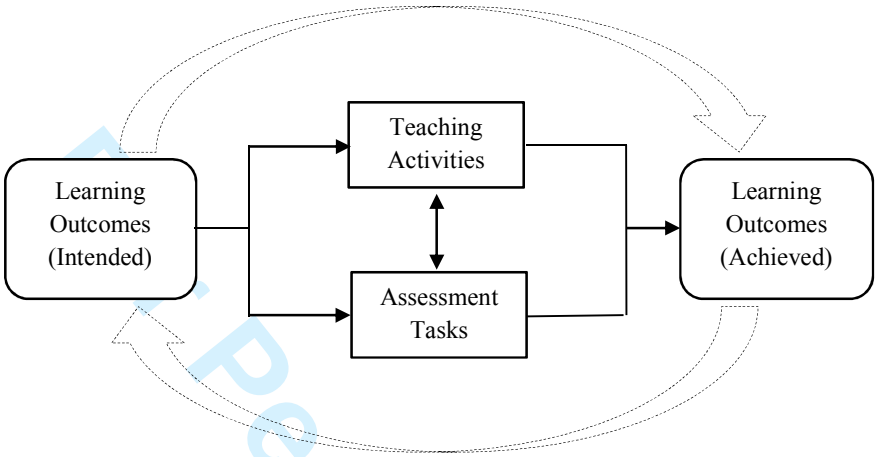

Figure 1. The teaching system, by Vitale (2010)

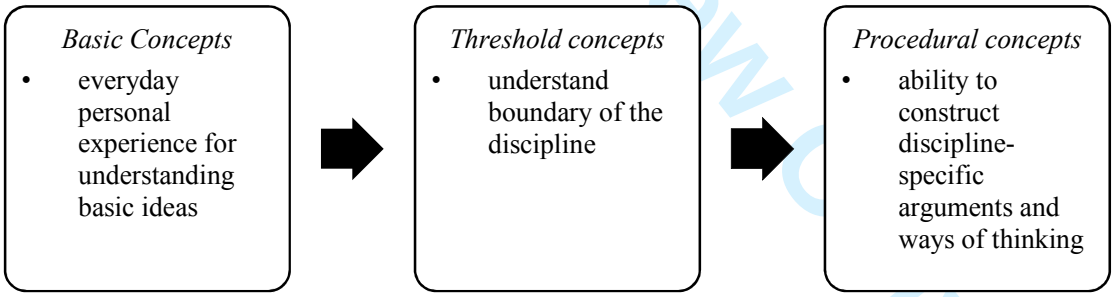

Figure 2. The conceptualisation process, by Davies and Mangan (2007)

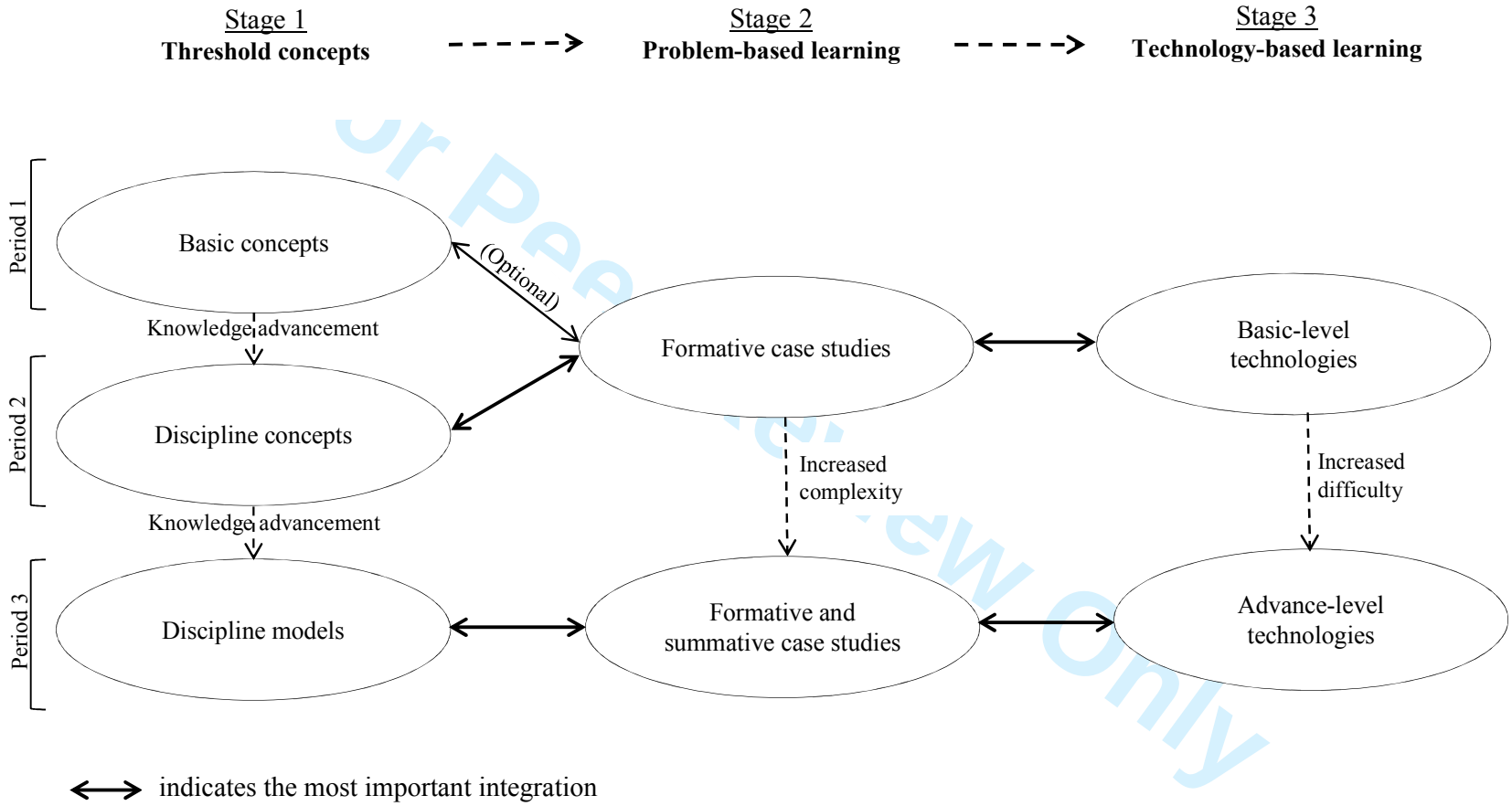

Figure 3. The proposed three-stage integrated approach

Type of Conceptual Changes	*Examples in International Business*	*Time*
Basic Concepts	Definition of business strategy, organisational structure, globalisation, strategic analysis	Period 1
Discipline Threshold Concepts	Definition and function of global value-added activities, typologies of multinational enterprise strategies and structures, firm internationalisation	Period 2
Discipline Modelling Concepts	Application of global value chain analysis, resource-based view and transaction cost economics analysis, Uppsala model, diamond model	Period 3

Figure 4. Cognitive construction and time allocation

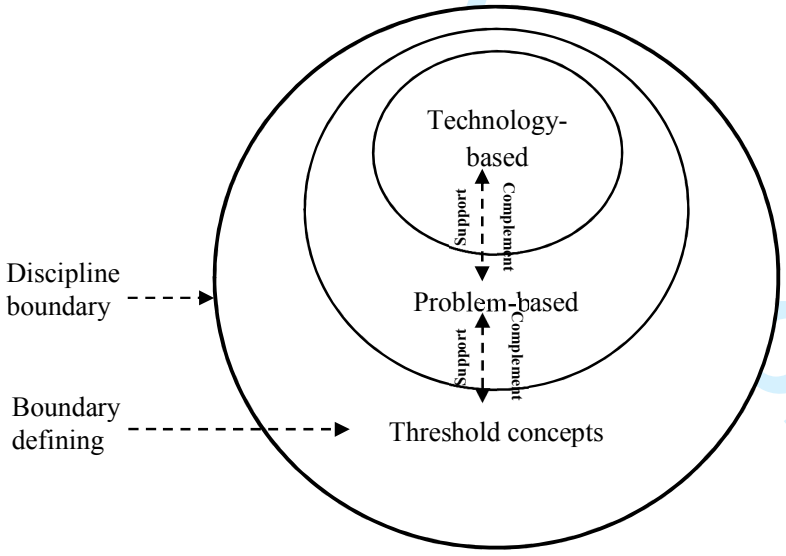

Figure 5. Onion-rings effect of the three–stage approach

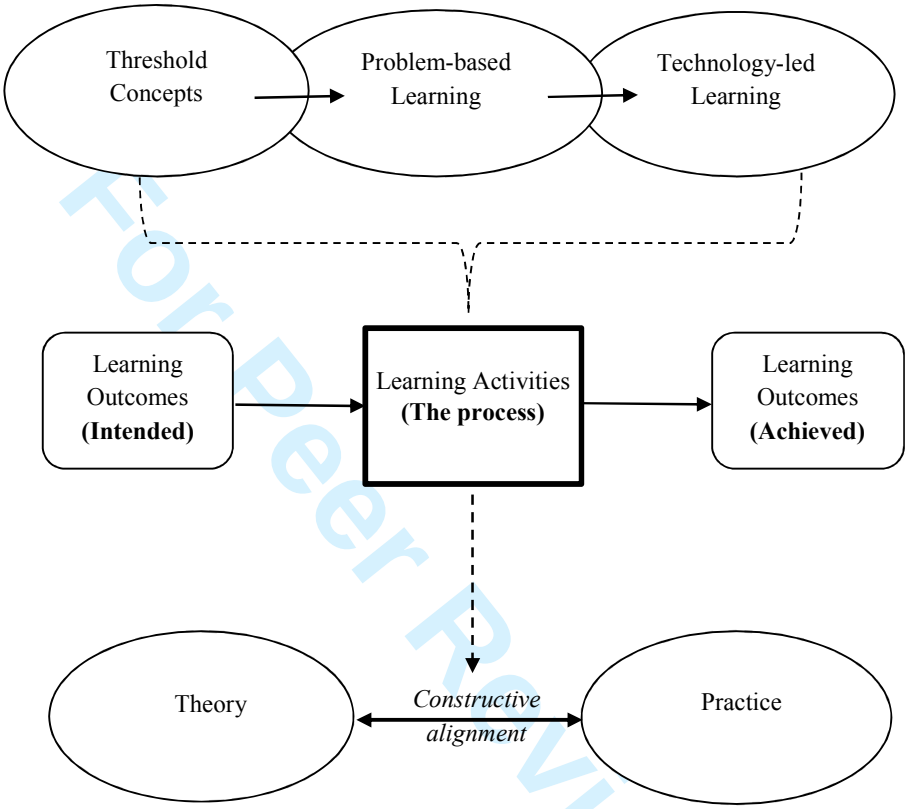

Figure 6. Three-stage integrated approach and its impact on effective learning

Table 1. Summary of the chosen sample groups and the overall population

Sample	*Size*	*Gender*	*Age range*	*Average grade (year two)*
Control group	81	38 male & 43 female	20-21	55%
Total population	157	91 male & 66 female	20-24	51%
Treatment group	81	45 male & 36 female	20-24[4]	54%
Total population	144	82 male & 62 female	20-24	52%

[4] 3 students were between the ages of 22-24 whilst the rest were 20-21.

Table 2. Item mean scores, standard deviation, and median scores, prior and after implementation

	Before			***After***		
Items	*Mean*	*Std. dev.*	*Median*	*Mean*	*Std. dev.*	*Median*
Basic concepts	2.815	1.050	3.000	4.222	0.652	4.000
Discipline models	3.099	1.056	3.000	4.037	0.697	4.000
Problem cases in lecture	2.050	0.789	2.000	4.062	0.556	4.000
Additional problem cases	1.914	0.778	2.000	3.407	0.985	4.000
Problem cases in seminar	2.790	0.945	3.000	3.605	0.786	4.000
Model-case exercises	2.926	1.010	3.000	4.482	0.550	4.000
Case feedback	2.889	0.908	3.000	3.543	0.807	4.000
Summative cases	3.407	0.985	4.000	3.457	0.975	4.000
Model-case application	1.815	0.654	2.000	3.901	0.930	4.000
Practical knowledge[5]	1.728	0.652	2.000	3.926	0.891	4.000
Problem-based coursework	2.222	0.866	2.000	3.630	0.782	4.000
Model-case application	2.099	0.735	2.000	4.025	0.724	4.000
Practical knowledge[6]	1.728	0.633	2.000	3.988	0.955	4.000
BSG for theories	*1.000	0.001	1.000	4.284	0.597	4.000
Application via BSG	*1.000	0.001	1.000	4.407	0.565	4.000
Practical knowledge[7]	*1.000	0.001	1.000	**4.605	0.517	5.000

*lowest mean score prior and after; **highest mean score prior and after

[5] Small team-based assessment (apply threshold concepts for case problem-solving)
[6] Individual written coursework (apply threshold concepts for case problem-solving)
[7] Business simulation games (problem-solving using threshold concepts in simulations)

Table 3. Item mean score comparison

Item	*Mean Difference*	*t*	*df*	*T test (p-value)*
Basic concepts	-1.407	-10.25	160	0.001
Discipline models	-0.938	-6.67	160	0.001
Problem cases in lecture	-2.011	-18.75	160	0.001
Additional problem cases	-1.493	-10.71	160	0.001
Problem cases in seminar	-0.815	-5.97	160	0.001
Model-case exercises	-1.556	-12.18	160	0.001
Case feedback	-0.654	-4.85	160	0.001
Summative cases	-0.050	-0.32	160	0.746
Model-case application	-2.086	-16.51	160	0.001
Practical knowledge	-2.198	-17.92	160	0.001
Problem-based coursework	-1.408	-10.86	160	0.001
Model-case application	-1.926	-16.80	160	0.001
Practical knowledge	-2.260	-17.75	160	0.001
BSG for theories	-3.284	-49.51	160	0.001
Theory-case application	-3.407	-54.27	160	0.001
Practical knowledge	-3.605	-62.76	160	0.001

Table 4. Method mean scores, standard deviation, median scores, prior and after implementation

	Before			***After***		
Method	*Mean*	*Standard deviation*	*Median*	*Mean*	*Standard deviation*	*Median*
Threshold concepts	2.957	1.059	3.000	4.123	0.679	4.0000
Problem-based learning	2.324	0.988	2.000	3.820	0.878	4.0000
Technology-based learning	1.000	0.001	1.000	4.426	0.565	4.0000

Table 5. Method mean score comparison

Method	*Mean Difference*	*t*	*df*	*T test (p-value)*
Threshold concept	-1.173	-8.39	160	0.001
Problem-based learning	-1.496	-10.19	160	0.001
Technology-based learning	-3.426	-54.57	160	0.001

Table 6. Comparisons of completion rate, pass rate, and grade (in percentage)

Assessment	*Before*	*After*
Completion rate	90%	94%
Pass rate	86%	92%
Grades	55.6%	67%