

# The influence of active learning experiences on the development of graduate capabilities

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Surveys at a university in Hong Kong indicated that graduates of discrete part-time programmes perceived significantly higher development in eight out of nine graduate capabilities than their counterparts in full-time programmes. Several possible explanations are considered and rejected. The conventional view that capabilities are nurtured through immersion in a stimulating campus environment was not applicable, as the part-time students spent less time on campus than the full-time ones. Other data in the survey suggested that the respective teaching and learning environments might be the principal cause. It appeared that the part-time courses had more teacher–student interaction, and were more likely to employ active learning approaches. Structural equation modelling was used to examine this possible explanation. A model in which the type of teaching and teacher–student relationships impacted upon capability development showed a good fit to the data. The greatest effect was from teaching approaches requiring active student involvement and aiming for understanding. There was a mutually reinforcing effect from good teacher–student relationships. The results suggest that a strong effect on the development of graduate capabilities may come through employing active learning approaches.

## Introduction

In formal terms, students enrol in university programmes for in-depth study of a limited number of disciplines and/or to learn how to be proficient in an established profession. The widely accepted view of a university education, though, goes beyond acquiring the knowledge base of a discipline or profession. There is generally an expectation that a graduate will have developed as a person and acquired a range of intellectual qualities so as to be capable of performing in an intelligent way outside the confines of what has been taught in formal courses.

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The range of capabilities expected would vary according to personal, disciplinary or university views. There have also been developments over time. Historically, the capabilities expected might have been derived largely from religious, humanistic or moral perspectives, whereas nowadays the demands of information technology and knowledge-based economies hold greater sway.

It is, therefore, not surprising that, when evaluation takes place at the level of an overall programme or degree, there has recently been a tendency to include generic capabilities within the attributes evaluated. Instruments that assess the university students' experience, for example, the *College student experience questionnaire* (Pace, 1984), typically include scales which examine the extent to which capabilities were deployed during the course of study. The *Course experience questionnaire* (CEQ), developed from research by Ramsden and Entwistle (1981), is used as a graduate survey of all undergraduate degree programmes in Australia and is being increasingly used in the UK. When the instrument was recently revised, a generic skills scale was added (Wilson & Lizzio, 1997).

This paper reports results from a graduate survey that included scales for students' perceptions of the development of a range of capabilities during their period of study. The instrument also contained measures of the teaching and learning environment. Some rather unexpected results from a comparison of perceptions of capability development from students enrolled in full- and part-time programmes led to an investigation of the relationship between the perceptions of nurturing of graduate capabilities and measures of the teaching and learning environment.

## **Context**

The sample for the study was drawn from a university in Hong Kong. The university was formerly a polytechnic, with the title and role based upon the former British two-tier system. The emphasis of the university is upon applied professional programmes, in areas such as engineering, construction, business, health sciences, textiles and design. Part-time and full-time programmes are separate, even if leading to the same degree.

Approximately 60% of those following taught courses were full-time students. The large majority of these enter directly from high school through the highly selective entry system, based upon examination results. The full-time students are, therefore, highly uniform in terms of educational background and age, with most undergraduates starting their course in the age range of 18 to 20. Nearly all finish in the minimum completion time of three years. The full-time students were not campus residents as the university had no halls of residence at the time of the study.

The large majority of the students lived in the family home. In conventional terminology they would be classified as commuter students. They probably spend substantially longer on campus than western commuter students, though, as the typical small crowded flats in which they live do not make a good environment for either studying or socialising. There is also evidence of strong communal groups, mostly based on class cohorts, and high levels of group study (Yan, 2001). Such behaviour is consistent

with collectivism and a communal element of achievement motive, which are features of both Chinese and Confucian traditions (Salili, 1996; Stevenson & Lee, 1996).

Full-time students are normally taught by a conventional approach, involving lectures to largish classes, backed by practical classes or fieldwork, problem sessions and tutorials. With the concentration upon applied professional disciplines, there are few seminars or discussion classes, so much of the teaching could best be described as didactic.

The remaining 40% of students in taught award-bearing programmes study by the part-time mode. Virtually all of the students, both full- and part-time, live in Hong Kong. With the size of the territory they do not have to travel far to attend classes. Classes take place in the evening, so the students typically go from work to class, and then go home when it finishes. Very little time would normally be spent on campus, other than that for attending classes. Sub-degree and undergraduate degree-level programmes cater for approximately one-quarter each of part-time enrolments, with the remainder in postgraduate awards. Diploma courses, at sub-degree level, are often taken by students who were unable to obtain sufficiently high grades to obtain a place on a full-time programme at a university, because of the restricted intake in Hong Kong. The average age of these students, therefore, tends to be somewhat younger than the adult students in part-time study in western countries. The students in the post-graduate programmes would normally have undergraduate degrees, usually obtained through previous full-time study.

Part-time students are mainly taught in classes in the evening. A typical course would require students to attend one or two evening classes per week, normally of three hours' duration. Even staff most rooted in an information transmission conception of teaching (Kember, 1997) find it hard to maintain a didactic mode of teaching for this period. A three-hour lecture in the evening would end up with many students asleep. The evening classes therefore have periods of a more interactive nature.

## **Method**

The data for the results in this paper came from a survey of all graduates of one academic year. This included graduates of both full- and part-time programmes. The original purpose of the survey was to provide evaluative programme-level feedback to departments. Examination of the overall results led to an additional research focus.

### *Development of instrument*

The survey instrument was a revised version of one used for graduates of the previous academic year (Kember *et al.*, 2001). The revisions were based upon thorough testing of the original instrument. In the original instrument the scales examining graduate capabilities were mainly derived from the work of panels that formulated lists of attributes needed by graduates from their faculty. There was a high degree of commonality in terms of scale selection, both between faculty panels and with other work in the literature, such as that reviewed by Pascarella and Terenzini (1991).

There was, therefore, a high degree of confidence that appropriate constructs had been selected.

The instrument used for this study made few changes to the capabilities included. The number of items in several of the scales was reduced, as the testing showed that scales would still have been reliable with fewer items, and response rate tends to rise with shorter instruments. The original instrument was also revised by the deletion of some scales which had not correlated with perceptions of capability development, and by their replacement with scales which broadened the potential range of impacts upon the development of capabilities. In particular, there was more attention to the nature of teaching.

The survey instrument was produced in two forms for full- and part-time students. There were some variations in items relating to the student campus experience, which does have differences according to the mode of enrolment. However, only the common scales pertinent to the topic of this paper have been used in this study, so the reporting will be restricted to them.

The sets of scales were combined in the questionnaire, and there were 13 common scales made up from 26 items. The survey instrument measured nine constructs in the capabilities domain and four in the teaching and learning environment domain. Items in a scale were put together in the questionnaire under the heading of the scale title as a means of enhancing understanding of the construct. A five-point Likert scale from 'strongly agree' to 'strongly disagree' was used to solicit responses. Appendix 1 presents the common scales in the questionnaires the students received.

### *Sample and administration*

The questionnaires were administered to all of one year's graduates from full- and part-time programmes. The survey forms were mailed about three months after graduation. The survey packet included a covering letter to students explaining the purpose of the survey, the questionnaire and a postage-paid return envelope. A reminder packet was mailed three weeks later to increase the return rate.

The questionnaire was completed and returned by 1456 graduates of full-time and 1092 of part-time programmes, which constitutes overall response rates of 33.4% and 36.7% respectively. Such a return rate is normally considered acceptable for a mail survey with a lengthy questionnaire. The return rate is quite high for graduates; it is notoriously hard to achieve high response rates for graduate surveys as the graduates tend to be hard to trace or see little incentive to respond after graduation (Furse *et al.*, 1981; Zusman & Duby, 1984).

### **Comparison of perceptions of capability development**

This section compares the results for perceptions of capability development between full- and part-time programmes. Before doing this, however, it is necessary to establish the reliability of the scales.

*Reliability*

The reliabilities for each of the 13 scales were measured by the values of Cronbach alpha computed by SPSS10.0 and are displayed in Table 1. The reliability coefficient, Cronbach alpha, reflects the precision with which a scale is measured by a set of observed variables. It is defined as the ratio of the variance of the true scores of the measure to the variance of the observed scores (Guttman, 1945). The abbreviations of the constructs are given in brackets. Schmitt (1996) discussed the value for alpha that should be acceptable, and noted that a number of sources recommended the 0.7 level, but argued that values as low as 0.5 would not seriously attenuate validity coefficients. All but two of the scales in the instrument for this sample have alpha values above the higher figure, and the other two are only a little lower, so it seems reasonable to consider the scales as reliable for the sample.

Scores for all the 13 constructs were created by averaging their corresponding items, with 'strongly agree' scored as 5 through 'strongly disagree' as 1. The scale scores were then used in the calculations for the following sections.

*Comparison of full- and part-time students*

Mean scores on nine comparable scales from the capabilities domain and four from the teaching and learning environment domain are given in Table 2. Statistically significant differences in mean scores between the full-time and part-time students were detected by MANOVA (Wilks's  $\lambda = 0.893$ ,  $p$ -value = 0.000). To locate the scales with significant mean differences, a series of  $t$ -tests with Bonferroni adjustment

Table 1. Cronbach alpha values of the 13 scales for the sample

Scale	Part-time (N = 1092)	Full-time (N = 1456)
<i>Capabilities</i>		
Critical thinking (crit)	0.78	0.78
Creative thinking (creat)	0.70	0.68
Ability to pursue lifelong learning (life)	0.80	0.75
Adaptability (adapt)	0.75	0.72
Problem-solving (solve)	0.78	0.75
Career relevance (career)	0.82	0.78
Discipline knowledge (discipline)	0.80	0.75
Communication skills (comm)	0.78	0.73
Interpersonal skills (inter)	0.80	0.76
<i>Teaching and learning environment</i>		
Active learning (active)	0.67	0.67
Teaching for understanding (understand)	0.84	0.82
Assistance from teaching staff (assist)	0.91	0.85
Teacher–student interaction (ts)	0.88	0.90

Table 2. Comparison of means of scale scores for the surveys of 1,092 part-time and 1,456 full-time graduates

Scale	Part-time		Full-time		PT vs FT Cohen's <i>d</i>
	Mean	SD	Mean	SD	
<i>Capabilities</i>					
Critical thinking (crit)	3.80	0.66	3.59	0.73	0.31
Creative thinking (creat)	3.71	0.67	3.43	0.76	0.41
Lifelong learning (life)	4.06	0.74	3.72	0.81	0.45
Adaptability (adapt)	3.87	0.66	3.77	0.74	0.15
Problem-solving (solve)	3.83	0.66	3.63	0.74	0.30
Career relevance (career)	3.75	0.86	3.43	0.97	0.36
Discipline knowledge (discipline)	3.82	0.72	3.54	0.83	0.37
Communication skills (comm)	3.63	0.78	3.62	0.82	0.02 <sup>a</sup>
Interpersonal skills (inter)	3.64	0.75	3.58	0.79	0.09
<i>Teaching and learning environment</i>					
Active learning (active)	3.58	0.75	3.25	0.83	0.42
Teaching for understanding (understand)	3.72	0.77	3.34	0.84	0.49
Assistance from teaching staff (assist)	3.72	0.82	3.48	0.88	0.30
Teacher – student interaction (ts)	3.37	0.90	3.10	0.97	0.29

Note: <sup>a</sup>Mean difference was statistically non-significant at 5% level.

were performed and all differences in the mean scores were shown to be statistically significant at the 5% level, with the exception of communication skills. Cohen's *d*-statistic (1988) was then used to give a measure of the effect size. According to the convention recommended by Cohen (1988), effect sizes greater than 0.5 can be considered large, those between 0.5 and 0.2 medium, while effect sizes less than 0.2 are considered small.

All of the scale scores in the capabilities domain are higher for part-time students. Six are in Cohen's medium range and three small. For the teaching and learning environment domain, the scores are again higher for the part-time students for all the four scales, with medium effect sizes.

### *Interpretation*

The finding that perceptions of capability development were consistently higher for part-time students was rather surprising. This was particularly so when the effect size of the differences were considered. Cohen's interpretation of the magnitude of effect sizes is on the conservative side. For educational research, effect sizes of this magnitude in a consistent direction across a series of related scales indicate a noteworthy finding. A number of potential explanations were examined. There are differences between the full- and part-time students, in that the latter are generally somewhat

older. They are almost all in full-time employment, often in a position related to the programme they have enrolled in. The combination of age and work experience is likely to make them comparatively more mature. There are also differences by level of course between the full- and part-time samples. Only about 5% of the full-time graduates had completed postgraduate awards, with the remainder taking either sub-degree (42.8%) or degree level (52.0%) programmes. About half of the part-time students were taking taught postgraduate courses, with the remainder roughly equally divided between degree and sub-degree courses.

The part-time students taking postgraduate courses would virtually all have taken undergraduate degree courses to qualify for entry. The previous education of the remaining part-time students could vary from leaving school after form 5 to taking sub-degree courses. The full-time students normally go straight from secondary school into university. The differences between the full- and part-time students by age, work experience, level of award and previous education might all influence the level of attainment of the capabilities on enrolment. The part-time students enrolled in the postgraduate courses may have reached a higher absolute level of capability on graduation.

These differences, though, seem unlikely to be the main explanation for the results as the questionnaire items clearly refer to the development of capabilities by the programme of study or through time at university. Every single item of the scales in the capability domain explicitly refers to a change in the level of the capability. The initial orientation to the questionnaire and its covering letter also clearly stated that the purpose was to evaluate the effect of the programme of study.

A significant proportion of the part-time students probably had higher levels of most of the capabilities when the questionnaire was completed, but this is not what the instrument measures. It examines perceptions of change or development over the period of study, and caused by the programme itself. It is perhaps possible that in completing the questionnaire the absolute level of attainment of a capability influences the perception of its development, though there is no evidence of this phenomenon. It seems most unlikely that such an effect could account for such large and consistent differences.

The next distinction between the groups is the mode of study itself. This factor would seem more likely to favour the full-time students. The traditional view of the development of graduate capabilities advanced by Pascarella and Terenzini (1991), in their review of the affects of college education, is that they are primarily nurtured through exposure to a stimulating campus environment:

One reasonable explanation, however, is that of all the experiences a student could have after secondary school, college is the one which most typically provides an overall environment where the potential for intellectual growth is maximised ... The advantage of college, however, is that salient intellectual, cultural, and interpersonal influences (for example courses, libraries, laboratories, faculty and other similarly engaged peers) tend to be concentrated in one place. (Pascarella & Terenzini, 1991, p. 156)

The full-time students did not reside on campus, but many spent a large part of every day there because most resided with their parents, typically in a fairly small

apartment. The campus is a better environment for both studying and socialising, so time spent on campus would normally be quite appreciable. By contrast, the part-time students normally went to their classes when they finished work and left the campus as soon as the class finished. Typically they spent little time on campus other than for timetabled classes. They also tended to spend much less time in the company of fellow students.

The full-time students therefore had far greater exposure to the campus environment as a consequence of the difference between modes of study. If the conventional view of the development of capabilities through exposure to a stimulating campus environment was the major factor, the results would be in the opposite direction to those found.

### **Teaching and learning environment**

This seems to leave little to explain the difference in perceptions of capability development other than the effects of the teaching and learning environments. This appeared to be a sensible avenue to explore further, since Table 2 shows that the part-time students rated aspects of their teaching and learning environment consistently higher than the full-time students.

Full- and part-time programmes have separate awards, classes and timetables. There are obviously variations by teacher and course, but it was possible to generalise about distinctions between the predominant modes of teaching in full- and part-time courses. In full-time programmes there would normally be conventional university teaching. All programmes have lectures, which are of 50 min duration. The majority of the courses have either practical laboratory classes or fieldwork.

The part-time programmes mostly have one or two three-hour evening classes per week, so the students do a day's work before attending class. It would be extremely hard to keep the attention of students if the entire three-hour period was devoted to lecturing, so the evening classes normally feature a variety of teaching and learning activities.

The distinctions between the full- and part-time students tend to reinforce the distinctions between the types of teaching. The full-time students almost all enter their programmes straight from high school, where they have typically been accustomed to large classes. Entry to the final years of high school and to university is highly selective and governed by a series of external examinations (Education Commission, 1999, 2000). The strong desire for examination success and the large classes result in a preponderance of didactic teaching and passive learning (Watkins & Biggs, 2001). The students have become conditioned to view their teachers as authority figures, partly because Confucian tradition accords great respect to teachers (Ho, 1986; Lee, 1996; Wu, 1996), and also because schools tend to have an authoritarian regime, in class at least (Ho, 2001). The students commonly have little, or often no, exposure to their intended profession, and often a limited insight into what it entails, as examination grades and course quotas play a significant factor in the selection of what to study at university. Interaction between teachers and students can, therefore, be hard to initiate.

The part-time students are more mature. Work experience tends to give them experience of interacting with others, thus greater confidence in doing so. The large majority of the part-time students are working in the professional field associated with their course. It is therefore possible for teacher and students to have sensible discussions about the professional area. Students can comment about how a construct is applied in practice in their own workplace. It is, therefore, much easier to engage in interactive teaching modes with the part-time students.

### **Analysis by structural equation modelling**

It seemed as though the nature of the teaching and learning environment was a plausible reason for the greater level of development of capabilities in the part-time programmes. To further investigate this possible explanation, the relationship between the capabilities scales and scales in the study environment domain was investigated through structural equation modelling (SEM). This article reports only the analysis of data from the combined data set from part- and full-time students. The models were computed separately for the two modes, but did not differ in any significant way from those for the combined data. For the sake of brevity just the models for the combined data will be reported here, with the sample size of 2548.

SEM makes it possible to test whether theoretically plausible models provide a good fit to collected data. In this case, the hypothesised model to be tested was that the variables in the teaching and learning domain were a major influence on the development of graduate capabilities. A model was formed by grouping both the capabilities and the teaching environment variables under latent variables or higher-order factors. The structure of these was informed by a previous study (Kember *et al.*, 2001).

The capabilities were subsumed under three latent variables: learning outcomes, intellectual qualities and working together. The scales were hypothesised as indicators for these higher-order factors. Learning outcomes incorporated knowledge of the discipline (discipline) and career-relevant knowledge and skills (career). Intellectual qualities included critical thinking (crit), creative thinking (creat), the ability to pursue lifelong learning (life), problem-solving ability (solve) and adaptability (adapt). The working together latent variable was hypothesised as composed of communication skills (comm) and interpersonal skills (inter). The teaching and learning environment domain had two latent variables, namely relationship and teaching. The teaching latent variable had two indicators which measured teaching aiming at understanding (understand) and teaching approaches that involve active involvement of the learner (active). The relationship factor encompassed teacher-student relationships (ts) and degree of assistance from teaching staff (assist).

The variables in the teaching and learning environment were selected as plausible influences on the development of capabilities. Accordingly, the model fitting started with the less restrictive measurement model, with correlations between each pair of the five latent variables.

The hypothesised model was fitted by utilising the EQS package (Bentler, 1995), with the covariance matrix computed from the information in Table 3. The Lagrange



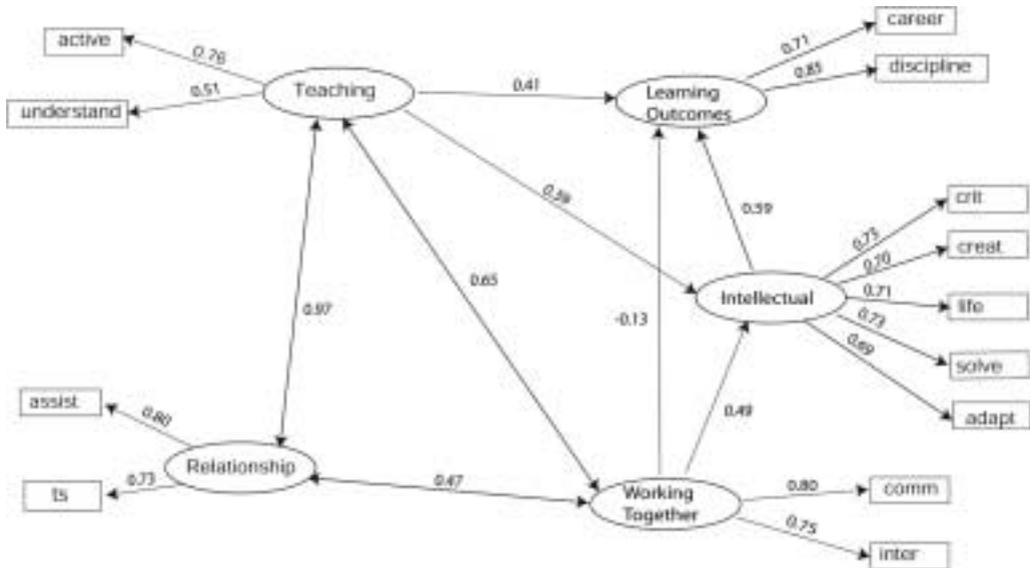


Figure 1. The path diagram with standardized parameter estimates for the combined model (all estimates are statistically significant at the 5% level)

*Key:* Variables in circles are latent constructs and variables in squares are observable measures. Career: career relevance; discipline: discipline knowledge; crit: critical thinking; creat: creative thinking; life: lifelong learning; solve: problem-solving; adapt: adaptability; comm: communication skills; inter: interpersonal skills; active: active learning; understand: teaching for understanding; assist: assistance from teaching staff; and ts: teacher–student interaction.

Multiplier (LM) and Wald tests, provided by EQS, were used to modify the hypothesised models to give a better fit to the data. Redundant paths would be deleted based on the Wald tests and new paths added based on the results of LM tests. Only theoretically plausible modifications were made to the hypothesised model. Based on the LM and Wald tests, and taking into account judgement for plausibility, the final model obtained is depicted in Figure 1. The final model shown in Figure 1, with the standardised parameter estimates, is little changed from that originally hypothesised.

In the study, we used multiple indices to evaluate the goodness-of-fit for the hypothesised models. The indices chosen were the  $\chi^2$  with associated degree of freedom ( $\chi^2 = 294.8$ ,  $df = 57$ ), the comparative fit index ( $CFI = 0.982$ ) (Bentler, 1990), the standardised root mean squared residual ( $SRMR = 0.023$ ) (Bentler, 1995) and the root mean squared error of approximation ( $RMSEA = 0.041$ ) (Steiger, 1989), with its 90% confidence interval (0.036, 0.046). Together these indicators show that the model was a very good fit to the data.

## Discussion

The SEM results suggest that the variables subsumed under the teaching and relationship latent variables have an effect on the development of graduate capabilities.

In the combined model there is a direct path from the teaching latent variable to that for learning outcomes and intellectual qualities, and a positive correlation with the working together latent variable. These paths and correlations indicate that the teaching approach has a direct influence on all three capability domains.

The relationship latent variable has a direct correlation with capabilities under the working together latent variable. The combined model also includes an inter-correlation between the teaching and relationship latent variables, with a very high standardised coefficient. This can be interpreted as indicating reinforcement between the nature of the teaching and the degree and nature of interaction between teacher and student. The more active teaching approaches employed in the part-time courses help to promote the level of interaction between teacher and students, which contributes to the development of teacher–student relationships. The more confident the teachers feel about interacting with students, and the more useful the contributions, the greater is the inclination to employ active approaches to teaching and learning.

With full-time students, the reinforcement can act in the opposite direction. Didactic teaching lends little opportunity for developing a rapport with students, and can reinforce the image of an authority figure standing behind a lectern. Students, therefore, shy away from contributing in class. Lecturers who ask questions or invite comments can get little response, so tend to retreat to didactic teaching.

The comparison of perceptions of capability development between full- and part-time graduates clearly challenges the conventional wisdom that the predominant nurturing mechanism is exposure to a stimulating campus environment. These findings can be compared with results from the National Study of Student Learning (Pascarella, 2001) in the USA. This study found no significant differences between first-year cognitive growth between two- and four-year colleges (Pascarella *et al.*, 1995, 1996). The two-year colleges would have had markedly lower proportions of campus residents than their four-year counterparts.

The same study, though, found that full-time study tended to yield larger first-year gains in critical thinking than part-time enrolment (Pascarella, 2001; Pascarella *et al.*, 1995). These findings are not necessarily inconsistent with those of the research reported here. In the USA part- and full-time students commonly enrol in the same courses, so would not experience differing teaching approaches by enrolment mode. The weaker effect of degree of campus exposure would, therefore, be the only factor differing between the modes. In this study, the students did experience markedly different types of teaching by mode of enrolment, and the effects of this markedly outweighed the weaker influence of exposure to the campus environment.

## **Conclusion**

This study began through an observation that graduates from part-time programmes of one university perceived higher gains in graduate capabilities than their full-time counterparts. The results were not consistent with the conventional view that college students acquire generic capabilities through exposure to all the stimulating experiences that are available on a college campus. The operative mechanism was

investigated by SEM. The final model indicated that the teaching latent variable was the stronger influence on the development of capabilities under all three latent variables, namely learning outcomes, intellectual qualities and working together.

The relationship latent variable had a strong significant link to the development of capabilities associated with working together. There was also a very strong intercorrelation between the relationship and teaching latent variables, which indicates that there would be indirect effects on capabilities under the other two domains. The strong intercorrelation has been interpreted as a mutually reinforcing effect. Utilising active approaches to teaching and learning helps in the development of good teacher–student relationships. Well-developed relationships make it more comfortable for teachers to introduce forms of teaching involving active student participation.

The indicator with the higher standard coefficient to the teaching latent variable was that for active learning. This is a measure of the extent to which teachers used a variety of approaches to teaching, which involved the active participation of students in learning activities. The other indicator examined the extent to which teaching aimed to promote understanding. Mutual reinforcement to the effects of this active orientation towards teaching and learning came from the development of teacher–student interaction and the provision of assistance by teaching staff.

If universities wish to produce graduates with the capabilities needed for knowledge-based societies, they should be looking at the types of teaching employed in their courses. The conventional didactic teaching commonly employed in lecture-based teaching appears to be less effective in developing intellectual capabilities than forms of teaching and learning involving active student participation.

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## Appendix 1: Student experience questionnaire for graduates

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Students we asked to respond to the following items using the 5-point scale.

- |  |                            |
|--|----------------------------|
| 5 — strongly agree (SA)                                      | 4 — agree (A)              |
| 3 — only to be used if a definite answer is not possible (0) |                            |
| 2 — disagree (D)   | 1 — strongly disagree (SD) |

### *Critical thinking*

1. Through this programme I developed my ability to make value judgements about opposite perspectives
2. I have become more willing to consider differing points of view

### *Creative thinking*

3. When faced with difficult problems, I can often come up with new ways to deal with them
4. In this programme I was encouraged to look at existing issues or problems in a new way

### *Ability to pursue lifelong learning*

5. I feel that I can take responsibility for my own learning
6. I have become more confident of my ability to pursue further learning

### *Adaptability*

7. During my time at university, I have learned how to be more adaptable
8. I have become more willing to change and accept new ideas

### *Problem-solving*

9. I improved my ability to use knowledge to solve problems in a systematic way
10. I am able to bring information and ideas together from different topics to solve problems

### *Career relevance*

11. I think the programme improved my performance at work
12. The programme content related well to my career needs

*Discipline knowledge*

13. I gained a lot of useful knowledge and skills from this programme
14. From my programme I developed a good understanding of the main concepts in my subject area

*Communication skills*

15. In this programme I developed my ability to communicate effectively with others
16. In my time at university I improved my presentation skills

*Interpersonal skills*

17. I learnt how to become an effective team or group member
18. I feel confident that I can deal with a wide range of people

*Active learning*

19. Our teaching staff used a variety of teaching methods
20. Students were given the chance to participate in class

*Teaching for understanding*

21. The teaching staff tried hard to make us understand the course material
22. The teachers for this course designed classes with the aim of the students reaching an understanding of the course content

*Assistance from teaching staff*

23. When I had difficulty with the course material, the teaching staff were available to help
24. I found teaching staff helpful when I had problems understanding the course material

*Teacher/student interaction*

25. There was a close relationship between teaching staff and students
26. There was good communication between teaching staff and students

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