

**STAFF PERCEPTIONS OF ISSUES RELATING TO
THE PRE- AND POST-IMPLEMENTATION OF A
CREDIT BASED SYSTEM**

by

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ABSTRACT

The purpose of this research was to examine the issues pertaining to the change to a credit based system (CBS) in its first academic year of implementation 1997/98. Through the use of a longitudinal study, interviews were administered to academic and management staff at the beginning and end of the first CBS academic year, to evaluate the expectations and the reality of the implementation of a CBS at The Hong Kong Polytechnic University.

The findings disclosed that the faculty and its staff were prepared and reacted well to the introduction of a CBS. However, the development of this new system tended to be an amalgamation of pre-existing programmes. The overall expectations of CBS had to do more with the operational aspects of the new scheme than with the anticipated results of CBS itself. Final examinations were reintroduced to coursework-only subjects. The elective selection process was moved closer to the semester they were offered. A relationship was established between the extent of participants' previous CBS experience and ease of introduction. This finding was further significant as previous CBS knowledge resulted in frustration over the slow pace and the extent of the scheme being introduced.

To ease the phasing-in process, it is recommended that staff be involved in the early stages of establishing CBS. There also appears to be a clear need for further advice, explanation and guidelines on the new grading system. The university may need to secure a centralised examination system, including an examination timetable. More training for management and staff on how to advise students is needed. A task group is suggested to standardise CBS administrative procedures university-wide. Furthermore, the university needs to encourage departments to open up their subjects and, at the same time, give their students real opportunities to take up the choices offered.

KEY WORDS: Credit Based System, Curriculum, Student Choice, Hong Kong Education, Higher Education.

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In memory of my late mother.

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1. INTRODUCTION

Staff Perceptions of Issues Relating to the Pre- and Post-Implementation of a Credit Based System

by

B.W.A. (Ben) Dewald

1. INTRODUCTION

Hong Kong is transforming into a knowledge-based society and lifelong learning has become essential to everyone. The vision of the local Education Commission (1999) is that everyone who aspires to higher education should be given opportunities to attend programmes appropriate to their abilities, as a first step to life long learning. Hong Kong's higher education sector should adopt a greater degree of flexibility and diversity so that individual learners can choose among different institutions and modes and determine their own pace of study in pursuing higher education. Hong Kong's Policy Address 2000 announced its commitment to increase higher education attendance from the current 34 percent to 60 percent of senior secondary school leavers, over the next decade.

A portable and transferable credit unit system is therefore suggested within and among the Hong Kong universities so that students may choose to take modules across different disciplines and in different universities. Flexible entry and exit points should be available such that students can accumulate the credits earned, suspend and resume their studies according to their abilities and personal plans. The establishment of such a system among the local universities would pave the way for the development of a comprehensive qualifications recognition system among the higher education institutions. With such a system, access to higher education would be greatly widened as the qualifications attained by learners through different channels and different modes could be recognised, accumulated and transferred among institutions.

The Hong Kong Polytechnic University (PolyU) has decided to move toward a credit-based system (CBS). This move, according to its President, will enable the PolyU to offer academic programmes, which can be modified readily to meet the changing needs of various professions. A CBS scheme should also facilitate student exchange between the PolyU and academic institutions in Hong Kong and other parts of the world, including China (HKPolyU Press Release, May 1, 1997).

CBS at PolyU

The PolyU has been phasing in a CBS for its academic programmes at all levels pursuant to a decision by the University Senate in October 1995. Starting from 1997/98, the University's Faculty of Engineering was the first to adopt a credit-based structure in its curriculum, while the other five Faculties would implement the system in 1998/99. The implementation schedule was as follows:

- 1997/98: at least one Faculty expected to introduce credit-based programmes
- 1998/99: additional Faculties expected to introduce credit-based programmes
- 1999/2000: all first years of all programmes will be credit based
- 2002/03: all stages of all programmes to be credit based.

In the above schedule, the conversion of on-going structured programmes to a credit-based system was assumed to be completed in stages.

In the PolyU's credit-based system all academic programmes will fit a common framework, in which subjects of standard size (3 credits/3 hours per week for 14 weeks)

The focus of this research is on the descriptive, people's own words and not the quantitative, statistical aspects. Therefore, this study is subjective and process oriented. In order to give a holistic view of the expectations and the reality of the implementation of CBS an approach involving interviews with the participants was used. There are, however, problems involved using a qualitative versus a quantitative approach; it is time consuming, data reduction is difficult, and it is harder to prove reliability. Moreover, it may not be possible to generalise the findings, as they are specific to the PolyU. However, "fuzzy generalizations" should be possible as the findings here may occur at other institutions (Bassey, 1999).

This study aims to evaluate the expectations and the reality of the implementation of a credit based system at The Hong Kong Polytechnic University.

The objectives of the study are:

1. To examine, review and assess how the Engineering Faculty and its staff have prepared and reacted to the introduction of CBS at the PolyU;
2. To assess how CBS strategies and measures have been implemented and to identify strengths and deficiencies;
3. To examine to what extent the departmental management and staff have been able to adapt to CBS changes;
4. To examine possible scenarios for the future of CBS at the PolyU and other institutions;
5. To provide guidelines and recommendations on the introduction of CBS.

The main research questions emerging from the study's objectives are:

1. What are the staff and management's expectations of CBS?
2. To what extent are staff expectations of CBS the same as those of management?
3. To what extent are participants' expectations of CBS related to their past experience?
4. How does the degree of CBS knowledge and experience by management and staff relate to the levels of success of the innovation?
5. What are the perceived effects of CBS on teaching and learning?
6. What are the perceived effects of CBS on assessment?
7. What are the perceived effects of CBS on the students, the lecturers, and the management?
8. What is the overall perceived impact of CBS at the PolyU?

Education in Hong Kong

Culturally, education is highly regarded in Chinese society, often attributed to the Confucian tradition; parents across different social classes tend to have very high aspirations for their children. Entrance exams in Hong Kong are common for kindergartens, which have special links to desirable primary schools, which in turn feed reputable secondary schools.

Hong Kong's population has grown from 600,000 at the end of World War II to 6.8 million in 1999 (HK Census and Statistics Department), greatly increasing the demand for higher education. Furthermore, Hong Kong's mainly manufacturing economy changed to a predominantly service economy requiring a better-educated workforce.

Since the 1984 Sino-British agreement, followed by Hong Kong's re-unification with the Chinese Mainland in 1997, there has been a greater demand for a home-grown educated population.

In Hong Kong's 1999 Policy Address, the Chief Executive re-iterated the importance of education for its knowledge-based economy (Tung, 1999). The Education Commission had been asked to assist the Government in conducting a comprehensive review of the existing education system, the goal being an educational system that can both be user friendly and take care of the increasing demand for higher education. Furthermore the overall transformation in education is to embrace "life-long learning".

Initial findings by the Hong Kong Special Administrative Region Education Commission Education Blueprint for the 21st Century (1999) show that Hong Kong's society is undergoing fundamental changes. As it transforms from an industrial society into an information society, and as the economy shifts its emphasis from manufacturing to knowledge-based activities, knowledge has become an essential element. Lifelong learning is now essential. The Education Commission further states that the Hong Kong:

"... education system appears to have stagnated in the industrial age. The system still caters to a selected few, whilst disadvantaging the majority and creating a large number of losers. There are comments that kindergartens are teaching our children a curriculum that is too advanced for their age; school children have to cope with too much homework; and the structure of basic education is fraught with hurdles and dead-ends. Even in universities, students often have little experience outside their specialised areas of study. Many students stop learning after graduation, or are simply tired of learning even before graduation. This runs counter to the expectations of a lifelong learning society and poses a serious challenge to Hong Kong.

There is an urgent need to introduce fundamental reforms to our education system. Reforms in education should bring new learning opportunities to every citizen, and should bring new opportunities for the future development of Hong Kong. This should be the guiding principle for education reform in Hong Kong.”

(HK SAR EC 1999 p. 15)

Higher Education in Hong Kong

Therefore the Hong Kong Education Committee makes the following suggestions:

“Top priorities:

- To encourage the establishment of various types of post-secondary colleges, while accommodating the existing institutions.
- **To encourage universities to adopt a genuine system for fully transferable credit units.**

Issues under consideration:

- **How could universities progress towards a transferable credit unit system? How could the credit units be transferred among institutes and eventually among different modes of higher education?**
- How to redefine the first degree? How to broaden the knowledge horizon of university students? Does university campus life provide students with sufficient room to experience practical life in society?
- How to encourage the development of various types of private universities?
- Should we actively develop post-graduate education?”

(HK SAR EC 1999 p. 22)

The emphasis on transferable credit units is directly relevant to this study.

If learning for life is adopted into the education system it will encourage people of all ages to continue formal learning as a matter of course, it will transform the lives of thousands whose schooldays are behind them, as well as opening up new horizons for school starters (SCMP, Sept. 23, 1999).

University of Science and Technology 7,000; City University 11,200; Hong Kong Polytechnic University 11,600; Chinese University 13,300; and Hong Kong University 14,500), a greater than ten-fold increase in 15 years. These numbers do not show the full picture as they exclude part-time students (for example, Hong Kong Open University 24,000; City University 6,000; and Hong Kong Polytechnic University 6,650) and Hong Kong students studying by distance learning or overseas.

The PolyU History

The Hong Kong Polytechnic opened in 1972, taking over the site of the former Hong Kong Technical College in Hung Hom, Kowloon. In the early 1970s, the range of courses offered was focused mainly on engineering, commerce and management, mathematics and science, nautical studies and textiles. Over the years, the PolyU has progressed from an institution of eight departments, to one with 29 academic departments and centres grouped under six faculties. Today, it is the largest university in Hong Kong in terms of student population, offering more than 120 programmes in a wide array of academic disciplines, at levels ranging from higher diploma and bachelor's degrees through to master's and doctoral degrees. Since its inception in 1972, more than 166,000 students have graduated from the institution.

The University has formulated a Strategic Plan for the 21st century. In broad terms, the University is determined to become a "preferred institution", offering "preferred programmes" and producing "preferred graduates"; not only for Hong Kong, but also for China and the rest of the region.

The Engineering Faculty

The Faculty of Engineering was established 25 year ago and had, at the time of the 1997/98 study, just under 2,000 full-time students, 1,500 part-time, 137 academic staff, and over 60 support staff. The Faculty of Engineering consisted of five departments:

1. Department of Electrical Engineering
2. Department of Electronic Engineering
3. Department of Manufacturing Engineering
4. Department of Maritime Studies
5. Department of Mechanical Engineering

According to the Dean, the Department of Electrical Engineering had been following a CBS for the past five years, and this experience was one of the reasons for the Dean himself to have been chosen as one of the leaders of the PolyU's move toward such a system. This expertise ensured that the engineering faculty would be the first to follow the new credit based version. Four out of the five engineering departments could be part of this study, as one had already been operating in a CBS mode and was therefore excluded.

Model of CBS at the PolyU

The introduction of CBS at the PolyU can be illustrated by a synoptic model developed Becher and Kogan (1992) which shows the changes that have taken place in education over the previous decade (see Figure 1.1). This model reflects the characteristic values and practices at four levels: the central authorities, the institution, the basic unit and the individual, and the relationships between them. The four levels for this study are:

- The Hong Kong Government as the central authority
- The Hong Kong Polytechnic University as the institution
- The four Engineering Departments as the basic units
- The lecturers as the individuals

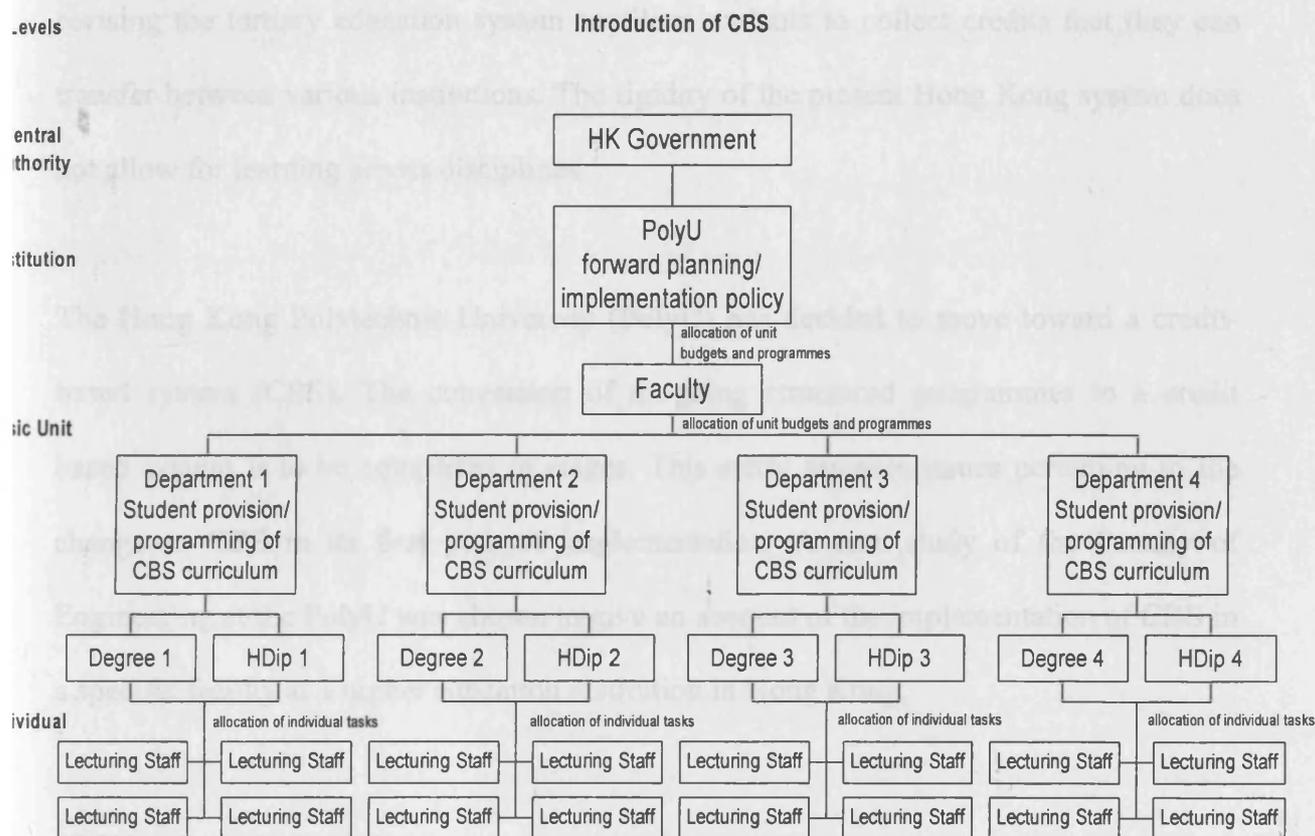


Figure 1.1 CBS Introduction model at PolyU (Adapted from Becher and Kogan, 1992)

A CBS has been created at the institutional level and guidelines, academic regulations and procedures for credit based programmes are to be set. The decision was made to phase in CBS in one faculty initially, the Faculty of Engineering at the Basic Unit level in Figure 1.1. The rules and regulations of CBS at the PolyU will then be introduced at the basic unit level through department heads and/or course leaders, who will make part of the sample of this study.

Summary

The growing demand for Hong Kong education sees a need for a system that allows for an ever growing number of students, offering possibilities for lifelong learning, and which allows for a universal credit unit system. The Education Commission recommends revising the tertiary education system to allow students to collect credits that they can transfer between various institutions. The rigidity of the present Hong Kong system does not allow for learning across disciplines.

The Hong Kong Polytechnic University (PolyU) has decided to move toward a credit-based system (CBS). The conversion of on-going structured programmes to a credit based system is to be completed in stages. This study assesses issues pertaining to the change to CBS in its first year of implementation. A case study of the Faculty of Engineering at the PolyU was chosen to give an account of the implementation of CBS in a specific faculty at a higher education institution in Hong Kong.

Background

Module structures are being replaced by various types of higher education institutes on a global scale. Some of the potential benefits are flexibility and student choice, saving of resources, increasing access to higher education, and popularity with students. It is therefore easily understood why CBS is growing in popularity world-wide. However,

2. LITERATURE REVIEW

Introduction

The literature review focuses on the main sources relevant to CBS in order to address the objectives of this study. It might have been appropriate to discuss theoretical literature such as managing change, or influences on the curriculum, in this review. However, given the large number of sources directly relevant to credit based systems, and related topics such as modularisation, it seemed sensible to focus on this substantial body of literature in the review. The chapter adopts a thematic approach reflected in its structure. Following the background of CBS its history and where it stands today is presented. This is followed by a review of the vocabulary of CBS. Levels of modularity introduced elsewhere and a comparison of the UK and USA credit based system are further presented. The purpose and reasons of CBS are subsequently explained. Criticisms of this new scheme are investigated. The implications for management, staff and students and post-studies and findings are reviewed. The emerging four themes are: counselling and advising students, assessment, teaching and learning approaches, and the administration of CBS.

Background

Modular structures are being introduced to various types of higher education institutes on a global scale. Some of the potential benefits are flexibility and student choice, saving of resources, increasing access to higher education, and popularity with students. It is therefore easily understood why CBS is growing in popularity world-wide. However,

many academic staff have seen, and continue to see, some rather more organised and hidden agendas sponsored by institutional managers and political agencies (Allen & Layer 1995). Although a credit based system (CBS) claims to be good for students, at the same time it is praised by those who seek to reduce resources and squeeze student funding. This explains why CBS practitioners are not always trusted by colleagues. Furthermore, “sceptics question the effect on standards, on the coherence and value of the educational experience provided to students” (CNAA, 1989, p.1).

Credit and modularity were initially developed in the UK to give students more choice. With the dramatic rise in student numbers and less money available to education, CBS has been given another role it was not initially designed for, that is taking care of an increased number of students at a time of decreasing educational budgets, which some critics see as one of the reasons for the perceived decline in higher education. The ability to manage change by higher education is seen as being as much of a problem as the tools themselves (Allen & Layer, 1995). However, students and institutions alike in a mass higher education system require the flexibility of CBS. The US system has shown that it has been able to cope with greater participation rates in higher education over the last one hundred years, through the adoption of CBS (Allen 1995).

CBS and Modular History

Modular and CBS concepts have a long history in North American higher education according to Theodossin (1986), and CBS is the most utilised educational system in the USA. Records show that the University of Harvard, early this century, instituted a system

to have such a system in place between 1994-5 and 1996-7". This trend shows a lengthy, but ultimately inevitable process moving from initiatives in credit and modularity in the 60s and 70s, to a virtually universal credit based system by the end of the century. This is confirmed in the 1995 Higher Education Quality Control (HEQC) report which claims that, "(approximately) 90 per cent of higher education institutions have now adopted a modular or unitised framework" (p. v). This growing popularity calls for a system that is best for education and students alike.

However, not everybody agrees with the benefits of CBS, and another explanation for the move toward it is that although it may not be the best system, most institutions are headed that way, and therefore not doing so is no longer an option.

There are many variations of CBS, but all systems seem to share two characteristics: first, the underpinning principle of increasing flexibility for both student and institution and second, the dilemma of introducing CBS at university and national levels. On the international market, the US CBS model remains the most imitated and is used as a starting block by most countries. Countries moving toward CBS, tracing US models, are New Zealand, Australia, Thailand, the Philippines, India and Senegal. Meanwhile, Eastern Europe is using American CBS consultants to transform its higher education, resulting in very Americanised schemes. Furthermore, two-thirds of European Union countries have, or are developing, a credit system with Sweden, followed by the UK, at the forefront in terms of modularity and credit. Asian countries becoming involved

include Vietnam, Singapore, South Korea and Malaysia. Robertson (1994) best describes why so many countries move to CBS.

“As nations come to expect more from the educational capacity of their citizens, an expansion of participation in higher education appears to be the global response. In most cases this has taken the form of increased diversity and flexibility, mediated by the introduction of credit-based and modular systems.” (p.286)

There appears to be a correlation between the increased demand for education and CBS. However not everybody is joining this move toward CBS; countries based on German and French higher education traditions have patterns of non-involvement according to Robertson (1994). Other parts of the world that have shied away from CBS are Latin America, Africa, and the Middle East. Robertson does not find an explanation for this, but suggests the possibility that these countries wish to stay away from an Americanised model.

The variations of CBS schemes being introduced are endless. Regel (1992) expresses the problem of implementing hybrid CBS models, in his report for the World Bank on academic credit systems:

“At the National University of Lesotho [...] initial efforts to combine academic aspects of British academic requirements with a modified American academic credit system have created a complex and hybrid programme [...] Excessive faculty time has been absorbed in administration and paperwork at the expense of teaching and research. It is important to realise that the development of the credit system in America took place over a long period of time, and the system continuously responded to other factors which helped form contemporary American Universities.” (Regel 1992 in Allen & Layer 1995 p. 34)

CBS has been fabricated in the UK in a haphazard manner according to Betts & Smith (1998), and they state that:

“In the UK, Credit-based Modular Systems (CBMS) have been created through a fragmented and inconsistent process of piecemeal development. For good reason they were developed by deconstructing the traditional curriculum model of higher education rather than by building a new system from the bottom up. The British system of higher education (HE) has not been particularly receptive to modular systems and credit accumulation and transfer. For many, indeed, most universities, which have adopted CBMS, the change has been very recent. The credit-based modular curriculum system, has at its heart a revolutionary approach to HE.” (p.2)

There clearly is not a ready-built model that can be introduced. Nevertheless, there are many similarities in terminology and operational problems between CBS and modularity.

In Hong Kong all eight universities are currently using or introducing credit based systems. The City University has completed its CBS introduction, the PolyU is in the process, and the Hong Kong University has just started. The Lingnan University is looking at a universal credit unit system allowing its students majoring in one subject at one university to take a second subject at another university and have the credits gained transferred. Lingnan University president Professor Edward Chen Kwan-yui said the eight universities supported the system and that details were being sorted out (Ng, 2000).

Transfer of credit units is common in America, where students can gain credits in any subject and have them counted towards one degree. In Britain, undergraduates generally concentrate on the area of study they select for their degree. A recent Hong Kong Open University survey showed 95 per cent of respondents were in favour of a universal credit unit system. At present, funding in Hong Kong is based on the number of first-degree

students a university takes. The Hong Kong Education Commission, in its proposals on educational reform released in 1999, encouraged universities to adopt a genuine system for fully transferable credit units, but did not make proposals about funding. The University Grants Committee chairperson Dr. Alice Lan Lee Kiu-yue supports the credit unit transfer system as collaboration would benefit universities in research and save resources (Ng, 2000). Hong Kong's Chief Executive accepted in full the Education Commission's reform proposals, during his Policy Address 2000, and pledged an additional yearly HK\$2 billion funding for education. He promised the government would provide about 28,000 extra places for higher education this decade to reach the sixty per cent target for higher education. Only 18 per cent of 18 to 20 year-olds enter local universities. When including those students studying overseas (16 per cent) 34 per cent receive higher education. CBS should facilitate an effective response to the greater demand for education.

CBS Vocabulary

The introduction of this new system, without being fully understood by both academic and administrative staff, has created obstacles. There is not only the one model borrowed directly from the US, or the early UK initiatives such as Oxford Brookes University, or the Open University. The popularity of modularisation and CBS gave way to a new vocabulary, and new expressions were adopted by potential modularisers, such as semesters, modules, programmes, credits, and electives, to show the paradigm shift (Kuhn, 1962).

Modular schemes are created upon the principle of credit accumulation, based on units of a standard size or equivalent study within a scheme. Consequently, they facilitate participation in credit accumulation and transfer schemes, which function within a single institution, locally, regionally or nationally (CNAA, 1989). Credit, also referred to as CAT (Credit Accumulation and Transfer), means that learning can take place anywhere; that it can be measured and given a credit value; and that these credits are transferable. Furthermore, the assumption is not always made that learning has to take place in an educational institution, that it needs to be formal, or about what 'size' learning should be. Credit therefore implies that learning can be measured, accumulated and transferred. The systems and regulations used to manage credits overshadow the simplicity of it. Giving credit for experience other than education, will give students the opportunity to move across boundaries. The accreditation of prior experiential learning (APEL) can be problematic as:

“Experience does not necessarily lead to learning, or the right type of learning at the right level. APEL processes must therefore be designed to award credit for experience that can be translated into learning through a process of reflection, and which has been captured in a formal way through for example an analytical commentary which can then be judged against explicit criteria. The issue for some is whether this commentary must be embedded within some written offering or can legitimately be observed through some oral process such as a *viva voce*.” (Betts & Smith, 1998)

This is similar to 'exemption to advanced standing' recognised previously on structured programmes, but seems to be more formal under CBS (Betts & Smith, 1998). Nevertheless, “where there is a lack of clarity and explicitness about procedures and expectations it is usually the candidate who suffers” (Trowler 1996, p. 25) and the previous experience

is not rewarded. Robertson (1994, p. 10) states that seventy per cent of universities allowed credit for work-based and other forms of experiential learning, learning acquired through experience at work or elsewhere, rather than in university classrooms on validated courses. Therefore, credit goes well beyond conventional models of modularity. This ability to give value to, and transfer, credit has opened up previously inaccessible areas of higher education (Allen & Layer, 1995). This accreditation of prior learning or prior experiential learning (APL/APEL), which gives academic credit for prior qualifications or experience, can significantly reduce the cost of and the time required for training (Raban, 1990).

The CNAA (1989) states that:

“A module or course unit is a self-contained block or unit of study which has a standard size or some method of agreeing a standard value [...]. Each module usually has specified prerequisites and distinct aims and objectives and is assessed and examined separately, normally during it and immediately following its completion.” (p.3)

Credit and modularity both imply that learning can be done in separate uniquely valued blocks. Institutions should understand the differences between credit and modularity when introducing either, or both of them. For an institution to introduce modularity, reorganisation of both its curriculum and management structures are needed, whereas credit will allow learning to be measured wherever it takes place. This distinction must be understood in practice to minimise misunderstandings during the introduction and development of either, or both of them. Modularity is best explained by Allen (in Allen & Layer, 1995):

“Modularity [...] makes an assumption that *formal* learning, mostly within institutions, can be broken into self-contained blocks (*units* or *modules*) in which students can learn and then show, through assessment, that they have satisfactorily done so. These blocks, which may be related to each other (for example, through the use of *prerequisites*), can then be built up by the student into appropriate academic awards.” (p.26)

In order to graduate, a specific number of modules at predetermined levels have to be completed. These might include prerequisites, which are either other modules within the scheme, or prior knowledge and skills.

Level of Modularity

Modularity can be applied in different levels (see figure 2.1). Allen & Layer (1995) and Betts & Smith (1998) have derived different levels of modularity. A single ‘*module-based*’ course or ‘*contained provision*’, is broken down into self-contained components that are separately assessed and allows ‘limited’ to ‘no choice’ to students. The next step up, called the ‘*boundaried provision*’ by Betts & Smith (1998), as students’ choice is still within boundaries. The focus is still on a single programme, but some choices outside this area are permitted. ‘*Departmental or faculty modular scheme*’ takes it to the next level, permitting students departmental or even faculty wide subject choices. Students may design their own programmes including major and minor combinations. These first three versions of modularity, or combinations thereof, are quite common in tertiary education. The introduction of these three levels of modularity are not seen as exceptionally problematic by Allen & Layer (1995), as they do not endanger the subject or discipline independence. The next stage is an ‘*institutionally based modular scheme*’,

that does away with all departmental or faculty boundaries, requires central action and is frequently limited by managerial and administrative mandates. This model is still scarce and calls for highly centralised management and administrative functions. Students enter a scheme rather than a department. This version of modularity is nearest to the US prototype, but differences do exist between the UK and USA versions.

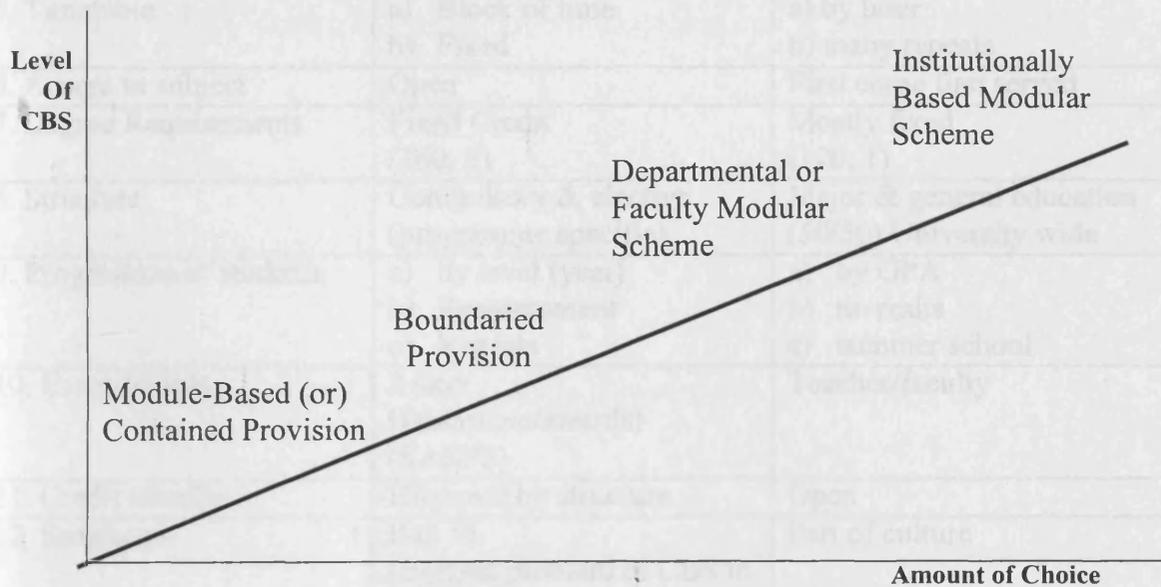


Figure 2.1 Degree of modularity (Allen & Layer, 1995; Betts & Smith, 1998)

By comparing the credit-based systems on both sides of the Atlantic we can see there are substantial differences (see table 2.1). Firstly, the American version is much more straightforward. The USA system calculates student time in relation to contact hours only, as opposed to notional hours in the UK, which includes 'tutor time', and 'student committed time', or 'learning time' (Theodossin, 1986, p 13). Assessment is teacher led without the involvement of any external examiners and all grades are used for the student's overall grade point average (GPA).

CBS

Characteristics	UK	USA
1. Basis	Notional study hours	Class contact hours
2. Assessment	University approved (Validation)	Teacher led
3. External examiner	Universal	None
4. Student performance (Grading)	Passes only used in averages	All assessment in GPA
5. Timetable	a) Block of time b) Fixed	a) by hour b) many repeats
6. Access to subject	Open	First come first served
7. Degree Requirements	Fixed Credit (360, 3)	Mostly fixed (120, 1)
8. Structure	Compulsory & elective (programme specific)	Major & general education (50/50) University wide
9. Progression of students	a) by level (year) b) Reassessment c) Repeats	a) by GPA b) no resits c) summer school
10. Exam boards	2 tiers (Discipline/awards) (SARPS)	Teacher/faculty
11. Credit transfer	Hindered by structure	Open
12. Semesters	Bad fit (Biggest problem of CBS in UK)	Part of culture

Table 2.1 Comparison of UK versus USA version of credit based systems (Scurry, 1999)

The UK system kept some of the bureaucracies of the structured programmes. Timetables in American institutions have many options for students and most subjects are repeated each semester or quarter at different time slots, allowing failed subjects to be retaken the following semester. The UK has timetables, which are fixed by block of time, and since most subjects are offered only once a year, reassessment is still employed as failing a subject could put the student one year behind. The UK course has a compulsory component and some electives, whereas the USA one has subject choices for the student's major and an array of subjects for their general education. Credit transfer allows

USA students to move within or outside the institution. The semester breaks are considered a major problem in the UK, but they have been part of the American educational culture for many years. Most of these differences can be explained by the fact that the American system has been in operation for a much longer time and is similar nation-wide, whereas the UK system has been developed independently by each institution, often by cutting the existing yearly structured course into semesters.

The above versions of modularity are not all-inclusive, and institutions choose to enter at different CBS stages and either stay at their entry level, or progressively change.

Increased Student Numbers with Flexibility of Choice

According to Dicksens (1995), modularisation and semesterisation serve at least two purposes. Students are given flexibility of choice and CBS permits higher education institutions to provide for the increased student demands coupled with a reduction in resources. Therefore, the expansion of future student numbers and the increasing financial burden of participating in higher education on both students and the state, reveal there is a need for universities to create a system which:

“... can become more ‘flexible’ and more ‘economic’, through the creative manipulation of such variables as course design, course length, awards and teaching methods.” (Watson, 1985 p.11)

The educational rationale for CBS is an increased amount of flexibility and empowerment for the student. Students following CBS have the ability to customise their semesters by choosing the amount and kind of subjects they study.

Mature students will benefit by altering their pace of attendance and by combining learning from different locations (Davidson 1992). Modularisation and semesterisation allow for greater flexibility of student choice, and allows them to attend full-time, part-time or through distance learning. Furthermore, credit accumulation and transfer systems (CAT) would entitle students to move between institutions. Mansell suggests that:

“...an open society calls for an open response from the educational system, a greater freedom of choice for students, flexibility in the use of the resources by institutions dependent upon the public purse, a rapid response to industrial needs and a decoupling of students from fixed terms of study in one place.” (Mansell et al, 1976 p. 35)

Suggestions for a unified post-16 curriculum and present developments are based on modular and credit based systems (IPPR, 1990, Young & Watson, 1992, FEU, 1992, WJEC, 1992). The FEU report shows strong support for a post-16 national credit accumulation transfer (CAT) framework.

Although, according to Dicksens (1995):

“As yet, there is little or no evidence to confirm that modularisation is encouraging students to take advantage of such opportunities to any significant extent and it would seem that this particular element of choice is merely a chimera.” (p. 36)

Reality indicates that students' main choice relates to electives, which are not exclusive to modular schemes (Dicksens 1995).

How students select these electives is another challenge since it becomes their own responsibility to construct a programme of study. According to Allen (in Allen & Layer, 1995), students are at first overwhelmed by the responsibility of the choice offered by CBS. Once they are more familiar with the scheme students tend to test its perimeters.

Criticisms of Modular and CBS Schemes

CBS gives education a processed neo-Fordist managerial perspective, according to Trowler (1998), best recapitulated by Eriksen (1995):

“...education [can be perceived] ...as a production process...whereby resources are used to convert inputs into outputs. Specific issues can then be discussed systematically in terms of production efficiency and effectiveness; efficiency in terms of resources utilised and effectiveness in terms of the quality of the output produced.... Standardization avoids duplication, which is an enormous source of wasted resources, and the multiple use of subjects/modules allows for the production of large quantities. Higher education is becoming and will become more of a process involving a high volume of a repetitively processed product.” (pp. 14, 22,21)

Theodossin (1986, p.8) describes CBS schemes as a device for “curricular accounting” and Toyne (1979, p.35) refers to credit transfer as maximising “accumulated educational capital”. Furthermore, criticism of modular structures has centred on their purported inclination to dissolve the cohesion of a course. Student feedback recorded by Jenkins and Rusk (1993) showed how they cherished their modular choices. However, this new-found freedom could be influenced. For example, electives may be selected because of their ease of assessment, by its well-chosen name, or the popularity of the lecturer. The student choice allows them to stay away from subjects they consider themselves weak in. For example some students stayed away from modules that required them to work in groups (Jenkins & Rusk, 1993). Because of supply and demand, modules not chosen are cancelled and resources move toward the popular choices, and therefore marketing techniques such as advertising may be used to gain the competitive edge. There is some apprehension that electives will be designed to attract the largest number of students

possible to guarantee resources, but not necessarily to satisfy educational needs. This is best recapitulated by Becher and Kogan (1992):

“Individual departments will often tend to compete amongst themselves for student numbers, using a variety of ingenious, but not always educationally productive tactics. They may also introduce unnecessary rigidities in the system by insisting on a series of prerequisite courses, or complicate matters by keeping to their own marking schemes.” (p.96)

“A major inherent weakness of modularisation as a method of content organisation is it tends to fragment knowledge” (Cornford, 1997, p. 237). Several students in Jenkins and Rusk’s (1993) video commented they saw no integration to their learning. Subjects tended to be studied at insufficient depth over a short period, not allowing students to assimilate and reflect upon their studies. Bell and Wade (1993) encountered fragmentation of the curriculum and the reduction in coherence and integration of modular programmes. The institution has to decide on how much freedom of choice students are given and the desired amount of control. Most CBS programmes, however, have a suggested path, which may have been created with the input of professional and external bodies.

Dicksens (1995) anticipates more surface learning as opposed to deep learning because of the fragmentation of education through semesterisation. There is ample evidence to suggest that the balance of deep and surface approaches in a class is related to a number of contextual factors, such as course design, workload, teaching, assessment methods and even the nature of the learning task (e.g. Entwistle & Tait, 1990; Knapper, 1995; Laurillard, 1979; Ramsden, 1979; Trigwell & Prosser, 1991). A study by Eley (1992)

shows that the same student may adopt different learning approaches for different courses. These findings have significant implications for the introduction of CBS as they suggest that improving students' learning is linked to course design, teaching and assessment systems, whereas isolated efforts like study skills sessions have little effect.

According to Badley & Marshall (1995):

“The danger with a modular scheme is that modules will be packed with more and more content and that students will be forced into a rather superficial view of their learning task.” (p.20).

They further suggest designing modules that encourage meaningful learning by moving away from the traditional over-concern with subject content. Student involvement and learning activity should be given greater emphasis.

The semesterisation of the school year has greatly complicated the introduction of modularity and credit. Although modules offered per semester give greater choice to students than yearlong ones, semesters are seen by many academics as too short to provide a genuine educational experience. Dicksens' (1995) research in modularisation reveals that:

“A module is taught in reality, for 12 weeks in a 15 week semester – many academic staff believe that to deal adequately with subject content and analysis there will inevitably be an overload of work and assessment for both students and staff.” (p.37)

This academic debate is fuelled by the administrative ordeal of cutting the first semester at Christmas in the Northern hemisphere. Following this holiday, students have to sit exams which lecturers have to mark and make decisions about within a two-week period, prior to the start of semester two. This time frame is problematic and very few institutions

have decided to start the first semester early enough to have it finished before an extended Christmas break which allows academics to mark essays and make decisions before the commencement of the second semester. The University of Stirling, Scotland, has adopted this early start and extended the Christmas holiday, and some other institutions in the UK have followed suit (Allen & Layer, 1995). Oxford Brookes University has kept the conventional UK school year pattern of three terms lasting ten weeks each; one commences and is examined before Christmas, the second in the beginning of the new year and the third offered before the summer (Scurry, 1999). Universities that introduce CBS without accounting for the semester break encounter administrative problems that hamper both staff and students acceptance of the scheme.

Teaching problems identified on modular courses are not related to modularisation, according to the HEQC (1996) report, but rather to semesterisation, greater student numbers and diversity among those entering higher education, the additional administrative load, and resource constraints.

Thomson's (1995) article entitled "Is modularisation producing rotten eggs?", in an Australian training journal, generated a substantial number of letters to the editor. The article by Thomson questioned learning outcomes, assessment procedures, and the relative advantages of 'modular' versus 'traditional' courses. Modularity has been blamed for worsening educational standards. Students' choice is at the centre of this reproach. Curriculum designers make use of several procedures to preserve cohesion and progression in modular programmes, including core modules, pre- and co-requisites, and

the use of joined modules with combined assessment. Jackson and Gregg (1995) did not encounter 'Cafeteria-style' programmes, where students pick and mix to build their own course without any direction. Their study showed an increased coherence in educational values as a result of involving and empowering student choice. The student-centred nature of modular courses enhances students' motivation by encouraging them to plan their own course progression (CNAAC, 1989). To further guarantee proper choice the CNAAC (1989) suggests that:

"...for any course, the scheme rationale, defining its aims and objectives and showing how these are to be achieved, must demonstrate how the academic coherence and standard of each individual student's programme is to be safeguarded. Each module will have its own statement of objectives, in terms of knowledge and skills, and show how these are to be taught and assessed at appropriate level." (p.6)

"Although there are some examples of students having increased flexibility and choice, the potential of the [CBS] Scheme is largely still to be exploited" according to Billing (1996, p.18).

The Higher Education Quality Council (HEQC, 1996) report, based on a series of interviews with key individuals representing a mixture of higher education institutions (16 'old and 16 'new' universities and 8 Institutes/Colleges of higher education), is best summarised by Dickens (1997):

"...the report conceptualises its investigation of modularity within the confines of academic standards and what constitutes 'graduateness'. Modularity fosters 'honours in breadth' and the report defends this by maintaining that the notion is poorly understood within the academic community. Apart from dealing with the nuts and bolts issues the overall message is that modularity has managed to expose issues about what a degree is and where the

thresholds for honours classification are. The report insists that standards are not deteriorating because of the advent of modularity and that it remains essential that standards are maintained and seen to be maintained. Confused perceptions are obviated by the revelation that modularity has exposed greater transparency and explicitness and the view that standards 'must be developed and judged in the context of the purpose of education which is provided' (HEQC, 96, p. 1)." (Dickens, 1997, p. 70)

Reasons for Implementing CBS

The initial questions to ask are *why* and *how* to introduce a CBS model and Allen & Layer (1995) state this is not always done. The main two reasons for introducing CBS are 'educational' and 'managerial'. The educational reasons compiled by Allen & Layer (1995) are:

"increased flexibility for students; interdisciplinary opportunities for both staff and students; curriculum development; introduction of skill components to academic courses; enhancing vocational relevance through introduction of secondary subjects; student-centred learning; and attractiveness to mature students, particularly through the development of part-time courses." (p.45)

The managerial reasons raised by academics are:

"larger classes; higher student staff ratios; staff rationalization; the breaking down of disciplinary closed shops; disempowerment of academic staff; increased centralized managerial control; curriculum control." (Allen & Layer 1995; p.45)

Trowler (1998) and Watson (1989) concur that a modular or CBS scheme becomes appealing to management as student numbers increase and resources decrease, which results in increased staff-student ratios. The savings are a result of economy of scale:

“By offering subject-based units to students on a wide variety of potential programmes, modular courses can achieve significant economies, especially through common teaching and the resulting economy of group size...” (Watson, 1989, p. 5)

Managerial attractions, according to Trowler (1998), include “greater economy, efficiency, manageability and market responsiveness in higher education institutions”(p. 91). Modularity, according to the HEQC (1996) report, has become the vehicle to accommodate the demands on higher education. The economic, social, political, educational, and managerial reasons for going modular are summarised in table 2.2.

Economic	Leads to a more efficient and economic use of resources...inherent choice offers marketability
Social	Potential for choice and flexibility improves opportunities for greater participation in HE by those normally under-represented.
Political	Together with CATS satisfies policy objective of greater participation and responsiveness.
Educational	Potential for new inter and multi-disciplinary programmes which could respond to national initiatives and market demand...flexibility promotes autonomy of learners via individual patterns of learning and modes of study...more transparency and accountability vis-à-vis assessment.
Managerial	Coupled with CATS holds potential for managed internal market within an institution.

Table 2.2 HEQC 1996 Reasons for going Modular (from Dickens, 1997 p. 65)

The above reasons are not mutually exclusive and show enough justification for introducing both a cost saving and student empowering device. CBS can be mutually attractive to those who seek to advance educational change, as well as those who pursue efficient and effective educational management. As CBS has been introduced in the majority of tertiary education, the stage of questioning the validity of the system may have passed. Although benefits are involved, resistance is frequently present simply

because the change is introduced using the top-down approach. Staff have to be convinced that the change toward CBS is both beneficial to them and the student and not uniquely for managerial purposes. The persons selected to lead the change toward CBS will have to “tread a difficult tightrope between impatient managers on the one hand, and reluctant, if not antagonistic, staff on the other” (Allen & Layer 1995, p. 55).

Morris (2000) finding based upon ten UK-based universities was:

“that the main reasons for the introduction of these scheme were the personal ambitions of senior managers, pressure from external regulatory agencies and a desire to emulate initiatives undertaken by competitor institutions” (p.239).

Implications for Management, Staff and Students

CBS and modularity imply shifting responsibility and selection to the end user, the student.

“Going modular entails a shift in control over the curriculum from teacher to student. The flexibility inherent in modular schemes is in contrast to the careful pre-packaging of curricular experiences which marks out the traditional approach to the design of degree courses [...]. This flexibility allows the single degree course to more easily accommodate the greater multiplicity of purposes and objectives which a diverse student body brings into higher education.” (CNAA 1989, 27).

However, this signifies consequential alterations for staff as:

“They have to learn the new language of student-centred programmes, learning packages, negotiated routes, contract with students, problem-centred and independent learning.” (CNAA 1990, 18).

The implications of this new system are best explained by Jackson and Gregg (1995):

“Modularity is undoubtedly contributing to the dramatic change in higher education. It certainly poses considerable challenges to many aspects of academic and institutional practice. The process of ‘going modular’ requires a steep learning curve involving considerable adjustments to cultures, academic and administrative practices and professional values.” (p.iii)

In order for this change to occur as smoothly as possible, staff need to be both fully informed about, and part of the planning of, the new scheme. Since the change is of a major nature, there is a need for clearly stated justification, deliberation with students, a long lead-time, and suitable staff development. Even when following all suggestions it will take time to work properly.

“Designing a flexible modular programme, which ensures coherence and progression while permitting a degree of choice, requires sophisticated curriculum design and mapping skills, and an effective infrastructure for academic guidance. [...] The first few years of implementing a modular policy are likely to be characterised by experimentation, mistakes and much learning.” (Jackson & Gregg 1995, p. iii)

Research shows that systems such as CBS are rarely newly developed but most often introduced through an amalgamation of pre-existing programmes, however:

“A modular scheme is not a blocking of a traditional scheme into modules and assuming that the curricular, pedagogical and progression processes will be the same. It is likely to require radical revision of many traditional academic assumptions. Its implementation has consequences for every aspect of the curriculum process: design, recruitment, knowledge/skill selection, assessment, review.” (CNA 1989, p17)

The reasons for this are resources and the time frame given for implementing such a complex multidisciplinary scheme. Recommendations given to facilitate a smooth

introduction are to have a proper budget set-aside for the process, managed by a coordinator who has both responsibility and authority.

Since there are no fixed CBS introduction and operating standards and procedures, a broad disparity exists, within and between countries, in the design of modular systems and in the procedures and aims of modular innovations (Raffe 1992).

Admissions and assessment are also often affected and may require additional paperwork. As overall student numbers rise, individual groups increase in size and may become 'mixed' with students on different majors. This calls for subjects with specific aims, which need to be understood by both specialist and non-specialist students. Pre- and co-requisites have to be taken into account and team teaching across disciplines will become common. This will directly and indirectly affect staff control. Student choice may affect staff jobs. Furthermore, this new system complicates time-tables and requires increased advising for students. The need for staff development becomes apparent.

“Training in such areas as time management and management skill more generally is important. The people involved need to learn to operate as teams – though not all staff may be able to cope, and some may need help, or may leave. Staff support and team building needs to be within a strong institutional culture.” (CNA 1990, 18).

This new system involves duties staff did not have to perform under the traditional structured system and might not be qualified to do without additional preparation. Therefore, there is a clear need for staff development in order to deal with the changes and prepare them for their new responsibilities toward other staff and students with CBS.

The literature on implementation of modular and credit based schemes shows shortcomings and gives recommendations in the following areas: counselling or advising students, assessment, teaching and learning, and the administration of CBS. Each of these areas is now considered in more detail.

Counselling and Advising Students

For proper advising to occur; “Information for students needs to be concise, accurate, up-to-date and user friendly.” (Billing 1996, p. 15). This can only be achieved if staff are proficient in counselling and guiding students in dealing with the variety of choice. Candidates need to fully understand the course before they can make a proper choice, and inappropriate advice in the beginning of their study path will hamper them later on in the course. Most universities, however, do not possess sufficiently effective counselling methods according to the 1994 HEQC report.

Counselling might extend to the admissions process, as prospective students need to be advised and assessed for each programme. Furthermore, students on a modular course might lose motivation through isolation and loneliness, as they are no longer part of a traditional cohort. This could impact on the student’s social life and reduce the availability of peer comparisons regarding study achievements (Leask, 1994). Personal counselling and support groups might even be needed for students who are not integrating with their peer groups (CNA, 1989).

Research carried out at Sheffield Hallam University in the late 1980s showed concerns raised by students on CBS programmes as reported by Stoddart (1990). Students on CBS courses felt 'isolated', as their choices were unique, and sharing classrooms with students on structured programmes who had already formed their own peer groups only increased these feelings. Lecturers were inclined to teach classes as part of a programme instead of stand alone modules, thereby further alienating CBS students. Proper counselling was not readily available for these new CBS students resulting in their being 'ill-informed' and feeling 'unwanted'. As lecturers were not familiar with CBS they tended to concentrate on the course and their students as a whole, instead of the individual CBS students who shared the classrooms. Nobody seemed to be willing to take responsibility for these CBS students. The administration of the university concentrated on courses, making these students feel like outcasts. The reason for this chain of events was that the system was being phased in instead of introduced en-bloc, according to Layer (in Allen & Layer, 1995).

Oxford Brookes University assigns personal tutors to all their modular students, according to Watson (1989). These counsellors are responsible for up to twelve students and systems are in place to keep them informed of their students' progress. However, not all institutions are dealing with this issue well. Billing's (1996) findings and recommendation regarding the guidance given, following his review of modular implementation at his university, are as follows:

"The Scheme has put pressure on the personal tutor role, reducing its already questionable effectiveness by adding the task of providing students with module choice information and guidance. It is now important to review the means of providing this educational guidance

role and also the means of re-establishing the pastoral role of tutors.”
(p.20)

According to Billing (1996), an effective tutorial method depends on academic staff understanding the new scheme and having the time and information to assist students with their choices. Since this does not seem to be working, the guidance of students needs attention.

Assessment

Due to the nature of a CBS and modular system, each module needs to be individually assessed and certified; a process labelled ‘progressive assessment’. Therefore, Cornford (1997) proposes “serious consideration must be given to ways of ensuring that adequate time is planned for practice and feedback before summative assessment takes place” (p. 250). As each module is customarily assessed at its completion it has to be fully understood how the progression through the course is monitored.

One of the concluding HEQC (1995) remarks about assessment was that “modularity poses considerable challenges to academic practices in defining, measuring, evaluating and verifying academic standards” (p. 72). Furthermore Trowler (1998) states that:

“Assessment of students increasingly becomes an institutional-wide issue with academic staff collectively making decisions and departments having to collaborate, often involving students with whom they have had very limited contact.” (p. 99).

Therefore commonality of grading across the institution is needed as students may be allowed to take subjects in other departments. It is therefore expected that students would

be assessed following the same guidelines across the same institution. This consistency of assessment is further needed in order to give out institution-wide final awards to graduating students.

Furthermore, a variety of assessments have to be introduced so as not to overburden the students. "Any assessment scheme should incorporate safeguards that reduce load, ensure balance and allow for progression." (CNAA 1989, p. 20). The final degree classification, the adding and dividing of grades of all modules, should be both manageable and acceptable.

Raffe's (1994) findings indicate that lecturers dislike the increased assessment workload, which leaves less time for their day-to-day teaching activities. An Inspectorate study of the Scottish National Certificate (NC) found that learning could become assessment driven:

"The greatest single negative influence on learning and teaching was caused by the manner in which staff interpreted assessment requirements. In some subjects the dominant approach was to teach and test each learning outcome discretely. This led to a fragmented learning experience, and sometimes trivialised it." (SOED 1991, p. 38)

The HEQC (1996) report shows higher overall marks for students on modular programmes. It is argued that this is largely due to the increased use of coursework assessment (Gibbs, 1995).

When students fail certain modules they are not required to repeat a whole semester, but only the failed modules, allowing them greater concentration on these subjects (Finch & Crunkilton, 1984).

A study by Leask (1994) of Bedford College examined assessment and considered whether it enhanced student capability. Her methodology included questionnaires and interviews with both students and staff as well as course document analyses. Responses to open-ended interviews with a small number of students and staff were used to formulate a questionnaire. Four main contexts to strengthen student capability were identified and used as a framework for data analysis.

- Formative assessment where assessment can be used by students to improve future assignments.
- Variety of assessment used as opposed to one single form of assessment.
- Fair and relevant assessment.
- An assessment framework which ensures coherence and progression in student learning.

More than half of her 60-student sample benefited from the modular progression monitoring even though a quarter of the staff commented that most assessment appeared at the end of the module. All first year students had been assessed through at least three assessment varieties and year two students through at least two. Assessment was further seen as fair and relevant and, even though there were complaints of high student workloads, modular assessment was preferred over yearly examinations. Staff had concerns about students being over-assessed on modular schemes. Staff feared a heavier marking load as more and more programmes became modular. Issues raised in this case study were:

of the assessment (Oulton & Steedman, 1992). Furthermore there is a need for students to feel confident in the system and be protected from wrong (Billing, 1996).

Teaching and Learning Approaches

Offering a selection of subjects on a semester basis requires a fresh approach to teaching and learning as suggested by Phillips (1989):

“the ‘centres for excellence’ will become those places which allow the serious participation of students and do not seek to impose outdated and outmoded methods of teaching on reluctant, disinterested students.” (p.86)

With this increased amount of choice, both staff and students can acquire greater interdisciplinary opportunities, and therefore the breadth and depth of education should be increased. CBS should also enhance curriculum development, student centred learning, and vocational relevance through the introduction of secondary subjects (Allen & Layer, 1995). The possible need of integrating different subject areas means that staff will have to be prepared to collaborate more closely with colleagues. Suggestions for developing these new relationships include team-teaching and interdisciplinary research (CNAAs, 1989) which, although effective and enticing, are demanding for staff and need additional resources.

Proper design of a course facilitates teaching and learning and, according to Cornford (1997), the:

“Design of modular courses needs to ensure that there is sufficient time for teaching of theory relevant to mastery of skills and sufficient practice to ensure that the skills become securely established. Problem solving skills will only become possible if there is a good

understanding of relevant theory and how it integrates with practice. This indicates that the designers of modular courses also need to plan content and process very carefully, bearing in mind both the characteristics of students and the relevant level of expertise which it is aiming to develop. The limitations of learners at different levels must be observed. There also needs to be incorporation of teaching-learning strategies which will assist in development and consolidation at the existing stage, and facilitate progression to higher stages in development of expertise.” (p.243)

Vaughan and Woolf (1994) report on the experience of their university in writing and recording its modules in learning outcomes. They suggest learning outcomes that make clear to staff and students the skills to be developed in modules and courses. Modules, however, tend to fragment knowledge rather than to integrate it. Cornford (1997) recommends reviewing past modules to increase integration, but practical experience suggests that, because of shortage of time, this is seldom done.

Greenwood et al. (1997) founded a working group to survey trends, and staff attitudes, towards semesterisation and modularisation in twenty-five UK institutions teaching public administration. Twenty-one of these schools had introduced modular systems in the past and one more was about to do so.

Staff attitudes showed strong feelings toward the negative aspects of semesterisation. Reasons given were inadequate time for in-depth study and assessment, and an increased staff workload.

The overall views were that modularity/semesterisation fragmented the students' learning experience and that semesterisation caused too much material to be crammed into too

small a teaching period. According to a few respondents the predicted benefits and student choice had not materialised. Concerns were raised concerning module popularity and its assessment strategy. Increased administrative and assessments costs, and the bureaucratisation of the teaching environment, was third on the list.

Administration of CBS

King (1994) also states that CBS programmes are centrally managed and controlled, which Billing's (1996) modular implementation review found the following major administration problem areas: information for students regarding their module choices; guidance for these choices; registration; implementation of a Student Record System; and the time-tabling exercise. This concurs with the recommendations given by the CNAA (1989) for managing CBS programmes regarding time-tabling, recording students' progress, student handbooks, administrative support, and libraries and computing facilities. The CNAA recommends computerised central time-tabling to save departmental resources. A computer-based system should allow full use of the space available and give students as many options as possible by offering their choices at times that do not clash.

In order to offer their students as many choices as possible, Oxford Brookes University has a timetable for its three semesters that remains the same each year. Students can therefore make choices well in advance and decide when to take certain subjects. In order to offer flexibility in choice, the time-table has to be fixed, according to Scurry (1999). Furthermore, Oxford Brookes has in-house created computer programmes for most aspects of their modular programmes.

Computer programmes are also advocated for recording students' progress. There is also a need for individual tutors or counsellors, as students have wider choices (CNAAs, 1989). Betts and Smith (1998) concur with the need for information technology to manage Credit-based Modular Systems, both for input and output factors. They further state that: "CBMS institutions more often than not have to take the IT process several stages further if they are to provide the flexibility they set out to offer students and staff" (p.117). King (1994) also states that CBS programmes are centrally managed and controlled, which tend to centralise authority (Betts & Smith, 1998; Billing, 1996; CNAAs, 1989; King, 1994).

Trowler's (1998) five-year ethnographic study at a single university assessed the 'realism' of managerialist approaches used on CBS schemes in higher education in the United Kingdom. The data from the study:

"...show that managerialist ideology oversimplifies and occludes aspects of social reality in higher education, the effect of which is to undermine many of the benefits claimed for the credit framework by managerialists." (Trowler, 1998, p. 91)

Ample administrative support has to be given to fulfil the administrative requirements of CBS. According to Trowler (1998):

"The administrative centre mediates the tutor-student relationship as information flow shifts away from academic-student to student-centre-academic." (p. 99).

A clear and concise student handbook should be developed in order to keep students informed of requirements, options, time-tables, deadlines, and assessment regulations. In

(Billing, 1996). The assessment of these fragmented learning experiences is questioned by SOED (1991). Furthermore the HEQC (1996) report shows higher overall marks for CBS students, which is related to the increased use of coursework assessment (Gibbs, 1995). Both Billing (1996) and Leask (1994) agree that students on this scheme are likely to be over-assessed and feedback given is often too close to the final exam, not allowing students to benefit from their lecturers' input on coursework. Accreditation of prior experiential learning can be problematic as experience does not necessarily lead to learning (Betts & Smith, 1998). The scheme further needs effective counselling methods which most universities do not possess (HEQC, 1994), putting additional pressure on the personal tutor role (Billing, 1996). Higher education is becoming a high volume process of a repetitive processed product and the management of the system tends to be centralised (Trowler, 1998). In addition CBS disempowers academic staff, and increases centralised management and curriculum control (Allen & Layer, 1995). To deal with the increased administrative burden of CBS, the literature seems to favour the use of information technology, which tends to centralise authority (Betts & Smith, 1998; Billing, 1996; Blau, 1973; CNA, 1989).

4. How does the degree of CBS knowledge and experience by management and staff relate to the levels of success of the innovation?
5. What are the perceived effects of CBS on teaching and learning?
6. What are the perceived effects of CBS on assessment?
7. What are the perceived effects of CBS on the students, the lecturers, and the management?
8. What is the overall perceived impact of CBS at the PolyU?

Research Methods

This study aims to evaluate the expectations and the reality of the implementation of a CBS at the PolyU. The people involved in this change are the first-year lecturers of the Engineering Faculty and the management. This study looks at explaining what happened during the first year of CBS through the experience of the people concerned. A longitudinal case study, making use of interviews before and after one year of CBS, was used to produce descriptive data: people's own spoken words (Taylor & Bogdan 1984). This research emphasises the processes and meanings rather than rigorously examining, or measuring, in terms of quantity, amount, intensity, or frequency (Denzin & Lincoln 1994). Therefore the research can be described as qualitative in nature. The focus of qualitative research is on the descriptive; people's own words and not the quantitative, statistical aspects. Hence, this study is subjective and process oriented. In order to give a holistic view of the expectations and reality of the implementation of CBS, an interactive relationship with the participants was selected, using interviews. There are, however, problems involved in using a qualitative approach. The approach is time consuming, data

reduction is difficult, and it is harder to prove reliability. Since this is a single case study of one university in Hong Kong, statistical generalisation will not be possible. Case studies, according to Yin (1994; 145) “rely on *analytical* generalization”. However, “fuzzy generalization” (Bassegy, 1999: 51) may be feasible as:

“A fuzzy generalization carries an element of uncertainty. It reports that something has happened in one place and that it may happen elsewhere” (p. 52).

The rationale of this single case study is what Yin (1994; 147) calls a “revelatory case”. The implementation of CBS took place at a certain time in one faculty only. Qualitative research such as interviews is advisable in order to understand the experience of others and the meaning they make of that experience (Seidman, 1991).

Case Studies

A “case study is an umbrella term for a family of research methods having in common the decision to focus an inquiry round an instance” is the definition adopted at the 1976 Cambridge conference on the topic (Adelman *et al.* 1977, pp. 139-150). A briefer definition suggested by Nisbet & Watt (1984) is “a systematic investigation of a specific instance” (p. 74). Case studies are therefore recommended “to examine a specific case systematically and in detail” (Nisbet & Watt, 1984 p. 73). In this instance the event was the introduction of a credit-based system. Since this study looked at the phasing in of CBS at four departments of one faculty of the PolyU the case study method should be able to “penetrate aspects which are not readily accessible by methods which rely on large numbers” (Nisbet & Watt, p. 73) such as quantitative research.

Walker (1986) describes case studies as:

“primarily documentary and descriptive in character, but are marked by the attempt to reach across from the experience of those who are the subjects of study to those who are the audience” (p. 104).

The ‘reaching across from the experience’ of the lecturers and managers of this change towards CBS is done by interviewing. Teaching and management staff are interviewed both prior to and after the implementation, to investigate their expectations and the realities of CBS. According to Yin (1994;137) “case studies have been done about decisions, about programmes, about the implementation process, and about organizational change”. Yin further recommends specific time boundaries to define the beginning and end of the case. For this case study a period of one academic year has been set as the time limit.

Case studies tend to give a ‘conservative’ view, a picture in time, of how things were. Therefore case studies describe how things were, not as they currently are, becoming redundant as they are being written. To correct this distortion a longitudinal study was undertaken. The participants were interviewed both at the initial stages of CBS and after a full year, two semesters, of use. Furthermore, both management and teaching staff were included in the study. This allowed for four pictures in time (management and lecturing staff prior and post CBS implementation) to be developed, which in turn could be compared to each other. The discrepancies between the four should clearly show the effect of the innovation on the initial CBS lecturing and management staff.

Since there is no 'book of rules' for conducting case studies, great emphasis had to be placed on the judgements made by the researcher (Kogan *et al.*, 1984). All the steps made during the CBS research are documented and directions taken fully explained.

Case studies present certain assertions to reality, depending on the nature of the data they provide, however they are invariably imperfect descriptions; creations of reality; representations (Kogan *et al.*, 1984). These findings should undergo some conceptual analysis, which could be used to further current knowledge or devise a grounded theory (Glaser & Strauss, 1967). During 'grounded' theory the researcher concentrates on emerging data, instead of an advance hypothesis. For a case study to stand alone it needs to be able to create a grounded theory (Glaser & Strauss, 1967) or be connected to a current body or bodies of knowledge. The emerging data might make for the 'grounded' theory, which can be used to emanate a distinct framework. Furthermore, according to Johnson (1994), case studies are highly recommended for situations where there is one project researcher. The case study findings can then be related to existing theories or used to originate a distinct framework. The main resources needed for the case study approach are time and access. The researcher has been able to allocate enough time to the study, to gather the data and he has been able to gain access to the departments in the Engineering faculty.

Interviews

Interviewing, according to Guba and Lincoln (1981), is an extension of day to day face-to-face exchanges between human beings. The "conversation with a purpose" (Dexter, 1970, p. 136) is therefore the oldest and most valued of research methods. Even though,

the objectives for interviews differ, their commonality is the seeking and supplying of information (Cohen & Manion, 1994). Cannell and Kahn (1968), define it as:

“a two-person conversation initiated by the interviewer for the specific purpose of obtaining research-relevant information, and focused by him on content specified by research objectives of systematic description, prediction, or explanation”. (p.527)

The combination of interviews and participant observation is the method often used in field research (Becker & Geer, 1957; Trow, 1957; Circourel, 1964). Field research has a wider selection of methods, but interviewing, especially the unstructured interview, is still the preferred starting point of field and naturalistic research and evaluation (Guba and Lincoln, 1981). The selection of interviewing as the research tool, according to Dexter (1970) is most appropriate “... when in fact it appears that it will get *better* data or *more* data or data *at less cost* than other tactics” (p. 11). For the interview to happen the interviewer has to be on site and *how*, to *whom*, and for *what purpose* one talks, are of great significance (Guba and Lincoln, 1981).

The type of research interview can range across the spectrum from the structured, resembling an oral questionnaire, to the unstructured, where the researcher him/her self does not know what will emanate. The researcher defines the problem and formulates questions prior to the structured or “focused” interviews (Merton *et al.* 1956). Whereas, the unstructured, “elite,” “specialised,” or “exploratory” interview is not seeking normative responses and follows a non-standardised format (Dexter, 1970; Richardson *et al.* 1965). “Rather, the problem of interest is expected to arise from the respondent’s

reaction to the broad issue raised by the inquirer” (Guba and Lincoln, 1981, p. 156). The

unstructured interview involves:

“stressing the interviewee’s definition of the situation; encouraging the interviewee to structure an account of the situation; and letting the interviewee introduce, to a considerable extent, his notions of what he regards as relevant, instead of relying upon the investigator’s notions of relevance”(Dexter, 1970, p. 3).

Thus the unstructured differentiates from the structured, focused, or standardised interview, as it is influenced by the solitary, the distinctive, and the unconditionally individual perspective.

Simply put, when the researcher knows what he/she does not know the structured interview is advocated, whereas the unstructured interview should be adopted when one fails to recognise what one does not know (Guba & Lincoln, 1981).

For this study a semi-structured interview method was selected, as there was a clear list of issues to be addressed from the literature and questions to be answered. The semi-structured model allows the researcher to be flexible in terms of the order in which the topics are considered. More importantly it lets the interviewee develop ideas and speak more widely on the issues raised by the interviewer. The questions are open-ended, and there is more emphasis on the interviewee elaborating points of interest.

However, Guba and Lincoln (1981):

“warn that a set of techniques or tricks will not guarantee a good interview. Practice, a clear understanding of self and of the problem, and a nonthreatening presentation of both will go a long way toward

unlocking needed data” (p. 160).

According to Lincoln and Guba (1985) there is a need to establish trustworthiness in qualitative research, therefore, confidence for the truth of the findings has to be established. In order to institute internal validity, parameters have to be well described and a theoretical framework has to be in place. The variables have to relate to the literature review. To increase construct validity the three tactics suggested by Yin (1994) were employed. For the first tactic, “multiple sources of evidence” (p. 145) four departments were selected. A longitudinal design was used for the “chain of evidence” (p. 145). For the third tactic the informants reviewed the drafts. Triangulation was established through data collection using longitudinal and cross-sectional designs, a one year study across four departments, from both management and lecturing staff. Defined as ‘Time Triangulation’ by Denzin (1970). To draw “fuzzy generalisations” (Bassey,1999) and to give this study external validity, the data needed to be thick and descriptive.

Interview Timetable

Following a meeting with the Dean, and pilot tests, four sets of one-to-one semi-structured interviews were carried out at different times of this longitudinal study, namely:

- Interview set 1: the pre-implementation interview with the people managing the CBS introduction; course leaders and a department head;

- Interview set 2: the pre-implementation interview with the lecturing staff on their perceptions and predictions of CBS;
- Interview set 3: the post-implementation interview with the same lecturers on their experience of one school year, two semesters, of CBS;
- Interview set 4: the post-implementation interview with the same people who managed CBS for one year.

Sample

The sample for this longitudinal study were academics and management staff about to embark on teaching or managing the CBS program phased in at the PolyU Faculty of Engineering from 1997/98. Four of the five departments of the Engineering Faculty were phasing in CBS during this school year. Phasing in is done by implementing CBS for first year students, while at the same time phasing out the 'structured' program, with year two and three students.

A person in charge of CBS in each of the engineering departments was recommended by the Dean for the management staff interviews. With the go-ahead of the Dean, these four departmental CBS managers were contacted and interviewed. These meetings lasted about one hour each, following a semi-structured interview format. Since, they were considered the experts in their respective departments; their advice was sought regarding their predictions of the introduction and operation of CBS. An initial list of variables was also used to give some prompts and put them back on track. Because these four people

knew one another outside the group context, it was not conducive to conduct a focus group interview (Anderson 1998). He suggests that:

“Whenever possible, one should involve a mix of relative strangers who will feel comfortable sharing their views without having to wonder what their friends and colleagues might think about their responses.” (Anderson, 1998, p.203).

Therefore, an individual focused interview with each of these departmental experts was held. These focused interviews followed the characteristics set out by Merton and Kendal (1946). The interviewees were all involved in a particular experience, the introduction of CBS structure to their courses. Although the encounters were structured, and major aspects of the study explained, respondents were given considerable liberty in expressing their account of the situations presented to them. It was felt that because of the backing of the Dean, and the way the participants were treated, as experts in their field with a story to tell, the amount and quality of data gathered was excellent.

A purposive sampling method was used for this study. Academic staff of the above four departments were sent an e-mail summarising the study and explaining that it has the approval of their Dean, asking for their support. This was followed up by phone calls to all staff in the four departments, using the PolyU telephone lists. Respondents could only be reached if they answered their office phone. The telephone conversations started by introducing the researcher and inquiring if they were aware of the CBS study. Most had read the e-mail, but those who had not were given a synopsis of the CBS study. This was followed by inquiring if they would be teaching first-year students the coming two semesters. If they were not they were thanked for their time and the next call was made.

A total of 20 year-one academic staff about to use a CBS were reached out of an estimated 50 year-one lecturers. All but two of the qualified 20 agreed to be interviewed. The number of participants per department was proportional to their total number of staff. The engineering department is still a male dominated field and only one of the interviewees was female. One of these 18 participants left the PolyU before the second interview and this data was therefore excluded from the study.

The four departments that were part of the study and the interview samples are shown in Table 3.1

		Total Academic staff	Management	Teaching staff
1.	Electronic Engineering	51	Course Leader	8
2.	Manufacturing Engineering	35	Course Leader	4/3
3.	Maritime Studies	14	Course Leader	2
4.	Mechanical Engineering	37	Chair/Head	4
		137	4	18 /17

Table 3.1 Faculty of Engineering staffing and interview samples.

The fifth department, Electrical Engineering, was already operating on a CBS mode. Therefore it was excluded from the study.

Developing the Interview Instrument

In order to address the study's objectives and answer the research questions a research instrument was developed. The interview instrument was constructed following a review of internal PolyU memos on CBS, a literature search, and the researcher's personal experience as a linear and CBS student, and as a course leader of a modular course, which later became a CBS course. The instrument constructed on this basis was submitted to the Dean of the Engineering Faculty as his support and blessing were sought for this study. The Dean was very courteous and gave permission to use his faculty for the proposed case study. The time spent with him was quite valuable since he is considered to be the on-campus specialist on CBS.

Pilot Testing

The managers' instrument (see appendix 1) was tested on a course leader from the fifth engineering department already operating on a CBS. The lecturers' instrument (see appendix 2) was tested using semi-structured interviews on PolyU teaching staff involved in the change toward CBS in the Department of Hotel & Tourism Management. These lecturers and manager were interviewed and some changes were subsequently made to the instrument, to be administered subsequently to the engineering faculty lecturers, and to the interview process itself.

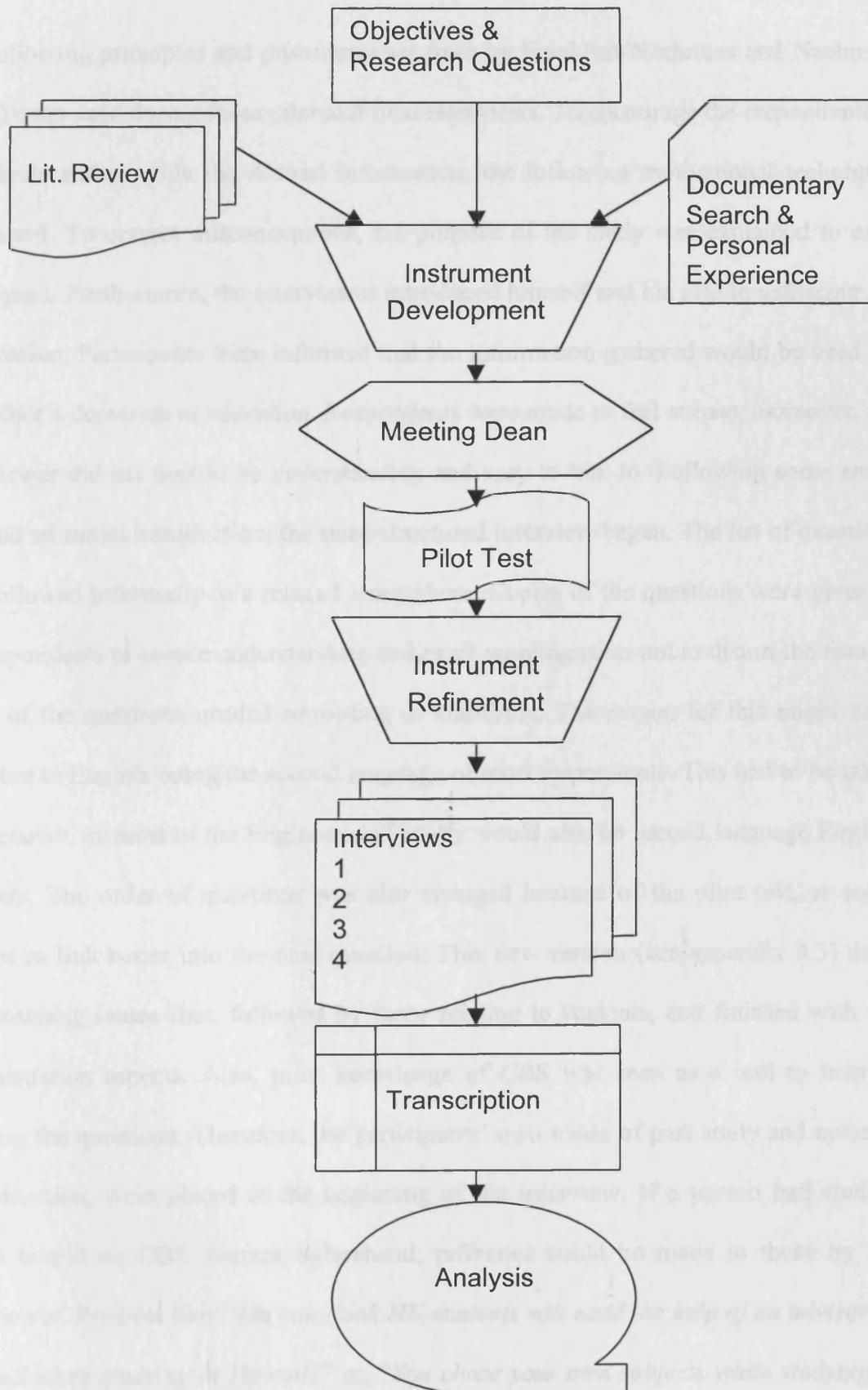


Figure 3.1 Methodology

The following principles and procedures set forth by Frankfort-Nachmias and Nachmias (1992) were used during these pilot and final interviews. To encourage the respondents to co-operate and provide the desired information, the following motivational techniques were used. To correct misconceptions, the purpose of the study was explained to each participant. Furthermore, the interviewer introduced himself and his role in gathering the information. Participants were informed that the information gathered would be used for the author's doctorate in education. Respondents were made to feel at ease, moreover, the interviewer did his best to be understanding and easy to talk to. Following some small talk and an initial introduction, the semi-structured interview began. The list of questions was followed informally in a relaxed atmosphere. Copies of the questions were given to the respondents to ensure understanding and exact wording so as not to distort the results. Some of the questions needed rewording or clarifying. The reason for this might have been due to English being the second language of most respondents. This had to be taken into account, as most of the Engineering Faculty would also be second language English speakers. The order of questions was also changed because of the pilot test, as some seemed to link better into the next question. This new version (see appendix 3.3) dealt with teaching issues first, followed by those relating to students, and finished with the administration aspects. Also, prior knowledge of CBS was seen as a tool to help in pitching the questions. Therefore, the participants' own mode of past study and systems of instruction, were placed at the beginning of the interview. If a person had studied and/or taught on CBS courses beforehand, reference could be made to these by the interviewer. Prompts like: "*Do you think HK students will need the help of an advisor as you had when studying in Hawaii?*" or, "*You chose your own subjects while studying in*

Texas, do you foresee any problems in PolyU students doing so?" No time needed to be wasted on the persons having a good understanding of CBS. Whereas, persons unfamiliar with the new CBS concept, were given a broader introduction to the CBS study mode. The first two pilot interviews were conducted in the respondents' own offices; this gave mixed results as some were disturbed by the telephone or by third parties. For the other interviews a room was reserved, away from the office environment, to avoid any interruptions. The chosen venue was comfortable, had a relaxed atmosphere, and lent itself to offering interviewees a beverage. It became quite clear that a venue away from the office environment was advisable for the in-depth interviews.

Some probing took place to motivate the respondents to elaborate, to clarify an answer, or to explain the reasons behind their answers. Probing while interviewing is an advantage of this research method. The aim of probing being "to encourage the respondent to reply without 'leading' them in a particular direction." (Johnson, 1994, p. 47). The interviewer had to be very careful not to use his knowledge of CBS to influence the interviewee, but at the same time get a response. By having researched the PolyU CBS matter to a great extent, and the departmental interpretation of it, the interviews moved toward what Johnson (1994) calls the specialised interview. The interview outline was adhered to, but departmental and faculty specifics were introduced when needed. This helped to focus the conversation on the specific topics of the interview. The use of a specific room also allowed the use of a tape-recorder, so more time could be spend listening to the participants. By knowing the conversation was being recorded, more time could also be spent making eye contact and putting the interviewees at ease. This additional time was

used to ask follow up questions, in order to get a deeper and broader picture. The use of a tape recorder allowed for the verbatim rendition of the data and therefore increased its ultimate validity. Moreover, by listening to and transcribing the taped interviews, a better overall picture developed and a full record of a potentially rich source of data emerged. The disadvantage was that it was time-consuming to listen to and to transcribe the tape. It was also found that detailed notes were still indispensable, not only to provide the location of information on the tape, but also to record the body language of the interviewee. Furthermore, the interviewer's procedure of the interview could also be analysed by listening to the tape and the interview technique improved. The interviewer's amount of dialogue could be reduced and participants were given more time to respond. It was noticed that when the interviewer controlled the content too rigidly, the subject could not tell his or her story personally in his or her own words, which could cause the interview to fall out of the qualitative range (Bogdan and Biklen, 1992). This is seen as very important as the issue of instrument validity and reliability resides largely in the skills of the interviewer, according to Miles and Huberman (1994).

The pilot participants were content with the one-hour length and the breadth of the interviews. Most had concerns about class sizes and the administrative capabilities of the PolyU in dealing with CBS. These two issues were added to the list of questions for the formal interviews and gave another insight to the thoughts of the participants.

The scheduling of the pilot-interviews had been a difficult task, as participants did not want to commit themselves. This problem would only intensify during the data gathering

for the main study. The playing back and transcribing was also a very laborious and time-consuming process. Nevertheless, the data gathered were of superior quality and would allow for better comparison with the data obtained at the end of the one-year longitudinal study.

The pilot test resulted in the following changes to the lecturer's instrument (see appendix 3.3). First, previous CBS knowledge of the interviewee was moved to the top to aid the interviewer in pitching the questions. A short explanation of CBS was added for those who were unfamiliar with the new scheme. Furthermore, the CBS subjects to be offered that academic year were included as to make sure to keep the participant focused on CBS subjects. The order of the questions was changed to deal with teaching issues first, followed by student and administration issues. Questions regarding the administration of CBS, class size, and the lecturer's involvement in the development of CBS at the PolyU were added.

The Management's interview instrument (appendix 1) looked at the changes CBS makes on the individual programmes and how these changes affected the running of the course and the lecturers on the course. The instrument worked well for the management's interview.

The pilot study helped to improve the instrument and the interview techniques. The updated instruments were administered to the engineering lecturers and managers, prior to, or in the first few weeks of teaching, in the 1997/98 academic year and follow up

interviews were conducted at the end of the academic year. The longitudinal design focused on the expectations and the reality of the implementation of a CBS at the HKPolyU.

Interview Questions

All questions were related to the study's objectives, research questions, and the review of the literature. The management was first asked to explain the changes the programme would undergo to become credit based. This was followed by questions relating to subjects, students, and assessment. The managers were asked to elaborate on expected problems of the first year of CBS. See appendix 1.

For the lecturing staff the questions were arranged in the following order. First the interviewees were asked about their own involvement with CBS both as former students and as academics. This was followed by an overview of the subjects to be taught using CBS for the lecturing staff. The first part (I) of the interview concentrated on how CBS would affect the individual lecturer; the second part (II) sought their opinions on wider CBS issues. See appendix 3.

For the second round of interviews (i.e. interview set 3 and 4) the overall impression of the first year of CBS was asked prior to the set list of questions so as to get the participant's general impression from the first year. See appendices 4 and 5.

The questions asked were in the following categories.

1. Proposed changes to make programmes CBS (Interview set 1)
Participants & Personal involvement with CBS (Interview set 2 & 4)
Overall impression of the first year of CBS (Interview set 3 & 4)
2. Teaching and learning
3. Assessment
4. Counselling
5. Administration
6. Other

In the interviews, the open-ended questions were used as focus questions to target the areas of interest; respondents were then allowed to develop their views along the line that they felt important and to reveal their perspective as much as possible. Care was taken to avoid leading questions. Probing and prompting were used to seek clarification and elaboration when necessary. Interviewees were also encouraged to illustrate their points with examples from their teaching and/or course management.

Collecting and Handling Interview Data

All interviews were conducted by the researcher. Prior to each interview, a briefing was given to the interviewee regarding CBS and he/she was reminded that all the questions should be answered with reference to the year one CBS courses taught or managed by the respondent.

Care was taken to minimise the threat of 'reactivity' (Maxwell, 1996) as much as possible. Since the participants had been told the aims of the study when they were

recruited, they knew the researcher was investigating possible changes related to the introduction of CBS. This knowledge could cause them to consciously or subconsciously claim to have noticed changes due to CBS. Therefore in all pre- and post-implementation interviews, it was made clear to the interviewees that they were expected to answer as truly as possible.

The four departmental CBS managers were interviewed in their offices and extensive notes were taken and immediately transcribed. All academic staff participants came to the specific interview venue and agreed to have their conversations audiotaped; furthermore notes were also taken. The audio-tapes were transcribed verbatim. Audiotaping was the preferred method for transcribing the responses. Audiotaping also minimised the distraction that would have been experienced if the investigator had recorded by hand.

Copies of the pre and post interviews were passed back to the participants for approval following the final interview so as not to influence the second round of data collection by information provided the first time around. Most made minor changes related to engineering jargon, one made extensive alterations, being less direct in criticising the system, and the remainder accepted them without change.

Role of the Researcher

The role of the researcher was to facilitate the interviews and to make sure that all participants would return for the follow up interview. The co-operation of the participants

was exceptional, all returned for the second round of interviews. It is felt that this was accomplished because of collegiality, as all participants were PolyU staff. Since all but two of the participants were Chinese the researcher treated them with the Confucian concept of politeness. According to Gu (1990) the Confucian concept of politeness (*limao*) has four qualities: respectfulness of the other's face, modesty, attitudinal warmth (demonstration of kindness, consideration, and hospitality), and refinement. All participants were treated as experts in their field and also being the first ones going through the CBS experience. The interviewer made it perfectly clear that the study, which had the backing of the dean, would be impossible without their input. Great consideration was given to setting of the interview times and follow up calls were made and email messages sent. An impressive looking venue with a formal coffee and tea set-up had been allocated. All the participants in the study fully co-operated and returned for the second round of interviews.

Data Analysis

Qualitative data analysis can be defined as the analysis of information that is recorded through words rather than numerical values, through the process of determining patterns or categories in qualitative data (Firestone & Dawson, 1988; Miles & Huberman, 1984; Tesh, 1990; Yin, 1989).

According to Tesh (1990) most approaches to qualitative analysis include segmentation and organisation of data, describing this process in the following manner:

“Data are ‘segmented’, i.e., divided into relevant and meaningful ‘units’. [...and] the data segments are categorized according to an

organizational system that predominantly derived from the data themselves. [...] Some topical categories, relating to a conceptual framework or to a particular research question, may exist before analysis begins, but for the most part data are 'interrogated' with regard to the content items and themes they contain, and categories are formed as a result. The process is inductive." (pp. 95-96).

The analysis and interpretation of the qualitative data was done by looking for emerging patterns. The process of data organising in this study consisted of initially identifying "meaningful" (Tesh, 1990; 117) segments for both the pre and post-interviews. Data reduction was looked at first. Content analysis was done by manually coding; concepts, ideas, and categories. The data were further categorised following "The-Cut-Up-and-Put-in-Folders Approach" (Bogdan & Biklen, 1982; 166). However a 'cut and paste approach' using a computer, rather than the physical act of cutting, was employed here. As recommended by Miles and Huberman (1984), matrices were constructed in order to have "an organized assembly of information that permits conclusion drawing" (p. 21).

To complete the analysis procedure results of matrices or index searches were compared. Conclusive statements were made at this stage and were compared with literature and the research questions. Result statements were then developed based on this study. Care has been taken in generalising the findings as this is a single case study, but "fuzzy generalisations" (Bassegy, 1999) are proposed.

4. FINDINGS FROM PRE-IMPLEMENTATION INTERVIEWS

Introduction

This chapter reports the findings of the interviews held with lecturers and management before the implementation of the credit based system. The participants were asked to give their predictions of the coming year's events in relation to the introduction of CBS for year one students. All participants either teach next year's incoming students or are course leaders or departmental managers who are in charge of the implementation of this new system. The post-CBS interview findings will be presented in the next chapter. The findings from the departments of Electronic Engineering, Manufacturing Engineering, Mechanical Engineering and Maritime Studies will be given individually.

Each of the four departments will be introduced first followed by the participants' background and personal involvement with CBS, as a student, a lecturer, an administrator, and a manager. The teaching and learning category will report the effect the participants predict CBS will have on their teaching, subject, delivery mode, and course preparation time. Participants will further report on students' learning and class size. This section will also report on the inclusion of the compulsory subjects English, Mandarin (the official Mainland language, as opposed to Cantonese which is the local Chinese dialect) and General Education. These GE subjects are grouped under five major headings: scientific, historical, philosophical, aesthetic and value judgements.

The assessment section concentrates on the effects of CBS on grading, two examination periods, course work assessment, and the newly proposed grading system. Furthermore, participants will be asked to comment on the abolition of external examiners for each course offered and the introduction of single departmental advisors.

The following section will report on participants' opinions on the advisory needs of CBS students. The predictions of the effects of CBS on administration are reported on next. All other comments are grouped in the last section.

The findings are presented in the following categories:

1. Participants' background and personal involvement with CBS
2. Teaching and learning
3. Assessment
4. Counselling/Advising
5. Administration
6. Other

Overall there were 21 participants in the study, ranging from department heads to course leaders and lecturers. All had at least a CBS teaching role or a CBS management role. Some participants had both.

Manufacturing Engineering

The Department of Manufacturing Engineering is responsible for the education and training of professional engineers to meet the needs of manufacturing companies in industry both in Hong Kong and those which have invested directly and indirectly in

Southern China. Amongst the tertiary institutions in Hong Kong, the Department is the oldest establishment of its kind being established in the late 1950s. There are five main themes of study in the Department: (i) Manufacturing and Materials Technology, (ii) Control and Automation, (iii) Quality and Reliability, (iv) Manufacturing Management and (v) Design for Manufacture. With the continued development and upgrading of its facilities, the Department has 13 laboratories with equipment covering most aspects of manufacturing engineering for academic programmes as well as research, consultancy activities and other scholarly activities.

In 1997 the Department offered taught undergraduate degree courses leading to a 4 year full-time/5 year Sandwich Master of Engineering, a 3 years full-time/4 years Sandwich Bachelor of Engineering with Honours in Manufacturing Engineering, and a 2-year Higher Diploma in Manufacturing Engineering. Part-time programmes included research degrees, a Master of Science and Postgraduate Diploma in Industrial Automation within the Modular Postgraduate Scheme in Engineering. In addition, the Department co-hosted with the Department of Mechanical Engineering for the awards of Master of Science and Postgraduate Diploma in Precision Engineering, which were also within the Modular Postgraduate Scheme in Engineering.

Participants' background and personal involvement with CBS

MfC/L (the Manufacturing Engineering Course Leader) is the Degree course leader and associate professor in manufacturing engineering. He is originally from the UK and has been at the PolyU for over 10 years.

Dr. Mf1 is a lecturer and the next year's timetabling officer. He was born in HK and has studied in the UK on structured programs. Dr. Mf1 has taught both structured and modular courses.

Mr. Mf2 and **Ms Mf3** are both assistant professors, born and schooled in HK. Mf2 has done some modular studies whereas Mf3 has done some modular teaching.

Only the Course Leader has neither studied nor worked using a CBS or modular mode. The other three staff have all had some involvement with a modular system. This is the only sample that includes a female; the engineering faculty is still very much male dominated in both staff and students.

Teaching and learning

The Course Leader and two of the three staff have reservations about the subjects being moved from a 28-week school year into a 14-week semester. The C/L feels subjects will get too "*concentrated*" and the lecturing staff will have difficulties in scheduling laboratory sessions. "*Less flexibility in arranging the laboratory sessions, since it has to fit in 14 weeks instead of 28 weeks.*" Under the old scheme labs were scheduled later in the year so that the teaching could be completed first.

According to the MfC/L, lecturers:

"should change or adapt [their teaching delivery methods] but I'll never get the staff to do that" and "lecturers might need more time. Because of 14 weeks, lecturers have to have all teaching materials ready". (MfC/L)

One staff member felt that:

“because of the short time (1 semester) I need to rearrange my teaching material, specially take care about the laboratory and the tutorial, because they have to come very soon when I start the lecture”. (Mf1)

As for time, two staff (Mf2 and Mf3) thought they had to just modify or update their materials. The third person (Mf1) needed:

“some time in preparing the teaching materials, for the coming few weeks to be ready for the coming semester. I will devise the work with my colleague, as we have to look into the syllabus and decide who teaches which area”. (Mf1)

The C/L predicted *“more surface learning, as students were only interested in passing exams to get the award”*. Teaching staffs were divided over this issue. One expected students to do deeper learning and be better prepared for classes following pre-requisites. The other two debated between *“depends on the student”*, meaning some students are deep learners others are not, and students will have to start studying earlier as there are only 14 weeks. The class sizes were predicted to be similar to the previous year.

Two out of the three staff agreed that students should manage their time better following a semesterised system.

“We had some students who can not manage their time, this is a good way to make them study each semester and separate their workload per semester.” (Mf3)

For general education subjects the overall feeling was that they should have been covered in secondary school, prior to university.

Assessment

Neither management nor staff foresaw any dilemmas with student assessment except for the time frame; tests and exam papers would have to be produced earlier and marked faster.

“Setting exams will be a problem for the first term, since this is a new subject; you have to issue/make the exam after just a few weeks of teaching. I don’t know how what and how much I will cover. Last year I had some problems since I didn’t know if I would have time to cover it all, but since I set the exam questions I had to make sure I covered all the topics of the exam”. (Mf3)

Overall the department agreed that it was better for the students to have two exam periods per year instead of one. The abolition of the external examiner was not seen as a problem either.

“I think if within the department you got all those experts to look after the exam paper it won’t be any different. The problem is do you have that kind of expertise in your department? Do you have at least two lecturers working in the same subjects? There is a possibility of dropping standards, however, that may already happen with the external”. (Mf1)

One of the three lecturers was not aware of the introduction of a single departmental advisor. Another had doubts if one person could look after many different courses.

Counselling and Advising

As there are very few electives in the foundation stage, the need for Advising was not an issue yet. But according to one participant in the future:

“I think they need somebody to advise them. It is hard to say who should do that. Most students have not much idea on what they are going to learn. A centralised system should be better than individual counselling”. (Mf1)

and exam setting. According to the lecturers, former course materials were made to fit into 14-week blocks instead of developing new modules for CBS.

Electronic Engineering

The Department of Electronic Engineering was founded in 1974. In 1997 it was the largest engineering department in the university. With over 70 postgraduate research students, 250 coursework postgraduate students, 500 full-time undergraduate students and 200 part-time undergraduate students, the department is among the largest academic units in Hong Kong providing a full range of tertiary programmes in electronic engineering.

The department offers full-time and part-time taught courses leading to the awards of Higher Diploma, Bachelor degrees, Postgraduate Diploma and Master's degrees, in electronic engineering. Research programmes are also offered by the department leading to awards up to the doctoral level. Programmes bearing the same title of awards reach comparable standards irrespective of the mode of attendance. The two Bachelors degrees in electronic engineering (full-time and part-time) offered by the department have been repeatedly accredited by the Institution of Electrical Engineers, U.K., the last five-year accreditation being attested in April 1994.

Participants' background and personal involvement with CBS

Dr. EnC/Ldegree (the Electronic Engineering Degree Course Leader) is an associate professor and the course leader of the B/ENG degree. Following his secondary education

Of the nine participants interviewed, only the course leader of B/Eng was considered to be a course manager by the researcher; all others were going to teach year-one students using CBS the following year. However, three of these also hold management positions within the department, one as Associate Head, the other two as course leaders. There is a wide range of previous experience with CBS amongst the nine participants.

En1 the Associate Head is one of the key designers of CBS in the EN department. He feels that engineering is moving in the right direction and should learn from this experience.

“Administration and time tabling are some of the problems associated with CBS.” “More resources are needed for space and administration.” (En1)

Giving student advice has to be increased and a meeting with new students concerning second semester electives had already been held. His recommendations were to either make the first year more structured or allow students to make elective choices for semester two during semester one, instead of the summer prior to starting the programme.

Teaching and learning

Management does not foresee any changes to day-to-day teaching except for laboratory scheduling and support. This discipline requires a large amount of laboratory support for their subjects. Half of the teaching staff who have taught some semesterised subjects are in agreement with management. The other half, however, is concerned about fitting and preparing everything in one semester. *“Because of compressed time [next year will be]*

like spoon feeding... Last year I emphasised more active learning as I had one seminar per topic". (En5)

According to the Course Leader, EnC/L, with the introduction of a CBS the opportunity was taken to review and update the content of the subjects.

Only one lecturer, En4, had to "*design a course from scratch*". This was the basic mathematics subject which was going to be taught for the first time by the EN department and was taken back from the servicing department.

According to management, teaching delivery methods should be "*similar to yearly teaching*." Only one lecturer agreed with that statement. Teaching staff have thought of several changes in their teaching delivery styles and most focused on "*using more handouts*". One staff member has gone as far as to turn last year's course material notes into a textbook format.

The Course Leader predicted no effect of CBS on student's surface or deep learning. Lecturers, however, anticipated changes ranging from more deep learning because of shorter duration but longer time periods per subject followed by an exam, to surface learning for similar reasons. Everybody had an opinion, some being quite contradictory. This also explains lecturers' predictions that students are either better prepared for classes following pre-requisites or will forget previous materials.

"Maybe I will give [students] some assignment to make use of the pre-requisite course knowledge, guide them in a tutorial session [...]"

hoping to consolidate their learning”. (En6)

The class sizes were predicted to be similar to the previous year, except for one elective and one subject that has doubled in size because of CBS.

Staff seemed to agree that even though some students can never manage their time, CBS would at least force them to do things within the confines of one semester.

Management felt that general education would be another burden for weak students. Lecturers were divided but most saw it as a good idea for students to broaden their scope. It was suggested that general education should be for a four-year course, not the current three-year degree.

All interviewees agreed there was a need for mandatory English classes as standards have dropped over the years. Several lecturers admitted to teaching in Cantonese, the local Chinese dialect, as students did not understand enough English. As for teaching Mandarin, the official language of Mainland China, the feedback was mixed.

Overall there is a consensus that language study reflects the language fluency requests of employers. Management is still debating the issue of time lost to general education. Staff, however, seem to have accepted the reduction in contact hours.

Assessment and Advising

Assessment of students was not seen as a dilemma by management. Individual lecturers were concerned with the amount of coursework;

“last year students did two experiments in the first semester and three in the second. This year they will have to do all five before Christmas, marking could be a problem”. (En5)

Faster turn round time for assignments was also mentioned. One lecturer said he was told to give CBS students higher grades since the increased amount of choices would result in lower student averages. All teaching staff expected students to benefit from having two lighter exam periods instead of one heavy one.

Most of the department was against re-exams, but some agreed there should be a possibility for special circumstances. One of the lecturers felt that in the past the Hong Kong government would not allow large numbers of students to fail as the number of graduates were important. He was not sure if the SAR government had a different attitude.

Only one lecturer saw the need for the current external examiner system. This person worried that one departmental advisor could not replace one external examiner per course.

Counselling and Advising

An elective briefing was set up during the summer, as students had to make elective choices for semester two, year-one, prior to starting their studies. Management felt that students could make up their minds following this event. The lecturers' response was:

"Impossible for the students who have not been to the PolyU yet, to choose classes for the second semester. [It would be better to] wait till the second semester, with help from us, but the administration will not allow for that." (En4)

One of his colleagues, therefore, "expected quite a number of add and drops" of chosen subjects by students during the first few weeks of the semester. There was another concern that students might choose easy subjects only.

About half of the lecturing staff saw the need for student counsellors or advisors, but were not aware if anything was going to be organised by the department. The Course Leader did not expect any students asking for advice.

The department has had a mentoring system in place for many years whereby each staff looks after ten students. Furthermore, the senior students in the group will look after the newer students also.

Administration

The management predicted an increased amount of administration because of CBS. The teaching staff did not expect to do more administration work but predicted more work for the course leaders and the general office.

All agreed that timetabling would be a problem and, since no timetable was available one week prior to the start of the semester, this seemed to be true.

Other

The change in name only from structured to CBS concerned one lecturer. "*Apart from one year teaching to one semester, there is no apparent change.*" Another comment along the same lines was: "*More effort should have been put into a quality pull (selection) of subjects,*" instead of only relying on staff expertise as a decision for offering subjects. "*Subjects are only changed and other subjects offered because we have these teachers. Not to improve.*" What subjects should be offered to best serve the students on a certain programme instead of what can be offered by existing staff should be at the forefront when deciding on curriculum.

Electronic Engineering overall view

The predictions of management and lecturers were quite different. Management did not foresee too many dilemmas in the move to CBS apart from students choosing electives too far in advance and laboratory scheduling and support. Furthermore, an increased amount of administration was predicted which would not directly affect the teaching staff. The move toward CBS had also been used to make some needed changes to subjects.

Teaching staff were less optimistic and had more concerns. Fitting all yearly teaching and assessment into one semester was a worry for half the departmental lecturing staff. Lecturers were equally divided over the surface and deep learning effects of CBS.

The positives of CBS were two lighter exam periods as opposed to one, with students forced to manage their time per semester. General education was seen by most as a way to broaden the students' minds.

Mechanical Engineering

The mission of the Mechanical Engineering Department is to produce graduates with a broad knowledge of mechanical engineering, yet with special understanding of one chosen sub-area of mechanical engineering, so that they can meet the changing technological challenges of the 21st Century. This goal is accomplished by having forward looking course curricula, by placing emphasis on new technologies, particularly those that could impact on teaching and research, and by conducting applied and basic research to serve the Hong Kong society and push the frontier of knowledge ahead.

The department offers full-time and part-time taught courses leading to the awards of Higher Diploma, Bachelor degrees, Postgraduate Diploma and Master's degrees, in Mechanical engineering. The programmes offered by the department of Mechanical Engineering are designed to provide students with a thorough understanding of the fundamental science and mathematics, basic knowledge in the discipline of mechanical engineering and specialisation in one particular area relevant to advanced technology. Its 1997/98 brochure emphasised the new credit based system allowing students to specialise in one of the following five areas; engineering science, design and manufacturing, materials and mechanics, power systems and control & automation, by selecting a

specified number of electives. Research programmes are also offered by the department leading to awards up to the doctoral level.

Participants' background and personal involvement with CBS

Prof. MmHoD (the Mechanical Engineering head of department) is the Chair and Head of the department. He has been schooled in HK, Canada and the USA. He is familiar with CBS, as he has worked in the USA.

Dr. Mm1 has been Assistant Professor with the PolyU for 12 years. He has been schooled in HK and the UK and has taught on structured programmes and the modular M.Sc.

Prof. Mm2 has been back in HK at the PolyU for less than one year as a Professor. His first degree came from Taiwan and he did his Ph.D. in the USA where he taught for 20 years thus being familiar with that version of CBS.

Dr. Mm3 is originally from the PRC and taught for one year in Australia following his PhD studies. He has been at the PolyU for one year.

Mr. Mm4&C/L has been at the PolyU for 14 years and is currently a Senior Lecturer and Course Leader for the HDip programme. He did his masters degree in London.

All five participants have teaching experience in CBS. Except for the two new arrivals the interviewees were part of the change to CBS either as an academic board member, a planning sub-group member or as head of department. The head of department (MMHoD) "*introduced and explained CBS to staff and 1996 students; after they understood it, fears were gone.*" This is also the only department which mentioned CBS in its prospectus.

Teaching and learning

Subjects were streamlined. According to the Mm4 “*the university as a whole, at least engineering, tends to over teach, like stuffing a goose. We took this change to review the syllabus.*” No major proposals on changing teaching delivery methods were planned by either staff or management. Monitoring students during the semester was one suggestion made.

The Mainland Chinese lecturer, Mm3, intended to spend more time on getting the students involved in his lectures, deeper learning, as compared to last year. He had seen a big difference between Hong Kong, Australian, and Mainland Chinese students. The local students were much more passive, which according to him could be because of English language skills. He anticipated better interaction if he could use Cantonese. The HDip C/L had noticed a tendency toward surface learning for continuous-assessed subjects.

The sizes of the mass lectures were large, but all classes were split into smaller groups for seminars, laboratories, and computer rooms.

Staff seemed to agree that CBS would at least force the students to complete their studies within the confines of a semester.

Nobody objected to the introduction of general education subjects. Student English was seen as poor but the new proposed hours of teaching were the same as previously. All

agreed that Mandarin was important and in HDip, where it was being offered as an elective, 90 per cent of students had chosen it.

As students had several choices under the structured programme, these choices seemed to have been taken away by general education. The overseas lecturer recommended a four-year degree to cope with additional choices and the introduction of general education curriculum.

Mixing full and part-time students is not allowed by the University Grants Committee even though CBS might make that possible, according to MMHoD. The department has the practice of allowing full-time students to repeat failed subjects on the part-time evening mode.

Assessment

Management had informed the staff to start using the new grading system but expected lecturers to mark student's work giving numbers and assign grades later. Management and most staff agreed that the use of re-assessment should be held to a minimum. Most lecturers were going to introduce several pieces of assessment during the semester in order to monitor the progress of the students. Spreading exams out over two semesters was seen as beneficial for the students by all.

The sending of examination papers to an external examiner was seen as a waste of time by the lecturing staff. The abolition of the external examiner was, therefore, welcomed by

implementation problems. Overall the department seemed to be prepared for the introduction of CBS.

Maritime Studies

The Department of Maritime Studies offers academic programmes covering both the technological and managerial aspects of the maritime profession, at levels ranging from post-experience scheme, higher diploma to degree level. The graduates of the department serve a wide spectrum of maritime and shipping related companies and organisations, both afloat and ashore. The department is focusing on the education and training needs of the industry in Hong Kong and beyond.

The department offers a degree and a higher diploma programme, and a post-experience scheme. The B.Sc. (Hons.) Degree in Shipping Technology and Management programme aims at providing graduates with a wide spectrum of knowledge and skills in maritime transport within the perspective of international transport and trade. The programme is designed to cater for the academic needs of the graduates who wish to focus their careers on either the operational or commercial side of shipping and those who might wish to specialise further.

The Higher Diploma in Shipping Management Studies programme aims at meeting the needs of the shore infrastructure of Hong Kong's shipping industry for middle-level staff who will be capable of moving to managerial roles in the future. The course is designed

to provide students with a thorough knowledge of disciplines forming the academic foundation for a career in the shore-based commercial side of the shipping industry, including the management, operation and servicing of ships and cargo interests.

The Post-experience Scheme in Shipping Practice and Management provides junior and middle shipping management personnel with self-paced, part-time education and an opportunity to enhance their knowledge in the shipping industry.

Participants' background and personal involvement with CBS

CmC/L (the Maritime Studies Course Leader) is the Degree Course leader and Associate Professor. Originally from the UK, where he had worked for 17 years on a CBS programme, the C/L had been in HK for three years.

Mr. Cm1 has been a lecturer in the department for the past five years including a two-year study leave in Sweden. He is from HK.

Mr. Cm2 is originally from the PRC where he was schooled. He has been at the PolyU as a lecturer for one year following master's studies in the UK and teaching in Bermuda.

The course leader (CmC/L), originally from the UK, is clearly an expert in CBS having worked 17 years in the UK and the Solomon Islands following a modular/CBS scheme. The teaching staff, one from Hong Kong (Cm1), the other originally from the Chinese Mainland (Cm2), were new to CBS. Cm1 had been

“part of CBS change, by being in some meetings [and] followed orders and procedures. [He saw, however,] no real benefit for students, [but] OK for management.” (Cm2)

Cm2 predicted that

“guidance is needed for students [and] breaking subjects into semesters is not a good idea since different lecturers will be teaching different parts [which] takes time for students to adjust to.” (Cm2)

Management, according to him, was showing good awareness of CBS. However, he exclaimed, *“I am in the change, but not a developer of it.”*

Teaching and learning

The CmC/L expects teaching to remain the way it currently is. The degree course is new with the final year being taught for the first time next year and has been designed with CBS in mind. The CmC/L also anticipates semesters to be better for students as they will have to revise less for examinations as compared to the yearly system. Furthermore, he predicts students will be better prepared for subsequent semesters *“because of building blocks and pre-requisites.”*

To make sure students keep up with the faster pace both lecturers have decided to have an increased number of reviews. They proposed more assessments along the way to check the understanding of the materials by students.

Class sizes for degree students are around 30 and HDip classes are 70, split into four groups of 15-18 for tutorials.

Management had no comments on student time-management but staff were divided. One expected students to improve the other expected the students to have the same problems as before: "*students are lazy or have too many readings overall, maybe both.*"

The course leader tries to give lecturers a choice regarding their preferred teaching.

Both management and staff agreed that general education would make for "*better rounded students.*" All responded positively regarding language studies. No time seems to have been lost from the departmental curriculum by GE, just hours added.

Assessment

Management foresees no major changes in assessment; "*current phase tests will be made into an exam. [It is] better [for students] to only revise half a year at a time.*" Re-examination will be used sparingly. A departmental advisor has already been appointed from overseas, who will replace the two current external examiners.

Lecturing staff seem to be in agreement with management, regarding assessment, but expect to spend some additional time on writing exams. One lecturer prefers re-examination to repeating courses.

Counselling and Advising

The course leader explained that the choices given to students have increased. He foresaw that course leaders would advise students first and pass them on to appropriate subject

experts. His comments about student advisors or counsellors were: *“something to be put in place.”*

Both lecturers had their doubts about the students’ ability in selecting electives and expected to be contacted for advice.

Administration

No administrative problems were mentioned except for one lecturer who expected *“timetabling to be much harder.”*

Maritime studies overall view

The course leader was very positive about the change toward CBS and staff only had some minor objections. The only recommendations made were related to advising or counselling students regarding their choice of subjects under CBS. Overall, the department seemed to be well prepared for the introduction of CBS.

Overall Faculty of Engineering Pre-implementation Findings

Two of the four departments, the Mechanical Engineering Department and the Maritime Studies Department, seemed to be well prepared for the introduction of CBS. Both management and lecturers in these two departments predicted only minor problems during the introduction of CBS. Both the staff and management of the Maritime Studies department made recommendations about advising or counselling students about their subject choices.

The Electronic Engineering department management recommended that students make their choices of electives closer to the actual semester they were offered in instead of too far in advance. Furthermore, management predicted an increased amount of administration by office and course management staff.

The Electronic Engineering department staff and the management and staff of the Manufacturing Engineering department had difficulty fitting yearlong subjects into single semesters. This included teaching aspects, laboratory schedules and assessment.

During the changeover, all four departments re-evaluated teaching materials and introduced a few faculty-wide subjects. For the students, advantages anticipated were that the two semesters per academic year would force them to plan for shorter periods of time as compared to the previous yearlong structured subjects. Semesterisation further introduced a reduced number of subjects and exams twice a year. It was also predicted that the introduction of a general education curriculum (e.g. Social Ethics, Philosophy and Life) should result in broader based students. However, a four-year degree instead of the current three-year degree was recommended to take full advantage of these additional subjects.

5. FINDINGS FROM POST- IMPLEMENTATION INTERVIEWS

Introduction

All participants introduced in Chapter 4 were re-interviewed following one year of using CBS either as a lecturer or as a manager. All lecturing staff were interviewed prior to talking to management so as not to influence the interviewer. Participants were first asked to summarise their overall impression of the previous year, then they were asked the same questions as last year. Their responses from last year had been reviewed by the interviewer prior to each interview to prompt the interviewee. None of the participants were shown any of their previous responses prior to the second interview. All were given an opportunity to read over their pre- and post-CBS interviews and make amendments after the post-CBS interviews.

Manufacturing Engineering

Participants' overall impression of CBS

The MfC/L had an increased amount of administration because of semesterisation; he felt the two semesters gave him double the work.

All three lecturing staff agreed that CBS had progressed well during the previous year. Several problems had arisen though. Mf1 felt the students' attitude had changed, they were unwilling to tackle the engineering subjects which required a lot of mathematical background. He felt their *"mathematics background was very poor [and had] to go back to re-introduce mathematics, since many did not have much mathematics."* Mf2 taught

changed for Mf2 as another department was responsible for mass lectures but for next year he was looking at:

“adopting different kinds of teaching methodologies. The first one interactive mass lecture presentations, the second one preparing all teaching materials into a web page format. So students, at any time, can just browse our net, all lecture notes will be on line.” (Mf2)

All three teaching staff had distinct comments on student surface or deep learning. Mf1 could not make any comments as for him *“it was too fast, students walk into the University and do exams.”* According to Mf2 *“the smaller the class [size] the deeper the learning. Sometimes, [he had] to repeat the mass lecture during tutorials”* to make sure the materials were truly understood. Mf3 commented that *“the more mature the students the deeper they study, [the extent of learning] really depends on the level they [the students] are at.”*

All classes, as predicted, had between 60 to 90 students and tutorial groups were of 20 or less. Next semester, Mf2 is going to teach 280 students in the faculty wide mass lecture; he was not looking forward to that at all.

No improvements were encountered by the lecturing staff on student time management. Students were discontented about studying over the Christmas holiday and about having to do their industrial placement during their semester break.

No general education subjects ran last year and are being offered the coming year instead. However, students' choice would be determined by available timetable slots, not by their preferences.

Assessment

Management had not received complaints from students about the two examination periods per academic year. No problems were encountered regarding the student's overall grade point average (GPA) as of yet, as the PolyU regulations state that three consecutive semesters of below two (grade C) will result in de-registration. Re-assessments were avoided and all failed students were asked to repeat the subjects. There had been no need to allow students to continue, had they failed a pre-requisite, which according to the MfC/L, would have made *"a little bit of a mockery of the idea of pre-requisites."*

Teaching staff encountered some assessment predicaments. First, Mf1 had difficulty marking 90 coursework assignments and handing them back in time to students. Both Mf1 Mf2, who co-taught and had faculty common subjects, had to compare grades with other lecturers teaching the same subjects. The take home assignments from Mf1's course had *"some students copying each other's work which was quite a headache as there were 90 pieces of work to compare and mark."* Some grading issues also occurred in Mf2's faculty common subject. One department did not want to include the grades from the mass lecture exercise so the other two departments dropped them too and only laboratory marks were used for the final grades. Mf3 encountered no difficulties, as she graded the thirty students by herself.

Lecturers had different opinions of the two exam periods. Mf1 felt students were at a disadvantage by sitting an exam after only three months of study. Two or three students had failed his faculty-wide subject. "*Gaps between each grade were too wide*" according to Mf1. Mf2 explained how all students disliked examinations and liked his 100% coursework subject, all students passed this subject. He had however, encountered some difficulty with the exam input system as A+ marks for both coursework and exam were assigned an overall A grade. Mf3 had neither problems nor fails, but mentioned that although she liked the two exam periods a year for part-time evening students, she thought it put too much pressure on the full-time students as they had "*no time to relax, take it easy.*"

Both management and staff are satisfied with the department's internal moderation system and do not miss the external examiner. The departmental advisor had visited last summer but no report was made according to the MfC/L. Lecturers had no notion of the appointment or duties of the departmental advisor.

Counselling and Advising

Students were not able to get the electives they wanted because of timetable clashes, according to the MfC/L. The year tutors under the old system were now called departmental academic counsellors (DAC) and there had been one assigned to each programme.

The lecturers had not been asked for advice, as electives were not offered until later in the programme, year three or four. Mf3 only knew that not enough students had chosen her

elective subject. She mentioned that *“students attend for the first two weeks and then decide to add or drop”* the chosen elective. Mf1 also mentioned that:

“whatever electives the students choose they still get the same diploma/degree. So the specialism is not known by the potential employer and students may choose the easiest way out.” (Mf1)

Administration

No additional administration was given to teaching staff. However, it was agreed by all that timetabling was a major problem. Students from different programmes are attending common subjects, which causes problems. Mf1 explained that to construct the departmental timetable

“you should start with common subjects, like language and general education, they fill the slots first. The second level comes to the faculty common subjects; they take up more slots. The third phase is the servicing subjects. This means I have to negotiate with the other departments. Our department has the last choice. It is an impossible puzzle.” (Mf1)

The timetable will get further complicated, according to Mf2, as students who have failed subjects in year one need to do these again in year two.

Other

The MfC/L did not see

“any evidence that students are getting indigestion as a result of CBS. There is also an acceptance of CBS by lecturers. Nobody has said it is better or worse. Only the compression of subjects and the losing of holiday weeks.” (MfC/L)

The MfC/L further mentioned the part of the week he enjoyed most was teaching.

Last year some HDip and Degree students shared the same classes. This year they are separated again as there were problems and complaints from students. It was difficult to form groups as both student groups had different ability levels when they joined the PolyU. Next year they will follow the same syllabus but sit in different classrooms. One lecturer mentioned that the loading for staff was quite unbalanced, lots of teaching in one semester and none in the next.

Manufacturing engineering overall view

Management had an increase in administrative duties, but felt both staff and students had accepted CBS. Assessment had worked well according to the MfC/L.

Staff had noticed entry requirement issues and some electives had been cancelled for lack of popularity. The teaching schedule had been quite tight and class size had remained static. Because of co-teaching some assessment procedures had changed. Staff further mentioned that the sharing of classes by Degree and HDip students had not worked and would be discontinued the following year. In future, students on distinct programmes would not be mixed but follow similar syllabi. According to staff, deeper learning by students was adversely affected by class size and their seniority.

Electronic Engineering

Participants' overall impression of CBS

Management's impressions were diverse and focused on different aspects, but it was felt that the change to CBS went better than expected. Lecturing staff touched upon

counselling, assessment, and teaching and learning. These comments have been included in the following sections.

Teaching and learning

The C/L had not asked for changes to be made to teaching delivery methods. There was an option to use the Web site, but it was voluntary. Management did not feel that CBS affected students' deep and surface learning.

Both management and staff agreed that daily university life had not changed because of CBS. However, lecturers had made some significant changes to their individual subjects. A significant challenge was fitting everything into one semester. Furthermore, the synchronisation between lectures and laboratory work did not go all that smoothly.

Both En2 and En3 delivered their teaching differently as they had 10-15 students for their subjects. En3's elective was not too popular as only 15 students choose it but he *"got to know the students by name. I really enjoyed this class. First time in ten years I got such a small number of students [to teach]."* Some of the larger classes experimented with web-based teaching and had favourable reviews from students. Students were able to download materials from the web at any time and could look up the solutions to their homework before next week's class. About half the lecturers needed quite some time to prepare their teaching materials, this was related to new subjects being taught and fitting all concepts into 14 weeks.

Both lecturers (En2&3) who taught the small elective subjects felt students did deep learning. They attributed this to class size and because students choose these subjects. En4 agreed with this statement *“if they [the students] have interest in the subject they really go deep.”* En5 and En6 mentioned that in general Hong Kong students were passive learners and that only a few will do deep learning. According to En6 the

“department head wants us to give extensive handouts and solutions to exercises. So students just wait for the answer and learn that by heart. They tend not to try to solve the problems themselves. This is typical of Hong Kong students.” (En6)

En7 added that *“because of the time frame [...] students tend to surface learn quite a lot.”*

Not all students were ready for the next semester. Management found:

“cases when a lecturer found that students had not learnt what he expected them to have learned, based on previous modules. But I suppose this is very similar to what used to happen in the structured programme.” (En1/aHoD)

The Degree C/L agreed:

“Some lecturers had to repeat part of the pre-requisite due to curriculum set too high. Also student quality has gone down the last couple of years.” (EnC/L)

Four of the lecturers had taught subjects that had no pre-requisites and one had one that was not really related. En5 had been in touch with the pre-requisite lecturer and had found out that these students had few previous fundamentals. En4 spent one third of his time reviewing materials which students should have picked up during their previous studies.

The Degree C/L explained that some classes were bigger and electives smaller, as elective subjects were offered if at least ten students had selected them. The Associate HoD remarked that the department introduced "*larger classes a few years ago already, so large classes to us are not new.*" Class sizes in the department varied from 10 to 100 students.

The Degree C/L had seen "*no drastic change. [in student's time-management] The faster pace is better for students, they have to get on with it, no time to daydream.*" All but one lecturer agreed.

Last year students were asked to do one more technical subject and the coming year they will do the general education subjects that were not offered. Their choice of GE subjects is determined by their timetable and is not really a free choice.

Assessment

The Degree C/L complimented staff for sticking to the examination's time plans. The time of the board of exam meetings, mid-July, resulted in students entering the summer work force later than the Hong Kong University students who have their results in May.

The C/L further stated that:

"As previously to keep our resources our department would like to keep all its students. Therefore, as before, it is still understood that even under CBS we pass all our students. It still seems impossible to fail any student. Furthermore students have to be below 2.00 GPA for 3 consecutive semesters, before we can ask them to de-register. So bad students will stay in the programme longer. My worst student on the degree has a 1.9 GPA, but I feel he should have had a zero GPA. [Therefore the] University should have a system that allows them to fail students within one year. My worst student had a 1.8 &

1.9 GPA in respective semesters. He was counselled, but he still strongly believes he can get all B's next semester.” (EnC/L)

The C/L had not heard any difficulty on assessing coursework from lecturers. The turn around time between semesters was too short. Students had commented to appropriate course leaders that two exam periods a year did not put too much pressure on them.

Most lecturing staff encountered no problems grading their students. En5, however, encountered some irregularities:

“Results weren't too good. But I can't really correlate the bad results to the CBS system, because last year we had a very poor intake from A- level. We used to have an average of C & D's, but last year we had D & E's. So apparently that could have been the reason why. Logically I can't really say the CBS system would pull down the results, because the materials are easier than before, but wider. The exam questions were easier, actually the whole process was less demanding than the previous years. But still they did not perform as good as before.” (En5)

Coursework assessment seemed to work overall. According to the lecturers no student complaints were received regarding sitting exams twice a year.

Even though the new grading system operated well, lecturers had some concerns regarding failures. En4 had a problem when failing a student.

“That's something stupid about the system. This puts some pressure on the lecturer. The GPA would drop and he [the student] can't continue anymore. The student would have to drop out since with 2 F's a student can never bring his GPA above 2 points again. So it doesn't make sense for him to continue studying anymore. If you fail the student you create a lot of trouble for the system. Should we let the student continue the 3rd term or should we change the regulation in order to give the student a chance to retake the subject even if this is the 4th term. At the end we gave that student a chance to re-sit the

exam and at the end he passed which solved the problem. But that doesn't mean that every student should go through this. Lecturers are not aware of any student's GPA until the exam board at the end of the semester. Only the student's performance in your subject should affect the grading not what happened to this student before.” (En4)

It would be hard for students to ever bring their GPA up to two or above after having had an F grade. Several lecturers mentioned that they were directed by management not to fail students. One said that there was a:

“Very subtle problem with the GPA, more psychological I think. The head of department was over worried that students might not be able to graduate eventually, because the regulations say a student has to have a GPA of 2.00 or above in order to graduate. So what happened was if we failed a student he would get less than 2 for that subject. Then he would need to get an A or B to bring their average up again. Eventually it brought back the same question as before when we didn't have CBS; whether I can fail students as I wish. If the student is not up to my standard can I fail him? The answer was no. Only a certain percentage, not 90%. When CBS was introduced many lecturers thought this was wonderful, because they would be allowed to fail students that weren't up to the standard. This would send out a strong message to the students; you are not up to the standard. Then they would have to retake the subject. It would just lengthen their study. But with the minimum 2.00 GPA, if you fail a student and you can not guarantee an A later, he will never be able to graduate even if he passed all other subjects. Because of this constraint we are asked not to fail too many students. So we are back to where we were, only letting fail a few, and just lowering the standard.” (En6)

En5 failed six or seven of his students, but was not aware if they have to repeat or can just carry a fail. He also stated that, even though a student had failed a pre-requisite, the engineering faculty still allowed them to proceed to the following subject. Some re-examinations were given with the approval of the board of examiners. One lecturer stated he was told by management to pass a student who had not done the coursework. Some

examination papers still went to an external examiner but others were internally moderated.

The associate HoD and three of the lecturing staff were aware of the introduction of a single departmental advisor.

Counselling and Advising

Students have an increased amount of choice as they progress in their studies, according to the associate HoD, and to make sure the right choices are made a departmental tutoring system has been in place for many years. The Degree C/L did not agree with students having to choose in August prior to starting the course and arranged to have fees waived for adding and dropping subjects. Now students are allowed to make choices at the end of the previous semester. Some changes were made after one year to make sure staff understood the CBS programme. In order to advise students better, proposed paths of study streams were outlined.

En4 noted that the system had changed now in order to allow students to select electives only in the previous semester instead of several semesters ahead of time.

En5 did not “*expect everything to be wonderful because last year was the first implementation of CBS.*” He noted however:

“the good thing is I can observe that in general, students are more cheerful since they have choices. They now have so many dishes to choose from entrée to desert, all they can eat.” (En5)

The subject he taught had some problems as the first half was mandatory but the second part an elective. The fitting of all the essential information into the first semester had been quite difficult. This was further complicated by the fact that, because of laboratory space availability, student groups only attended laboratories every other week.

According to En2, some electives were very popular but others might be changed for future offerings. Many students dropped En3's 'one stream specific elective subject' as it restricted their future choice and they selected a more widely accepted one instead. It was felt that, overall, students made well thought out choices.

Administration

Management impressions were diverse and all focused on different administrative aspects. The Degree C/L suggested:

“the University needed more experience before introducing CBS. Lots of decisions were made by trial and error. The operation of CBS seemed very difficult” (see general education elective example) *“only the system changed whereas all should have changed. [...] The simultaneous operation of two separate systems created a mess [...] Our department was learning as the system was being implemented. Some decisions that were made along the way had quite some consequences on the administration.”* (EnC/L)

The Associate Head felt *“it went better than I thought.”* Everything seemed to work and the timetable was only a little late. He had *“worried about resources problems [since] giving students flexibility requires more resources, but everything turned out quite ok.”*

The HDip C/L said: *“In general it ran quite smoothly, no major hiccups. [...] The main confusion was with the registration of subjects”* .

Management and staff agreed that:

“lecturers did not have much additional administrative work because of CBS. Lecturers just had to remember which class was following which system and grade them accordingly.” (En1)

All agreed timetabling had become increasingly difficult.

Other

All subjects for Degree and HDip have the same syllabus but they sit in different classrooms, according to En5. *“We moderated each other’s exam papers but besides that there was zero communication.”* The Associate HoD said that:

“the Degree and Higher Diploma are parallel, and are two different kind of students. But now we provide some more flexibility for them to interchange so that good HDip year-one students still have the chance to get into the Degree programme, either year one or year two. In this way we are trying to encourage HDip students who work hard to get into the Degree programme somehow. This year we do have one HDip year-one student getting into the second year of the degree programme. We also have graduates of our HDip programme, fitting into the second year of our degree programme. This is not a normal route but something to encourage HDip students to try to work towards a better qualification, a kind of motivation to encourage them to study harder.” (En1)

En6 had reservations about having made *“HDip equivalent to the first two years of the degree. Students will only have learned part of something, very hard to find a job this way.”*

Some sections offered more electives than others did. The EnC/L agreed with this and stated that some of these electives were *“good but others not so good. One computer class offered seemed more like the library induction.”*

Electronic engineering overall view

Management's overall comment was 'better than expected', but many decisions were made by trial and error according to the EnC/L. It was felt that overall the introduction of CBS was well planned by the leadership but the "do-ers" did not have enough time and experience to cope with it all. Administrative matters seemed to have affected management but not staff. Lecturers explained that once a student had failed a subject it would be rather difficult for that student to graduate. Students seemed more cheerful because of the subject choices given by CBS.

Hong Kong students were labelled as passive learners by the EE department, but students did deeper learning in chosen electives according to their lecturers. Lecturers deemed repetition of pre-requisite materials necessary. At the end of the day all students seemed to pass. The elective selection period was moved closer to the actual semester and it was agreed that overall students made well thought out elective choices. All but one EE staff member felt that students managed their time better. General education subjects were being offered one year later and students' choice would be determined by timetable slot availability. The best higher diploma students had the possibility to crossover to the degree programme.

Mechanical Engineering

Participants' overall impression of CBS

The MmHoD said last year was "no problem". Teaching staff had different opinions. According to Mm1 the pace was too fast. Mm2 and Mm3 both thought there was too

much material to cover within the one semester. Since Mm2's subject was a pre-requisite he felt he had to cover everything so students would be prepared for the next subject. He had therefore no time for *"in-depth discussion on anything, everything could only be handled superficially"*. Mm3 said that *"when I went to university I spent 120 hours on this subject, here it is only 45 hours, this is too hard for students and lecturers"*. He had proposed to management to offer the subject over two semesters, which was currently under review by the department. *"The co-teaching worked for us lecturers, but it was confusing to the students"* according to Mm2 who had never done co-teaching. He also stated that *"CBS here is still a hybrid, two different halves stuck together"*.

Mm3 explained that all CBS lecture notes:

"had to be put on the internet, so that students at anytime could download the lecture notes, the assignment, the answers of the assignments, and to communicate with the lecturer by e-mail". (Mm3)

Teaching and learning

Management introduced web-page teaching to simulate information to students which, according to them, had nothing to do with CBS. Lecturing staff saw a relationship between CBS and Web teaching. Lecturers ended up spending more time on their teaching materials as they were there for everybody to see on the Web. Mm2 suggested it would *"be up to the head to check for discrepancies. This is a step to openness and teaching in a democratic society"*. All lecturing staff agreed quality of teaching materials improved because of Web teaching, which had taken up quite some time. Mm3 had trouble getting students to ask questions and doubted if students understood what he was

saying in English. The effectiveness of the student's feedback questionnaire (SFQ) was questioned by three of the four lecturers.

Only one lecturer had noticed students had learned a little deeper as a result of asking the lecturer questions during office hours. The management had introduced mandatory office hours for all courses with CBS. The other three lecturers thought students' learning was still very superficial. The level of English understanding was mentioned again by Mm3 and he also had observed that Hong Kong students never took notes in class, "*they just sit there*", he doubted whether the additional information given verbally could be remembered by students.

Students who had failed Mm2's pre-requisite subject ended up failing his subject also.

Both management and staff agreed that class sizes had remained similar. All agreed students' time seemed to be managed better.

Since GE was not offered last year, both year one and two will be doing these subjects this year. The debate of a three or four year degree was raised again in relation to GE subjects. It was suggested closer links should be developed between secondary schools to make sure the connection between secondary and tertiary education worked better.

Assessment

The MmHoD mentioned there was a need to change lecturers' attitude on grading, because grading students an average of C made for the minimum GPA of 2.00 and would

result in half the students failing. The same would hold true for D+ and D grades, which are allocated grade points of 1.5 and 1 respectively. Lecturers had to learn to move the curve forward.

The HDip classes had decided to re-introduce exams as they had found difficulty in failing students with 100% coursework.

There had been some controversy on the computer system averaging marks but that has been solved. Mm4 changed his subject *“not trusting continuous assessment, hard to handle students copying one another, [therefore] a final exam was added”*. The whole department agreed that re-exams were not given and all failed students had to repeat those subjects.

Staff and students do not fully understand the minimum 2.00 GPA requirements, the effect of D grades, and the de-registration procedures, according to management.

Counselling and Advising

Management had positive feedback from students regarding electives. Students would start selecting electives next academic year and course leaders had briefed them.

According to Mm4 students contacted their seniors to find out what subjects to study in order to get better grades.

The introduction of office hours, three set hours per week for students to see their lecturers, had been introduced, but not because of CBS according to management.

Lecturers had seen an increase in students coming to their office because of this. E-mail was also widely used between some lecturers and their students. Even though all staff were responsible for 4-6 students, it was felt that students sought most advice regarding choices from their respective course leaders.

Administration

The management's response to administrative problems was that "*operational problems can be solved and should be easy compared to engineering problems and formulas*".

Staff seemed to agree that the departmental offices had good follow up. The university support departments were not catering very well, according to Mm3.

"Our CBS is not really CBS it is actually pseudo CBS only, [with a] specified pattern [subjects set for each semester]. It is creating a mess for both AS [academic secretariat] and ITS [office of information technology services]. We need to do a lot of worthless work". (Mm3)

Mechanical engineering overall view

Management had encountered no problems during the introduction of CBS but the staff felt they had too much to teach in too little time. Co-teaching had worked for staff but was confusing for students. The current CBS system was described as a "hybrid". The use of the Web, to provide teaching materials, was introduced simultaneously with CBS and had resulted in better notes. The effectiveness of student feedback questionnaires was questioned by three of the four teaching staff. Mandatory office hours introduced concurrently with CBS had made for deeper learning according to one lecturer; the remaining three still felt that learning was too superficial. Staff had to learn to grade higher according to management and all failed subjects were to be repeated as no re-exams were granted. The department's students had been briefed for next year's electives

choices and the students in turn had sought advice from their seniors regarding higher grading lecturers/subjects. Administrative problems were tackled but not seen as a major issue. All agreed students seemed to manage their time better on this semesterized programme. Three versus four year degree programmes and better links between secondary and tertiary education were issues being discussed within the department.

Maritime Studies

Participants' overall impression of CBS

The CmC/L had been used to a similar system in the UK for a number of years. The teaching staff did not see a real change from the previous year. Cm2 stated:

"Subjects were cut somewhere in the middle, the test was replaced by an exam at the end of term one. Had another exam at the end of term two. Content remained the same." (Cm2)

Teaching and learning

Teaching delivery methods were left up to individual teachers, according to management and about half the staff had made use of Web teaching in some form or another. Students think that attending classes alone is all that is required, but according to the C/L they are supposed to be reading for a degree.

It was agreed that students did deeper learning for electives as they had chosen these subjects. Students were better prepared for semester two as they had reviewed all materials for the examinations in semester one.

There were no changes made in class sizes because of CBS. Management had not noticed an improvement in student time-management, but both lecturers disagreed. Since GE subjects had not been offered the previous semester no comments were given.

Assessment

Examination grades and GPA worked as planned, according to management. No re-examination was given to the CBS students and 4-5 students who failed were asked to repeat their respective subjects. Students passed all pre-requisite subjects.

Cm2 had not been made aware that he was to grade CBS and non-CBS students differently, furthermore he felt coursework had not been up to standard. Cm1 further explained that:

“Although we have some structured courses we try to run everything following the CBS guidelines. This created some confusion during examinations.” (Cm1)

Counselling and Advising

The CmC/L stated that the old degree was divided into a technical and commercial stream, now students were allowed to choose any subject. Since most students chose commercial electives and too few selected technical ones these were not offered. The C/L hoped that they would be offered next school year. No students approached the CmC/L for elective advice as year tutors and personal tutors were assigned these duties.

Lecturers felt that students came to seek advice regarding their elective choices, but the number of students was similar to the previous years.

Administration

Timetabling was highlighted by the CmC/L as a problem area. He longed for the days when all teaching was done within the confines of the department where students and lecturers interacted on a daily basis.

Cm1 had encountered administrative problems regarding examinations and had noticed classes starting at 8:30 a.m. and last ones being offered at 5:30 p.m. Cm2 noted that:

“Adding and dropping subjects seemed not to work right. A student who dropped was still on my register and had to go back to that class. I had some students in my class who were not on the register”.
(Cm2)

Other

The C/L was disappointed with students simply regurgitating what they have been told. *“They have photographic memories”*. He thought it was related to non-mother tongue language teaching.

Cm2, being a new lecturer, had been assigned the heaviest teaching load in his department, which he questioned. Furthermore, he did not approve of sharing a subject with several lecturers.

Cm1 noted that the PolyU version of CBS was still very structured and that decisions were based to facilitate administration of the new system rather than to benefit students.

Maritime studies overall view

Since the C/L had worked for many years on a CBS programme in the UK, he felt the first year had worked well. Staff agreed and felt the only change were exams instead of phase tests in the middle of the school year. Teaching methods were left up to individual staff and about half had chosen to take advantage of Web teaching. The C/L did not agree with the students' attitude of just attending classes, he expected them to 'read' for his degree. Both lecturers had noticed deeper learning by students in elective subjects, they contributed that to the fact that students had chosen these themselves. Class size remained unchanged. Assessment under the new system had been confusing as staff were mixing the old and new grading systems. All failed students on CBS courses were asked to repeat their subjects but, since all pre-requisites were passed, this created no problems in the system. Because of lack of popularity some electives were not offered and the tutoring system seemed to have been adequate. The main administrative problem area was timetabling but also the add and drop period of electives did not go according to plan. Staff had noticed an improvement in student time management, but management did not. Non-mother tongue teaching was given as a reason for surface learning by the C/L. The PolyU version of CBS was still very structured and was seen as administration instead of student led.

Overall Faculty of Engineering Post-Implementation Findings

The management of all four departments agreed that the introduction of CBS had been better than expected and that both staff and students had accepted it. One electronic engineering academic staff member had noticed students being more cheerful because of

that had hoped to be able to fail more students and keep their standards high came to the conclusion that the change to CBS had not made it any easier to fail students.

Three departments had offered electives during the first CBS year. Changes had been made to allow students to choose their electives as close as possible to the semester they were offered instead of prior to starting at the PolyU. Several electives had been cancelled because too few students had chosen them. The remaining department had briefed their students about the next year's electives and students had taken it upon themselves to ask senior students for advice. No advising difficulties were mentioned. Lecturers remarked that choices could be influenced and that some electives were designed to increase student numbers and not to satisfy educational needs.

The management of all four departments agreed there had been an increase in administrative duties but they had not burdened teaching staff. Timetabling was seen by all as a major problem area. General education subjects were to be offered one year later and the choices would be determined by availability of students' second year timetable slots.

According to the staff of three departments, students seemed to manage their time better when completing a CBS programme.

Both degree and higher diploma students of one department had shared classrooms during the first CBS year. However, this had not been satisfactory as the higher diploma

students complained that degree students obtained higher grades. Lecturers also observed that students did not mix between programmes when forming groups for course work assignments. A decision was made to have students on distinct programmes sit in different classrooms even though they followed the same syllabus.

Summary

The decision to phase in CBS at the PolyU seemed to have worked well as no major problems occurred during the first year of operation. As this is a transitional process, from structured to a complete credit based system, it is understandable that staff and management who have used CBS before call this a “hybrid” system. Overall the faculty and its staff were prepared and reacted well to the introduction of CBS. The development of this new system tended to be an amalgamation of pre-existing programmes, which is similar to the CNA A (1989) findings.

Benefits such as flexibility and student choice, saving of resources, increasing access to higher education, and popularity with students have not fully materialised. These advantages might happen once CBS has been introduced university wide. These preliminary findings mirrored the CNA A (1989) report as educational standards, coherence and the value of the educational experience provided to students were questioned. Furthermore, as predicted by the literature, a CBS is not a cure all. Problems that existed prior to the introduction may be accentuated rather than solved.

The next chapter will incorporate the findings of pre- and post-CBS chapters and the literature review.

The analysis is presented using the following categories:

1. Reasons for CBS
2. Participants' CBS background
3. Teaching and learning
4. Assessment
5. Counselling/Advising students
6. Administration

The objectives of this study are:

1. To examine, review and assess how the Engineering Faculty and its staff have prepared and reacted to the introduction of CBS at the PolyU;
2. To assess how CBS strategies and measures have been implemented and to identify strengths and deficiencies;
3. To examine to what extent the departmental management and staff have been able to adapt to CBS changes;
4. To examine possible scenarios for the future of CBS at the PolyU and other institutions;
5. To provide guidelines and recommendations on the introduction of CBS.

This chapter will examine the first three objectives of the study by looking at emerging patterns from both the pre- and post-interview data and comparing these to the literature. Concepts, ideas and categories were identified through content analysis of the literature and the interview data. Matrices were constructed to organise these concepts, ideas and categories. Statements are made at this stage and are compared to the literature. The last two objectives and the research questions will be answered in the concluding chapter.

Reasons for CBS

According to the literature CBS has become the medium to meet the increased demand for higher education while allowing for greater student choice (Allen, 1995; Dicksens, 1995; HEQC, 1996; Mansell et al., 1976; Robertson, 1994; Watson 1985). Khun (1962) predicted obstacles when introducing a CBS, whereas the HEQC (1996) report anticipated that this scheme would offer greater transparency and explicitness to education. Trowler (1998) further anticipated a neo-Fordist managerial perspective of CBS.

During the pre-implementation interviews, participants focused mainly on the operational aspects of CBS discussed under the subsequent headings in this chapter, rather than the reasons for this new scheme. However, several topics were related to the reasons and others became apparent during the post-implementation interviews.

The increase of student choice predicted in the literature (Betts & Smith, 1998; Cornford, 1997; Greenwood et al. 1997), and by some of the pre-implementation participants in the study, had not materialised. This could be due to the fact that only the freshman year of one faculty moved toward CBS at this time; meaning that the choices might become wider as the system is adopted in all three years of the programmes and by additional departments and faculties. It was felt by the participants, however, that more choices could have been introduced. The selection of courses offered to students, according to the participants in this study, was similar to their choices under the former structured programmes.

Participants had expected larger classes, but this did not materialise except for a few faculty-wide subjects. There seemed not to have been pressures on management to save resources through offering larger classes, combining different programmes and centralising management functions, which are managerial attractions of CBS according to Allen and Layer (1995) and Trowler (1998). The opposite happened in one department where a general mathematics course, which used to be taught by a servicing department, was taken back and taught within the department. Furthermore, through the introduction of electives, some classes were smaller than before. If the ultimate goal was the saving of resources it had not yet taken priority over introducing and running this new system. The PolyU offers, however, an ever-growing number of part-time evening courses for mature students because of increased demand. Many of these are self-financed courses, allowing departments to accumulate additional income. Even though CBS could have allowed for full and part-time students to mix, the University Grants Committee (UGC) does not allow this, according to the pre-implementation findings from managers.

The post-implementation findings seem to reiterate this. Two departments had introduced the same syllabus for both higher diploma and degree students. One had not mixed the groups and offered these subjects separately. The other department had gone the extra step and had combined its higher diploma and degree students, which under the CBS ethos followed the same curriculum. This was to be discontinued as students had protested at combining students of different levels of ability. These two programmes were to be separated again the year following the study. The integration of different programmes, following the same syllabus, had not been tried in one department and been

rejected by students in another. Since the integration of programmes, and economies of scale, are seen as major benefits of a CBS (Allen & Layer, 1995), it was surprising to see that these strategies had been abandoned.

Even though this new system was introduced without being fully understood by staff, it had not resulted in major obstacles. The first year of CBS had gone by without major difficulties or unanticipated events. An explanation for this could be that universities in Hong Kong are very bureaucratic, rules and regulations are followed not questioned and management tends to be autocratic. Furthermore, a working party of management staff appointed by the University President, under the supervision of one of the vice-presidents, had been investigating the introduction of CBS for quite some time. This additional endorsement from top management and pre-planning aided in the introduction of CBS.

The neo-Fordist managerial perspective CBS gives education (Trowler, 1998) was not mentioned by the participants during the pre- and post-implementation interviews. The assumed explanation for this is that a patriarchal, autocratic and protectionist management culture already exists in Hong Kong and its educational institutions. The participants did not display any ill feelings towards the persons selected to lead and implement the change to CBS. The presidential endorsement may have minimised resistance and facilitated the introduction of CBS.

The findings in this study mirror the 1996 HEQC report in that, even though there is an overall feeling that educational standards are deteriorating, CBS was not seen as the reason for this. The HEQC (1996) report further suggests CBS offers greater transparency and explicitness, which was neither predicted nor became apparent in this study. All departments involved still worked very much behind closed doors and very little exchange happened between the departments in this faculty.

Greater participation in education through CBS had not been expected by the participants in this study. The number of students attending the programmes in the engineering department was not predicted to change in the coming years, according to both management and lecturing staff. As anticipated, the student intake remained constant for the period of the study.

The combining of different level programmes, higher diploma and degree, following the same syllabus was tried but discontinued. This finding was unique to this study and was contrary to the benefits predicted by advocates of CBS.

The Hong Kong education commission is, however, in the process of analysing the local educational system with a focus on lifelong learning and a greater participation in higher education. CBS was introduced to the PolyU, according to its President (1997), in order to have programmes that could be easily modified depending on the requirements of industry. Furthermore, the scheme should allow for easy student movement between educational institutions in Hong Kong and other parts of the world. The Hong Kong

Education Commission report of 1999 called for a system that could accommodate all who would like to take part in higher education. Hong Kong's Chief Executive announced in his 2000 policy address that six out of every ten secondary school pupils would go on to higher education within a decade. Currently, only 18 per cent of 18 to 20-year-olds enter universities including; students studying overseas, 34 per cent receive higher education. In the United States and South Korea, the proportions are 81 and 58 per cent respectively.

Conceivably, the introduction of CBS in Hong Kong's higher education institutions is related to the plans set forth by the education commission and its chief executive. If the ultimate goal is to increase higher education attendance from the current 34 per cent to 60 per cent over the next decade, CBS is, according to the literature (Allen, 1995; Dicksens, 1995; Mansell et al., 1976; Robertson, 1994; Watson 1985), a medium that has succeeded in doing just that. The increased diversity and flexibility offered by credit-based and modular systems has allowed nations to increase participation in higher education (Robertson, 1994).

Participants' CBS Background

Both pre- and post-implementation results showed frustration by several participants regarding the extent of CBS that was introduced.

As predicted in the literature, staff in general resist change (Allen & Layer 1995). In addition to this resistance, the sub-group of staff with previous CBS experience felt additional frustration, as the amount of CBS phased in was minimal. The benefits of the new system did not become clear to the newcomers sub-group, and the lack of benefits frustrated the others. It is felt, however, that because of this past experience of CBS, changes were proposed and made earlier than they would have been if everybody had been from a uniform background.

Training suggested by the CNAA (1990), including time management, management skills, team building and teamwork, could be helpful for all PolyU staff and management in moving toward CBS. However, no formal training was mentioned by the participants in this study.

Of the 21 participants interviewed, one course leader (MF) and five staff (3 EN & 2 CM) had no prior experience of teaching or studying CBS. Of these six, three had been involved in one way or another in the development of CBS for the PolyU. The course leaders had been part of the development of the CBS materials in their respective departments and the Associate Head of electronic engineering was actually one of the

major designers in that department. One of the staff from Maritime Studies had attended some CBS meetings. Just over 85 per cent of the sample had taught, studied, or been involved in CBS, leaving only three participants who had no prior involvement at all with this scheme.

The four departments can be rated by amount of involvement, knowledge and/or prior experience of CBS (Figure 6.2).

1. Manufacturing Engineering (MF): No management experience and some staff member experience
2. Maritime Studies (CM): Extensive management experience but little to no staff member knowledge
3. Electronic Engineering (EN): Management experience and key designer of CBS, staff members experience rated from none to extensive.
4. Mechanical Engineering (MM): Both management and staff members have medium to extensive CBS experience.

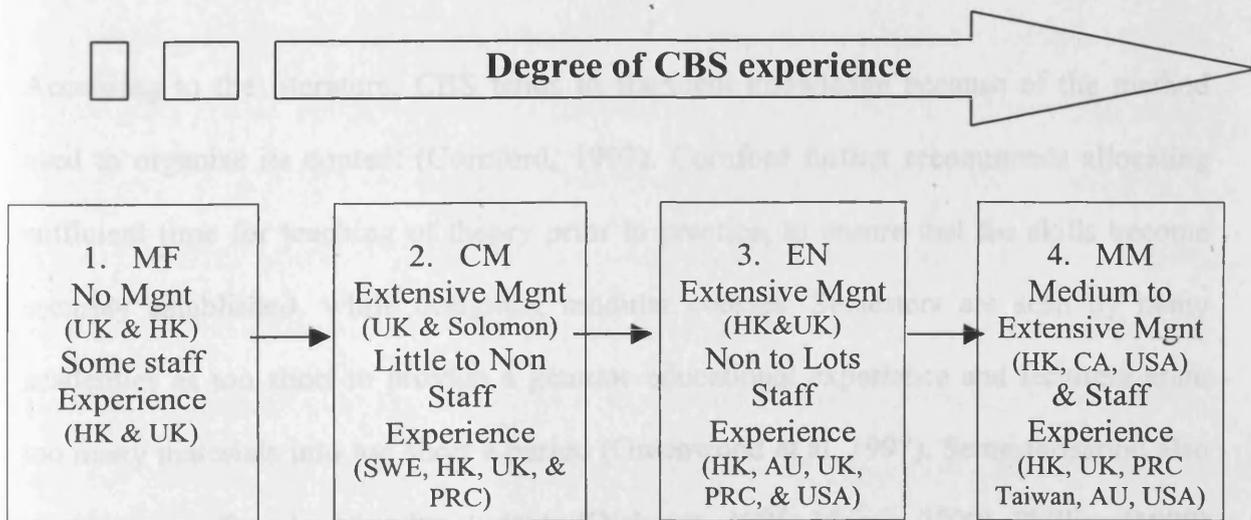


Figure 6.2 Degree and Country of CBS Experience per Department.

The departments with the greatest previous CBS experience had an easier time introducing the scheme. These departments were, however, also the ones that were

frustrated by the slow pace and extent of CBS being introduced. According to Scurry (1999), there are significant differences between the North American and British interpretation of CBS, further explaining the different expectations of management and lecturers.

CBS had been experienced in different ways by the participants in this study. The greater prior departmental knowledge of CBS resulted in easier introduction of the scheme. The frustration of the amount of CBS introduced, was a finding attributed to the variety of world-wide CBS experience and multi-culturalism of staff. The diversity of background of academic staff is peculiar to Hong Kong. Therefore, the expectations of the participants were distinct. Most previous studies had a more homogeneous population.

Teaching and learning

According to the literature, CBS tends to fragment knowledge because of the method used to organise its content (Cornford, 1997). Cornford further recommends allocating sufficient time for teaching of theory prior to practice, to ensure that the skills become securely established, while designing modular courses. Semesters are seen by many academics as too short to provide a genuine educational experience and lecturers cram too many materials into too short a period (Greenwood et al. 1997). Semesterisation also encourages surface learning by students (Dicksens, 1995; Morris, 2000). Phillips (1989) therefore suggests a fresh approach to teaching and learning while offering a selection of subjects on a semester basis. A radical revision of academic assumptions is required while properly introducing such a scheme (CNAA, 1989). Previous findings show that

this rarely happens. An increase in student-staff ratios was also predicted (Trowler, 1998; Watson, 1989). The accreditation of prior experiential learning (APEL) could be problematic according to Betts and Smith (1998) but opens previously inaccessible areas of education (Allen & Layer, 1995; Raban, 1990; Robertson, 1994).

The fragmentation of education because of CBS, referred to in the literature (Betts & Smith, 1998; Cornford, 1997; Greenwood et al. 1997), was predicted by numerous staff in this study. The reason for this was that CBS courses were being developed through the amalgamation of pre-existing programmes, rather than by creating a new system from the bottom up. Half the participants in this study had reservations about fitting yearly teaching into semesters. The difficulty of arranging laboratory sessions at the appropriate time was another anticipated issue.

The post-implementation findings show that these predictions became a reality, as yearly subjects were either squeezed into one semester or cut in half to fit a semester, reiterating Greenwood et al.'s (1997) findings. This had further complicated the scheduling of practical classes after theory classes, in hands-on engineering and computer subjects. This meant that some students were not able to learn the theory first in order to benefit from the subsequent practice, as predicted by Dicksens' (1995) research. The connection between subjects had become less apparent and some of the second semester subjects, that had formally been compulsory, had been turned into electives, resulting in lecturers trying to cover all the essential course materials within the compulsory semester. The timing and content of semesterized courses were not ideal, as predicted. However,

lecturers did their best to be flexible and cover all the essential materials within the time allocated. Those who encountered real time constraints had taken it upon themselves to develop solutions or involve the course leaders in amending course content and available time.

The findings mirrored the literature regarding the fragmentation of education and related scheduling problems because of CBS (Betts & Smith, 1998; Cornford, 1997; Dicksens, 1995). Neither management nor staff had been very pro-active regarding these predictions, but lecturers had been reactive when problems were encountered.

Management in general saw no need to change teaching delivery methods but half the lecturers had been contemplating such changes. Lecturers were, however, vague on what these delivery changes would be. Staff anticipated the need for additional time to prepare teaching materials for the first two CBS semesters.

No major changes to teaching delivery methods were either predicted or introduced during the first year of CBS, contrary to the recommendations in the literature. Teaching delivery amendments were left up to the individual lecturers in three departments and there were few changes. This could have been expected since the teaching materials had not changed either. The only changes made were those relating to class time. If classes increased from two to three hours, some different teaching approaches were added to keep the students' attention. Team-teaching as a delivery method had worked well for lecturers, but had been confusing for students. The CNA A (1989) results showed that,

although team-teaching was effective and enticing, it was burdensome for staff and needed additional resources, but the effect on students was not mentioned in the literature. One department had, however, introduced mandatory Web-based teaching, resulting in improved teaching materials and positive comments from students, according to lecturers. This change was not related to CBS, according to management, but nevertheless introduced at the same time, perhaps taking advantage of the period of change. As CBS is being phased in, the fundamentals of Web-based teaching are being phased in as well. Little additional time had been required to prepare teaching materials, except for those who were making their teaching materials available on the Web. These staff felt the need to upgrade the materials, as they would be available for all to see. The outcome of this departmental exercise was improved course materials.

Participants' predictions were equally divided over the implications of CBS on surface and deep learning. No consensus was reached amongst participants, but many described Hong Kong students as generally passive learners.

Some participants had noticed changes to student's surface or deep learning approaches during the year in question. These are, however, the lecturers' perceptions rather than any scientific testing of deep learning. Students on continuously assessed subjects had a tendency toward surface learning. However, participants teaching elective subjects in the engineering faculty noticed students learned deeper. The empowerment of students was seen as the deciding factor here. As students had a say in the elective classes they selected, they took greater responsibility for their learning. It must not be forgotten,

however, that class size in the electives was smaller than in regular classes. The reduction of the student-staff ratio may also have helped to promote deeper learning.

No consensus was reached on the learning approaches of students during the pre-implementation interviews. Hong Kong students were labelled passive learners contrary to the literature, where Chinese students were deeper learners than their Western counterparts (Biggs, 1996; Kember & Gow, 1991; Watkins, 1996). There were different opinions on how CBS and semesterisation would affect the learning approaches of students. The results showed how students' learning approaches were affected by assessment modes, class size and the elective selection process. The literature (Dickens, 1995) showed more surface learning, as opposed to deep learning, because of the fragmentation of education through semesterisation, but this was not consistently true in this study because of the diversity of the student's experience.

A relationship between semesterisation and student time-management, became apparent in this study. Students' time-management skills were predicted to improve for those attending semesterized programmes according to one department. Another two departments agreed that CBS would at least force students to meet deadlines within the confines of a single semester.

The post-implementation findings showed that the change from yearly to semesterized subjects had altered the distribution of subjects. It had allowed students to concentrate on

fewer subjects over a shorter period of time. According to the lecturing staff, this had resulted in students managing their time better.

Both the pre- and post-implementation findings indicate a link between time management and semesterisation. Leask's (1994) case study had raised concerns regarding time management. Students needed to be well organised and to be able to manage their time well (Leask, 1994). At the PolyU, better time management by students was seen as a result of semesterisation.

The introduction of a general education curriculum (e.g. Social Ethics, Philosophy and Life) with the introduction of a CBS was part of an attempt in Hong Kong to produce broader based students. This change is seen as part of the American version of a CBS. Therefore, according to staff with experience in the USA, a four-year degree instead of the current three-year degree would suit these additional subjects better.

The accreditation of prior learning or previous experience available in some CBS schemes (Allen & Layer, 1995; Raban, 1990; Roberston, 1994) has not become evident in this study. Students who join full-time programmes enter straight from secondary schools or upgrade from other programmes. Accreditation of prior experiential learning (APEL) was not mentioned during the pre and post interviews by any of the participants in this study. The reasons for this might be that this study concentrated on full-time programmes and students only. Furthermore, full and part-time students do not generally

share the same classrooms in Hong Kong. APEL would be more relevant to those students returning to education.

Assessment

The literature regarding CBS assessment describes how each subject needs to be individually assessed due to the nature of a CBS allowing students to progress (Cornford, 1997). Furthermore, assessment has become an institutional-wide issue as students will ultimately take classes all over the institution and grades will have to be comparable throughout (Trowler, 1998). The assessment of CBS subjects is questioned by SOED (1991) as it leads to a fragmented learning experience. Both Billing (1996) and Leask (1994) agree that students on a CBS scheme are likely to be over-assessed and feedback given is often too close to the final exam, not allowing students to benefit from their lecturers' input on coursework. However, modular assessment was preferred over yearly examinations (Leask, 1994). Raffe's (1994) findings indicate that lecturers dislike the increased assessment workload. Furthermore, the HEQC (1996) report shows higher overall marks for CBS students, which is related to the increased use of coursework assessment as opposed to the traditional end of year exams (Gibbs, 1995). CBS allows for failed subjects to be repeated without retaking a whole semester or year (Finch & Crunkilton, 1984). The literature on CBS further shows that assessment is no longer controlled by external examining bodies, but instead is handled internally (Oulton & Steedman, 1992).

The pre-implementation findings showed that participants anticipated that two lighter exam periods per year, instead of one heavy one, would be better for students, giving them more time to prepare for fewer examinations per semester. The examinations at the end of each semester were predicted to prepare the student well for follow-up subjects in the subsequent semester.

Management had received positive feedback from the students regarding sitting examinations twice a year, which reflects the finding from Leask (1994). As predicted, lecturers felt students were better prepared for semester two subjects as they had reviewed the materials for the examinations in semester one. Both pre- and post-implementation findings suggest that allowing students to be examined for fewer subjects per semester helped them to focus better on the subjects offered. Leask (1994) received similar feedback from students in her case study.

The over-assessment issue found in the literature (Billing, 1996; Leask, 1994) was raised prior to the first CBS year. Some lecturers were concerned about the amount of coursework to be given to students within the confines of one semester while others had decided to increase the number of assessments to improve the monitoring of students. The number of coursework assignments given per semester had greatly increased. Furthermore, the year-end findings indicated the difficulty in marking and handing back coursework assessment in a timely manner. The number of students per class was a reason for this as was the complicated process of checking for the originality of the homework assignments. For faculty-wide subjects, this was further complicated as

departments disagreed on the mass lecture marks, resulting in ignoring these grades and using tutorial marks only. Exams were re-introduced to coursework only courses, as grading and perhaps failing students on coursework alone was difficult to justify for lecturers.

The over-assessment issue raised in the literature was predicted and actually happened in this study. The increased assessment workload for lecturers echoed Raffe's (1994) findings. The literature warns that assessment would become an institution-wide issue (Trowler, 1998) and it has become faculty-wide at the PolyU with the potential to become university-wide as CBS is phased in further. The difficulty of using coursework assignment grades only for final marks was not stressed in the literature. The re-introduction of end of semester exams to coursework only subjects is an understandable intervention, and is particular to this study.

During the pre-implementation interviews, one lecturer reported that he was informed to give higher grades to CBS students. Management commented, during the post-implementation stage, that staff had to learn to grade higher, as the student's overall grade point average (GPA) should not remain below two (i.e. grade C) for more than two consecutive semesters. This should result in higher overall marks under CBS, reiterating the HEQC (1996) report. However, the report's reasoning for increased marks was related to the increase of coursework assignments. Here the focus was on moving the grading curve forwards, by giving an average grade of B (three) instead of the traditional

C. Some lecturers had implemented the concept of moving the grading curve forwards, but there is evidence of inconsistency between individual lecturers and departments.

Most management and staff predicted that re-assessment would be held to a minimum. This is what actually happened as few re-assessments were granted and most failed subjects had to be repeated. However, staff noticed that a failed subject resulted in such a significant drop of the student's grade point average (GPA) that it would be difficult to make up for later. Some borderline students had been given the "benefit of the doubt" during examination meetings and had been allowed to progress.

Staff who had seen CBS as a mechanism to maintain high standards, by not letting students progress until they had reached the required knowledge, came to the conclusion that the change to CBS had not made it any easier to fail students. The marking system worked in such a way that the grade given for a failed subject would pull the students grade point average down to such a low level that it would be almost impossible to bring it back to the required level.

No concerns were predicted regarding the discontinuation of the external examiner, as the process was deemed unnecessary and time consuming by most. As predicted in the literature (Oulton & Steedman, 1992), assessment was no longer controlled by external examining bodies, but handled internally instead. Participants had been satisfied with the individual departments' internal moderation systems during the CBS year.

Examinations were no longer externally validated for the CBS programmes, perhaps with the intention to speed up the examination and marking process. It might, however, not be to the benefit of the departments and the students to introduce a new system and at the same time reduce the external control of it. Even though the validity of the previous external examiners was questioned by many, it was still an additional control and recourse for students. The introduction of a new scheme, and the discontinuation of external examiners, raises the question of quality assurance. Additional internal quality assurance has to be in place to protect and monitor the programme, the students, and the lecturers. Departmental advisors were introduced to monitor the quality, but nobody in this study was aware of the role the advisor should play.

In relation to assessment, the expectations of management, and their descriptions of what actually occurred, were different to those of the lecturers. Even though assessment issues were numerous, management seemed to feel the process worked well. An explanation for this is that management looks at the overall assessment process and lecturers have to give grades to individual students. Academic staff are the ones who have to justify individual student grades.

The re-examination debate is not apparent in the literature and could therefore be particular to this study. It might again be related to the American version of CBS where re-examinations are non-existent, but all subjects are offered each semester and at different time slots, increasing the possibility to retake subjects. The UK version offers

most subjects once a year only, making it very difficult for students to repeat subjects (Scurry, 1999).

Under the US system the last grade awarded replaces the previous one, contrary to the PolyU system, where both the failed grade and new grade contribute to the student's GPA. This study shows a scheme that is in between the traditional UK structured system and a multi-faceted version of CBS. The PolyU has created a hybrid system modelled on both the British and American version of CBS, similar to Regel's (1992) findings.

Counselling and Advising Students

Students need to fully understand a CBS course before they can make a proper choice (Billings, 1996; Dicksens, 1995). The literature, however, shows that most universities do not possess sufficiently effective counselling methods (1994 HEQC report). This has resulted in additional pressure on the personal tutor role (Billing, 1996). According to a few respondents in Greenwood et al.'s (1997) study, the predicted benefits and student choice have not materialised. Concerns were even raised concerning module popularity and its assessment strategy.

Pre-implementation findings highlighted concerns regarding student choice, as some students had to make elective choices for their second semester prior to officially starting their very first semester at the university. Informative elective meetings had been held and the students had made their choices. Even though some management staff felt this

might work, most participants recommended that, for informed elective choices to be made, the selection period should be during semester one while related subjects were taken. Another option recommended was to make the freshman year of study more structured. Expectations were that students might change their mind regarding their elective choice as they progressed through semester one, which might result in students wanting to change classes prior to or during the first few weeks of the elective course. The yearly selection of semesterized electives is a classic example of how the new system has to fit into the yearly cycle.

Three departments had offered electives during the first CBS year and students had selected these well in advance. However, course leaders had allowed some students to switch between electives, without penalising them. The remaining department had briefed their students about the next year's electives and students had taken it upon themselves to ask senior students for advice. As the result of lobbying by management and lecturers, changes were to be introduced to allow students to choose their electives as close as possible to the semester in which they were offered instead of prior to starting at the PolyU. This improved elective selection process made during the introduction of CBS in this faculty was not discussed in the literature.

Management predicted that course leaders would advise students regarding elective choices and pass them to the appropriate experts of their chosen subjects. Most of the departments had previous mentoring systems in place, but lecturers still saw a need for student advisors in order to assist students with their elective choices. Furthermore,

lecturers thought that students would not make rational elective choices, but would choose easy subjects so they could get higher marks.

After one year of CBS, it was felt that students had coped well with their additional choices. The participants in this study mentioned no counselling difficulties. Course leaders were contacted, as well as senior students, regarding subject choices. Several electives had been cancelled because too few students had chosen them. Lecturers remarked that subject choices by students could be influenced and some electives were designed to increase student numbers and not to satisfy educational needs. The designing and marketing of electives on offer resulted in certain departmental subject teams increasing their student "market share". Members of subject teams that were not as aggressive resented and questioned the validity of these newly created electives.

The development and student selection processes of electives was not predicted in this study but emerged during the post-implementation stage. The literature identified concerns regarding module popularity and assessment strategy (Greenwood et al., 1997). The innovative development of new electives to influence student choice by certain subject teams was not predicted in the literature. The supply and demand of subjects is however more competitive in North America (Scurry, 1999), where the popularity of subjects will determine the ones that are offered. The departments in which the creation of innovative electives occurred had staff with North American CBS experience.

One of the major lessons learnt during the first year of implementation is that students should be allowed to choose their electives close to the actual semester they will study them. Morris' (2000) findings reported elective choices were made well in advance. The well being of students has taken priority over the bureaucratic, human resource planning and monetary advantages of making them choose earlier in the year, or in the previous school year. Even though this has resulted in an improvement for students, the university might waste resources as a result.

Administration

The move from structured to semesterized programmes has created administrative obstacles (Kuhn, 1962). The change process requires a steep learning curve involving considerable adjustments to culture, academic and administrative practices and professional values, according to Jackson and Gregg (1995). The literature suggests that information technology be used to manage CBS programmes, especially time-tabling (CNAA, 1989; Betts & Smith, 1998). However, administrative use of computers tends to centralise authority (Blau, 1973; King, 1994).

During the pre-implementation stage of the research all participants mentioned difficulties regarding the timetable. Lecturers did not expect additional administrative duties for themselves, but predicted more for the course leaders and the departmental administrative offices. To deal with the additional administrative duties, management mentioned the need for more resources.

As predicted, departmental management and their administrative support staff had to deal with the additional administration, not the lecturers. The running of two semesters as opposed to one year of study, resulted in many administrative duties being handled twice. Decisions were made on a trial and error basis, as previous CBS administrative experience was not available. This was further complicated by the fact that both the new and old systems were running simultaneously. As predicted in the literature (Allen & Layer, 1995), students were discontented about studying over the Christmas holiday. The gap between the two semesters was judged to be too short. Time-tabling was still done by hand in each individual department. The making of the time-table was very difficult and had to be repeated for each of the two CBS semesters.

During the introductory stage of CBS it seems it would have made sense to reorganise the administrative duties of the whole faculty. The departments could have saved time and money, if they had combined their resources and worked on the phasing in of CBS together. Instead all administrative efforts were repeated within each department. This shows how the former departmental administrative duties dealt as well as possible with the new demands on administration, but no attempts were made to centralise these duties. The extensive use of information technology, suggested in the literature (CNAAs, 1989; Betts & Smith, 1998), had not been utilised, as most administrative duties were still handled at the departmental level. Therefore the predicted centralisation of authority (Blau, 1973 & King, 1994) had not become apparent. Control is still centralised at the departmental level. On balance, the first year of CBS had gone quite smoothly, even though time-tabling had been difficult.

Summary

This chapter demonstrates how the introduction of CBS at the PolyU had similar implications to those identified in the literature.

The participants in this study reiterate much of the criticism of CBS apparent in the literature. They seem, however, to concentrate on Cornford's (1997) fragmentation of knowledge and the semester's length. Semesters are seen as too short to deal properly with subject content and analysis, resulting in student, staff and assessment overload (Dickens, 1995). Learning outcomes questioned by Thomson (1995) were also questioned here. The proposed changes to teaching and learning strategies recommended in the literature had not been adopted by the participants in this study.

The expected managerial payoffs of CBS (Allen & Layer, 1995; Trowler, 1998; Watson, 1989) were not apparent during this year of study. Only a few faculty-common subjects with 280 students were introduced. Overall classes had not increased in size and student staff ratios had remained the same. Even though a more centralised management control was suggested, most decisions were still made at the departmental level. As for the disempowerment of academic staff, no changes were noticed by the staff, but the empowerment culture has not been widely adopted in this part of the world and even less so at academic institutions.

However, several findings were particular to this study and these will be discussed in the following chapter.

7. CONCLUSION

Introduction

This chapter provides a reflective overview of the findings of this study, showing how the research questions have been answered. A model adapted from Becher and Kogan (1992) is also used to interpret the findings. The significance and the limitations of the study are explained. Furthermore the last two objectives are addressed; examining possible scenarios for the future of CBS at the PolyU and other institutions, and providing guidelines and recommendations on the introduction of such a scheme.

Answering the Research Questions

This section provides succinct answers to the research questions for this study. The answers are based upon the detailed findings and analysis reported in previous chapters.

1. What are the staff and management's expectations of CBS?

The overall expectations of CBS had to do more with the operational aspects of the new scheme than with the anticipated results of CBS itself. The strengths and limitations of CBS were not at the forefront, rather the focus was on "how to make it fit at this institution".

Two of the four departments seemed to be well prepared for the introduction of CBS. Both management and lecturers in these two departments predicted only minor problems

during the introductory phase. Both the staff and management of another department made recommendations about advising or counselling students about their subject choices. The management of one department recommended that students make their choice of electives closer to the actual semester they were offered in. Furthermore, management in all four departments predicted an increased amount of administration by office and course management staff.

The staff of one department, and the management and staff of another, had difficulty fitting yearlong subjects into single semesters. This included teaching aspects, laboratory schedules and assessment.

During the changeover all four departments re-evaluated teaching materials, an added benefit of CBS, and introduced a few faculty-wide subjects. For the students, advantages anticipated were that the two semesters per academic year would force them to plan for shorter periods of time as compared to the previous yearlong structured subjects. Semesterisation also introduced a reduced number of subjects and exams twice a year. It was also predicted that the introduction of a general education curriculum (e.g. Social Ethics, Philosophy and Life) should result in more 'well-rounded' students. However, a four-year degree instead of the current three-year degree was recommended to take full advantage of these additional subjects.

2. *To what extent are staff expectations of CBS the same as those of management?*

Staff and management's expectations of CBS were quite distinct. Managers had already been involved in numerous meetings and workgroups on the introduction of CBS and were therefore quite confident and expected this new system to work. Staff were more cautious about the change and were concerned with the day-to-day operations of this new system and predicted operational problems.

3. *To what extent are participants' expectations of CBS related to their past experience?*

Past experience of CBS tended to affect participants' expectations. Management and staff who had never previously experienced CBS did not see many reasons for changing to such a system that turns education into a "cafeteria style" scheme, away from the well structured and thought out former linear system. The CBS experienced staff were familiar with the vocabulary and noticed similarities relating to their past experiences. Staff and management who had past experience of CBS were expecting the same kind of system to be introduced at the PolyU, whereas those with no prior knowledge were more circumspect about the changeover. The opposite seemed true during the second round of interviews, where the people with the most experience and knowledge of CBS were frustrated with how little had really changed and with the slow phasing in process.

4. *How does the degree of CBS knowledge and experience by management and staff relate to the levels of success of the innovation?*

The departments with the most management experience and knowledge of CBS had greater ease introducing this new scheme. As this is a transitional process, from a

structured to a complete credit based system, it is understandable that staff and management who have used CBS before, called this transitional system a “hybrid”. The new system tended to be an amalgamation of pre-existing programmes. Overall the faculty and its staff were prepared and reacted well to the introduction of a CBS.

5. What are the perceived effects of CBS on teaching and learning?

The effects of CBS on teaching and learning in this study mirrored the literature findings. It was felt that this scheme tended to fragment knowledge and semesters were seen as too short to provide a favourable educational experience. Lecturers had either cut former subjects in half, to make them fit into semesters, or had crammed all materials into one semester. Teaching delivery methods had remained much the same. Departments operated independently of each other. One department had introduced Web-based teaching, a change not introduced by the other three departments. Contrary to the literature, deeper learning was noticed in elective subjects, according to the lecturers. This was attributed to the fact that students had chosen these subjects themselves and to the smaller than usual class size for these electives.

6. What are the perceived effects of CBS on assessment?

The effects of CBS on assessment were numerous. Consistent with the literature, the introduction of two examination periods a year received positive feedback from the students, according to course leaders. The prospect of over-assessment, identified in the literature, was predicted during the pre-implementation interviews and was confirmed in this study. The literature states that assessment becomes an institution-wide issue. This

study found that it became a faculty-wide issue, in the Engineering Faculty, with the potential to become university-wide as CBS is further phased in. Individual departments rejected the grades from faculty-wide subjects. Even though an attempt was made to combine resources, and offer a faculty-wide subject, no agreement could be reached on the faculty-wide mass lecture grades. This resulted in grades being assigned by individual departments for the tutorial sessions only.

Staff found it difficult to assign grades to coursework-only subjects. As a consequence, end of semester exams were re-introduced to previously coursework-only subjects. The difficulty of using coursework assignment grades as the only basis for final marks was not stressed in the literature. Management commented that staff had to learn to grade higher as the student's overall grade point average (GPA) should not remain below two (i.e. grade C) for more than two consecutive semesters. Few re-assessments were granted and most failed subjects had to be repeated. However, staff noticed that a failed subject resulted in a significant drop in the student's GPA and would be difficult to make up later. Staff who had hoped to be able to fail more students, and keep their standards high, came to the conclusion that the change to CBS had not made it any easier to fail students. Raising questions about standards and quality assurance, accentuating problems that existed prior to the introduction of CBS. Participants were satisfied with the departmental internal examination moderation systems.

7. *What are the perceived effects of CBS on the students, the lecturers, and the management?*

CBS affected management, staff and students in different ways. Management was overburdened with administrative duties related to CBS. However, the additional duties were considered by management to be outweighed by the benefits of introducing CBS.

Teaching staff, who had to make all the materials fit within the confines of the semesters, noticed an overload of work and assessment for both the students and themselves. Furthermore, staff did not feel comfortable advising students about this new scheme. Probable reasons for this uneasiness are that staff either did not fully understand the new CBS curriculum or did not believe that students would benefit from devising their own course by choosing subjects. By selecting certain electives, students would find themselves in a particular stream, restricting themselves to future choices within that stream. According to the participants, students did not make full use of the additional advising role given to staff during this first year of CBS. Students have been given briefing sessions regarding their elective choices. These sessions might have been sufficient or perhaps students were reluctant to approach lecturers.

Participants reported that students had managed their time better under CBS and they had been able to focus more on their reduced number of subjects per semester. Students had been given more responsibility for their own education and had enjoyed being empowered, according to the lecturers. The elective choice process had been moved

closer to the semester in which they would be offered because of lecturer and management suggestions.

8. *What is the perceived overall impact of CBS at the PolyU?*

Potential benefits, such as flexibility and student choice, cost savings, increasing access to higher education, and popularity with students, have not fully materialised. Such benefits may be realised once CBS has been introduced university wide. This study's findings mirrored the literature and questioned educational standards and the coherence and value of the educational experience provided to students. As noted in the literature, learning outcomes, assessment procedures, and the relative advantages of 'modular' versus 'traditional' courses were questioned.

Furthermore, as predicted in the literature, a CBS is not a panacea for all the challenges faced by universities. Problems that existed prior to the introduction were accentuated rather than solved. Examples of some of these pre-CBS dilemmas are the integration of individual subjects within a programme, the difficult task of timetable development, the reluctance to fail students, the tendency of Hong Kong students to rely on rote learning, and the debate of mother tongue versus English language instruction.

At the institutional level the decision was made to phase in CBS at one faculty initially. The rules and regulations of CBS were then introduced at the department level through department heads and/or course leaders. This followed a top down approach from the institution to the faculty level. The introduction of this CBS, specifically designed for the

PolyU, at a departmental level has resulted in an amalgamation of pre-existing programmes that do not take full account of other departments, faculties, and even other local institutions offering similar awards through CBS and/or linear schemes. The individual departmental teaching staff interpreted the new assessment guidelines to fit their subjects, as they thought appropriate. The elective choices and student advising were also handled at the departmental level and resulted in inconsistent outcomes. The level of CBS introduced at this point would be what Allen and Layer (1995) and Betts and Smith (1998) label the single '*module-based*' course or '*contained provision*', as it is broken down into self-contained components that are separately assessed and allows 'limited' to 'no choice' to students. Administration, including time-tabling for CBS, was also handled at the departmental level. The integration of programmes and administration, seen as major benefits of CBS, was not implemented at the PolyU. Even within departments, the merging of students on different programmes, Degree and Higher Diploma, following the same syllabus, had not worked. Programmes that had been joined were being separated and taught independently in the year following the study.

The increase of student choice predicted in the literature had not materialised, as most subjects were programme specific and only a few faculty-wide subjects were offered. Because of this departmentalisation, few cost savings occurred through larger classes, combining different programmes, or centralisation of management and programme functions.

Proposed CBS Model

The Hong Kong Government, through its Educational Commission (HKEC), has announced that a credit transfer system would be set up to allow students to move amongst institutions. The HKEC gives two reasons for this credit transfer system: to maximise student choice, and to enable universities and individual departments to focus resources on their own strengths with a view to developing their own areas of excellence. For the credit transfer system proposed by the HKEC to function, universities will have to offer comparable subjects. The results from this study indicate that a lot of co-operation and course development would be required before such a system could be operational across all universities.

At the institutional level a CBS was created and guidelines, academic regulations and procedures for credit based programmes were set. The rules and regulations of CBS at the PolyU were then introduced at the basic unit level through department heads and/or course leaders. It was left to the individual faculty, its departments and lecturers, to apply these guidelines. Minimal collaboration has taken place between departments. This is reflected in the predominantly vertical model shown in Figure 1.1.

The introduction of this home-grown CBS at the departmental level has resulted in an amalgamation of pre-existing programmes that do not fully take into account other departments, faculties, and other local institutions offering similar awards through CBS and/or linear schemes. This is illustrated in the top down approach in figure 1.1. The existing programmes were made to fit semesters. This resulted in the fragmentation of

education through compressing former courses within single semesters or by cutting these yearly subjects in half. This reflects the UK system, where credit based and modular programmes have been developed independently by each institution, often by reorganising the existing yearly structured course into semesters.

At the individual level, lecturers worked independently. Lecturers teaching similar subjects, but different courses within departments, did not collaborate. This was further accentuated when lecturers belonged to different departments. Mass lecture assessment grades for faculty-wide subjects were rejected by individual department staff. This resulted in only tutorial and examination grades, awarded by the lecturers themselves, being used to compile final student grades.

The lack of collaboration between departments and individuals in this faculty would not facilitate the credit transfer proposals made by the Hong Kong Educational Commission. If it were not possible for credit transfer to operate effectively within one faculty of the Hong Kong Polytechnic University, it would be even more difficult between institutions.

The departmental structure was designed for the former structured scheme, but is less appropriate to a credit based system. Therefore, to fully profit from this new CBS scheme, and to allow for the proposed credit transfer system, the departmental framework should be bypassed or broken down. The introduction of schools of study, each devoted to its own broad theme, should be formed through reorganisation of the institutional structure (Becher & Kogan, 1992). For this study a "School of Engineering" could be

formed, integrating all engineering departments. Furthermore, Becher and Kogan (1992) suggest that, to progress further in modularising courses, a structure that differentiates between teaching and research is needed. They state that:

“In practice, those UK institutions that have gone farthest in the direction of modularising their courses have tended to move to a structure in which course teams provide the organisational basis for teaching and subject groups provide the basis for research. Each course team consists of all the staff involved in teaching a given unit or module. [...] An individual member of staff will normally belong to two or three course teams, but in most cases to only one subject group.” (Becher and Kogan, 1992; 96)

This would translate into an alternative model, bypassing the departmental framework seen as a hindrance, to enable the further introduction and development of CBS. See figure 7.1. Lecturing staff would belong to several course teams depending on their teaching assignments. Membership of each course team would include lecturers from several of the former departments, reflecting the student body taking that course. Members of these course teams would have to collaborate in order to develop their courses and assessment strategies, facilitating better integration of course structure, content and materials. This model provides for highly centralised management and administrative functions, resulting in the cost savings which are seen as a major benefit of CBS. Research activity may also increase, as cross-fertilisation between members of staff develops.

Significance

The significance of this study is that many of its findings, at a Hong Kong institution, mirror the literature on CBS, the vast majority of which has been based upon experience in Western countries. The semesterisation introduced as part of CBS has resulted in the fragmentation of education. This became apparent in assessment, teaching and learning, and scheduling. The over-assessment issues raised in the literature were predicted and occurred. As noted in the literature, assessment was no longer controlled by external examining bodies, but handled internally. By copying the American version of grading and GPA, the marking curve was moved forward. However the consistency of marking across lecturers, programmes, and departments was questioned. According to the participants, students had taken CBS on board and coped with the new system and the elective choices.

However, some findings are particular to this study as they were not previously noted in the literature.

- **Teaching and learning**

There is evidence of deeper learning. Even though the participants labelled Hong Kong students passive learners, they claimed that students learned deeper in their elective subjects. The relationship between choosing one's subject and taking greater self responsibility for learning, is not noted in the literature and should be investigated further from the student's perspective.

- **Assessment**

Lecturers had encountered difficulty grading coursework-only subjects and final exams were re-introduced. Staff who had predicted that CBS would allow them to fail more students, to keep their standards high, came to the conclusion that this new scheme had not made it easier to fail students. The uncertainty of failing students is a notable finding as the failed grade would remain part of the student's GPA even after repeating the subject. In contrast, the American CBS registers the final grade of repeated subjects, deleting the previous fail result.

- **Elective choice**

Course leaders had challenged the early selection process of electives and the corresponding departments had allowed students to amend their choices. As a result of lobbying by the participants, the elective selection process had moved closer to the semester they were offered. However, the increase of student choice predicted in the literature had not materialised.

- **Administration**

All departments involved still worked separately and very little exchange happened between the departments in this faculty. The greater transparency and explicitness mentioned in the literature were neither predicted by the participants nor became apparent in this study. The consolidation of administrative duties across the faculty had not occurred and all departments still operated independently, contrary to evidence in the literature.

Limitations

Qualitative research is time consuming, data reduction is difficult, and it is harder to prove reliability. This case study describes how things were, not as they currently are, becoming redundant as it was being written. The longitudinal aspect, one year of study, was added to correct this distortion, but this is still a 'conservative' feeling of how things were. As this case study was about four departments in one faculty at a Hong Kong University, statistical generalisation is not possible. However, "fuzzy generalizations" are possible as the findings here may occur at other institutions (Bassey, 1999).

Managers and academic staff of each department were interviewed. However, some lecturing staff held managerial duties and some managerial staff taught year one students. The responses given by the respondents had to be placed into the management or lecturing categories depending on the role assumed while answering specific questions. There was some overlap that became apparent during the post-implementation interviews.

All but two of the participants in this study are Chinese, whose most distinctive cultural trait is collectivism (Hofstede, 1980, 1983). As strong collectivists, Chinese are generally highly conformist. This means that they tend to be cautious in responding to uncertain situations and are typically emotionally controlled. Complaining behaviour is not culturally supported, even when products and services fail to meet expectations (Cavusgil & Kaynal, 1982). The cultural traditions of *'face'* and self-dignity are common characteristics and important to Chinese groups. Saving one's own *'face'* is as important

as avoiding others losing 'face' (Yau, 1988). Social strata and power are highly respected attributes in Chinese societies where everyone knows and accepts their station in life (Legge, 1960). The time orientation of Asian cultures is strongly rooted in the past and there is a strong resistance toward change (deMooij, 1998; Yau, 1988). Even though these cultural traits were considered during the data collecting process, it is possible that they influenced the responses of the participants.

Recommendations

In this section recommendations and guidelines (objective 5) are presented in several different areas; the introduction of CBS, assessment, students, and administration related issues.

1. Introduction of CBS

To ease the phasing in process, it is recommended that staff be involved in the early stages of establishing CBS. The findings reflected less resistance from management and a reason for this was that they had been involved earlier on in CBS preparation meetings.

The findings of this study reveal that the credit based system has been conservatively introduced by the four departments with many programmes making only modest changes to curriculum design. These programmes are offering students only limited scope for flexibility and choice. It is hoped that departments will more fully embrace the opportunities offered by CBS as confidence in the system grows. It is crucial that the university does not introduce CBS whilst at the same time retaining an

underlining philosophy, structures, processes and resource allocation based on traditional linear programmes. This might result in the worst of both schemes.

2. Assessment

There appears to be a clear need for further advice, explanation and guidelines on the new grading system. There does seem to be uncertainty by the participants over the new grades and their relationship to GPAs, to credit and to student continuation on programmes. These misunderstandings need to be quickly resolved and strong guidance given if inconsistent treatment of students across the university is to be avoided.

The ownership of subjects and their assessment methods were questioned. There appeared to be some suggestion that different assessment rules or methods could apply to students on faculty-wide subjects, depending on their "home" department. Such ideas have no place in a true credit based system and departments should respect the teaching and assessment traditions of colleagues from other departments of the university. There were several mentions of moving the grade curve forward. To help with the consistency in assessment, agreed grade and level descriptors should be put in place university-wide.

There is a need for central guidance on university policy with respect to assessment loads for staff and students. One department might consider fewer examinations for its students and more continuous assessment to relieve pressure on the students whilst

another may choose to move in the opposite direction to ease workload for staff. To establish a university-wide assessment system, a strong central steer is suggested.

3. Examinations

As examination procedures were still handled on a departmental basis, there will be a need to streamline the examination board structures and processes across the faculty, and ultimately university-wide. This should give more time for processing, marking and checking student results. The system needs to be as clear as possible with a minimum of duplication and no overlap of responsibility between the tiers. Consistency in assessment matters is needed for confirming results, progression and awards to students. The university may need to secure a centralised examination system, including an examination time-table. The alternative is to give responsibility solely to the lecturer as is the norm in the USA, but a decision one way or the other is necessary.

4. Pre-requisites

There is a need to look more closely at pre-requisites and the progression of students between semesters. The findings show that in many cases pre-requisites are acting as a structural feature of programmes, and not just of modules. Pre-requisites are, and should only be, a characteristic of modules and should be in place for academic, rather than regulatory, reasons. They are to warn students of the prior knowledge and/or skills required before a module can be attempted. Pre-requisites allow the lecturer to deliver the module to the required standard, within the time constraints of the semester, by being able to assume all students have reached a certain level

beforehand. There is an indication that the progression rules at the university are still relatively conservative and are not truly credit based. A review of academically unnecessary pre-requisites might help staff view this issue in a new light.

5. Student pace

There seems to be a feeling that in many programmes there is little flexibility for students. CBS students should be able to set the pace of their own study. The regulations need to reflect flexibility within programmes as student status may rapidly change, as may the desired pace of study. In addition a true credit based system would have universal requirements for all students within the same programme, and not ones that are different for part-time and full-time students. CBS students should be allowed to change their pace of study within a programme without having to change to another programme.

6. Semester length and inter-semester break

Feedback from the participants indicates that academic staff have strong views concerning the length of the semester and the inter-semester break. However, it needs to be stressed that the point made is commonly raised by staff regardless of the scheme in operation, be it semesters, terms, or yearlong units. Staff inevitably maintain the length is too short, the examination period too compressed and the assessment processing time not long enough. However, valid issues were raised. There should be university-wide rules about revision periods and examination sessions. Students should not be expected to devote large amounts of time for serious

revision purposes during public holidays. To increase flexibility patterns for students, a third semester structure could be introduced during the summer break.

7. Advising students

The advisory service for CBS students will need to be reinforced as the number of students on the CBS grows. More training for management and staff on how to advise students is needed. Information has to be readily available for students to make elective choices. The use of modern technology, and increasing the efficiency of the current system, should help to disseminate this information.

8. Administration

Administrative duties are still handled departmentally. In order to move towards a university-wide CBS, a better communication network is required between subjects, programmes, departments and the Academic Secretariat. A task group is suggested to standardise CBS procedures university-wide and select a compatible computer programme. This task group should also make decisions on which functions within CBS can best be handled centrally and which should be devolved. A university-wide timetabling computer programme needs to be put in place.

9. Student choice

There is an overall feeling that programme design is still very cautious and that departments are unwilling to allow their students too much flexibility in case they exercise it. The university needs to encourage all departments to open up their subjects and, at the same time, give their students real opportunities to take up the

choices offered. While departments and faculties are expected to interact because of the nature of modular and credit based systems, research by Becher and Kogan (1992) shows that departments following a CBS compete for student numbers. This is contrary to what a credit based scheme is supposed to accomplish. The breaking down of the departmental framework is therefore suggested (Becher & Kogan, 1992; Watson, 1989). To encourage widespread implementation of a more meaningful credit based system, some medium-term assurances about resources for departments need to be in place.

Future Research

In this study the expectations and realities of CBS were investigated from the perspectives of lecturers and managers. There is a strong case for conducting a similar study of students' views. Such a study could involve interviewing students on CBS programmes and investigating their perceptions of the scheme. The data collected could be used to triangulate the findings of this study.

A longitudinal study of this innovation, across the whole university, is further suggested.

Important dates would be:

- Year 2000 when all first years of all programmes will be credit based;
- Year 2003 when all stages of all programmes are credit based;
- Year 2010 when expected higher education attendance has reached 60 per cent of senior secondary school leavers.

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As more PolyU staff and students are being affected by and using CBS, other survey methods could be used to collect data. Questionnaires could be given to a larger sample allowing for quantitative analysis. It would also be beneficial to include other Hong Kong higher education institutions in the survey, so as to compare and contrast findings, and to be able to give an overall view of CBS across Hong Kong.

A follow up study of the proposals on educational reform released in 1999, by the Hong Kong Education Commission (HKEC), which encourages universities to adopt a genuine system for fully transferable credit units, is further recommended.

Providing educational opportunity to all who can benefit is to be highly commended, but it depends on how it is done. The HKEC is asking the universities to review their undergraduate programmes to strike the right balance between breadth and depth. Different universities will come to different conclusions as to what the "right balance" is. This will create credit based systems particular to each university, making transfer from one institution to another still difficult. Credit transfer may be available in only a few subjects. The answer to these questions should be investigated and the results should indicate the difference between a workable system and a hybrid one.

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APPENDICES

Semi Structured Interview Questions For Managers' Views Of The Move To CBS

Please explain changes to your programme(s)

Current	CBS

How will CBS affect:

APPENDICES

1. Subjects
2. Coursework for students
3. Students' learning (surface or deep)
4. Students' time
5. Students' preparation/readiness for following semester
6. Students' achieving objectives
7. Students' asking for advice from lecturers
8. Sitting exams twice a year for students
9. Exam setting and marking twice a year for lecturers
10. Lecturers' teaching delivery methods needed
11. Time needed to prepare teaching material
12. New grading system
13. Making space for Q&A and language study?

FORESEEABLE PROBLEMS

Your personal involvement and CBS background

Semi Structured Interview Questions For Managers' Views Of The Move To CBS

Please explain changes to your programme(s):

Current	CBS
1. Subjects	
2. Coursework for students	
3. Students' learning (surface or deep)	

How will CBS affect:

1. Subjects
2. Coursework for students
3. Students' learning (surface or deep)
4. Students' time
5. Students' preparation/readiness for following semester
6. Students selecting electives
7. Students asking for advice from lecturers
8. Sitting exams twice a year for students
9. Exam setting and marking twice a year for lecturers
10. Different teaching delivery methods needed
11. Time needed to prepare teaching material
12. New grading system
13. Making space for GE and language study?

FORESEEABLE PROBLEMS:

Your personal involvement and CBS background

Semi Structured Interview Questions For Lecturers' Views Of The Move To CBS

I. How will CBS affect:

1. Your daily (teaching) life
2. Subjects
3. Coursework for students
4. Students' learning (surface or deep)
5. Students' time
6. Students' preparation/readiness for following semester
7. Students selecting electives
8. Students asking for advice from lecturers
9. Your teaching delivery methods
10. Time needed to prepare teaching material
11. Your grading of students
12. Your exams and re-exams setting twice a year
13. Students sitting exams twice a year
14. Other

II. Your opinion on the following issues:

1. New grading system
2. Re-exam versus repeating
3. Students' advisors/counselors
4. The abolition of one external examiner per course
5. The introduction of a single departmental advisor

Semi Structured Interview Questions For Lecturers' Views Of The Move To CBS

6. Two general education studies; scientific, historical, philosophical, aesthetic and value judgment
7. Two mandatory English subjects
8. Mandatory Putonghua
9. Mandatory written Chinese
10. Teaching time lost to GE and language study?
11. Other

PERSONAL DATA:

Study History		Mode of Study			
	Country	Traditional	CBS	Modular	Other <small>(Please Specify)</small>
High School					
1st Degree					
Masters/MPhil					
Ph.D./Doctorate					
Other					

JOB HISTORY:

Employment History				System of Instruction			
Employer	Years	Country	Job Title	Tradi- tional	CBS	Modular	Other <small>(Please Specify)</small>

Name: _____

Staff Number:

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Sex:

M		F	
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Date:

				1	9	9	7
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Main Study Pre-implementation Appendix 3

Semi Structured Interview Questions For Lecturers' Views Of The Move To CBS

Name: _____

Staff Number:

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Sex:

M		F	
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Date:

<i>Day</i>	<i>Month</i>	<i>Year</i>
		1 9 9 7

PERSONAL DATA:

Study History		Mode of Study			
	Country	Structured	CBS	Modular	Other <small>(Please Specify)</small>
High School					
1st Degree					
Masters/MPhil					
Ph.D./Doctorate					
Other					

JOB HISTORY:

Employment History				System of Instruction			
Employer	Years	Country	Job Title	Struc- tured	CBS	Modular	Other <small>(Please Specify)</small>
HKPolyU		HK					

CBS IN _____ DEPARTMENT WILL SEE THE FOLLOWING CHANGES

- **YEARLY (28 WEEKS) TO SEMESTERIZED (14 WEEKS)**
- **DIFFERENT AMOUNT OF HOURS PER CLASS (PROBABLY 3HRS)**
- **LESS SUBJECTS PER SEMESTER (FROM 12/YEAR TO 6/SEM.)**
- **PREREQUISITES FOR SOME CLASSES**

CBS SUBJECTS:

SEM 1

SEM 2

Main Study Pre-implementation Appendix 3

Semi Structured Interview Questions For Lecturers' Views Of The Move To CBS

I. How will CBS affect:

1. Your daily (teaching) life
2. Your subjects
3. The size of your classes
4. Your teaching delivery methods
5. Time needed to prepare teaching material
6. Your grading of students
7. Your exams and re-exams setting twice a year
8. Coursework for students
9. Students' learning (surface or deep)
10. Students' time
11. Students' preparation/readiness for following semester
12. Students selecting electives
13. Students asking for advice from lecturers
14. Students sitting exams twice a year
15. Administration of course
16. Other

Main Study Pre-implementation Appendix 3

Semi Structured Interview Questions For Lecturers' Views Of The Move To CBS

II. Your opinion on the following issues:

1. New grading system
2. Re-exam versus repeating
3. Students' advisors/counselors
4. The abolition of one external examiner per course
5. The introduction of a single departmental advisor
6. Two general education studies; scientific, historical, philosophical, aesthetic and value judgment
7. Two mandatory English subjects
8. Mandatory Putonghua
9. Mandatory written Chinese
10. Teaching time lost to GE and language study?
11. Other
12. Were you involved in the preparation for CBS?

Semi Structured Interview Questions For Lecturers After 1 Year of CBS

Name: _____

Date:

Day		Month		Year			
				1	9	9	8

What were your overall impressions of this first year of CBS:

I. How did CBS affect:

1. Your daily (teaching) life
2. Your subjects
3. The size of your classes
4. Your teaching delivery methods
5. Time needed to prepare teaching material
6. Your grading of students
7. Your exams and re-exams setting twice a year
8. Coursework for students
9. Students' learning (surface or deep)
10. Students' time
11. Students' preparation/readiness for following semester
12. Students selecting electives
13. Students asking for advice from lecturers
14. Students sitting exams twice a year
15. Administration of course
16. Other

Semi Structured Interview Questions For Lecturers After 1 Year of CBS

II. Your opinion on the following issues:

1. New grading system
2. Re-exam versus repeating
3. Students' advisors/counselors
4. The abolition of one external examiner per course
5. The introduction of a single departmental advisor
6. Two general education studies; scientific, historical, philosophical, aesthetic and value judgment
7. Two mandatory English subjects
8. Mandatory Putonghua
9. Mandatory written Chinese
10. Teaching time lost to GE and language study?
11. Other

Semi Structured Interview Questions For Managers After 1 Year of CBS

Name: _____

Date:

Day		Month		Year			
				1	9	9	8

What were your overall impressions of this first year of CBS:

I. How did CBS affect:

1. Daily (teaching) life
2. Subjects
3. The size of the classes
4. Teaching delivery methods
5. Time needed to prepare teaching material
6. Grading of students
7. Exams and re-exams setting twice a year
8. Coursework for students
9. Students' learning (surface or deep)
10. Students' time
11. Students' preparation/readiness for following semester
12. Students selecting electives
13. Students asking for advice from lecturers
14. Students sitting exams twice a year
15. Administration of course
16. Other

Semi Structured Interview Questions For Managers After 1 Year of CBS

II. Your opinion on the following issues:

1. New grading system
2. Re-exam versus repeating
3. Students' advisors/counselors
4. The abolition of one external examiner per course
5. The introduction of a single departmental advisor
6. Two general education studies; scientific, historical, philosophical, aesthetic and value judgment
7. Two mandatory English subjects
8. Mandatory Putonghua
9. Mandatory written Chinese
10. Teaching time lost to GE and language study?
11. Other