Reflections on the Final Year Learning Experience –Designing a Capstone Experience

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Abstract

Cross-sector educational reform to be implemented in 2012 in Hong Kong (HK) is intended principally to prepare students for the future workplace. One of the explicit requirements for the new four-year undergraduate curriculum is the inclusion of a capstone course for final year students. This paper explores the uptake and reported effect of the capstone- liked final year project using participating students' experience (voice) in existing undergraduate study programmes in the Chinese University of Hong Kong (CUHK). Semi-structured interviews were used to collect student feedback; findings revealed considerations in terms of the core design elements highlighted in literature. The paper highlights students' lack of readiness to successful transition into the workplace, linked to the current academic focus of projects. A framework that includes learning activities preferred by students is proposed for the final year learning experience. Findings from this study will be useful for curriculum development and evaluation of the final-year curriculum.

Keywords: cross-sector educational reform, future workplace, capstone course

Introduction

Hong Kong's 3+3+4 education reform that introduced cross-*sectorchanges* to both the secondary and undergraduate (Ug) systems, has several important goals. These include increased exposure to non-academic learning experiences; expanding whole person capacity; supporting a close linkage to workplace; increasing students' adaptability given rapid changes in society; and preparing students for a knowledge-based society (Education Commission, 2000). This reform, commenced in 2009 at the secondary school level, will extend in 2012 into the tertiary sector with universities introducing a normative 4-year undergraduate curriculum. One of the explicit requirements for this new curriculum is the inclusion of a capstone course for final year students. These dramatic changes in an academic structure require a careful look at the current curriculum, especially on students' final year, when students can expect to leave a relatively safe and comfortable environment and move into the workplace. In this new environment, as The Higher Education Academy (2006) noted in relation to learning and employability, performance in disciplinary subjects is not a crucial factor, rather it is capacity and achievement in a range of soft skills (such as interpersonal skills, communication skills, and presentation skills etc.) that will most impress potential employers.

This paper reviews the final year project (FYP), the de-facto capstone- type course in a local Hong Kong university. The aim, using the students' voice, is to understand if the FYP implemented as a capstone in the new curriculum will support the development of desired attributes necessary to support graduate employability. Consistent with an outcome-based approach to education, the focus should be on authentic learning opportunities in the final year in order that students may exercise and enhance their soft skills before stepping into future careers. In other words, higher education institutions should not simply produce discipline-based outstanding graduates, but a multi-faceted graduate able to meet the needs of the society.

Education reform in HK

According to the Reform proposals for the Education System in Hong Kong (Education Commission, 2000), Hong Kong education reform started in late 1990s with the goal of promoting lifelong learning and all-round student development. Consistent with, a public consultation process it was initiated to determine the objectives for education in the 21st Century for Hong Kong. The results showed that higher education should facilitate students' learning, develop their abilities in effective communication and expand their capacity for creativity and sense of commitment to their communities. Moreover, in any fast-changing society, the requirement of multi-faceted talents was favored over specialized talents. Reflecting these concerns, a report by University Grants Committee (UGC) a non-governmental body that advises the Government of Hong Kong on the development and funding needs of higher education institutions (HEI), noted institutions should provide students with interdisciplinary learning experiences that can equip them with an expanded scope of knowledge and foresight for a globalised society (UGC, 2010). The subsequent comprehensive cross-sector educational reform process initiated in 2009 in secondary schools and extending in 2012 to the Ug sector echoes these broad objectives for higher education.

New Ug curriculum and the capstone course

The Chinese University of Hong Kong (CUHK), where this study is situated, is one of the premier research-intensive institutions in Asia. As advocated by the UGC, an outcomes based approach has been integrated into the design of the new curriculum. Another feature of the new curriculum is a common Faculty Package for first-year students, with core components of the curriculum strengthened by the inclusion of General Education, languages, information technology and physical education units. Another feature of the four-year curriculum, consistent also with the objectives of the education reform, is the systematic inclusion of a

capstone course as the culmination of the undergraduate experience (CUHK, 2011). Different capstone experiences are being designed to suit the nature of each discipline, however, as the new four- year curriculum states, the capstone course targets the synthesis of subject knowledge, as well as independent enquiry (e.g. research) or execution (e.g. creative design in Fine Arts or Architecture, engineering design, fieldwork or internship both involving reflection and evaluation) (CUHK, 2011).

As the University has noted, previous experience and pilot courses with Final Year Projects have demonstrated benefit in terms of the development of student capabilities. At present, CUHK has eight faculties offering 62 undergraduate programmes; of these some twenty- four programmes have a compulsory FYP as a graduation requirement and thirty-eight programmes offer a FYP in the form of an elective. As a note of caution, however, it is worth noting that the majority of FYPs are operated as academic research.

The Capstone Experience. In general a capstone course is intended to integrate a body of relatively fragmented knowledge into a unified whole (Atchison, 1993; Durel, 1993). This integrating activity, allows students the opportunity to look back or reflect over their undergraduate curriculum in an effort to make sense of that experience. It should also allow students to *look forward* in order to transition into working life by building on that experience (Durel, 1993; Henscheid, 2008).

The issue of looking forward is crucial given the realization in the 1970s and 1980s of a gap between academic study and the real world (workplace). As a consequence, some universities moved to develop a course that could bridge this gap (Schroetter & Wendler, 2008). The resultant course(s) evolved into what is referred to today as a capstone course and that

some describe as the "crowning achievement" in an undergraduate programme (Atchison, 1993, cited in Schroetter & Wendler, 2008). The National Survey of Senior Seminars and Capstone, a study in the United States, recorded the importance, even critical nature of this course (Chickering and Schlossberg, 1998; Henscheid & Barnicoat, 2001). As this study also noted, it is often difficult for students to leave their comfort zones and move into a new environment, and educators need to make an effort to help students move on after graduation.

Chickering and Schlossberg (1998) reported three issues for educators assisting students to successful transition: first, make a career connection, second, help them identify their new roles after university; and third, create a life-long perspective. Educators should treat this facilitative role as equally important as helping student transition into university as freshmen. Progressive design features of a transition-focused capstone include a foundation component, needed to provide student basic knowledge and skills. These foundations are provided by the formative courses students complete in the first three years of university study. A second component is what can be termed as a pre-capstone component completed towards the end of year 3 and the beginning of year 4, the capstone year. This component is intended to help student learn advanced research techniques and like skills in preparation for their final year study. The final component is the actual capstone course, that some also describe as an 'experience' in recognition that the capstone objectives are likely to be satisfied better by a composite range of activities (Hauhart & Grahe, 2010). Reflecting upon the diverse needs of the student body and the transition needs, as one institution (Copenhaver, 2011) has determined, the capstone experience is made up of a varied set of options so that students are able to choose their personal capstone experience according to their abilities and future needs.

Design Characteristics. Literature identifies two broad types of capstone, a developmental capstone and an assessment capstone. In this paper, the focus of the capstone course is developmental, because this form of capstone tends to be the common approach in higher education. Reflecting on this focus, there are four broad design characteristic of a capstone activity or course. These are:

- To encourage *integration* and synthesis of previously acquired knowledge and skills (Bailey, Oliver & Townsend, 2007; Cuseo, 1998; Jervis & Hartley, 2005). Other researchers state the integrative focus as students being given a chance to make connections between course content, acquired skills and application in a wider context (Holdworth, Watty & Davies, 2009; Huber & Hutchings, 2004; Rowles, Koch, Hundley, & Hamilton, 2004).
- To facilitate some form of *transition*, such as from university to professional/working life (Bailey et al., 2007; Cuseo, 1998; Henscheid, 2000; Schroetter & Wendler, 2008; Wood, 2007). This characteristic includes the encouragement of useful connections between study majors and work experiences, such as those acquired via internships and exchanges; an awareness of personal development necessary to transition from undergraduate to post university life; and preparation for career or postgraduate education through professional development (Henscheid, 2000; Jervis & Hartley, 2005). Importantly, as Rosenberry & Vicker (2006) noted, when capstone activities address career issues, students are reported to have a better understanding of the relevance of what they have learnt and how it can be applied.
- To assist students to *reflect* on and demonstrate on what they have learnt over their undergraduate studies (Holdsworth et al., 2009; Kerka, 2001). Reflective practice is a fundamental skill of life-long learners and being able to reflect on one's performance can also help achieve higher goals. Hence, reflection is a vital component of the capstone experience (Kift, Field & Wells, 2008) that involves both course content in their academic major and more generally across courses, as well as an inner, personal reflection by students on their aims,

personal strengths and future plans (Brooks, Benton- Kupper & Slayton, 2004; Henscheid, 2008).

• Finally, being placed in the final year of an undergraduate degree, a capstone activity represents a culminating experience (Holdsworth et al., 2009) that arguably offers students a chance for *closure* (Rowles et al, 2004; Schrotter & Wendler, 2008; Schubert, 2009). This is the last opportunity to ensure students graduate with the knowledge, skills and attitudes they need to meet the growing demands of professional practice (Rowles et al., 2004). The process of closure, which includes recognition of accomplishments, pulls together all the ideas presented in different units and helps construct some sorts of integrated, meaningful whole experience (Heinemann, 1997).

Figure 1 below illustrates a developmental capstone designed to support generic skills and high-level thinking applicable in the workplace. The central learning outcome of this course therefore is encapsulated by graduate competence. The focus for students is not about acquiring new knowledge, but about integrating, reflecting and extending knowledge that has already been acquired (Bailey et al, 2007; Cuseo, 1998).

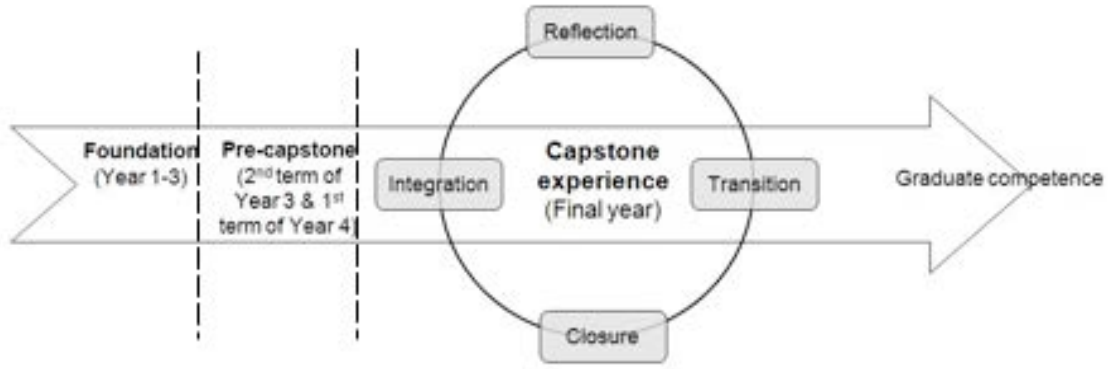

Fig. 1 A conceptual illustration of a developmental capstone

Methodology

The final year project (FYP), a de-facto capstone in the current three-year curriculum was examined in order to understand the difference, if any, between current practice and the ideal capstone design experience. The FYP is significant to a student's final year because, for some disciplines, it was a compulsory course and students were expected to devote most of their time to complete this project as it is regarded as an important milestone in their undergraduate studies.

This investigation adopted a qualitative approach, because it provides a rich pathway to collect insights and practices through interviews and personal conversations (Brewerton & Millward, 2006; Heppner & Heppner, 2004). As suggested by Brewerton and Millward (2006), a qualitative approach using semi-structured interviews allowed interviewees to offer their own experiences in a fluid and unrestricted manner, still within the context of the target research area. The research framework proposed for this study is based on the earlier defined four design characteristics for a capstone experience, and a survey done with 300+ graduates.

Eighteen students from thirteen programmes across the Science, Engineering and Humanities disciplines participated in interviews on a voluntary basis. During the interview, students were asked if the FYP helped them in developing their future and whether the FYP completed met the four capstone characteristics evidenced in literature. Participants were also encouraged to articulate their expectations and opinions on a capstone experience. Interviews were recorded and then analyzed using thematic analysis, with significant comments and expectations among students sorted by supporting argument.

Reported findings

Relative importance of the design characteristics

Based on accumulated responses, all participants agreed that the four characteristics are essential to the final year of study. However, among the four characteristics, transition received most attention. Students said it is important to help them understand the workplace environment, provide chances to put theories into practice, and better determine a career path. At the final stage of undergraduate life, students suggested that knowing specific workplace requirements and preparing to face unexpected real life challenges were the important reasons for a "transition" component in the final year. Students also acknowledged knowing the real world practice as necessary in order for a smooth transition. For example, a Science student, who spends 16 hours a day in the library to study, expected he would face many problems in effective communication when he applies for jobs. According to him, if he had been given a chance to know the workplace environment and the relationship between Science and the outside world, then this would have been most helpful to his future employment.

Another factor highlighted by students as supporting better transition, was the chance to execute and apply what they have learnt in class in their final year. Application of integrated knowledge serves as an experience for students to evaluate their performance and abilities to manage hands-on tasks. As several students mentioned:

- '[the opportunity to] u*se acquired theories to apply into the real world, after such practical use of theories, I will never forget these theories, because they transformed into my experience'* (Humanities student).
- *'Something you may only have came across in one course, then forget, but by doing FYP you recall your memory and apply it.'* '*Because you can apply what you have learnt [in*

final year] and after graduation, you can perform better transition to the real world, you won't get lost after graduation' (Science student).

It is clear that application of knowledge is important to students and for this reason, authentic assessment is also a crucial element of the study experience. Authentic assessment involves worthy intellectual challenges, presented as an array of tasks that are likely to be encountered in the workplace (problem identification, research, analysis, problem resolution and presentation) which requires full application of acquired knowledge in realistic settings. To illustrate, a written test, for example, is not a useful basis to infer driving ability. An authentic test would include some demonstration of ability, as well as an opportunity to improve performance. In all, students endorsed the importance of a final year learning experience based on the four design characteristics, with a particular emphasis on transition. However it is problematic to discover whether students found their FYP experience actually satisfied by these four characteristics.

Evaluation of the FYP

Table 1: Summary of student voice by development theme	
1.Curriculum design	
Integration (+ve)	My discipline emphasizes fieldwork a lot in any course-based projects →can integrate the skills of fieldwork methodology. Have to use previous knowledge in order to produce something new → can also apply what I have learnt in my minor FYP reminds me of what I have learnt in year 1 →apply them in the project.
Integration (-ve)	FYP cannot integrate previous knowledge. Many necessary materials are new FYP topic is not related to year 1 & 2 courses. New theories →feel like taking an extra course rather than consolidating previous knowledge
2. Focus of the FYP	
Transition (+ve)	Cannot prepare me for workplace, but postgraduate study Compulsory placement demonstrates my competence

Transitio n (- ve)	Not useful →not planning to stay in the academic world. Wonder how an academic thesis is considered to be helpful in a business world. FYP no use for job application→just a 6-credit course Research type FYP cannot help job application Cannot support my transition to workplace, it is too concentrated →cannot learn anything from other fields. Won't stay in the same field →FYP is unhelpful
3. The graduate capabilities	
Reflectio n and Closure (+ve)	Know how to conduct a study effectively and efficiently. Learnt different theories and became more capable. Presentation skills become better because of there are chances to practice throughout the FYP.

Of the four design characteristics identified in literature, two characteristics, reflection and closure, were reported as being commonly evident in the FYP. However, integration and transition were not commonly reported. Examining the student feedback, themes related to *integration* are categorized under curriculum design, while comments related to *transition* aspects are categorized in terms of the focus of capstone. Comments linked to *reflection* and *closure* is grouped within the broad theme of developing graduate capabilities. The following discussion on student voice is in terms of these three categories (Table 1 is a summary of key points noted by participants).

Curriculum design. Curriculum design is crucial to a successful implementation of a capstone experience. The study before the final year, i.e. the foundation and pre-capstone, is also critical for preparing the student to reflect and integrate during their final year study. According to the student voice, there are both positive and negative feedback on the FYP. Most positive feedback was gained from the closure and reflection aspects. Student reported that they could reflect on their performance in soft-skills and personal goals through FYP.

- '*I know how to conduct a study effectively and efficiently*' (Humanities student).

A science student said because her FYP is to create a new product, so she needed to use her previous knowledge to serve as the base of reference:

- '*I have to use previous knowledge in my FYP, in order to produce something new [a newflavor candy]. I can also apply what I have learnt in my minor [marketing studies], as I have to conduct marketing research for my new product*' (Student from Science).
- '*FYP reminds me of what I have learnt in year 1, for example some formula, and I manage to apply them in the project*' (Student from Engineering).

However, this experience was not a common one among other students. More commonly, students reported that only a limited amount of knowledge was useful to their FYP. These students, therefore, thought that the FYP did not help them to integrate what they have learnt in their University life.

- '*This topic is from a year 3 course [final year course], not quite related to year 1 & 2 courses*' (Science student).
- '*I don't' think FYP can integrate previous knowledge, in these 3 years, only one course talks about cultural conservation. Many necessary materials are not being mentioned in previous years; they are new to me and I have to find them by myself*' (Humanities student).
- '*Many of them are new theories; it seems like taking an extra course rather than consolidating previous knowledge*' (Engineering student).

Notwithstanding the fact that students in the FYP could not consolidate what was otherwise informative knowledge, students found that research skills learned in previous years were essential to their FYP. As one humanities student noted:

- '*My discipline emphasizes fieldwork a lot in course-based projects, so in my FYP, I can integrate the skills of fieldwork methodology*.'

Based on this feedback, it is reasonable to infer that curriculum design and learning activity are important when implementing a capstone. To illustrate, without an adequate foundation a

capstone experience would become meaningless. Similarly, without authentic assessment, a course or project would not help consolidate desired capabilities and confirm the ability to successfully apply acquired knowledge in realistic settings, as well as afford some opportunity to improve performance.

Focus of the FYP. The focus of the FYP affects the reported learning outcomes of students. Based on student feedback, the current approach to FYPs appears to be academic in –focus and as such students found the experience unable to cater to their needs and abilities. Conversely, students who were interested in postgraduate studies reported the FYP as most beneficial to their transition.

- '*I have learnt different theories, more algorithms and* [am] *more capable of doing [computer] programming'* (Science student).
- '[the] *FYP cannot prepare me for [the] workplace, but it prepares me for postgraduate study. For example, I know how to do research and [have] discover[ed] that being a MPhil student is to do research consistently, then write a thesis'* (Science student).

These students stated that the FYP helped them understand the process of academic study. In this case, the FYP gave final year students a sense of closure and offered them a chance to reflect on what they have learned during their university life. When asked about whether the FYP helped them integrate previous knowledge and skills, most students mentioned integration in terms of research skills, but not the consolidation of knowledge and skills. One issue with integration was that students noted the courses offered in the previous years were too diverse. Another issue was, given that the FYP was focused on academic research and so narrowed down to a specific topic, the approach allowed very limited inferences from previous studies.

The sum effect is that the focus of the FYP is academic research and as a result viewed as offering limited opportunity for programme-level knowledge integration. Moreover, with this

academic focus, the FYP also offers little opportunity for the development of soft skills, such as independent problem solving, self-management, communication and teamwork. These and other workplace capabilities, including technological awareness and initiative and enterprise are important graduate capabilities (Kember & Leung, 2005). However, while students questioned the usefulness of an academic paper and a research-focus in a competitive business world, not surprisingly given its academic-focus, the FYP was seen as useful for transition into graduate school and postgraduate studies, but not as a transition into the workforce. Some representative comments on the utility of the FYP in terms of student's expectation in the final year study include:

- '*After doing this FYP, I realize I don't want to stay in the academic field*' (Humanities student).
- '*I wonder how an academic thesis is considered to be helpful in a business world'(*Humanities *s*tudent).
- '*FYP is not useful to me, because I am not staying in the academic world' (*Humanities student).
- '*My FYP cannot support my transition to workplace, it is too concentrated and I cannot learn anything from other fields.'* (Science student)
- '*FYP is unhelpful in my transition, because I think I probably won't stay in the same field anymore'* (Engineering student).

Highlighting the limited practical utility of their FYP, students reported their experience as supporting successful job application, but not workplace transition. As one student noted:

- '*I expect my degree is to be used for job application, but my research type FYP cannot assist transition [into the workplace]. If my FYP was to develop a software application [for smart phone], I think it would help my transition'* (Engineering student).

Although the majority of students viewed their FYP as unsuitable in terms of transition characteristics, some students acknowledged a transition component to their FYP because it is not purely academic research work.

- *'The compulsory placement at a primary school [allowed me the opportunity to] demonstrate my competence as a social worker'* (Humanities student).

The above findings reveal a tendency for a rigid approach to the FYP; the issue calls for better curriculum design where the experience supports students' workplace-based competence. The responses also provide support for the design approach by UCLA that allows for varied study options, based on capabilities and interests – a student-oriented capstone activity.

Developing graduate capabilities. The core objective of a capstone activity is in essence to equip students with graduate capabilities suitable for their future development. Reflecting on the broad impact of the four design characteristics, students commonly reported presentation skills as having improved because presentation is a compulsory aspects of most FYPs.

- *'I think my presentation skills [have] become better because there are some chances to practice throughout the FYP'* (Engineering student).
- *'You won't write on your job application form claiming that you have completed a FYP, unless the organization you are applying for is also concerned about your FYP topic, if not FYP is just a 6-credit course without further implication'* (Humanities student).

While students reported their presentation skills were improved as a result of the compulsory assessment requirement, in general students doubted the significance of completing the FYP as a way to demonstrate their abilities to the prospective employers. One aspect that appears less appreciated is the development of written communications; perhaps a capability that does not appear as immediately relevant, but this is still a key graduate capability (Kember & Leung, 2005). Overall, Table 1 is a summary of developmental themes as raised by student voice. As

the table shows, integration and transition are reported variable, depending on the focus of the FYP, academic or workplace transition. There is in contrast a general appreciation of the development of graduate capabilities, most notably presentation skills and the capacity to conduct an investigative study.

Summary of analysis

The findings suggest that the current approach to the FYP appears to address two design characteristics, closure and reflection, quite adequately. However, the FYP does not appear to address integration and transition. Based on the data, all final year students identify the four characteristics as necessary in a capstone experience, but all students emphasized transition as most important. In contrast to the emphasis on transition, the overt focus of the FYP is not academic, with most departments requiring a thesis or a research-like project that allows for a varied approach, nor does it relate to workplace matters. Students concerned about seeking work upon graduation, do not value the undoubted development of research skills and discipline knowledge from the FYP. What students appear to want most are chances to apply their knowledge and improve their soft skills. The desired type of activities could be broadly described as needing to be authentic and practical in nature. However, for some students, those aiming for further studies, the FYP helps realize the general goal of undertaking real academic research. However, this group was a minority in the final year student body and the FYP as currently conceived can only be seen as a limited capstone experience, and one without the four design characteristics.

From the findings, it appears that curriculum design affects successful integration of knowledge. Some students thought that their previous studies were practical enough and sufficient to help them through the process of the FYP, while others thought the curriculum was

not coherent enough and that they were unable to apply what they have learnt in the previous years. However, the academic focus of a FYP facilitated a smooth transition for the postgraduate students. Table 2 below outlines a design framework that identifies development aspects, learning activities and assessment strategies for a capstone experience.

Table 2: Design framework to support a capstone activity

Integration (I)**	**Reflection (R)**	**Closure (C)**	**Transition (T)**			
Integrate knowledge and skills	Reflect on development - academically, socially and personally.	Close undergraduate student life	Transition from undergraduate studies to being self-autonomous learners.			
Choose the activities and assessment						
What are we developing/ or assessing (Indicative)	**How (Authentic learning activities) (Indicative)**	**Authentic assessment methods (Indicative)**	**Design Characteristics**			
			(I)	**(R)**	**(C)**	**(T)**
University community	Project work, service	Group project, self reflection	✓	✓	✓	✓
Discipline knowledge	Project work, group presentation, simulation, thesis	Presentation, peer assessment, group projects, reflections	✓	✓	✓	✓
Academic skills, self-directed learning e.g. research, collaboration	Group presentation/case analysis/ Simulation/ Lab experiment report	Presentation, participation, peer assessment	✓	✓		✓
Self awareness	Reflection journal / Blog	Reflection; Pass/Fail	✓	✓		
Leadership skills/ Teamwork/ Interpersonal skills	Group project, team-based activities, Career planning	Group project, peer assessment, reflection, presentation	✓	✓	✓	✓
Problem-solving skills	Case analysis/ Group/ Research project/ Simulation	Group project, peer assessment, reflection	✓	✓		
Citizenship	Service learning	Not assessed			✓	✓

The suggested learning activities in Table 2 are similar to the preferred learning activities extracted from the findings of the student voice. The most welcomed learning activities were group work, presentations and fieldwork. These activities were important in the development of interpersonal skills, communication skills, presentation skills and the practical skills that nearly all employers are looking for. For the majority aiming to start a career right on graduation, an internship to gain a

real working experience is most valued. Generally, these students also wanted a smaller class size, as this enabled richer classroom interactions. Alternatively, students who planned to pursue further studies wanted more seminars and more teaching assistants available to offer them support and study assistance during their final year.

Conclusion

If higher education is aiming at producing multifaceted graduates who are both confident and competent in the future workplace, it seems that the current final year project (FYP) is not adequate in preparing the way. This study reveals the research-oriented FYP is the sole option for final year students and this activity is limited, failing to provide an integrated experience that is able to satisfy the expectations of the majority concerned with finding employment. The current FYP is, based on student feedback, only able to meet the needs for research students by facilitating their transition into graduate study. The capstone design framework illustrate stages that can help programme designers match student capabilities and learning experience to better assist knowledge integration and successful transition. Students with higher academic capabilities may be interested in and capable of handling a demanding research thesis. This would most likely suit those students more interested in staying in the academic field and continuing to graduate school. For students less interested in academic studies, the opportunity to choose projects, internships or group-based projects will help them attain better transition.

In summary, this study illustrates the idea that students should not be limited to knowing things, but should also be given a chance to reflect on knowledge and to apply what they have learnt in their studies for their future workplace. The capstone design dimension of transition captures this concept. The limitation of this research is that it was conducted only in CUHK; the study may however reveal what is happening in a wider education sector. The essentiality of the four components in a capstone experience conveys an important message the student voice appears to be saying: that integration and transition aspects are not being emphasized under the current 3-year curriculum. In other words, students are stuck within the academic world, and the chances to widen their horizons are thus being limited. For the 4-year curriculum, careful consideration should be taken in design of the new curriculum that culminates theoretically with a capstone experience. There is a deep yearning to improve students' capabilities towards realizing their life-

long goals. There are also some yet unrealized pitfalls from an academics viewpoint, such as finding suitable topics, marking thesis and providing feedback. These deserve further inquiry.

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