

Project title: An Adaptive blended learning platform for business teachers and students to work as a learning community

Project period: 24 months, 1 Sept 2019 – 31 August 2021

Principal Investigator:

Co-Investigators:

1. Introduction

This project's purpose will be to (1) **construct an adaptive blended learning community for teachers and students** and (2) **investigate and inform educators about the student learning patterns** that result from a blended learning approach.

Practical issues: This proposal is a response to the recent increase in flexible media, methods and applications for interactive learning. Although some business teachers have tried to adopt e-learning resources (such as flipped lessons, online materials or) to provide greater diversity in their teaching methods, students rarely use these resources to enhance their academic performance. The problem is that most teachers have not been trained to use e-learning resources to teach business subjects, and this inexperience presents a barrier that prevents them from developing comprehensive e-learning resources.

Theoretical issues: Few researchers to date have investigated the effects that hybrid, technologically flexible delivery initiatives can have on learning outcomes (Arbaugh, 2000; Kirkpatrick and McLaughlan, 2000; Oliver and Omari, 2001). More specifically, very little research has been done to test such novel approaches to education in the fields of accounting or business management (Borthick and Jones, 2000; Broad et al., 2000; Bryant and Hunton, 2000). This project will address these practical and theoretical issues.

General Idea: To address the practical and theoretical issues, the proposed project will use a **professional learning community approach** to address the needs of diverse students and teachers in secondary school business education. It will aim to **develop an adaptive blended learning platform for teachers and students** to facilitate their teaching and learning both inside and outside of school. In this learning community, teachers will work with EdUHK professionals and teachers in the to develop blended learning materials for various business topics. They will experiment with integrating these materials into their teaching platforms or their students' self-study platforms. We will also develop a navigation mechanism for each business topic. Based on the navigation map, we will build an adaptive assessment system for students in the form of multiple choice questions (MCQ). The term 'adaptive assessment' means that the assessment content will be individualised for each student according to his or her ability, which will facilitate self-directed learning. The students will get opportunities to challenge or confirm their business knowledge through answering the adaptive assessment MCQ.

Most importantly, this project will not only provide blended learning materials for teachers and students, but also expand the learning community network from the initial pilot schools to other business-subject teachers across Hong Kong. The **adaptive blended learning platform** will provide an environment in which business teachers can share, upload and actualise their innovative ideas for teaching, with the support of EdUHK. This platform will be an **ecological system** for developing business teaching materials. In addition, the project will enable EdUHK to generate big data on student learning from the platform, for the analysis of student learning patterns.

2. Project Needs

2.1 Gaps/problems and needs to be addressed by the project

2.1.1 Needs for catering to the diversity business students' learning styles

Catering to students' diversity in learning styles is a high priority in business education. The design of courses in business, accounting and financial studies requires a broad understanding concerning the knowledge and skills that students need to gain a solid foundation in the field and to integrate their knowledge with actual practice. In the last ten years, many business teachers have realised that their students have a wide diversity of learning styles and learning difficulties. The traditional teaching approaches may be time-consuming, and create dynamic group dilemmas or limit the progress of talented students (Robinson, 1990). To better deal with this problem of learning diversity, there is a need to cultivate the students' capacity for self-directed learning, especially in business subject (Rankin et al., 2003; Dowling et al., 2003).

2.1.2 Needs of business students for flexible learning with information and communications technology (ICT) assistance

Promoting flexible learning environments with information and ICT assistance is an essential strategy for enabling business students to understand complicated business concepts and gain updated information. Nowadays, 98% of Hong Kong teenagers (aged 15 to 19) have smartphones (Census and Statistics Department, 2017). Access to the Internet, with its myriad of learning materials, is now a simple matter, and students are able to access business knowledge whenever and wherever they wish. Therefore, college teachers increasingly see the need for transformations in how curriculums are delivered through ICT (Mayes et al., 2001; Beetham, 2013). They want to open up new ways for their students to choose their own technologies or methods of instruction (McGill, 2011). Students need flexibility in the ways they can acquire up-to-date business knowledge and information via ICT devices, as they move between school lessons and study at home.

2.1.3 Needs for student learning platforms and teacher learning communities

In March 2018, we conducted a survey to collect business teachers' opinions on Hong Kong business education. Responses from over 88 secondary schools were received, representing 25% of the secondary schools that offer business-related subjects. We found that there is a real need to construct a learning platform for students and teachers. For **business students**, there are plenty of business-related learning resources on the Internet, but these resources are not systematically categorised, or tailor-made for use by secondary school students. Therefore, 82% of the surveyed teachers reported that their students need an online learning platform to facilitate their learning on business subjects. With such a platform, the students could assess quality learning materials and communicate with their teachers at any time. In our survey, we also invited teachers to state their preference, in term of management, financial and accounting, of providing support. Accounting is around 60%, while management and financial are 30% and 10%.

For **business teachers**, there are currently few means or systems for supporting their individual efforts to improve teaching methods. Each secondary school has only one or two business teachers. It is difficult for these teachers to develop school-based materials for meeting the specific needs of their students without access to additional human or technological resources. In our survey, 88.3% of the participating teachers stated that they wanted more teaching and learning resources or systems for sharing successful methods among teachers. Such resources could help to meet the teachers' needs for additional means and approaches in teaching. For a long-term solution, the participating teachers expressed hope that a supportive learning community could be formed for sharing up-to-date business education information and for providing school-based support. Undoubtedly, a learning platform would help, not only as a shared source of alternative learning materials, but also as a means for teachers to develop professional learning communities across many schools.

2.2 Utilising blended learning for addressing educational needs

2.2.1 The nature of blended learning

We understand that there is no 'one size fits all' pedagogy for nurturing students' development. To address the project's goals, we **propose to use blended learning to teach business subjects** in secondary school. Blended learning is an effective integration of various modes of delivery, models of teaching and styles of learning. Such integration results from adopting a strategic and systematic approach to using technology, combined with the best features of face-to-face interaction (Wong et al., 2006; Krause, 2007). Blended

learning offers students a chance to choose and utilise resources in a great variety of ways, and to control how these resources are combined (Bonk et al., 2006). Blended learning has great potential to give students substantial flexibility in choosing how they will interact with their learning environment (Wong et al., 2006).

2.2.2 Blended learning platform for business education

2.2.2.1 Greater flexibility

Blended learning enhances teachers' and the students' flexibility in navigating the learning process. Such flexibility may be offered in the class structure, the delivery of content or the options for alternative learning and teaching methods (Barbara, 2007). In blended learning, **students** enjoy **flexible learning opportunities** that cater to their individual needs through mobile devices that offer greater flexibility (Parsons, 2012). Blended learning makes instruction more accessible. It reduces the amount of time spent on face-to-face learning activities or lower-order thinking (Barbara, 2007).

For **teachers**, the goal of a blended learning approach is to combine the best features of in-class teaching with the best features of online learning, in a way that promotes flexible, self-directed learning opportunities for students (Norberg et al., 2011). The teacher can **redesign the structures of delivery in conveying business knowledge and skills to the student** through providing blended materials on a shared learning platform. This approach can create new ways for students to learn before class, during class or after class (Shibley, 2009). In situations where blended learning caters to the students' individual needs, the teacher can place more emphasis on stimulating the students' higher-order thinking about the lesson contents.

2.2.2.2 Self-directed learning for catering to learning diversity through adaptive assessment

Blended learning offers a useful process for helping students to form **self-directed learning habits through engaging in adaptive assessment** (Kerr, 2016). In **blended learning**, the students can access teaching videos, receive immediate feedback on assessments, interact with their teachers and generally learn in a much more flexible way (Hiralaal, 2012). With the support of adaptive assessments, blended learning platform provide suitable, multiple assessment materials and paths that are based on the learners' own characteristics (e.g., personal behaviour, learning preferences, learning styles and prior knowledge) (Barbara, 2007; Dziuban et al., 2016; Nakic et al., 2015; Thorne, 2003). Such methods of self-assessment give students new means for further developing their metacognitive abilities (Koç et al., 2015). In this type of system, talented students can focus on more challenging questions, and less advanced students can focus on building their basic knowledge. Adaptive blended learning assessments widen student participation (Bonk et al., 2002) and meet students' expectations (Dziuban et al., 2004) in terms of personally appropriate content and affective factors (Liu et al., 2017).

2.2.2.3 Teacher professional learning communities with big data analytics

Blended learning systems can also offer a **professional learning community for teachers**, enabling them to facilitate student learning through big data analytics. A blended learning platform can serve not just one specific school, but all secondary schools. Teachers in many schools can share successful, up-to-date resources on the platform. In a blended learning community, teachers can access information and expertise to gain a broader perspective on the issues they face, and to find tools that meet their individual needs (Allan et al., 2006). Such sharing platforms can allow teachers to expand and improve their own professional teaching practice (Lewis et al., 2007) and to achieve higher synergy with fellow teachers.

Another important capability of blended learning communities is that they can **generate big data** for scholars and teachers to analyze the learning behaviours and patterns of students (in this case, students in business management, finance and accounting programs) (Bienkowski et al., 2012). The analysis of such big data in business education makes it possible for teachers to make recommendations for or modifications to their students' personalised learning paths (Ferreira, 2013). With regards to the synergy of the blended learning community among business teachers, such communities can facilitate teacher flexibility in serving and assessing their students (Dickfos et al., 2014).

2.3 Project objective (PO)

The ultimate goal of the proposed project will be to **construct an adaptive blended learning community for teachers and students**. With the support of EdUHK, we propose to involve business teachers and form a blended learning platform for sharing valuable resources. Business students will benefit from the adaptive

assessment system used in this platform, and we will collect big data from the system to analyse the students' learning behaviours and patterns. A creative pedagogy that applies blended learning will be developed through analysing these data. This process will help to establish a rich learning environment for business students and teachers. The objectives of the proposed project will be as follows.

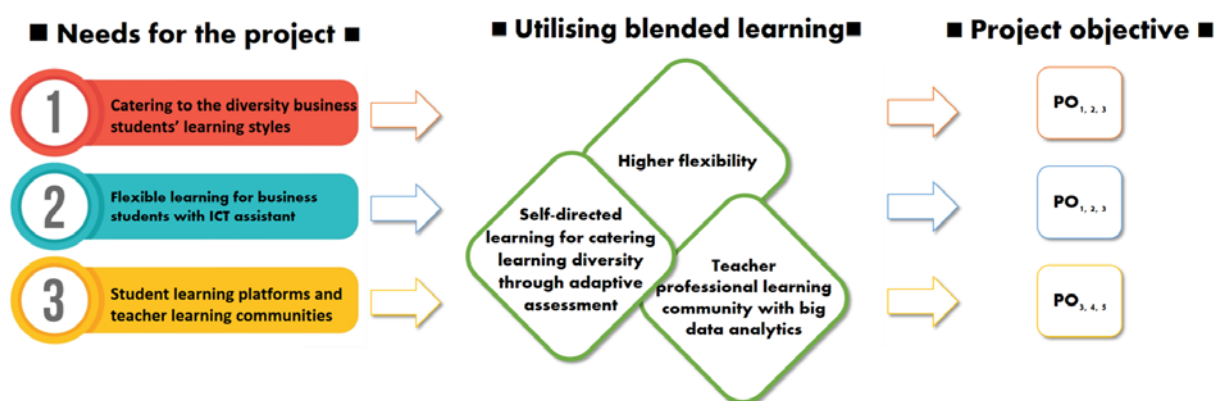
PO1. **Strengthening teachers' curriculum design and pedagogical capabilities** through promoting flexible, blended learning for business, accounting and financial studies students

PO2. Enhancing teachers' competence in **using adaptive blended learning assessments to meet the diverse needs of business students**

PO3. Producing a repository of practical, blended learning resources to help business students in their pursuit of **self-directed learning and learning performance**

PO4. **Connecting teachers across all secondary schools with the university**, to create a business teachers' learning community that will share resources and gain insights on their **students learning behaviours and patterns**

PO5. **Maintaining a sustainable business education community** for all stakeholders, with the support of a blended learning platform.



3. Innovations and Deliverable

In this section, we explain the innovations and contributions that this project will offer, and outline the deliverable of the project in relation to the innovations and feasibility.

3.1 Feasibility of the project

To make this project feasible on the scale envisioned, we will form a team including members with several kinds of expertise. To address the issue of teacher proficiency, we have invited the recipients of the **Teacher Award for Business and Financial Education** and **Principal**

, to participate in this project. Most of these people have considerable experience in using flipped lessons or IT devices to facilitate student learning. Due to their extensive professional experience and proactive engagement in new teaching methods, we feel that these people will ensure the quality of blended learning on the proposed platform. Furthermore, a well-constructed teacher training course for enhancing teacher proficiency in blended learning will help business teachers to benefit from the project. Therefore, **Professor** will supervise development of the teacher training course, and will oversee its content and operation. Concerning the technical capacity for developing the platform, **HKEdCity** can provide the VLE platform to support the project.

Last, EdUHK will contribute to constructing a navigation mechanism for business education in the blended learning platform. We will need to develop a navigation mechanism (Huang et al., 2012) by which users can find their way through the business curriculum, the branches of business knowledge and the alternative approaches to business-related pedagogy. To integrate blended learning into the business curriculum, pedagogy and assessment process, **Professor** (Associate Vice President) and **Mr**

will provide their expertise in business education. With her in-depth understanding of business education as practised around the world, Professor has been heavily involved in developing and teaching business studies courses for a whole range of pre- and in-service teacher education programs at both the undergraduate and post-graduate levels is one of the awardees of the Teacher Award for

Business and Financial Education. Over the last five years he has developed a series of school-based entrepreneurship and finance curricula that incorporate blended learning. These two experts have an immense amount of subject-specific knowledge that will be relevant in establishing the teaching contents, materials and adaptive assessments. These experts will also contribute to enhancing teacher proficiency in blended learning. Furthermore, **Dr** has had direct experience of developing a fully web-based learning Master's program (Executive Master of Arts in International Educational Leadership and Change) at EdUHK. Owing to their outstanding performance in providing blended learning, she and her colleagues were awarded a teaching development grant and the President's Award for outstanding Performance in Teaching 2016/17. Dr has also studied and published extensively on the subject of problem-based learning. With her valuable experience, she can contribute to designing an effective blended learning platform, and to conducting a study on its performance.

Table 3.1 Linkage between challenges and contributors

Feasibility	Contributors
Teacher proficiency in blended learning	Recipients of the Teacher Award for Business and Financial Education, Principal , Professor , Professor and Mr
Technical challenges in developing the platform	HKEdCity, Mr
Navigation mechanism for business education	Professor , Mr , Dr

3.2 Innovation – Facilitating business education with a blended learning management system

Integrate blended learning into business curricula with big-data analytics

This project will be the **first attempt to systematically address the challenge of developing business curricula designed to enable self-directed blended learning**. The proposal is in complete alignment with the key themes of the 2018 QEF, which concerned the application of information technology. The proposed project will adopt a blended learning approach to enable business education by linking the students' levels of learning with a level-appropriate cross-school business teaching and learning system. At the student level, the platform will focus on fostering each student's self-directed learning through offering greater flexibility. At the cross-school business teaching level, the platform will apply big data analytics to study the business students learning behaviours and patterns for the sake of improving business pedagogy.

This project will aim to **enhance teachers' adaptive competencies and pedagogical strategies in meeting the diverse learning needs of business students through blended learning**. The proposed platform will furnish teachers with the knowledge and skills for mastering blended learning resources for a school-based curriculum. The experts from EdUHK and HKEdCity will work with local teachers to develop a navigation mechanism for business education, which will allow the teachers to smoothly adopt the blended learning system. The results of this project will contribute to forming a successful example of the blended learning approach, which can be applied to other subjects in Hong Kong schools, especially for elective subjects whose teachers have limited human resources at the school level.

Benefits for the business teacher learning community

This project will also benefit business teachers by helping them to **engage in forming a learning community**. In the blended learning platform, successful business teachers will be able to share their experience with other business teachers through seminars or training workshops. Teachers will exchange resources and share their successful practices with the project's expertise assistant. The role of the university will be to support and maintain the teacher community by providing up-to-date business education pedagogy.

3.2.1 Deliverable (D) (Appendices 1)

The project deliverable will provide practical examples for the teachers of other elective subjects, and will be useful for the professional development of business teachers. These deliverables will be as follows.

D1. The EdUHK experts and pilot teachers will conduct a **training session for business teachers to master blended learning** in relation to their subject areas. We will approach master business teachers to join the program development team. To this end, we will produce a resources package that will include (1) a teachers'

guide for using and contributing to the blended learning platform, (2) a set of blended learning examples and (3) a guide to the navigation mechanism for the business education platform.

D2. We will establish a **navigation mechanism for business education** as a means to construct adaptive assessment systems and to facilitate teachers in designing school-based curriculums. The navigation mechanism will help teachers to identify the critical sequence for teaching business knowledge at school. This deliverable will support the deliverable from the first deliverable.

D3. We will **develop an adaptive blended learning platform** to facilitate students' learning. As the major component of this project, this platform will be divided into two categories, one concerned with 'teaching and learning for business subjects' and the other concerning the 'teacher professional learning community'. The section on the teaching and learning of business subjects will contain resources on mind mapping, flip videos, reading materials and adaptive assessments. The section on the teacher professional learning community will include teachers' guides, examples of successful teaching, and contributor concerns.

D4. We will set up a **business education network link for teachers in the blended learning platform** to connect the teachers of different schools with the university.

D5. We will organise a range of **conferences** to promote inter-school awareness regarding the use of blended learning for enabling adaptive learning, and to transfer the project's products and learnings to learning platforms for other elective subjects.

D6. We will conduct an **evaluation exercise** to measure student performance and collect feedback in the project. The result contributes to confining the best practice for other business teachers as a reference.

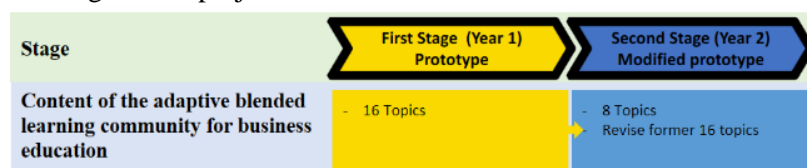
Deliverable	Measurement	Fulfilling PO
D1. Training for business teachers	<i>Training Workshop</i> - 1 per year, 2 at the end of programme	PO _{1,2,4}
D2. Navigation mechanism for business education	<i>Guideline of blended learning</i> - 1 set (Stage 1) <i>Navigation map</i> - 1 navigation map for each topic	PO _{2,3}
D3. Adaptive blended learning platform – Two sections	<i>Teacher training resource package</i> - 1 set (Stage 2) <i>Video</i> - Minimum 5 videos for each topic <i>Reading materials</i> - 1 reading materials for each topic <i>Adaptive MCQ</i> – 10 - 20 Adaptive MCQs for each topic	PO _{1,2,3,4}
D4. Business education network	<i>Resources sharing</i> - 6 examples <i>Communication</i> - 1 communication platform	PO _{1,4,5}
D5. Conference	<i>Cross-subject blended learning conference</i> - 1 day conference	PO _{1,4,5}
D6. Student performance report	<i>Evaluation exercise</i> - evaluation exercise per stage	PO _{1,2,3}

4. Project Design

4.1 General idea of the project

As indicated in objective D3, the **adaption of an adaptive blended learning platform will be the major contribution** of this project. The proposed platform will be **divided into** two categories, '**teaching and learning for business subjects**' and '**teacher professional learning community**'. For more detailed information, please refer to **Section 4.4**.

The platform will deal with **24 topics** in total. We decided to divide these topics into **2 stages (2 years)**. In the **first stage**, a pilot study will be conducted with a small sample of teachers. This study will serve to develop the prototype for the blended learning platform and provide some sample materials. Our team will modify the platform by considering feedback from teachers and students. With the initial intent of sharing some successful experiences, we will invite more schools to participate in the project. At the **second stage**, we will aim to consolidate the project participants' experience and develop a finalised version of the resource package for all business teachers. We will also use the platform as a network for developing other business-related materials for teachers and students in the future. In Sections 4.2 to 4.8, we provide detailed explanations on each stage of the project.



4.2 Timeline for two stages

Table 4.1 Schedule of project activities (24 months, 01 Sept 2019 – 31 Aug 2021)

Deliverable	Colour	Fulfilling project objectives
D1. Training for business teachers		PO _{1,2,4}
D2. Navigation mechanism for business education		PO _{2,3}
D3. Adaptive blended learning platform – Two sections		PO _{1,2,3,4}
D4. Business education network		PO _{1,4,5}
D5. Conference		PO _{1,4,5}
D6. Evaluation exercise		Measuring D _{1,2,3,4,5} & PO _{1,2,3}

Project activities		2019				2020								2021													
		9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8		
Stage one	Develop pilot topics blended learning materials - Including navigation map, Video for each critical knowledge, reading materials, and Adaptive MCQ	Sept - Jun																									
	Construction of adaptive blended learning platform	Sept - Oct																									
	Training workshop for participating schools' teacher	Sept - Oct																									
	Evaluation exercise - Lesson observations, reflections, interviews and feedback etc.										Jun - Aug																
	Cross-subject blended learning conference										Jul - Sept																
	Resources sharing: outstanding business curriculum and pedagogy										Since Jun 2020																
Stage Two	Develop the rest of accounting blended learning materials																										
	Updating guidance of business subject blended learning																										
	Training workshop for all schools' teachers																										
	Evaluation exercise - Lesson observations, reflections, interviews, survey and Big data analysis etc.																										
	Cross-subject blended learning conference																										
	Draft and submit final report																										
		24 months																									

4.3 The sampling method

Principle – As the purpose of this project is to construct a flexible blended learning platform for teachers and students, we will need to consider the students’ abilities and the school contexts. A stratified and purposeful sampling method will be used. We aim will aim to **balance the number schools in each ability band to between one and three schools**. Therefore, we will recruit one to three schools in each ability band to contribute to this project. With the constructive comments and front-line experience of these school teachers, the platform can be designed to serve the diverse needs of most students and teachers.

Stages – As a member of the executive committee, has links with a broad network of business teachers in Hong Kong. During **stage one**, six sample schools will be invited to participate, which will be distributed across three ability bands. This balanced sample of schools will provide a suitable set of participants for this stage of the project. **We already have nine schools committed to this project (see Appendices 2)**. Furthermore, the teachers involved have received the Teacher Award for Business and Financial Education, and they are fully capable to ensure the reliability of the pilot study.

We will expand our sample to 20 schools in **stage two**. We will draw on the network of the , which is recruiting experienced business teachers to participate in this project. For ensuring the reliability and quality of the teaching and learning program, the core members of the first stage study and our team will oversee stage two. We will open access to the platform for all students and teachers in Hong Kong as a means to collect their feedback and advice. Teachers, who are interested in the project will be able to contribute their materials and download our materials from the platform.

Beneficiaries – The project’s sampling design will help to **provide a platform** that is both practical and relevant to students of all levels of ability and to all school contexts. We project that **1,000 students** will benefit from this project **in stage two**. In reviewing the Hong Kong Diploma of Secondary Education (HKDSE) report, we see that this number of students represents around 13% of the BAFS students in Hong Kong. Although the proportion of beneficiaries will be lower during the project, the potential number of beneficiaries will be much higher in the long term. With the promotion of the platform and teacher training for all business teachers, we expect that the publicity given to this platform will increase. In the long term, **around 10,000 students** from each form will **benefit from this project**. The project will also be beneficial for all business teachers. With reference to statistics reported in the 2017 HKDSE, we believe that this project will benefit 356 schools. Teachers at these schools will be able to share and gain experience from the platform.

In **section 4.4**, we will explain the content and structure of the adaptive blended learning community for business education first. It indicates what sort of materials will be contained in the platform. In **section 4.5 to section 4.6**, we will explain how we construct all deliverable in each stage.

4.4 Content of the adaptive blended learning platform

The **adaptive blended learning platform** will be divided into two major sections. These sections will be (a) **teaching and learning for business subjects** and (b) the **teacher professional learning community**. We will aim to facilitate both student learning and teacher pedagogy through use of this platform.

A. *Teaching and learning for business subjects*

In this section of the platform, teachers and students will gain access to a range of teaching materials. **Teachers** will be able to integrate the material into their lessons and offer a blended learning experience for their students. **Students** will be able to access the materials at any time for fulfilling their class requirements or for self-study. The topics to be taught on this platform will be financial accounting and cost accounting (**Appendices 3**). These topics have been chosen in accordance with the results from the business teachers’ survey. Furthermore, over 70% of BAFS content is related to accounting. By concerning the survey result and the majority of students’ needs, we choose accounting as the teaching content in this platform. In our survey, we also invited teachers to state their preference, in term of management, financial and accounting, of providing support. Accounting is around 60%, while management and financial are 30% and 10%. Concerning the content for each topic, we have decided to provide a navigation map to help teachers and students understand the objectives and the critical knowledge involved for each topic. **First**,

there will be video and reading materials to help this audience **grasp critical knowledge**, as explained by experienced business teachers. Most of the basic conceptual questions can be addressed with these materials, which will save some of the teacher's time in dealing with basic questions. The teacher can then focus on answering the more critical questions in or after class. **Second**, this section of the platform will provide a series of **adaptive MCQ** for students to use in testing their understanding. Based on the student's answers, the levels of difficulty will be adjusted to the appropriate level of understanding. Every question will have a clear answer, and these answers will meet the students' diverse needs in terms of learning styles. The teachers will also be able to monitor the students' learning process by reviewing the multiple-choice results. One important point is that most of the accounting practice at school are long questions. It takes students over a half hour to complete a specific task. Some critical concept may even skip these questions. As students are getting busy in the senior secondary learning, checking their understanding and immediate feedback is more important for the students. MCQ question is not only fulfill the purpose of checking students understanding and provide immediate feedback, but it also enhances the flexibility of students learning. We also set a standardized assessment for teachers to examine student understanding. In England, the O-level accounting is also using the MCQ as an effective assessment tool. We expect that this platform will prove flexible in allowing both the teachers and students to use these materials.

Table 4.3 Summary of teaching and learning materials for the business subject section

Audience	Topics to be covered	Materials	Assessment	Benefits
Teachers	- 18 topics in stage 1 - 8 topics in stage 2	Navigation map (see appendices 4); video for each area of critical knowledge; reading materials	Adaptive MCQ	<ul style="list-style-type: none"> • Integrated materials for blended learning • Monitoring students' performance • Reducing teacher's workloads
Students	<ul style="list-style-type: none"> • Enhanced self-study • Catering to diverse learning styles 			

In appendices 4, there is a sample of blended learning lesson plan to illustrate how the proposed approach could better cater for specific learning needs of students and how the blended learning platform could supplement classroom teaching. Unlike the traditional classroom model, a blended Classroom puts students in charge of their own learning. By providing lectures online, educators give students the opportunity to learn at their own pace. Once a student masters a concept, he can move on. Also, students who need more time to master a concept won't get left behind. This means all students are not working on the same area at the same time in and out of the classroom. In the blended Classroom environment, the teacher becomes the guide off to the side, acting as more of facilitator, helping and guiding small groups and individuals toward learning success.

B. Teacher professional learning community

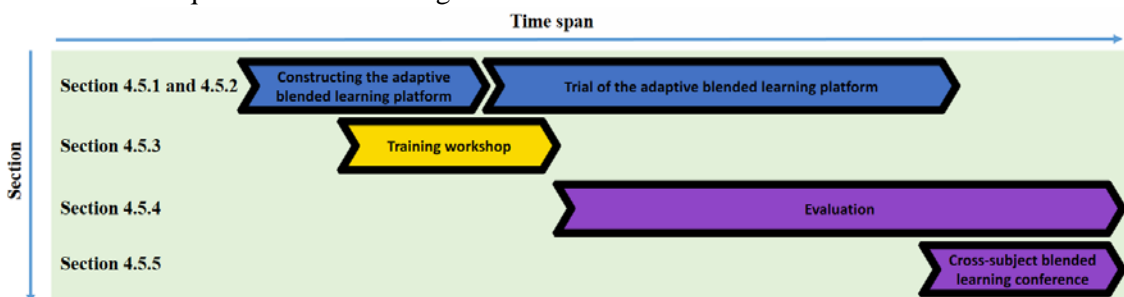
The teacher professional learning community section will serve as a professional learning exchange for business teachers. There will be two kinds of competence treated in this section, namely **guidance on business-subject blended learning** and **resource sharing**. Concerning the guidance on business-subject blended learning, we will provide theoretical and practical materials to help teachers adopt blended learning at their schools. A number of cases from sample schools will demonstrate how blended learning materials can be integrated into teaching practices. To enable resource sharing, we will upload all of the business teacher awardees' school-based lesson plans to the platform. Business teachers can review these curriculum designs. Moreover, we will invite teachers to upload their own resource materials to this platform. They will also be able to convey their innovative ideas or concerns regarding teaching and learning. Experienced business teachers and experts from EdUHK will respond to questions and maintain the community.

Table 4.4 Summary of Teacher professional learning community section

Audience	Content	Benefit
Teachers	Guidelines of business subject blended learning	<ul style="list-style-type: none"> • Understanding the rationale for blended learning • Guiding teachers in using the materials
	Resource sharing and communication	<ul style="list-style-type: none"> • Sharing good practice and generating innovative ideas • Updating the adaptive MCQ

4.5 General practice and implementation plan for each stage (Appendices 5)

Section 4.5 will present how our team develops all deliverable to fulfill the project objectives. Section 4.5.1 and 4.5.2 will explain two components of **the adaptive blended learning platforms**. Section 4.5.3 indicates the way of constructing a training workshop, while section 4.5.4 explains the evaluation method. Lastly, section 4.5.5 shows the practice of cross-subject blended learning conference. The following figure indicates the sequence of constructing all Ds.



4.5.1 Process of constructing the adaptive blended learning platforms - teaching and learning materials for the business subject section (D2 and D3)

The process of constructing the content of the teaching and learning materials will be managed by a series of teams coordinated by . Three teams will develop the content. Each participant in this phase of the project will be assigned to a different team, and will be responsible for dealing with a specific topic. The team leaders will hold regular meetings to discuss and manage the process of developing the materials on the platform. We illustrate the sequence to be followed for developing the materials in the following subsections.

4.5.1.1 Navigation map: A navigation map will be developed for the platform. To ensure the quality of this map, our core team and the teacher team will review the and BAFS curriculum frameworks. This review will provide a practical and theoretical guide for the team to develop the navigation map, so that it fits the requirements of the BAFS curriculum and of authentic business applications.

4.5.1.2 Video for each critical knowledge segment: Videos will be recorded to address the critical knowledge involved in each topic. Concerning the navigation map, the teacher team will identify the critical knowledge required for each topic. will use the scaffolding approach to design guidelines for the flow of work in constructing the content and in recording the videos. The teacher team will follow the guidelines, and will design the video framework under Mr 's supervision. On the basis of the finalised framework, teacher team will record videos with help from the supporting staff. The chairman, Principal , will provide the quality assurance for the videos.

4.5.1.3 Reading materials: Supplementary notes on accounting concepts will be provided for the students. These notes will offer in-depth explanations for complicated concepts, or will illustrate accounting entries for the students. The teacher team will review the and materials, which will be made freely available to the public. The team members will select the relevant reading materials to facilitate the students' understanding.

4.5.1.4 Adaptive MCQ: To connect with the navigation map, the teacher team will design the MCQ, which will echo the lessons provided in each video and reading for each area of critical knowledge. The teacher team will review the resources and the references books to design sets of questions appropriate for three levels of understanding. All of the questions will have explanations for each multiple-choice answer. The supporting staff will be responsible to input all of the data to the online platform.

4.5.2 Process of constructing the adaptive blended learning platforms - teacher professional learning community section

4.5.2.1 E-Platform (D4): A set of guidelines for the business-subject blended learning and resource-sharing platform will be developed for business teachers. This platform will be based on the HKEdCity platform. The new platform will share excellent examples of blended teaching for anyone to access. For the participating schools, we will use this platform as a resource-sharing centre. Teachers will be able to upload and share materials at any time. To facilitate communication, the platform will connect to each

workplace via . The teachers who register as members of the project will each have a workplace account. This account will provide access to an app through which the teacher will receive up-to-date notifications from EdUHK. The teachers will also be able to seek advice and voice their concerns through these apps. The EdUHK project manager will be responsible for the management of the platform. This set of practices will ensure that the teachers are kept informed and active in the community.

4.5.2.2 Teacher training resource package (D1): Building on the most successful work done in the second stage, a comprehensive version of this package will be compiled by our team. This package will include the theoretical concepts and practical models for constructing a financial curriculum. All of the participating teachers will share their experiences in this resources package. The audience members will be able to refer to this package in developing their school-based curricula. This resource package will include (1) a teachers' guide for using and contributing to the blended learning platform; (2) a set of blended learning examples and (3) a manual on the navigation mechanism for business education.

4.5.3 Training workshops for the teachers to integrate blended learning in business courses (D1)

The level of student satisfaction with the quality of training naturally relies on the teachers' performance. Therefore, business teachers are the core targets for this project to promote blended learning. At the beginning of the project, a training workshop will be conducted for the participating teachers. This workshop will explain the rationale for blended learning pedagogy and curriculum planning. **Professor**

will be in charge of this training workshop, which will cover blended learning knowledge, the integration of such knowledge into the business curriculum and the use of the blended learning teaching package. On top of the training workshop, our team will meet the participants regularly (at least 3) to ensure the teachers could grasp the pedagogical knowledge in blended learning. We provide various example for teachers to integrate the blended learning materials into their teaching. (Example of lesson plan in appendices 4) The project officer will follow up and visit teachers regularly. We will also invite all of the participants to participate in brainstorming ways of adapting blended learning into their curricula. The teachers may find new ideas and consolidate their plans through our team's guidance. They are also invited to share their best practice in the regular meeting with other participants as a professional training workshop.

4.5.4 Project Evaluation

A series of evaluation exercises will be conducted to assess student learning patterns and measure the effectiveness of using blended learning, according to reviews of the students' performances. We will also study how the teachers integrate blended learning into business education. For the purposes of this project, two types of evaluation strategies will be adopted.

For enhancing the effectiveness of adaptive blended learning methods, evaluations will be conducted regarding **modifications to the blended learning platform** and **teaching pedagogy**. These evaluations will involve participant classroom observations and case studies, to assess the effects of trial applications of the proposed pedagogical strategies. This evaluation process will make a practical contribution to blended learning pedagogy. The following table describes the regular process for evaluating blended learning strategies. *Table 4.5 Evaluation activities and successful criteria.*

Phases of the project	Activities	Successful criteria	Measurement tools /inventory	PO
1 Evaluation one – each topic (One standardized assignment for each topic)	a. Compare standardised assessment performance between active and passive learners on the blended learning platform by reviewing standardised homework; or	The active participant performs better than passive learners.	Standardize quiz, term test, or examination.	PO ₃
	b. Compare students' performance by reviewing pre- and post-test performance; and	Students show improvement in post-test.	Standardize quiz	PO _{1,3}
	c. Do lesson observations to investigate the effectiveness of blended learning. (One lesson observation for one topic.)	Teachers integrate blended learning in teaching.	Lesson observation form	PO _{1,2}

2 Evaluation two – end of each stage	a. Conduct surveys regarding teachers' and students' needs in using blended learning, and regarding the effectiveness of the platform;	Teachers and students satisfy in using the platform.	Survey	PO ₂
	b. Do focus-group student interviews for understanding the students' opinions and habits concerning blended learning;	Participant joins the focus-group interview.	Interview guide	PO _{2,3}
	c. Do focus-group teacher interviews to investigate and generate teacher feedback on the practice of blended learning.	Participant joins the focus-group interview.	Interview guide	PO _{1,2,4}
3 Modification	a. Conduct follow-up sessions with selected focus-group students and teachers to consider the findings on the performance of standardised assessments and the survey results;	Two follow-up sections have been conducted.	Survey and interview guide	PO ₅
	b. Modify the existing materials to create more accessible learning environments and support the students and their teachers in specific school contexts.	All materials are modified in needs and form the best practice.	Survey and interview guide	

To understand student learning patterns in blended learning and to transfer the project's products into curricula for other elective subjects, we will conduct quantitative research to **study the linkages between the students' access patterns, and the teachers' blended learning strategies**. This research will indicate the 'access patterns of high- and low-performing students' and the effectiveness of the teachers' pedagogical strategies. We will use these data to investigate the effectiveness of adaptive blended learning strategies in meeting the diverse needs of students with different kinds of aptitudes. This investigation will make practical and theoretical contributions to understanding the significance of blended learning for enabling diverse groups of learners.

- Data on the students' access patterns, such as access times, video views, and adaptive assessment participation, will be examined through reviewing the blended learning platform.
- A survey will be conducted concerning the teachers' adoptions of blended learning in their lessons.

For security, the evaluation data will be stored in the principal investigator computers with staff password protection. Further, all participants' information will be presented in anonymized form, because no personal information other than basic demographic information such as gender and age will be collected. Although a code will be assigned to every student for matching their responses to the pre-course and post-course surveys, but the code is identifiable to the researchers only and is not linked with any student information. A maximum time of data storage is two years from the completion of the project. After data will be disposal after five years.

4.5.5 Cross-subject blended learning conference (D5)

We will conduct a **cross-subject blended learning conference**. In this conference, we will promote adaptive blended learning for business and elective subjects. Participating schools will share their successful experiences and results with the audience. The participants will serve as role models for other schools, helping to promote the blended learning approach and to expand the business teacher learning community.

4.6 Staff development/collaboration among project team members

To enable project management and development, the Principal Investigator, _____, **in consultation with the Co-investigators, Professor _____ and Professor _____**, will design and monitor the overall implementation of the project. This team will be in charge of developing the adaptive blended learning platform, and they will supervise the project staff and the participating school staff. To ensure the quality of implementation, Principal _____ and the business teacher awardees will team up to design, conduct

and monitor the implementation of the process. **Co-Investigator** will work with our colleagues to design and conduct the project evaluation. More details on the roles and contributions of these team members are given in **Appendices 6**.

This project will be labour-intensive, and it will aim to produce sufficient teaching and learning material for a blended learning curriculum that will include a navigation mechanism, video recordings and adaptive assessments. **One full-time project officer** will be required for 24 months to assist the project investigator in coordinating, implementing and managing the project for the entire period. S/he should possess project management knowledge and must have the required competence in business subject pedagogy. S/he will be responsible for the day-to-day operation of the project. To ensure the knowledge management of the online platform, the project officer will monitor the blended learning platform. For the materials that upload to the blended learning platform, project officer and principal investigator will clear the copyright issue of the resources. All intellectual property right of all the deliverables developed in this project should rest under QEF.

Furthermore, each school that participates in the first year will have a supporting **student helper** to assist in developing the teaching materials and to do the administrative work. In the second year, the pilot school teachers will be the facilitators for the next 20 schools. We will target business, accounting and financial studies major students, to identify a student who is familiar with the curriculum and is sophisticated in teaching and learning. Also, six student helpers will be recruited to provide support for the teacher training programme and to transcribe project interviews.

4.7 Commitment and budget

Table 4.6 Implementation plan – adaptive blended learning platform for business education

Programmes	Content	Dates	Beneficiaries
Adaptive blended learning platform (teaching and learning for each business subject)	Stage one <ul style="list-style-type: none"> Develop pilot topics for six sample schools Include navigation map, videos for each critical knowledge topic, reading materials and adaptive MCQ 	Sept 2019 - Aug. 2020	356 schools Total: over 30,000 students and 500 teachers
	Stage two <ul style="list-style-type: none"> Expand sample size to 20 schools Modify the forms of blended learning Develop the whole package of financial accounting blended learning materials Open access to the platform for all students and teachers Develop the whole package of blended learning materials on cost accounting 	May – Dec. 2020; Jan. – June 2021	
Adaptive blended learning platform (Teacher professional learning community)	Guidance on business-subject blended learning	From Jun 2020	
	Resource sharing Strengthen business teachers' capacities for curriculum planning by sharing outstanding business curriculums and pedagogy		
Training workshop for the teachers to master blended learning in business subjects (PD Seminar)	1 Training workshop in stage two for teachers in six schools (Regular mentoring with teacher for grasping the pedagogical knowledge at least 3)	Sept - Oct 2019	6 schools Total: over 8 teachers
	1 Training workshop in stage two for teachers in 20 schools (Regular mentoring with teacher for grasping the pedagogical knowledge at least 3)	Jul - Aug 2020	20 schools Total: over 20 teachers
	2 Training workshop for teachers across N.T., Kowloon and Hong Kong Island.	Jun – Aug. 2021	356 schools Total: 500 teachers
Cross-subject blended learning conference (One day, target audience around 300, for all elective subject teachers, educators, QEF representatives and media)	<ul style="list-style-type: none"> Keynote speeches to promote adaptive blended learning for elective subjects Sharing of successful experiences Sharing of resources Future development plan 	Jun – Aug. 2021	Total: 200 teachers and 100 educators

Expenses	Description	Detailed calculation	Total (HKD)
I. Staff Cost			
1. Project Officer (Full-time)	1. Managing the whole project's development, accountable to the project leader and team members; 2. Coordinating with project schools for developing materials and other activities; 3. Assisting the team in establishing and updating the adaptive blended learning platform; 4. Conducting lesson observations at schools and interviews with teachers and students;	(1 x 24 months x \$30,700) + (\$18000 MPF per year x 2)	772,800.00

	<ol style="list-style-type: none"> 5. Analysing the project data, arranging regular team meetings and drafting the reports; 6. Preparing related documents, literature, curriculum designs and copies of questionnaires; 7. Assisting in the production of deliverables; 8. Monitoring the project budget, overseeing work quality and preparing annual reports. 		
2. Student helpers	<ol style="list-style-type: none"> 1. Giving administrative clerical support to project officers; 2. Providing support to the project team in doing library searches, documentary analyses and data processing; 3. Assist in developing blended learning materials such as videos, MCQ and readings; 4. Assisting in the production of training packages; 5. Assisting core groups for developing materials in stages two; 6. To provide support in workshops, teacher meetings and dissemination events, and to transcribe the taped interviews. 	51,000 (\$60/hr x 850 hrs)	51,000.00
II. Equipment			
1. Computer hardware	<ol style="list-style-type: none"> 1. 2 notebook computer, to be used outside the campus for video recording (\$5000 x 2); 2. USBs and external hard disks for data storage (\$1,000). 		11,000.00
2. Other equipment	Audio recorders (4 x \$1,000) and video recorders (3 x \$4,500).		17,500.00
III. General expenses			
1. Photocopying and printing	<ol style="list-style-type: none"> 1. Mainly for production of questionnaires, training materials and conference programme brochures. 		20,000.00
2. Miscellaneous stationaries and venue fees	<ol style="list-style-type: none"> 2. Budget for batteries needed for video productions, interviews, conferences and teacher training workshops; 3. Postage for mailings to schools and stakeholders regarding project information or consent letters; 4. Reference books and materials required for producing blended learning materials; 5. Certificates for teachers; 6. Backdrop for the training workshop, conferences venue, relevant materials and seminars. 		21,000.00
3. Transportation	<ol style="list-style-type: none"> 1. Attendance at training workshops, meetings, seminars and conferences; 2. Project teachers traveling costs; 3. Materials delivery; 4. Conducting evaluation activities. 		25,000.00
4. Resources package	400 copies		80,000.00
5. Administrative overhead	EdUHK administrative overhead for research administration service, staff appointment and payroll service, accounting services and space utilisation.		151,995.00
6. Auditing Fee	QEF requires an auditing fee of \$15,000 for one project having a budget over \$1,000,000.		15,000.00
IV. Contingency	3% of non-staff costs		10,245.00
Total			(1,175,540.00)

*HKABE already has a network with over 100 schools.

5 Discussing the future development of the project

6.1 Sustainability of the deliverable

Stabilised online platform: **HKEdCity** will support this project for storing all materials and resources on the blended learning platform, which will serve teachers and students access the platform for the long term.

Inter-school network with [redacted] and EdUHK support: The project schools will form a professional learning community interacting through the blended learning platform. We will also encourage other schools to join the network. With the **support of [redacted] and EdUHK**, this influential community will be connected in ongoing dialogue, with the teachers and supporting parties continuously contributing materials to the platform to facilitate the students' learning.

6.2 Dissemination/knowledge transfer

Establishment of the adaptive blended learning platform to disseminate business knowledge, materials and pedagogical strategies to teachers and students from every school.

Formation of the teacher professional learning community, with [redacted] and EdUHK support.

Enhancement of teachers' and students' ICT competencies for self-directed learning through adaptive blended learning platforms such as [redacted].

Transfer the project's knowledge and strategies to other elective subjects. Publication of a resources package, including (1) a teachers' guide for using and contributing to a blended learning platform; (2) a set of blended learning examples and (3) a guide to the navigation mechanism for business education. We will organise a range of seminars to disseminate the evidence-based findings, experiences and practical knowledge of using blended learning to enable students' adaptive learning via various channels.

6.3 Future development

In-service support for business teachers: Based on our experience of using the adaptive blended learning platform, we will expand our program by **providing in-service support for business teachers across Hong Kong**. Teachers who encounter difficulties in teaching or curriculum planning may seek our assistance for actualising their innovative ideas or solving their pedagogical problems. EdUHK and [redacted] will continuously update the platform and connect with business teachers who are interested in developing school-based materials.

Expanding the community for students' career mapping: Many corporations and NGOs are providing business subject-related support. Our department already has a network involving parties such as the [redacted] or the [redacted]. We will seek the assistance of these organisations in **providing support for business teachers in terms of materials and extra-curricular programs through our platform**. This kind of networking is relevant to students' career mapping efforts.

7. Asset Usage Plan

Category	Item/ Description	No. of Units	Total cost	Proposed plan for deployment	Justification (s)
Audio and Video equipment	Audio-recorder	4	4,000	The equipment will be deployed to the department of EPL, EdUHK for future educational use	sustain the project impact
	Video-recorder	3	13,000		
Computer hardware	Computer notebook	2	10,000	The equipment will be deployed to the department of EPL	sustain the project impact
	External Disk	1	1,000		

8. Report submission schedule

Project management		Financial management	
Type of report and covering period	Report due day	Type of report and covering period	Report due day
Progress report 1/9/2019 - 29/2/2020	31/3/2020	Interim financial report 1/9/2019 - 29/2/2020	31/3/2020
Progress report 1/3/2020 - 31/8/2020	30/9/2020	Interim financial report 1/3/2020 - 31/8/2020	30/9/2020
Progress report 1/9/2020 - 28/2/2021	31/3/2021	Interim financial report 1/9/2020 - 28/2/2021	31/3/2021
Final report 1/9/2019 - 31/8/2021	30/11/2021	Interim financial report 1/3/2021 - 31/8/2021	30/11/2021

9.

List of Appendices:

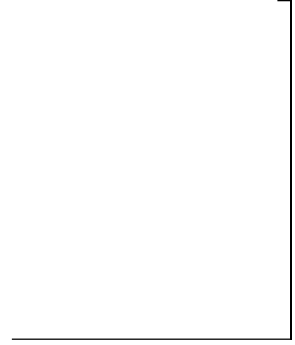
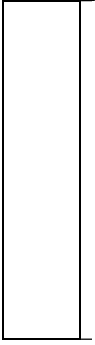
1. Deliverable
2. Collaboration with other parties/partners
3. Topic to be covered
4. Sample of navigation map (Simple version)
5. Sources and contributors
6. Role of contributor
7. Team Profile
8. Summary of the project with graph
9. Summary of media report – Needs of business teacher support
10. References

Appendices 1: Deliverable

Item	Measurable deliverables
D1. Training workshop for the teacher to master blended learning in the business subject	1 per year 2 at the end of programme
D2 & D3. Adaptive blended learning community for business education - <i>Teaching and learning for the business subject</i> <ul style="list-style-type: none"> • Navigation map • Video for each critical knowledge • Reading materials • Adaptive MCQ 	1 navigation map for each topic Minimum 5 videos for each topic (Depend on the number of critical knowledge) 1 reading materials for each topic 10 - 30 Adaptive MCQs for each topic
D2, D3 & D4. Adaptive blended learning community for business education - <i>Teacher professional learning community section</i> <ul style="list-style-type: none"> • Guideline of business subject blended learning • Teacher training resource package • Resources sharing • Communication 	1 set (Stage 1) 1 set (Stage 2) 1 example for each topic 1 communication platform
D5. Cross-subject blended learning conference	1 day conference
D6. Student performance report	Evaluation exercise per stage

Appendices 2: Collaboration with other parties/partners

Support school*			
1	Liu Po Shan Memorial College	4	Madam Lau Kam Lung Secondary School of MFBM
	Principal name: _____		Principal name: _____
	Teacher name: _____		Teacher name: _____
	Contact: _____ Email: _____		Contact: _____ Email: _____
2	Valtorta College	5	Toi Shan Association College
	Principal name: _____		Principal name: _____
	Teacher name: _____		Teacher name: _____
	Contact: _____ Email: _____		Contact: _____
3	STFA Cheng Yu Tung Secondary School	6	STFA Leung Kau Kui College
	Principal name: _____		Principal name: _____
	Teacher name: _____		
	Contact: _____ Email: _____		Contact: _____ Email: _____
7	Ning Po No.2 College	8	HKSKH Bishop Hall Secondary school
	Teacher name: _____		Teacher name: _____
	Principal name: _____		Principal name: _____
	Contact: _____		Contact: _____
	Email: _____		Email: _____
9	HKFYG Lee Shau Kee College	Principal	is the
	Principal name: _____		
	Teacher name: _____		
	Contact: _____ Email: _____		
1	STFA Leung Kau Kui College		
	Principal name: _____		
	Contact: _____ Email: _____		
1	Contact person: _____		
	Contact: _____		
	Email: _____		



***Please feel free to approach their Principal to confirm.**

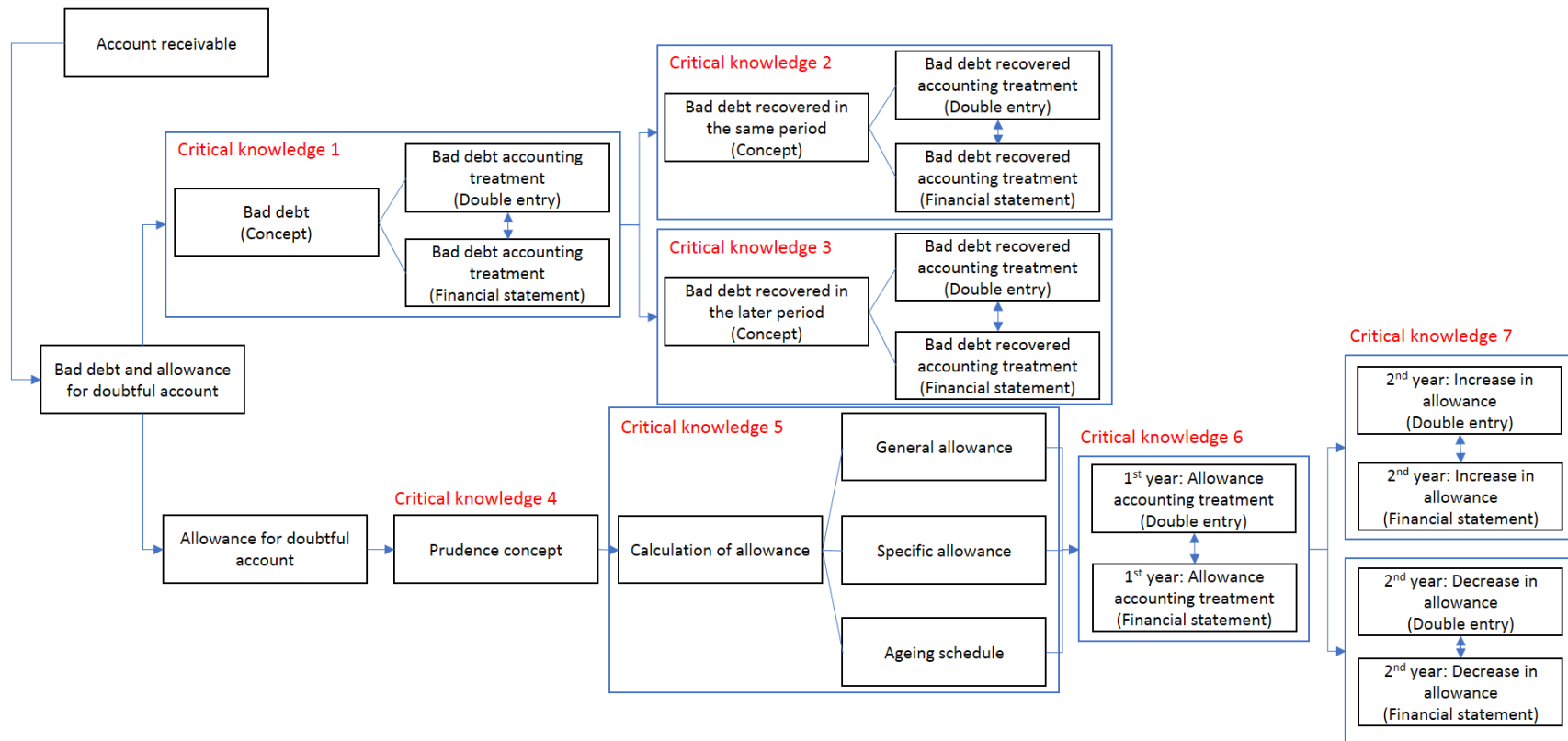
Appendices 3: Topic to be covered

Theme	Core knowledge	Topic	Benefits to students	Stage
Financial accounting	Book of original entry	<ul style="list-style-type: none"> - Books of original entry and ledgers (I) - Books of original entry and ledgers (II) - Financial statements for sole proprietorships (I) - Financial statements for sole proprietorships (II) 	Understand the business transactions, the banking system and double entry bookkeeping	Completed in Stage 1
	Balancing day adjustment	<ul style="list-style-type: none"> - Accruals and prepayments - Bad debts and allowance for doubtful accounts - Depreciation of non-current assets 	Understand the importance of preparing the financial reports at the end of the reporting period. Recognize the methodology of carrying out adjustments to the accounts, which will ensure a closer matching of revenue and expenses for the reporting period.	
	Control system	<ul style="list-style-type: none"> - Bank reconciliation statements - Correction of errors (i): errors not affecting trial balance agreement - Correction of errors (ii): errors affecting trial balance agreement 	Understand how internal controls establish safeguards to an organization's assets and minimize the opportunities of committing fraud and allowing errors to go undetected in an organization's daily operations.	
	Partnership	<ul style="list-style-type: none"> - Financial statements for partnerships - Partnership goodwill - Partnership revaluation - Partnership dissolution 	Understand the good practice to set out the terms agreed by the partners in a partnership agreement. Recognize how accounting system reduce the possibility of expensive and acrimonious disputes in the future.	
	Limited company	<ul style="list-style-type: none"> - Issue of shares and debentures - Regulatory framework of accounting in Hong Kong and financial statements of limited companies - Financial Analysis (I) 	Understand the financial statements of a limited company in accordance with the regulatory requirements. Analyze financial status for a business.	
	Accounting Concept	<ul style="list-style-type: none"> - Generally accepted accounting principles 	Apply the relevant principles and concepts in accounting situations	
Cost accounting	Absorption Costing	<ul style="list-style-type: none"> - Cost classification, Concepts and Terminology - Job Costing - Absorption Costing 	Understand the general nature of cost accounting. Employ the absorption costing system for manufacturing operations.	
	Marginal Costing	<ul style="list-style-type: none"> - Marginal Costing - Cost-Volume-Profit analysis 	Employ the marginal costing system for manufacturing operations. Compare the advantages and disadvantages of adopting absorption and marginal costing.	
	Decision making	<ul style="list-style-type: none"> - Cost Accounting for Decision-making 	Collect a relevant data and apply cost-volume-profit analysis for making business decision by applying cost accounting concept.	
Total	9 Core knowledge	24 topics		2 years

Appendices 4: Sample of navigation map (Simple version)

Core knowledge: Balancing day adjustment

Topic: Bad debt and allowance for doubtful account



Navigation map is the basis for developing materials and adaptive MCQ. Each critical knowledge contains 3 simple MCQ, 4 middle level MCQ, and 4 high level MCQ.

Based on students answer, the level of difficulties will be adjusted by concerning students' answer. Every question have a clear explanation on the answer. It serves the purpose of catering students' learning diversity with the explanation.

Sample of lesson plan

Lesson Topic/Description	Trial Balance and Financial Statement Preparation - Using balances from the General Ledger accounts learn to prepare a trial balance and then an income statement and Statement of financial position.		Time	50 mins
Learning Target:	<ul style="list-style-type: none"> - Learn how to prepare a trial balance - Understand what a trial balance says and does not say - Learn how to prepare an income statement - Understand why an income statement must be prepared before the balance sheet - Learn how to prepare a balance sheet - Learn the different formats of a balance sheet 			
Open, Rotations, Close				
Whole Group Open	Direct/Teacher	Independent/Online	Collaborative	Whole Group Close
Introduction	Remediate/Accelerate	Practice/Assess/Inquire	Explore/Create/Action	Reflect
Review the purposes of the general journal and general ledger	Introduce the trial balance <ul style="list-style-type: none"> - Discuss importance of preparing before the financial statements - Discuss which accounts are expected to have a debit or credit balance 	Overview the concept map of this topic. Review prepared examples video and complete the MCQ: <ul style="list-style-type: none"> - Work through calculating balances for accounts - Include accounts that have a negative balance - Talk about period of time - Discuss correct form - Introduce the Balance Sheet - Discuss formatting options Students have the right to do different level of difficult MCQ at home or in the lesson.	Transcribe those account balances to a trial balance <ul style="list-style-type: none"> - Discuss proper format - Discuss the limitations of the trial balance - Discuss how to record negative account balances - Discuss the concept of Net Income and how it relates to the equity section of the balance sheet. 	Have students complete worksheet. A suggested passing grade is 70% or greater. Student can review the materials on blended learning platform.

Appendices 5: Sources and contributors

Section	Source of materials	Contributors
4.4.1	Self-developed	Internal – EdUHK team (Professor)
4.4.2.1	and BAFS curriculum frameworks	Internal – , Prof and awardees External –
4.4.2.2	Guidelines for designing videos Reference books	Internal – and awardees External –
4.4.2.3	accounting sources	Internal – and awardees
4.4.2.4	Self-developed	Internal – EdUHK team, , HKEdCity and awardees
4.4.3.1	HKEdCity platform and Workplace by	Internal – EdUHK project officer, EdUHK team and HKEdCity
4.4.3.2	Self-developed	Internal – EdUHK team, , HKEdCity and awardees

Appendices 6: Role of contributor

Contributor	Expertise	Contribution (Role)
Mr	Business curriculum planning and blended learning	Training workshop – Developer Navigation map – Developer Video for each critical knowledge – Developer (In-charge) Reading material – Advisor Adaptive MCQ – Developer (In-charge) Teacher professional learning community – Developer (In-charge) Platform construction – Developer (In-charge) Evaluation – Co-investigator Teacher training resource package - Developer
Professor	Business education	Training workshop – Developer Navigation map – Developer (In-charge) Adaptive MCQ – Advisor (In-charge) Teacher professional learning community – Developer Platform construction – Developer Evaluation – co-investigator Teacher training resource package - Developer
Professor	School improvement and teacher training	Training workshop – Developer (In-charge) Teacher professional learning community – Developer Platform construction – Developer Evaluation – co-investigator Teacher training resource package – Developer (In-charge)
Dr.	Quantitative research and blended learning	Navigation map - Advisor Adaptive MCQ – Advisor Platform construction – Developer Evaluation – Investigator (In-charge)
and Principal	Business curriculum planning and pedagogy	Navigation map – Advisor Video for each critical knowledge - Advisor Reading material – Advisor Adaptive MCQ – Advisor Teacher professional learning community - Advisor
Participating school: Awardee	Business curriculum planning and pedagogy	Navigation map – Developer Video for each critical knowledge - Developer Reading material – Advisor Adaptive MCQ – Developer Teacher professional learning community – Advisor (With project management and student helper support)
	Professional knowledge in accounting	Navigation map - Advisor Video for each critical knowledge - Advisor Reading material – Sources provider

Appendices 7: Team Profile

Team members	Profile
Mr	
Professor	
Adjunct Professor	
Dr	

Principal

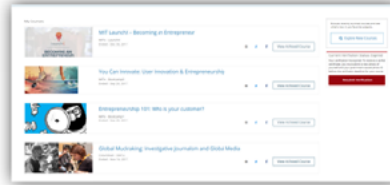
Appendices 8: Summary of the project with graph

General Idea

Develop a adaptive blended learning platform



Teaching and learning for the business subject



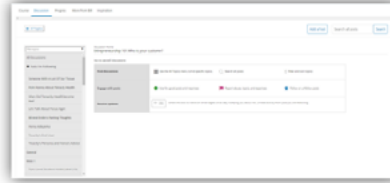
Target audience: Students and teachers

Purpose:

- Develop blended learning material for students and teachers
- Integrated in teaching (Teachers)
- Self-directed learning (students)
- Monitoring students' performance
- Catering learning diversity



Teacher professional learning community



Target audience: All business teachers

Purpose:

- Understand the rationale of blended learning
- Guiding teacher to use the materials
- Sharing good practice Generating innovative idea
- Exchange opinion among teachers



General Idea – A adaptive blended learning platform

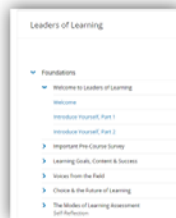
1. Content of Teaching and learning for the business subject

Topic to be covered



Theme	Core knowledge	Topic covered	Stage
Financial accounting	Book of original entry	4 Topics	Completed in Stage 1
	Balancing day adjustment	3 Topics	
	Control system	3 Topics	
	Partnership	4 Topics	Completed in Stage 2
	Limited company	3 Topics	
	Accounting Concept	1 Topics	
Cost accounting	Absorption Costing	3 Topics	Completed Stage 3
	Marginal Costing	2 Topics	
	Decision making	1 Topics	

Navigation map



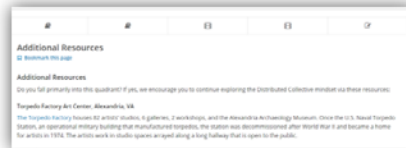
Indicate critical learning point of each topic for teachers and students.

Video for each critical knowledge



Explain the concept of critical knowledge, such as nature of contra assets etc. Similar to flip classroom.

Reading materials

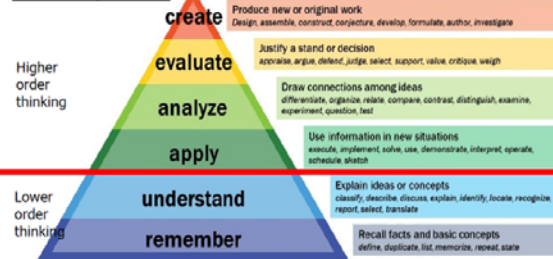


Useful reading materials from EdUHK, NGOs, Business corporates for enriching teachers and students business knowledge in that topic.

Adaptive assessment



Level of question



Bloom's Taxonomy of Learning Objectives

Purpose:

Provides suitable and multiple assessment materials and paths based on learner's characteristics.

Mechanism:

Based on the navigation map, which is developed by EdUHK expertise, projects teachers and our team develop a set of adaptive assessment for students and teachers. The level of difficulties will be adjusted by concerning students' answer. Every question have a clear explanation on the answer.

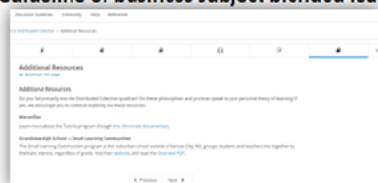
Benefits:

- Self-directed learning (students)
- Monitoring students' performance
- Catering learning diversity



General Idea – A adaptive blended learning platform 2. Teacher professional learning community

Guideline of business subject blended learning



- (1) a teachers' guide for using and contributing in blended learning platform;
- (2) a set of blended learning examples; and
- (3) a manual of navigation mechanism for business education.

Resources sharing



Sharing good practice Generating innovative idea:
Awardees share school-based curriculum planning to others school.



Exchange opinion among teachers:

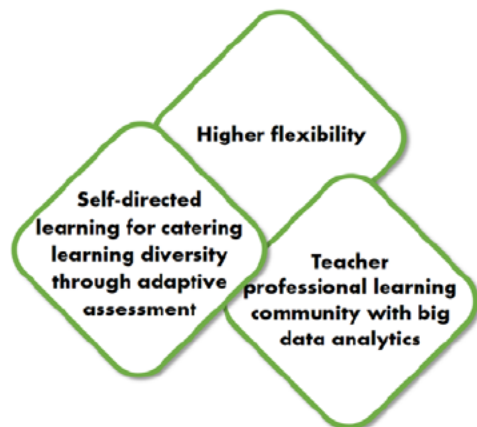
- Teacher exchange idea on forum and apps
- Upload resources to the forum
- Initiate an idea and gain support from project schools' teachers and EdUHK experts

(Project schools' teachers and EdUHK experts explore the possibility to actualize their idea in blended learning platform)



Innovation

Utilizing blended learning



Integrate blended learning to business curriculum with big-data analytic:

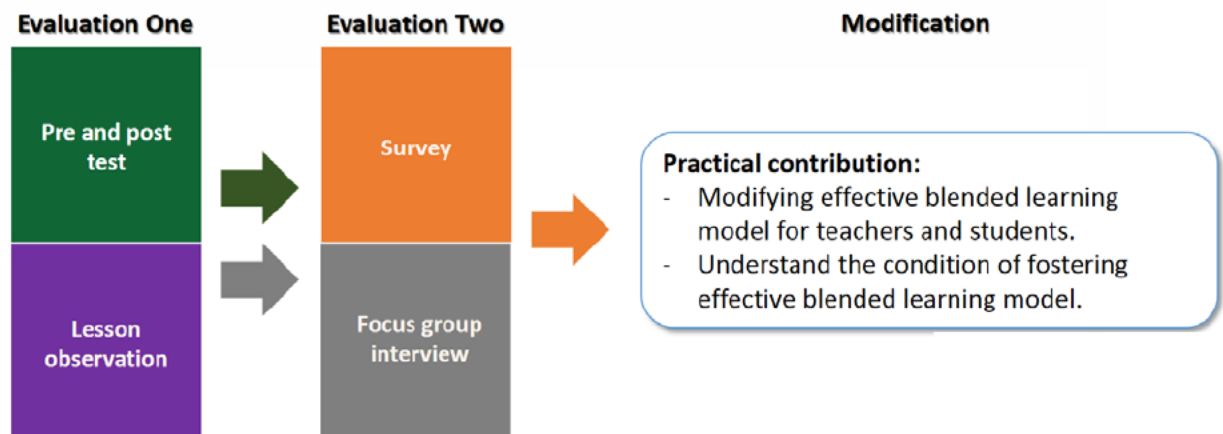
- Understand student learning behavior and pattern
- Providing higher flexible learning platform
- Enhance teachers' adaptive competence and pedagogical strategies

Benefit for business teacher learning community:

- Providing up-to-date business education pedagogy
- Develop teaching materials with EdUHK support



Evaluation – Enhancing the effectiveness



Appendices 9: Summary of media report – Needs of business teacher support

Media report for the survey:

Appendices 10: References

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