Differences in study approaches and the implications for student learning

AUTHOR(S)

Rodney Arambewela, Pamela Mulready, B Callaghan

Differences in Study Approaches and the Implications for Student Learning

Rodney Arambewela, Pam Mulready, Bill Callaghan, Deakin University, Australia

Abstract

Using the revised 42 item Study Process questionnaire SPQ-R (Zeegers 2002) and its underlying methodology developed by Biggs (1987), this study investigates student learning approaches and academic outcomes across units in their First Year of study. The study confirmed that there are differences in the study approaches of students and that it was possible to group students according to their learning orientations (profiles). Whilst there was not a large variation between profiles and academic results, low achieving approaches were clearly related to low achieving results.

Introduction

The continuous improvement of the 'quality' of teaching and learning is one of the key goals of universities endeavouring to fulfil their obligations as learning institutions. While universities and teachers have responded to the challenge of improving the quality of the learning environment of students with various internal reforms, strategies and practices, the task represents a major adjustment on the part of the institutions given the increasing diversity of the student population and changing demands of students from different cultural and ethnic backgrounds. A key source of the diversity is the international students studying in different universities around the world. In addition the migration trends, greater access to higher education (Ramsden, 2003), particularly the diversification of access to disenfranchised groups and new 'clients' such as working adults, older learners and learners at a distance (Middlehurst, 2004) have contributed to this diversity.

Aims and objectives

The primary aim of the overall study is to investigate the study approaches of students enrolled in a Business Faculty in an Australian university and their learning outcomes in various learning contexts and environments. The specific aims are to:

- Identify the different study approaches amongst incoming students and develop profiles as identified by Biggs (1987).
- Compare identified pre-course student approaches with performance outcomes in their first year of study.

Literature Review

Beginning with the seminal work of (Marton 1976; Marton and Säljö 1976; Marton and Säljö 1976) much of the higher educational development literature in the past 30 years has focussed on student learning research into "learning approaches". This work identified two qualitatively different approaches to learning, based upon student interpretation of a learning task, which was to read a passage of text. One approach was to seek understanding of the

author's intent; another approach was to remember, to regurgitate the text; the former was identified as deep approach and the latter as surface approach to learning.

Cuthbert (2005) postulates two distinct research perspectives (schools) on the interaction of students with a learning situation, as the "Learning Styles" school favoured mostly by US writers in management schools and the Approaches to Learning School by non-management educators in England and Australia. He characterises the Learning Approach School by 3 key features, the first being there will be differences in the quality of engagement of the learner. This is classified into 3 groups: learning for understanding, learning for reproducing and learning for achievement. The second feature is that the learners approach will depend upon their cognitive choice for learning, which may vary from their habitual or preferred pattern of study. The third is that students will have different intentions for different learning tasks depending upon the nature of the task and context.(Cuthbert 2005) Relationships have also been found between teaching approaches and student learning approaches(Trigwell, Prosser et al. 1999)

This study is firmly situated in the Learning approach school and uses the SPQ (Study Process Questionnaire) which was developed by John Biggs (Biggs 1987) to measure Student Approaches to Learning, SPQ has been used internationally with diverse groups.(Biggs 1987); (Albaili 1995; Zhang 2000; Smith 2001; Richardson 2005) and the instrument has been revised and adapted to reflect contemporary and local contexts of learning. (Zeegers 2002).

There is overwhelming acceptance in the literature (Carroll 1953; Biggs 1987; Entwistle 1989; Marton and Säljö 1997; Prosser and Trigwell 1998) that students choose to adopt a either a deep or surface approach to learning depending on their perception of a learning task and that Qualitative differences in student approaches are associated with qualitatively different learning outcomes (Duff 2004).Richardson (2005) reports that approaches will vary according to the context and the demands of a particular task. More recent studies have identified that approaches will also be influenced by the demands of different course units, the quality of the teaching and the nature of the assessment. These studies have raised some alarming concerns for the quality of learning in Australian institutions in particular, as they have revealed an ongoing decline in deep approaches to learning as student progress through their undergraduate degree. (Watkins and Hattie 1985; Biggs 1987; Zeegers 2002). Biggs (1987) has identified differences by Institution, Faculty, Course, and Gender as well as between cultural groups and has recommended the development of Institutional, Faculty and discipline norms, to develop an enquiry based approach to local research in the area. He has also suggested that it would be a useful thing to do "when circumstances permit" to test students early, and that counsellors and academic staff, need to work closely together to identify institutional strategies for diagnosis and remediation, (Biggs 1987)

More recently, a Melbourne University study of the student first year experience identified that "low achieving"[1] students were more likely to have considered deferring than their higher achieving colleagues for a diversity of reasons relating to work, finance, family, and course selection and commitment.(Krause 2005). This perhaps would suggest that the early identification of these students, may best assist an appropriate institutional approach.

---

[1] A low achieving student in this study self reported a grade of 60% or below

The Methodology

The revised version of SPQ3 (Zeegers, 2002) with 42 scale items and 6 subscale dimensions (Surface Motive (SM), Surface Strategy (SS), Deep Motive (DM), Deep Strategy (DS), Achievement Motive (AM) and Achievement Strategy (AS)) as outlined by Biggs (1987a, 1987b) was administered at pre-entry level (newly enrolled students) at a student orientation day at a Melbourne university. Subsequently the survey was administered online.

We used Biggs (1987) percentiles approach by computing the subscale scores into 3 ranges indicated by the symbols +,- and 0. Biggs suggests that "the exact range of deciles that qualify for a +,-,0 might vary according to context, or the use to which the profile is put.' (Biggs, 1987,p17). However for simplicity it can be visualized that + equals the top third, a 0 equals the middle band and – equals the bottom third of the subscale score range.

To allocate respondents to the groups defined by Biggs we employed a centroidal approach to allocate them to the above profile groups that they were closest to. This standard approach, commonly used in cluster analysis, used a squared Euclidean distances approach.. We defined the cluster centroids using the core profiles proposed by Biggs. For example, he specifies the sequence of scores 00++00 or --++-- (for the measures (SM, SS, DS, DM, AM, AS) as indicating a deep predominant student. To implement this classification of Biggs we identified the 15%, 50% and 85% percentile points for each scale and treated these scores as corresponding to the -,0 and + classification of Biggs. By considering his scores patterns for each profile group (2 score patterns by 6 profiles=12 possible score patterns) we then used the centroidal approach to allocate each respondent to their nearest profile. This allocation procedure avoids the use of benchmarks that have been published for many specific sample groups which are not generalisable.

Results and Discussion

Table 1 Subscale Cronbachs +

Dimension	Cronbach Alpha	Mean	Std Dev
SM	0.68	22.71	5.14
SS	0.72	21.61	3.77
DM	0.81	21.57	4.90
DS	0.42	21.40	4.67
AM	0.74	23.89	5.82
AS	0.82	21.27	5.56
Combined SM & DS	0.77	44.32	7.88
Combined DM & DS	0.77	42.97	8.90
Combined AM & DS	0.86	45.15	10.12

+Sample Size n=702

702 students responded to the survey of which 97 were international students who represented a wide range of nationalities (Chinese, Malaysian, Zimbabwe, Hong Kong, Indonesian and others). The sample is balanced between males (48%) and females (52%) and the majority (71%) of students were Australian born with students from Asia (18%) comprising the next largest segment.

Table 1 above shows the Cronbach Alpha test used to assess the reliability of scales and the overall mean scores which summarise students' learning orientations. The recommended minimum Cronbachs Alpha is generally considered to be .70 although lower alphas have been accepted in research of exploratory nature. All constructs generally met this criterion except for the Deep Strategy dimension which had an alpha of only .42. However, when motivation and strategy scores were combined for this Deep dimension, a satisfactory Cronbach Alpha was achieved. Most correlations between the subscales were significant at .001 level. The correlation between deep and achievement measures was strong justifying combination of these two measures.

In summary the basic structure of the Zeegers/Biggs approach is confirmed by this analysis but with some aspects requiring more investigation. A confirmatory factor approach was also used to examine the structure of the constructs but is not reported here.

Table 2 Student Study Process (SP) group sizes and Mean Profile Scores

Student Profile GROUP	Freq	%	SM	SS	DM	DS	AM	AS
Deep	100	14.2	22.1	20.5	24.7	24.1	24.4	20.7
Achieving	100	14.2	22.9	21.3	21.4	21.0	25.9	25.1
Deep-Achieving	135	19.2	23.7	22.0	27.2	26.4	28.9	27.9
Surface-Achieving	123	17.5	27.5	24.8	21.8	21.4	27.5	21.5
Surface	68	9.7	25.7	23.9	19.3	19.2	22.8	15.5
Low Achieving	176	25.1	17.7	19.0	16.3	17.1	16.5	16.4
Total	702	100.	22.7	21.6	21.6	21.4	23.9	21.3

Study Profile Groups

Table 2 shows student groups in different study approach categories and the mean profile scores for each of the sub scales. It is interesting to note that Surface category is the smallest group whereas Low Achieving is the largest. It may be observed that the subscale scores for each show considerable variation that is not evident in the overall mean scores

Student study approaches and Academic outcomes

Table 3 – Mean overall mark for student by Student Profile group

SPQ PROFILE GROUPS	Mean	N	Std Dev
Deep	66.30	57	9.88
Achieving	66.24	61	10.85
Deep-Achieving	67.96	96	9.63
Surface-Achieving	66.86	61	9.13
Surface	67.67	36	8.88
Low Achieving	64.31	118	11.76
Total	66.31	429	10.38

.
The analysis of data exploring the linkage between student academic performance and learning profiles indicated interesting results. The results for each subject completed by a student were matched with the questionnaire data. The academic results for 429 students who

supplied personal details for this purpose out of the original 702 students were matched with no biases in the matched results.. The average mark for all subjects studied was used as the summary measure of academic performance.

Table 3 below shows the average results for each student profile group which indicates the Low Achieving Group clearly achieved less well academically. This is relatively a large segment of students with one in four falling into this classification. Deep achieving and Surface Groups appear to have the best outcomes overall but the scores are only slightly higher than that for the other groups

Conclusion and Future Directions

This exploratory study investigated the differences of student learning approaches and their influence on the academic outcomes of students. The analysis confirmed that there are differences in the study approaches of students and it was possible to group students according to their learning orientations (profiles). The comparison of student study approaches with individual performance data revealed that academic performance is related to study approach although the relationship is complex.

Typically those students within the Deep-Achieving profile, performed best, however atypically those students within the Surface and Surface Achieving profiles performed better than those demonstrating Deep or? Achieving profiles. Students identified in the low achieving profile were relatively poor performers. Of concern for quality considerations is the performance of Surface Learners compared to other student profiles. This would indicate that we maybe assessing for replication (Surface) rather than understanding (Deep) which could be a significant problem for the quality of student learning. The findings also indicate the likely impact of the structure and quality of the assessment regimes on the academic outcomes.

This is an important theoretical base for the course and discipline based development of teaching and learning in an expanding field of knowledge and understanding. Study approaches have validated associations across both academic learning outcomes (Lizzio, Wilson et al. 2002), Course Experience Questionnaire (CEQ) (Ramsden 2003), thereby providing educators with a valuable lens through which they may better understand how students go about their learning, and informing how we may adjust our teaching and educational development practices to improve the learning experiences of our students and the institutional quality.

Most significantly was the link between low achieving students and low achieving results. This suggests that identifying the student learning orientation at an early stage could be a useful. Both students and academic support could benefit by being alerted early to the potential implications of adopting a "low achieving" approach by students.

More rigorous statistical analysis may be required to validate the findings of this study particularly to address the discriminant issues and the study could be expanded to include the student profile/academic outcome relationships across disciplines.

References

Albaili, M. A., 1995. An Arabic version of the Study Process Questionnaire: Reliability and validity. Psychological Reports. 77**:** 1083.

Biggs, J., 1987. Student Approaches to Learning and Studying. Melbourne, Australian Council for Educational Research.

Biggs, J., 1987b. Study Process Questionnaire Manual. Melbourne, Australian Council for Educational Research.

Cu,thbert, P. F., 2005. The student learning process: Learning styles or learning approaches? Teaching in Higher Education 10(2): 235-249.

Duff A., 2004. "The Revised Approaches to Studying Inventory (RASI and its use in management education." Active Learning in Higher Education 5(1): 56-72.

Entwistle, N., 1989. Approaches to studying and course perceptions: the case of the disappearing relationship. Studies in Higher Education 14(2): 155-56.

Krause, K. L., Hartley., Robyn., James., Richard., McInnes, Craig., 2005. The First Year Experience in Australian Universities: findings from a decade of national studies. Melbourne, Centre for the Study of Higher Education, University of Melbourne.

Marton, F., 1976. What does it take to learn? Strategies for Research and Development in Higher Education. N. J. Entwistle. Amsterdam, Swets & Zeitlinger**:** 32-43.

Marton, F., R. Säljö., 1976. On qualitative differences in learning: II. Outcome as a function of the learner's conception of the task. British Journal of Educational Psychology 46: 115-27.

Marton, F., R. Säljö., 1997. Approaches to learning. The experience of learning : implications for teaching and studying in higher education / edited by Ference Marton, Dai Hounsell, Noel Entwistle ; foreword by Wilbert J. McKeachie. F. Marton, D. Hounsell and N. J. Entwistle. Edinburgh, Scottish Academic Press**:** 39-58.

Prosser, M., K. Trigwell., 1998. Teaching for learning in higher education. Buckingham, Open University Press.

Richardson, J. T. E., 2005. Students' perceptions of academic quality and approaches to studying in Distance education. British Educational Research Journal 31(1): 7-27.

Smith, S. N., 2001. Approaches to study of three Chinese national groups. British Journal of Educational Psychology (71): 429-441.

Trigwell, K., M. Prosser., 1999. Relations between teachers' approaches to teaching and students' approaches to learning. Higher Education 37: 57-70.

Watkins, D., J. Hattie., 1985. A longitudinal study of the approach to learning of Australian tertiary students. Human Learning 4(2): 127-42.

Zeegers, P., 2002. A revision of the Biggs' Study Process Questionnaire (R-SPQ). Higher Education Research and Development 21(1): 73-92.

Zhang, L.-F., 2000. University students'Learning approaches in three cultures: an investigation of Bigg's 3P Model. The Journal of Psychology 134(1): 37-55.