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Abstract

This paper is an exploratory study into student approaches to learning at a multicultural university. It is particularly relevant to higher education today, which is taking on a more global perspective, especially in the developing world where this university is situated. The instrument used to measure student approaches to learning is the revised Study Process Questionnaire (SPQ) and the results are analysed using factor analysis. The SPQ was revised in 2001 to take into account the changing nature of students in higher education, with emphasis on students from diverse cultural backgrounds, and was therefore considered appropriate for this study. The main findings identify the problem of distinguishing between different kinds of motivation and the motive-strategy combination within constructs. The small-scale nature of this research means that the results are not as conclusive as could be hoped, but they provide an important starting point for more extensive research in this field.

Keywords

Investigation, into, Student, Approaches, Learning, Multicultural, University, Using, Revised, Study, Process, Questionnaire

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An investigation into student approaches to learning at a multicultural university using the Revised Study Process Questionnaire

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Abstract: *This paper is an exploratory study into student approaches to learning at a multicultural university. It is particularly relevant to higher education today, which is taking on a more global perspective, especially in the developing world where this university is situated. The instrument used to measure student approaches to learning is the revised Study Process Questionnaire (SPQ) and the results are analysed using factor analysis. The SPQ was revised in 2001 to take into account the changing nature of students in higher education, with emphasis on students from diverse cultural backgrounds, and was therefore considered appropriate for this study. The main findings identify the problem of distinguishing between different kinds of motivation and the motive-strategy combination within constructs. The small-scale nature of this research means that the results are not as conclusive as could be hoped, but they provide an important starting point for more extensive research in this field.*

Keywords: *R-SPQ; approaches to learning; cross cultural studies*

Introduction

Identifying student approaches to learning is an important step in developing teaching in higher education. In order to create a learning environment which helps students achieve their full potential it is necessary to have some understanding of the way they approach their learning. The approach used by a student and the processes used during learning are related to the quality of his or her learning (Biggs, 1979, p.381), and for the purposes of this paper are defined as 'what' and 'how' students learn (Ramsden, 1992, p.40). Two broad approaches to learning, 'deep' and 'surface', have consistently emerged through research in this area, with a deep approach seemingly leading to better learning outcomes, and therefore being considered the desired approach for students. Student approaches to learning are particularly important for teachers because they are not fixed and are susceptible to outside influences, especially the learning environment. Thus, as Biggs, Kember and Leung claim, "an approach to learning describes the nature of the relationship between, student, context and task" (2001, p.137). With knowledge of their students' approaches to learning teachers can implement strategies which encourage deep learning.

This paper aims to examine student approaches to learning in a multicultural university in order to provide teachers working in such an environment with useful information about their students. The instrument chosen to assess student approaches to learning is a recent revision of Biggs' (1987a) well-used Study Process Questionnaire (SPQ), the Revised Study Process Questionnaire (R-SPQ) (Zeegers, 2002).

This particular questionnaire was chosen because it is based on the original SPQ which has been used extensively in cross cultural studies (Hattie and Watkins, 1981; Kember and Gow, 1990; Volet, Renshaw and Teitzel, 1994; Zeegers, 2001), and because its recent revision makes it more accommodating to cross cultural students

The setting for this study is a fairly autonomous overseas branch of an Australian university situated in the Middle East. Although small by Western standards, it attracts students from many different countries and backgrounds. Seventy-eight nationalities are represented at the university from a range of cultural identities. These students also come from a wide variety of educational backgrounds, both within the host country and abroad. Accommodating such students within the classroom and lecture theatre, and helping them reach their potential can be difficult for teachers, so this paper will look at the R-SPQ to see if it is a useful instrument for helping teachers determine the approaches to learning of students within this multicultural university. Students were asked to complete the questionnaire at the beginning of their university careers because this paper seeks to determine the approaches to learning students have when they start their education at this university, so that teachers can have a general picture on which to base their teaching. Therefore the questions this paper will address are:

1. Is the R-SPQ a useful instrument for measuring student approaches to learning in a multicultural university?
and,
2. What information does it give about student approaches to learning in that environment?

The SPQ and cross cultural studies

From the theoretical background of research into student approaches first established by Marton and Saljo (1976), learning instruments were developed to measure these approaches. Such self-reporting instruments are considered useful at tertiary level because by that time it is assumed that students have developed recognisable motives and strategies, both from their personal characteristics and their previous learning experiences (Biggs, 1979 p.384). The most frequently used are the Approaches to Study Inventory (ASI), developed in the UK, and the Study Process Questionnaire (SPQ), developed in Australia (Biggs, 1987a). The SPQ developed by Biggs in 1987 identifies three approaches, 'deep', 'surface' and 'achieving'. These three approaches are all composites of related motives and strategies.

The scales and subscales devised by Biggs were found to be consistent among Australian (Biggs, 1987b; Hattie and Watkins, 1981) and British students (O'Neil and Child, 1984). However, as time has moved on, the nature of higher education has gone through dramatic changes. As the student body has widened, it has included more international students from a range of countries and cultures. The SPQ has been widely used to examine the approaches to learning of international students in cross cultural studies and some inconsistencies have arisen. A comprehensive study by Kember and Gow, (1990) in Hong Kong found that the SPQ and ASI have stable constructs across cultures for deep/meaning orientations, but that cultural influences in the 'less desirable' approaches can lead to ambiguity. They suggest further work in those areas is needed to avoid ambiguity in interpretation. Other studies have also found problems with the surface constructs.

Like Biggs (1987b) and Kember and Gow (1990), much of the research into cross cultural student approaches to learning has focused on comparing South East Asian students with Western students. Volet, Renshaw and Tietzel, (1994) found that South East Asian students exhibited higher deep and achieving approaches than their Australian counterparts, although that changed over time. Unlike Volet et al, Ramburuth (2000) found no significant differences between the approaches to learning of the Australian and South East Asian students she studied. However, she did find that the 'surface' and 'deep'

were not separate constructs, and she suggests that students can exhibit aspects of both approaches at the same time. She suggests that the interweaving between memorising and understanding which leads to this blurring of approaches may mean that the surface / deep framework may not be the best way of examining approaches to learning in students from some cultural backgrounds.

Another criticism aimed at the SPQ along with other instruments to measure student approaches to learning is that they are based on Western ideas of education (Richardson, 1994a; Tan and Goh, 1999). Tan and Goh claim that such instruments do not take into account contextual and cross cultural influences. Richardson (1994b) is very sceptical of research into student approaches to learning and, like Tan and Goh, criticizes the SPQ for not taking cultural influences into account. He also warns against generalizing across cultures, which is an easy trap to fall into, given that the vast majority of cross cultural research has been conducted with South East Asian students and domestic Western students. This is an issue particularly relevant to this study because of the diverse cultural backgrounds of the respondents.

Although cross cultural studies using the SPQ have been concentrated on South East Asian students, it has been used in other cultural contexts. As early as 1981 Hattie and Watkins found that it had poor internal consistency and loaded onto two factors instead of three when they compared Filipino and Australian students. They questioned its appropriateness for Filipino students. More recently Akande, (1998) tested the SPQ's reliability and validity for South African students and found that it was essentially a valid instrument for measuring student approaches to learning, but he questions its use as a means of making cultural comparisons. Hassan, (2002) used the SPQ to determine student approaches to learning amongst United Arab Emirate students in a study comparing academic satisfaction and approaches to learning and also found a two-factor approach. This is interesting because the study in this paper is conducted in the United Arab Emirates, but relates to a multicultural university rather than the mono-cultural group of Hassan's study, although there is a common cultural background.

The need for change in the SPQ

Building on the findings related to cross cultural studies, in particular problems associated with the surface approach, Kember and Leung (1998) examined the dimensionality of approaches to learning and found that a two factor model was best. This supported previous recommendations by Richardson (1994b) and others. Given that recent cross cultural findings were not around when the SPQ was devised, Kember, Leung and Wong (1999) suggest its revision to take cultural differences into account. They examined motivation in their study of Hong Kong students and found that intrinsic motivation was similar to the accepted view, but extrinsic motivation was not always shown in a negative light. They also found that students often displayed both kinds of motivation. In particular, career motivation was seen as a stimulus to do well and work hard, thereby mixing intrinsic and extrinsic motivation.

Thus, there was a need to change the SPQ so that it more accurately reflected the link between memorisation and understanding (Ramburuth, 2000), and contained a better understanding of extrinsic motivation in relation to career development.

Revising the SPQ

In response Biggs, Kember et al. (2001) developed a two-factor model which focused on the deep and surface approach allowing the previous achieving scales and subscales to load onto those two factors. The wording of items was changed to account for some of the changes in higher education since the original SPQ. Building on the work done by Biggs et al., Zeegers (2002) developed another revised version of the SPQ, the R-SPQ which also has a two-factor structure with seven subscales instead of the six of Biggs et al. Unlike the R-SPQ-2F, which was designed primarily to assess the effectiveness of teaching, the R-SPQ

is intended to be used to evaluate learning. It is intended for use by teaching staff “who wish to know more about how students approach their study” (Zeegers, 2002 p.76), which is one of the reasons for its use in this study. The other reason for using the R-SPQ is its aim to focus on the cross-cultural student. In particular, Zeegers divided the original surface motivation subscale into the more positive ‘extrinsic motivation’ (M1) which focuses on career options in line with the suggested ‘career-orientation’ of cross cultural students (Kember, Wong et al, 1999), and the more negative ‘test anxiety’ (M4). Zeegers found that the subscales ‘motivation to succeed’ (M3) and ‘test anxiety’ (M4) loaded on to both the deep and surface approaches. From the extensive research carried out by Zeegers into models for the R-SPQ the final version is a two-factor model with seven subscales and 42 items, which can be seen in Table 1.

Approach	Subscale	Items on questionnaire
Deep	M2 Intrinsic motivation	2, 8, 14, 20, 26, 32, 38
	S2 Deep strategy	5, 11, 17, 23, 41
	S3 Strategies to succeed	6, 12, 18, 24, 29, 30, 35, 36, 42
Deep/Surface	M3 Motivation to succeed	3, 9, 15, 21, 33
	M4 Test anxiety	7, 19
Surface	M1 Extrinsic motivation	1, 13, 25, 27, 31, 37, 39
	S1 Surface strategy	4, 10, 16, 22, 28, 34, 40

Table 1. Structure of R-SPQ

The items assigned to each subscale shown in Table 1 relate to Zeegers’ findings when he tested the R-SPQ extensively with over 2,500 students in Australia over a three-year period.

The present study

The sample

The aim of the study was to determine if the R-SPQ is a good measure of student approaches to learning at a multicultural university, so when selecting a sample care was taken to be as representative as possible. From a total student population of 1,500 a sample of 270 students was taken (18% of total population). Thirty-eight nationalities were represented in the sample in similar proportions to the total population, as can be seen in Table 2.

Respondents were drawn from both the faculties within the university (Commerce and Informatics), and from the different degrees offered by those faculties. The questionnaire was administered during lectures and was conducted in English, as it would have been almost impossible to have translations for all the different languages spoken by the respondents. The standard of English required of students on admission was deemed sufficient to cope with the questionnaire.

Data analysis

A commonly used method of analyzing data from inventories of approaches to learning is factor analysis with rotation to aid determination of orthogonal factors, which was the method chosen for this study. Firstly, reliability was tested using Cronbach’s alpha for the R-SPQ subscales. The results are in Table 3 where the results of Zeegers’ study with first year students are also given for comparison. Apart from M4 (which only has two items) all the alpha scores were above 0.5, which is acceptable for a pilot study.

	Population (per cent)	Sample (per cent)
India	32	36
Iran	14	11
UAE	11	4
Pakistan	9	10
Lebanon	4	<1
Jordan	4	<1
Palestine	n/a	4
Australia	2	3
Other	25	31

Table 2. Student nationality

Scale	Number of items	Results	Zeegers' study (1 st years)
M1 Extrinsic motivation	7	0.54	0.61
M2 Intrinsic motivation	6	0.59	0.71
M3 Motivation to succeed	5	0.71	0.66
M4 Test anxiety	2	0.36	0.65
S1 Surface strategy	7	0.57	0.56
S2 Deep strategy	5	0.69	0.64
S3 Strategies to succeed	9	0.76	0.78

Table 3. Cronbach's alpha for R-SPQ subscales

A principal axis factor analysis was performed using SPSS which identified fourteen factors with eigenvalues over 1.0. However, one factor was predominant with an eigenvalue of 6.325 which accounted for 15 per cent of the variance. This factor was consistent with a deep approach to learning. The second largest factor with an eigenvalue of 3.718 accounted for 8.9 per cent of the variance and represented a generalised surface approach to learning. The remaining factors were indeterminate and SPSS was unable to perform a rotation (either Varimax or direct Oblimin) to aid interpretation. Therefore, it was decided to try and extract seven factors as in Zeegers' study for comparison. Iterations of 25 were used and factors with 0.3 as a minimum level of salient loading were requested (Coakes and Steed, 2001). The results of this factor analysis with Varimax rotation can be seen in Table 4. A direct Oblimin rotation was not possible using SPSS.

Subscales	Item no.	7 factor solution with Varimax rotation						
		1	2	3	4	5	6	7
M1	1						.687	
	13						.520	
	25				.478			
	27			.395	.407			.303
	31					.510	.367	
	37						.613	
	39			.375				
M2	2		.361	.355			-.332	
	8	.488						
	14							.635
	20		.372					.431
	26				.322			.510
	32	.450						
	38		.334			.300		
M3	3			.556			.443	
	9	.485		.497				
	15	.426		.313				.471
	21			.554				
	33			.610				
M4	7			.404				-.378
	19			.427				
S1	4			.483				
	10			.378	.311			
	16				.498			
	22		-.378		.574			
	28	.512						
	34				.575			
	40			.300	.564			
S2	5	.608						
	11	.613						
	17	.418				.485		
	23	.591						
	41	.667						
S3	6		.386			.345		
	12					.509		
	18					.595		
	24		.413			.619		
	29		.643					
	30					.410		
	35		.731					
	36		.749					
	42		.525					

Table 4. Principal factor analysis with Varimax rotation for 7 factors

As can be seen, there are several complex variables which load onto two factors, or in the case of three items (2, 15 and 27), onto three factors. This makes the analysis difficult to interpret. However, some interesting findings emerge when compared to Zeegers' 2002 study. Firstly, the motivation subscales extrinsic (M1) and intrinsic (M2) do not have clear loadings onto a single factor, and indeed several items in those subscales cross load onto two or more factors. This suggests that in this study motivation cannot be clearly separated into extrinsic and intrinsic. It is surprising that extrinsic motivation (M1) did not emerge as a clearly distinct factor as this had been modified to focus on career motivation. The subscale motivation to succeed (M3) is fairly consistent with Zeegers' study, but test anxiety (M4) does not emerge as a separate subscale, instead it loads onto the same factor as M3. This suggests that test anxiety and the desire to succeed are closely linked and are strong motivating factors in this present study. The strategy subscales correspond more closely with Zeegers' study, with deep strategy (S2) being the closest.

Of the seven factors found in this analysis, factor 3 has the largest number of items (12) and is a mainly concerned with motivation to succeed, and has competitiveness featuring highly. Although this factor contains items mainly related to motivation, some strategy items also load onto it. This mix of motivation and strategy can be seen in the other factors, most notably factor 1, which contains a combination of deep motives and strategies.

To further examine the R-SPQ as a device for measuring student approaches to learning in a multicultural setting a four factor analysis was performed, as indicated by the Scree plot from the original analysis. From this, more distinct factors emerged which again exhibited a mix of motive and strategies. Test anxiety (M4) and strategies to succeed (M3) were also combined in the four factor analysis, as in the seven factor analysis, and there was a definite career-oriented approach found in Factor 4.

Discussion

This study supports a general two factor deep/surface approach, but the subscales are hard to determine due to the cross loading of some complex items. The fact that the predominant factor in the initial factor analysis represents a deep approach indicates that many students enter the university with this approach, therefore teachers can aim to build on this to encourage deep learning. However, like Ramburuth's study (2000), in some cases aspects of both approaches were exhibited. Thus, it would seem that some interweaving of understanding and memorizing is possible in this case.

As both factor solutions show a mix of strategy and motive items, the suggestion is that there is no clear distinction between these constructs for these particular students. The relationship suggested between motive and strategy is interesting and requires more in-depth investigation, although it is to be expected to some extent. Indeed, Biggs refers to motive and strategy as congruent constructs and based the original SPQ on the motive-strategy congruence theory (1993). This mixing of strategy and motive has been found in other studies using the SPQ (O'Neil and Child, 1984), and indicates to teachers that there is a significant amount of congruence between the stated motives of their students and the study strategies they adopt.

As with cross cultural studies (Kember, Wong and Leung, 1999), career motivation is an important issue for the students in this study, although this is not as closely associated with extrinsic motivation as found by Zeegers. The factor most closely associated with career-orientation reveals a strong emphasis on university study as a means to securing a good job. Teachers in this multicultural environment need to be aware of this and tailor their teaching to make the link between university study and future employment explicit if they wish to increase motivation in their students. The failure of items related to intrinsic and extrinsic motivation to form distinct subscales indicates the R-SPQ may have problems determining

motivation among students in this multicultural setting. This mix of intrinsic and extrinsic motivation implies that motivation is a complex issue for these multi-cultural students, and suggests that further investigation is necessary, possibly into specific cultural factors which may exert a strong influence on motivation.

The emphasis on motivation to succeed linked with competitiveness and test anxiety suggests a strong focus on testing and results in these students, which is significant for teachers, and indicates that assessment could play a vital role in encouraging a deep approach to learning.

However, as indicated, the results of this study were difficult to analyse, and so any conclusions must be tentative. Factor analyses are known to offer a variety of interpretations, and other methods of analysis, such as confirmatory factor analysis, could offer alternative interpretations of this data. At the time of this present study the data from the original study needed to perform a confirmatory factor analysis were not available.

Because this study was conducted with students from range of nationalities, the possibility of cultural factors blurring the results also needs to be considered. It may be that a clearer picture will emerge if specific cultural groups within the university are looked at individually in later studies.

Conclusion

The R-SPQ provides some useful information about student approaches to learning in this multicultural university, however there is need for further examination of its appropriateness. The findings of this exploratory study, particularly the mixing of strategy and motive within constructs and the problems encountered with motivation suggests that other means of researching student approaches to learning in a multicultural environment should be considered in addition to the R-SPQ. In future studies qualitative data from interviews and ethnographic studies would be useful in exploring student approaches to learning, as used by Kember and Gow (1990), and suggested by Tan and Goh (1999).

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