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The changing academic environment and diversity in students' study philosophy, beliefs and attitudes in higher education

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Student populations in higher education in Australia and elsewhere in the developed world have experienced significant diversity over the past two decades. The existing literature has provided limited clarity about the effects of this diversity on the dimensions underpinning students' study philosophy domain. Based on a large data set from a leading Australian university, this paper analyses students' study philosophy, beliefs and attitudes towards teaching and learning. Factor analysis explored themes (or dimensions) within the survey. Multivariate analysis of variance used these dimensions as dependent variables with age, sex, ethnicity, study discipline, study level, academic performance and sex/ethnicity interaction as grouping variables to identify significant sources of variations. Deep learning, expediency and responsibility reflected the students' study philosophy domain. Deep learning and responsibility varied with ethnicity and academic performance. Expediency differed according to ethnicity, study discipline and academic performance. Students in business-related disciplines displayed greater expediency than peers elsewhere, treating education like any other commodity. The contribution of this study lies in its rigorous analysis of the impact of the diversity of the student population on the study philosophy domain, compared to the existing literature.

Keywords: constructive alignment; deep learning; learning philosophy; paradigm shift; student diversity

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Introduction

There have been significant changes in higher education teaching and learning over the last two decades. These changes have been likened to those leading to the evolution of research universities in nineteenth-century Germany and subsequently elsewhere. These changes include internationalisation manifested by a significant increase in international student populations, reduction in public funding and significant vocationalisation of higher education. Access to higher education globally has expanded from about 15% of the relevant age group participating in postsecondary education to between 20% and 30% (Yang, 2011, p. 77). All of these factors have led to far-reaching contextual changes including significant increases in student numbers, and a student body with very diverse learning needs and aspirations.

The impact of the contextual change pivots around two outcomes. First, a large body of literature (Gruber, Fuß, Voss, & Gläser-Zikuda, 2010) contends that students increasingly perceive themselves as customers. Second, public funding cuts derive from the neo-conservative belief that education has personal benefits for which one

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should have to pay, as for any other goods (Biggs & Tang, 2011). 'McDonaldisation' of higher education (Deem, Hillyard, & Reed, 2007) has established the primacy of the vocational and professional orientation with a discernible trend away from what used to be, until about two decades ago, a primarily academic focus. Star and Hammer (2008) challenged the 'dichotomy that conceives of a fundamental disjuncture between the idea of universities as institutions of vocational education and the more traditional conception of universities as key institutions in the formation of reflective practitioners, social critics and good citizens' (p. 237).

The phenomenal change has generated a spectrum of positions (Star & Hammer, 2008). One extreme view considers increasing diversity of the student cohort to represent a crisis and focuses largely on what students lack (Kirkpatrick & Mulligan, 2002). At the other end of the spectrum is the view that teaching must change to meet the needs of an increasingly diverse student population. 'Student-centred' pedagogy represents a manifestation of this view. The proponents of this view argue that university teaching needs to adapt itself to student ability rather than the other way around (see, e.g., Biggs & Tang, 2011). This is somewhat similar to a shift of paradigm in higher education in the USA and elsewhere in the developed world. As noted by Barr and Tagg (1995), the role of institutions changed from *providing instruction* to *providing learning* for every student by *whatever* means works best. Colander (2004) viewed teaching as a holistic system with important interactions affecting its performance, and recommended a common-sense approach focusing more on content than on delivery and more student-centred than the old paradigm that mainly involved transfer of knowledge from faculty to students who remained passive vessels to be filled by a faculty's knowledge (Colander, 2004). Moulding (2010) found integrated course design and content relevant to real life to be most useful for learning and is supportive of the superiority of the common-sense approach.

Another strand of literature challenges the view that students are customers (see, e.g., Alauddin & Tisdell, 2000; Mason, Steagall, & Fabritius, 1995) on two grounds. First, due to asymmetry of information, at least some students may not be able to judge or appreciate the value of the information imparted and market failure may result. Second, in contrast to the traditional customer-supply model, the customer (student) directly contributes to the quality of the goods s/he acquires rendering the quality of education imparted critically dependent on the intellectual ability of, and the effort expended by, the learner. White (2007) warned of treating students as customers but suggested they might be regarded as clients:

> Customers demand a service with outcomes satisfactory to them; engagement in the process is not a requisite. Clients, on the other hand, do engage in a process that is appropriate with respect to content. And that is realistic with respect to assessment. It is this sense of engagement that lies at the core of the educational enterprise. It rests in part on relationships among students, but also significantly on the relationship between students and their teachers. (p. 603)

Marton and Säljö (1976) pioneered research on student learning taking contexts into account and making a distinction between deep and surface approaches. A deep approach embodies active learning and a desire to get a grasp of the central message, making connections and being able to draw conclusions and wider implications. In contrast, surface learning embodies a passive approach relying heavily on memorising some disjointed facts. Students gain little real comprehension of the central message, let alone acquire the competence to draw appropriate conclusions

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and wider implications. As suggested by Webb (1997a), references to *deep* and *surface* approaches to learning have been widespread and have attained fundamental status within higher education in regard to pedagogic research, practice and development.

Marton's work (2007) employs phenomenography to investigate the qualitatively different ways in which people experience learning. Akerlind (2005) went further by stating that empirical rather than theoretical or philosophical perspectives formed the basis of phenomenography as an approach to educational research. However, since the mid-1990s 'epistemological and ontological assumptions, a theoretical basis and specification of methodological requirements underlying the approach have been more clearly defined' (Akerlind, 2005, p. 321; see also Bowden & Walsh, 2000; Marton & Tsui, 2004).

Critiques of phenomenography or the resulting deep/surface metaphor has become more common in the 1990s, notably by Webb (1997a, 1997b), who deconstructed it on grounds of 'interpretive neutrality of the researcher' (p. 195). The criticisms levelled against phenomenography attracted immediate and strident defence (Ekeblad, 1997; Entwistle, 1997). Subsequently, Akerlind (2005) stated that:

> these debates typically neglect to address the issue of accepted variation in phenomenographic practice. This encourages a lack of awareness of this variation among all but the most active phenomenographic researchers, and can lead to confusion about the nature of the approach. (p. 322)

However, the deep/surface metaphor has remained largely uncontested, the criticisms notwithstanding.

Biggs and Tang (2011) and Entwistle (2007) recorded a prolific growth in research on student learning focusing on the psychology of individual differences and the characteristics associated with deep and surface approaches to learning. Biggs and Tang (2011) identified that the challenge for the teacher was to reduce the gap between 'academic' (deep learner) and 'non-academic' (surface learner) regarding their engagement with the teaching and learning process. The deep learner, for all practical purposes, teaches herself while the surface learner needs a lot of guidance. The question of 'self-teaching', however, existed long before constructive alignment or phenemenography or the deep/surface metaphor came to prominence. Having experienced 'poor teaching' as an undergraduate (during 1939–1942) a leading twentieth-century economist, Baumol (1986, p. ix), recalled:

> … we organized our own classes, each specializing in a different field, devouring as much of the relevant literature as we could and then lecturing on it to the others. I was assigned the microeconomics, and suspect that I learned more economics there than ever before or since.

Biggs (1987) presented the first major investigation of students' approaches to learning and studying and identified three types of learners (surface, deep and achieving) or, perhaps more accurately, three approaches (surface, deep and strategic). The achieving/strategic dimension was based on organising a student's time and space and behaving like a 'model student' (Biggs, 1987, p. 11). Subsequently, Biggs (Kember, Biggs, & Leung, 2004) considered that the achieving/strategic dimension was rather an additional dimension that might be present in both meaning and reproducing orientations.

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The growing instances of non-English-speaking background (NESB) students pose new challenges that need to be handled differently (Arkoudis & Tran, 2010; Marginson, Nyland, Sawir, & Forbes-Mewett, 2010). Johnson and Kumar (2010), Rambruth and McCormick (2001) and Vandermensbrugghe (2004) questioned stereotyping NESB students as rote-learners. Li and Chang (2001) found that memorisation aided understanding as it facilitated both acquisition of vocabulary and consolidation of knowledge.

Rambruth and McCormick (2001) suggested that overall approaches of the international students did not differ from those of the Australian students. Johnson and Kumar (2010) found that prior learning experiences at home, active participation of family and parents, family pressure and expectations shaped the learning behaviour of Indian students in Australia.

This paper contests the idea that all students are consumer orientated; it avoids making a sweeping generalisation of the student population as customers and explores the extent to which this might be embedded in a students' study philosophy domain. Consistent with the bulk of the literature on learning theory, this paper considers the deep/surface metaphor as a valid construct underlying students' philosophy of studying and learning and identifies dimensions that might underlie this domain.

The existing literature lacks clarity about the needs of the diverse student population. Moreover, there is no comprehensive analysis of how these needs vary according to factors such as age, sex, study discipline, academic performance and ethno-linguistic background. In contrast, the present study undertakes an in-depth quantitative analysis of student diversity in their study philosophy by focusing on the principal research question:

> Do students' study philosophy, beliefs and attitudes toward teaching and learning differ according to a set of characteristics defining diversity in the student population?

The main research question is underpinned by the following questions:

> Can students' responses in regard to their study philosophy, beliefs and attitudes toward teaching and learning be categorised in a small number of representative dimensions?

> Do these dimensions vary according to sex, ethno–linguistic background, study discipline, age, stage within their degree programme and academic performance?

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Methodology

Participants

Consistent with the focus of the study, class lists found that large first-year classes and introductory postgraduate courses contained a significant diversity of the student population. Following approval by the relevant ethics committee, the authors approached 20 lecturers as gatekeepers in various disciplines, teaching at different study levels at a leading Australian university. Fourteen granted gatekeeper permission to use their classes for the survey: economics ($n = 9$), business ($n = 2$) and education ($n = 3$). The authors also directly emailed students in science, arts and social sciences. This somewhat mitigated the problem of randomness by increasing the sample of valid responses. More than 1000 students were surveyed. Missing observations reduced the usable sample to 773 responses. Table 1 provides information on the study disciplines of the participants.

Table 1. Frequency distribution of the study disciplines of participants.

Variable	Description	% (Frequency)
Study discipline (n = 773)		
Discipline 1	Economics single or double majors outside BEL faculty	26.8 (207)
Discipline 2	Economics double major within BEL	12.8 (99)
Discipline 3	Single and double non-economics majors within BEL	29.6 (229)
Discipline 4	Single or double majors in arts or social sciences disciplines (e.g., education, sociology and social work)	16.2 (125)
Discipline 5	Single or double majors in science disciplines	8.5 (66)
Discipline 6	Single or double majors in disciplines not included elsewhere	6.1 (47)

Note: BEL, business, economics and law.

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Respondents aged ≤25 years accounted for 93% of the observations. Nearly 85% came from undergraduate programmes: two-thirds were from first- and second-year classes. Academic performance was estimated from their reported grade-point average (GPA) on a seven-point scale while acknowledging that it may not always measure the intrinsic student quality. Nearly 58% of participants had a GPA ≤5.0, 29% had a GPA >5.0 and ≤6.2 while 13% reported a GPA >6.2.

Male students represented nearly half the participants while about two-thirds were students with an English-speaking background (ESB). Students from Chinese-speaking backgrounds, including those from China and Taiwan, constituted about 25%; and those from India, Indonesia, Malaysia and Vietnam represented about 30% while the remaining NESB students originated from more than 25 countries. Full fee paying students constituted 37% of the sample, while 58% were born and raised in Australia and 97% were full-time students. Thirty per cent were overseas students and 83% had English as their medium of instruction in their previous degrees.

Instrument

Starting with Biggs' Learning Process Questionnaire (LPQ) and Study Process Questionnaire, the instrument was developed in several stages over three to four months. The scope of research was broadened by including items that reflected changes in the higher education sector.

The instrument was refined through discussions with four experienced academics at the School of Economics and through regular discussions (both individually and in small groups) with students from various study disciplines, ethnic backgrounds, age groups, sex, academic abilities and study levels. These extensive expert and stakeholder consultations provided a significant basis for content validity. The present study uses a five-point Likert scale, with one representing a strong disagreement, five a strong agreement and three neither an agreement nor a disagreement.

(1) Twenty-four items on underlying motivation, learning philosophy and goals included items such as: 'My aim is to gain a deeper understanding of the methods and techniques related to the course content' and 'The only way to learn the course material is to memorise by heart'

(2) Six items on the institutional learning process included items like: 'I judge the quality and value of the teaching and learning process almost exclusively by the classroom lecture' and 'I judge the quality and value of the teaching and learning process by a combination of lectures, lab/tutorial sessions, consultation and self-study'
(3) Nine items on the sense of belonging and relative responsibility included items such as: 'I believe that acquiring educational qualifications is just like acquiring any item that I can buy from the market' and 'I believe that acquiring education and its quality depends on my motivation'.

Twelve questions sought information on student characteristics including age, sex, study discipline, level of study, ethnic and linguistic identity, student performance and level of study.

Procedure

Ethical clearance through the School of Education Ethics Committee at the University of Queensland preceded the initiation of research. The researchers informed all students and the consenting instructors about the nature of the study and assured them of anonymity and confidentiality. The survey was implemented early in the semester. Students received an electronic version of the questionnaire, consent form and participation information sheet before the survey date. In class they received hard copy forms and returned their completed questionnaire (which took about 20 minutes to complete). Respondents received necessary clarification upon request.

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Results

Factor analysis derived an orderly simplification of the items to a small number of representative constructs or factors reflecting student response patterns. This paper relies on a large sample of participants and minor deviations from normality revealed by formal tests did not matter (Tabachnick & Fidell, 2007).

Extracted factors and factor structure

Factor analysis reduced 39 items to three dimensions. Consistent with the usual practice the six items with factor loading <.300 were excluded from the final factor analysis. The three factors explained 26% of the total variance. Cronbach's α-values of .763, .718 and .676, respectively, indicated acceptable internal consistency for all items within each factor. Table 2 reports the results of factor analysis.

Factor 1 (*Deep learning*): Fourteen items reflected students' philosophy, beliefs and attitudes towards deep learning and extending their frontier of knowledge. These included students' commitment to deeper understanding and applications of methods in wider contexts, to gain exposure to a wider set of readings and to aim for high academic achievements.

Factor 2 (*Expediency*): Twelve items typified students' beliefs in rote learning, a greater focus on grades than learning outcomes, lectures as the only vehicle of learning and a commercial view of education with greater responsibility on the lecturer for their learning.

Table 2. Three factors reflecting students' study philosophy domain.

Description	Loading
Factor 1: Deep learning	
My aim is to gain a deeper understanding of the methods and techniques related to the course content	.684
My aim is to use methods and techniques in a range of settings during and beyond my current degree programme	.589
My university work can give me a feeling of deep personal satisfaction	.554
I find most new topics interesting	.497
While I am studying, I often try to think of how useful in real life the material that I am learning would be	.491
I have a strong desire to do best in all of my studies	.462
I am interested in learning techniques and their real world applications more or less equally	.456
I spend a great deal of my free time finding out more about interesting topics, which have been discussed in class	.452
I have to do enough work on a topic so that I can form my own point of view before I am satisfied	.449
I chose my present degree programme because I am particularly interested in it	.424
I try to relate what I have learned in one course to what I already know from other courses	.416
I usually try to read all the references suggested by my lecturer(s)	.402
I am interested in application of techniques rather than techniques themselves	.389
My aim is to achieve the highest possible grade in every course	.379
Factor 2: Expediency	
One of the most important considerations in choosing a course is whether I will get top marks in it	.549
The only way to learn the course material is to memorise by heart	.547
I resent having to spend a further three or four years after leaving school studying	.543
I will continue my studies only for as long as takes to get a good job	.524
I prefer courses in which I have to learn just facts, to those which require a lot of reading and understanding of material	.524
I believe that acquiring educational qualifications is just like acquiring any item that I can buy from the market	.519
I believe that I am the consumer and the lecturer (or teaching staff) is the supplier of education just like any other product	.490
I judge the quality and value of the teaching and learning process almost exclusively by the classroom lecture	.477
I see doing well in university as a sort of game	.441
The quality of the education that I can acquire depends more on the lecturer than on me	.430
I do not spend time learning materials that I know will not be asked in the exams	.374
I chose my present degree programme because of career prospects when I leave university	.318
Factor 3: Responsibility	
I believe that acquiring education and its quality depends on my motivation	.765
Acquiring education and its quality depends on my effort	.741
Acquiring education and its quality depends on my organisational ability	.665
The quality of the education that I can acquire depends more on me than the lecturer	.547
I usually become absorbed in my work the more I do	.428
I judge the quality and value of the teaching and learning process by a combination of factors such as lectures, lab/tutorial sessions, consultation and self–study	.365
Studying is a good way to get a well–paid or secure job	.328

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Factor 3 (*Responsibility*): Seven items epitomised students' commitment and motivation to take responsibility for their education and beliefs that the quality of education depend more on their motivation, effort and organisational skills than on the lecturer.

Multivariate analysis of variance

Factor scores represented the composite score for each individual observation. These were derived by the regression method and have been used as dependent variables in subsequent analysis.

Multivariate analysis of variance (MANOVA) investigated whether age, sex, academic performance, study discipline, study level and ethnic identity affected students' study philosophy domain. As MANOVA requires multivariate normality, homogeneity of covariance matrices and absence of multicollinearity and singularity, the present study appeared to satisfy all of these assumptions despite minor deviations from normality as revealed by formal tests. However, to minimise the chance of Type I error, this paper has applied the significance level of $p < .01$ and Bonferroni correction in all hypothesis testing. The remainder of this paper reports the grouping variables with F-values at $p < .01$, not any individual F-statistic and the corresponding p-values.

Multivariate test results

MANOVA was carried out with age (3 groups), study discipline (6 groups), study level (3 groups), Academic performance (3 groups), Ethnicity (2 groups) and sex (2 groups) as grouping variables, and deep learning, expediency and responsibility as dependent variables. One could reject the null hypothesis of no between-group differences in ethnicity, study discipline and academic performance. No significant group differences existed for study level, sex and age.

Univariate test results

Ethnicity: Deep learning and expediency differed according to ethnicity. NESB students appeared significantly more inclined towards deep learning than the ESB students with respective group means of .41 and .15. The NESB students displayed significantly greater expediency than ESB students with respective group means −.40 and .09.

Study discipline: Only expediency differed according to study discipline. Students with single or non-economics double majors within the Faculty of Business, Economics and Law (BEL) displayed greater expediency than those with single or double majors in arts or social sciences, single or double majors in science and single or double majors in any other discipline not included elsewhere with respective group means of .12, −.14, −.39 and −.53.

Students with economics double majors within BEL displayed greater expediency than those with single or double majors in science, and single or double majors in any other discipline not included elsewhere, respective group means being .15, −.39, and −.53.

Students' performance: Deep learning, expediency and responsibility all varied according to students' performance. The mean score for deep learning for students with GPA >6.2 was significantly higher than for those with a GPA of ≤5. The mean expediency scores for students with a low GPA were higher than those with medium

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and high GPAs (with respective mean scores of .06, −.16 and −.56). Students with GPA > 6.2 displayed significantly greater responsibility than those with GPA ≤ 5.

Sex and ethnicity effects

Interaction effects of sex (male, female) and ethnicity (ESB, NESB) are explored by splitting the data first by sex and then by ethnicity. The former examines sex-specific effects of the remaining independent variables such as ethnicity and student performance. The latter investigates ethnicity-specific effects on the remaining grouping variables. Given the sample size, only splitting the data by sex or ethnicity allowed enough degrees of freedom for MANOVA.

Data split by sex

Multivariate tests suggested that student performance affected at least one dimension reflecting female students' study philosophy domain. However, male students' study philosophy differed according to ethnicity.

Univariate tests confirmed the following:

(1) Student performance made a significant difference in expediency of female students. Female students with GPA ≤5 and GPA >5 and ≤6.2 displayed significantly greater expediency than females achieving GPA >6.2 with respective group means of .06, −.16 and −.56. This contrasts with the results for the combined data where all three dimensions varied according to student performance
(2) Ethnicity affected all the three dependent variables for female students (respective group means of .47 and .14). NESB females were significantly more inclined towards deep learning than the ESB females. NESB females also displayed greater expediency than ESB females with respective group means of .01 and −.45. NESB females (group mean = .16) also displayed significantly greater responsibility than ESB females (group mean = −.23). The analysis reported earlier using aggregate data ethnicity affected only deep learning and expediency but *not* responsibility
(3) Ethnicity affected only expediency for male students' study philosophy. NESB males displayed greater expediency than ESB males (respective group means −.35 and .16).

Data split by ethnicity

Multivariate tests suggested that NESB students' study philosophy domain differed according to study discipline and ESB students' study philosophy domain differed both according to study discipline and student performance.

Univariate tests suggested:

(1) For ESB students, expediency varied according to study discipline. ESB students in an economics double major within BEL displayed greater expediency than those in any other discipline not included elsewhere, and single or non-economics double majors within BEL displayed greater expediency than

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those with single or double majors in science disciplines and in any other discipline not included elsewhere

(2) Furthermore, in non-economics single and double majors within BEL, ESB students were more expedient than those with single or double majors in arts or social sciences, single or double majors in science disciplines, or single or double majors in any other discipline not included elsewhere

(3) For the ESB students, student performance affected deep learning and expediency. Medium performing ESB students (GPA >5 and ≤6.2) were more expedient than high-performing ESB students (GPA >6.2) while high-performing students were significantly more inclined to deep learning than medium performing students.

Conclusions

Students' study philosophy domain in higher education can be categorised into a small number of representative dimensions such as deep learning, expediency and responsibility. Deep learning epitomised students' commitment and motivation to understand theory and its application to the current course, degree programme and a career beyond university. Expediency (as opposed to deep learning) was typified by rote learning, a focus on grades rather than learning outcomes and with greater responsibility being placed on the lecturer for students' learning than on themselves. Expediency in the present context is close to the typology of surface learning expounded by Biggs (1987). In this sense, the present study regards deep learning and expediency as two dimensions polar opposite to each other in the study philosophy domain. Responsibility was characterised by the view that the quality of a university programme had more to do with the student's own motivation, organisational skills and effort than any other influences. The findings indicate that contrary to the perceived wisdom that students are in the main customers, there was a core group of students with beliefs about teaching and learning that are synonymous with knowledge rather than grade maximisation.

Analysis of the combined data revealed that ethnicity, study discipline and student performance significantly affected one or more of the three dimensions of the study philosophy domain. NESB students significantly preferred both deep learning and expediency than ESB students. Students studying in the business discipline displayed higher expediency than those in arts, social sciences or science. Deep learning and responsibility were positively associated while expediency was negatively associated with student performance.

Data split by sex revealed that female students with higher GPAs displayed a lesser degree of expediency. NESB female students were more inclined towards deep learning, and displayed greater expediency and responsibility than ESB female students. NESB male students also displayed a greater degree of expediency than ESB students. Data split by ethnicity suggested study discipline and student performance were the two significant grouping variables. ESB students in the business discipline displayed greater expediency than those in arts, social sciences or science disciplines. For ESB students expediency varied inversely while deep learning varied directly with student performance.

Discussion

Two prominent studies in the literature (Biggs, 1987; Entwistle & McCune, 2004) support three dimensions of the study philosophy domain. The dimensions of the

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present study broadly accord with the surface, deep and achieving (or strategic) ones identified by Biggs (1987). They are also consistent with Entwistle and McCune's classification: deep, surface and methodical, well-organised studying linked to effort and achievement motivation. They are also consistent with those of Dieseth (2007) but differ from Kember and colleagues (2004). The latter did not recognise the achieving/strategic dimension as a separate construct, but as being common to both deep and surface approaches to learning. In view of the massive changes in higher education, the instrument of the present study incorporated more comprehensively the third dimension (responsibility) as a distinctive construct and represented a better description of the ground reality.

In contrast to Severiens and Ten Dam (1994), the present study did not find any evidence of males being more inclined than females towards deep learning. Note also that NESB students' greater inclination towards deep learning accorded with Biggs (1996) and contradicted Rambruth and McCormick (2001). However, those results were likely to be less relevant to the current context as they predate the phenomenal changes in higher education. Furthermore, both these studies focused only on specific ethnic students such as those from Chinese and other Asian origins. In contrast, the present study provides a more comprehensive coverage, with a far greater number of participants.

The inclination of NESB female students to two polar opposite dimensions, deep learning and expediency, presents an apparent contradiction. It might be due to interactions of: (a) study discipline and sex, given that students from certain disciplines (e.g., science) might be more inclined to deep learning than those in another (e.g., business); (b) ethnicity and study discipline or (c) student performance and sex or ethnicity. The present study was limited by the availability of such detailed and disaggregated data, in the absence of which any such explanation must remain speculative.

This study contributes to the existing literature in two important ways. First, in contrast to the bulk of the existing literature that either predates or relates to the evolving phase of the momentous change discussed above (Biggs, 1987; Entwistle & McCune, 2004). Second, and perhaps more importantly, it directly addresses the issue of diversity of the student population and undertakes an in-depth quantitative analysis of its impact on students' responses to issues related to teaching and learning in higher education. A rigorous analysis of the heterogeneity of the student population has not received due attention in the existing literature, even though some studies have focused on the study philosophy domain (Biggs & Tang, 2011) or specific aspects such as overseas students (Arkoudis & Tran, 2010).

Implications

The findings of this paper have significant implications for instructors, teaching and learning committees within a school/department (STLCs) and university-wide teaching and learning centres/institutes (UTLCs).

The real challenge for instructors lies in reconciling the two polar opposite philosophical positions: deep learning and expediency. The deep learning-orientated student needs intellectual challenges taking her/his learning beyond the current degree programme, a thorough understanding of theoretical tools and their real-world applications. This group of students requires the instructor to focus more on content at the forefront of the literature. However, the other cohort that is less particular about learning outcomes or more inclined to treat education as a commodity is more likely to be interested in instructional attributes such as how well the coursework is organised

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and how clearly the materials are explained and presented (Alauddin & Tisdell, 2010). Given that the latter group of students judge the quality and value of the teaching and learning process almost exclusively by the classroom lecture, these instructional attributes are likely to be critically important to them. Of course, other cohorts can benefit from well-organised courses and well-presented and explained materials as well.

Thus, the challenge boils down to engaging the various student cohorts with the process. Problem-based learning (PBL) might be a way forward. It is beyond the scope of this study to provide an elaborate discussion of the vast literature on PBL. Essentially, PBL embodies a student-centred pedagogical strategy with significant, contextualised, real-world ill-structured situations while providing resources, guidance, instruction, and opportunities for learners to develop content knowledge, and critical, analytical and problem-solving skills (see, e.g., Hoffman & Ritchie, 1997).

This study, unlike Biggs and Tang (2011), does not subscribe to the view that instructors need to aim at making a surface learner think more like an deep learner, given the old adage that, 'You can lead a horse to water, but you can't make it drink.' Instead, it views the instructors' role to be guiding the students in acquiring problem-solving skills, motivating them and giving them a feeling of accomplishment, amongst other things.

Instructors can devise an assessment mechanism whereby students have little alternative but to think rather than to memorise or find difficulty in achieving a good grade without learning and only through memorising. This may mean regular tests with a combination of multiple choice and short-answer questions embodying theory and applications depending on the nature of the course and the student mix. But a balance between progressive and end-of-semester tests is crucial as greater weight in progressive assessment may in some cases demotivate students to sustain learning momentum (Alauddin & Khan, 2010).

STLCs must become aware of the different dimensions of the students' study philosophy domain and how they vary according to different characteristics of the student population, and that students in some disciplines display greater expediency relative to those in others needs serious consideration. An STLC in one discipline (e.g., economics) can discuss it with the relevant STLC in another (e.g., business) and may organise some joint action to minimise the incidence of this phenomenon.

STLCs might aim to promote research-led teaching. This involves conducting regular surveys on students' study philosophy taking full account of the diversity within the student population due to such characteristics as age, sex, study discipline, student performance, study level, ethnicity, and socio-economic background. A teaching and learning research unit can be formed within the STLCs especially for the rigorous analysis of the data generated by the surveys. Such a research unit could harness human resources such as teaching focused appointees and be led by a senior academic – and needs to seek external research funding. The underlying message of research-led teaching proposed here is based on pedagogic research. This contrasts with the conventional view of linking disciplinary research findings to teaching, not research on teaching or improvement of teaching practices in higher education (Halse, Deane, Hobson, & Jones, 2007). This can be construed as a limitation of the existing literature.

One important implication for UTLCs is the development of inventories that can be of significant relevance to the diversity of the student population. These centres have the research infrastructure to gather information on key variables stated in the preceding paragraph. A large volume of data that are generated, for instance, on student evaluation of teaching and courses each semester can be much more meaningful if information on

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these key variables was available at the same time. Similarly, data on other aspects of teaching and learning that are collected on a regular basis need to have information on student attributes for in-depth analysis. The STLCs and UTLCs can also jointly develop discipline specific staff development programmes given that they can be more effective in tackling relevant issues than generic programmes. This aspect, however, requires in-depth research on existing practices within one institution or across institutions. Such research, however, is beyond the scope of this study.

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