Students' perceptions of the study process

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Abstract. The inherent structure of the study process is central to the provision of meaningful opportunities geared towards the achievement of success in any academic programme. Given this scenario, Biggs' Study Process Questionnaire (SPQ) was administered to first year university physics students in order to establish their perceptions about the nature of the study process which underscores the academic achievement. Analysis of SPQ responses provided valuable insights into students' perceptions about the nature of the study process. While the use of deep approach appeared to be a predominant learning tool within the context of this inquiry, a substantial number of students still appeared to employ surface approach to navigate their studies.

1. Introduction

There has been considerable focused attention on students' approaches to learning with a view to search for the fundamental differences in relation to students' engagement in learning tasks [1,2]. Deep and surface approaches have been extensively utilised in educational research as key constructs [1]. Deep approach is mainly concerned with students' intentions to understand and construct the meaning of content to be learned while surface approach specifically refers to students' intentions to learn by memorizing and reproducing factual contents of the study materials.

Both quantitative and qualitative inquiries have been undertaken into students' approaches to learning [2,3]. These inquiries revealed a complex dichotomy between deep approach and surface approach in students' learning [4]. Over and above the two approaches, a mixed approach to learning called the achieving approach has also been identified [5,6]. The achieving approach manifests itself either in the form of deep or surface processing depending on the key critical contextual demands [7]. This inquiry is largely inspired by the intellectual curiosity into the relationship between students' approaches to learning and students' learning outcomes. Congruent with this endeavour, this article provides insights into first year university students' perceptions about the nature of the study process.

2. Student approaches to learning and studying

Student approaches to studying comprise two elements: motive and strategy [2]. Three approaches to learning each consisting of motive and strategy [2] are illustrated in Figure 1 below.

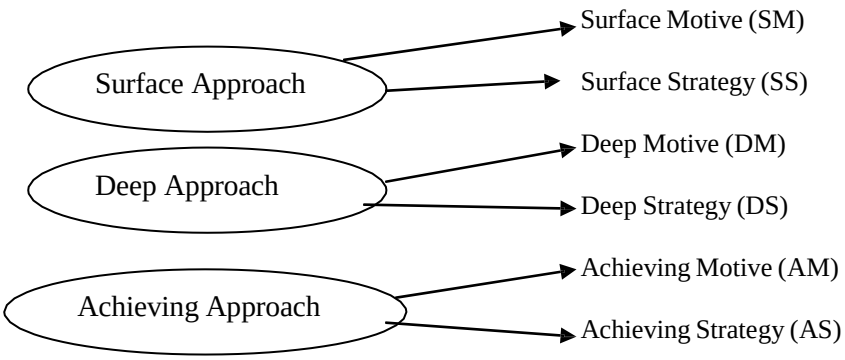

Figure1: Biggs' conception of a 6-factor structure in students' approaches to learning (Biggs, 1987)

Surface approach is premised on an extrinsic motive which seeks to carry out the task because of either positively or negatively reinforcing consequences. Deep approach is underpinned by an intrinsic motive which arises from the curiosity to seek meaning. The achieving approach is inspired by an achieving motive which primarily focuses on a product. Students' development of a specific learning approach is largely influenced by personal factors and the teaching context [8]. Personal factors such as background and personality are associated with a surface approach [8] and others with a deep approach [9]. Teaching factors such as time pressures, examination stress, and using test items emphasising low level cognitive outcomes encourage surface approach while learner activity, student-student interaction, and interactive teaching, particularly problem-based teaching encourage a deep approach [10]. In order to provide further elucidation, a summary of the differences in motivation and study process of surface, deep, and achieving approaches to study [2] is provided in Table 1 below.

Table 1: Summary of the differences in motivation and study process of surface, deep, and achieving approaches to study (Biggs, 1987)

Approach	Motivation	Process (strategy)
Surface	Fear of failure	Rote learning of facts and ideas
	Desire to complete their course of study	Focusing on task components in isolation
		Little real interest in content
Deep	Interest in the subject	Relate ideas to evidence
	Vocational relevance	Integration of materials across courses
	Personal understanding	Identifying general principles
Achieving	Achieving high grades	Use any technique that achieves highest grades
	Competing with others to be successful	Level of understanding patchy and variable

A coherent inquiry on student approaches to learning in educational research is underpinned by a systems model of learning called the presage-process-product model [11]. According to the model, learning is characterised by three inter-related components in the form of presage (student-based factors and the learning environment), process (how students engage in the task) and product (learning outcome) as depicted in Figure 2 below. Presage factors are independent of the learning situation and include personal factors (intelligence quotient, background, personality characteristics) and situational factors (subject content, methods of teaching and evaluation, course structures) [2]. It is important to point out that presage factors may affect student's performance directly or indirectly through their influence on process factors [2]. By their very nature, process factors determine the way the student goes about learning [2]. This implies that process factors are essentially anchored on students' motives for learning and their concomitant strategies.

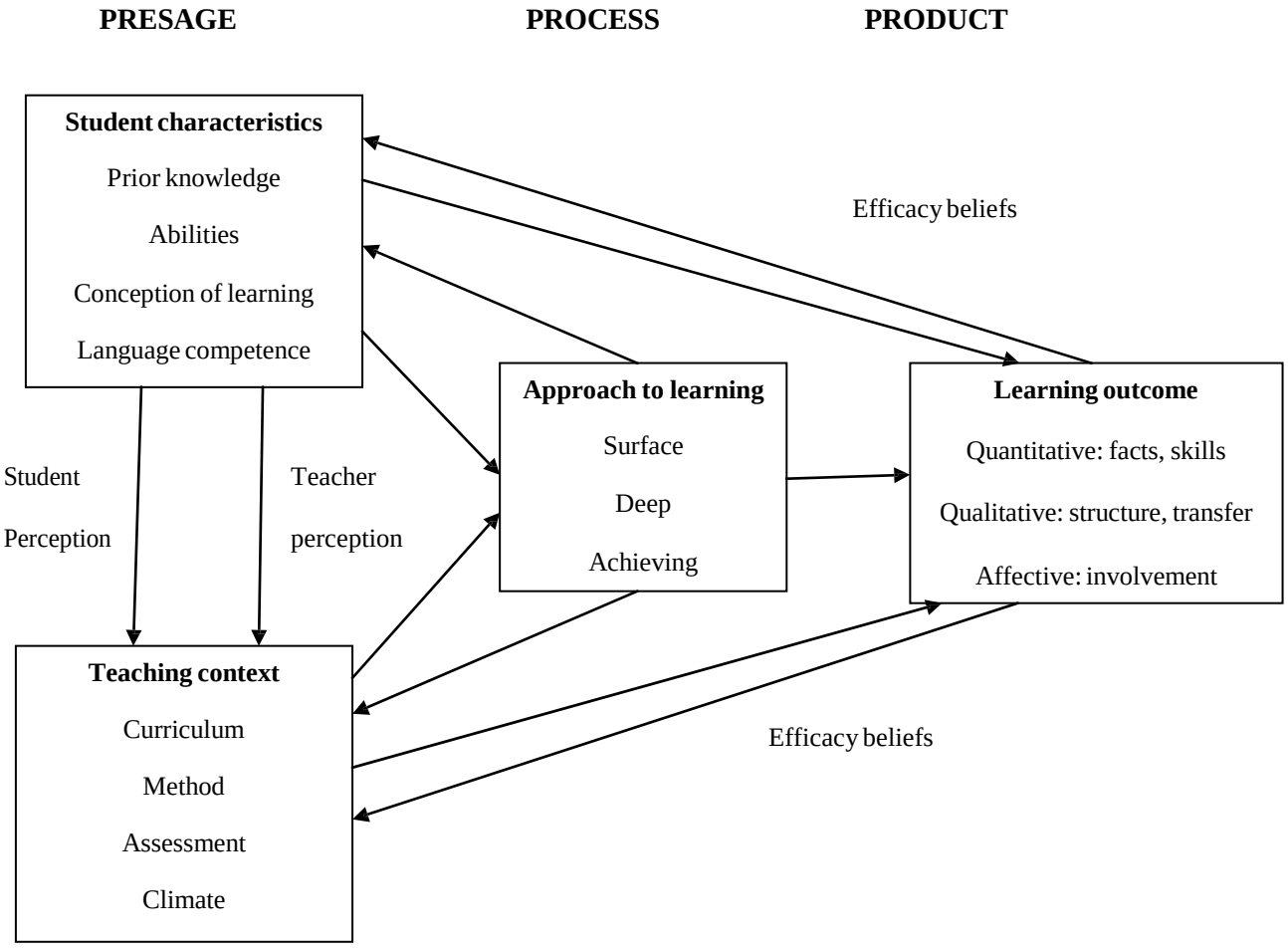

Figure 2: Systems Model of Study Process (Biggs, 1999)

Meta-learning is an important key parameter in educational research on student approaches to learning. Meta-learning refers to students' awareness of and control over their own learning [2]. It has been established that students show lack of meta-learning capability when they choose strategies that are incongruent with motives such as rote learning (surface strategy) to satisfy intrinsic curiosity (deep motive) [2]. Thus, the relationship between personal and situational factors associated with approaches to learning and performance can be meaningfully assessed in terms of a general model of student learning [2] illustrated in Figure 3 below.

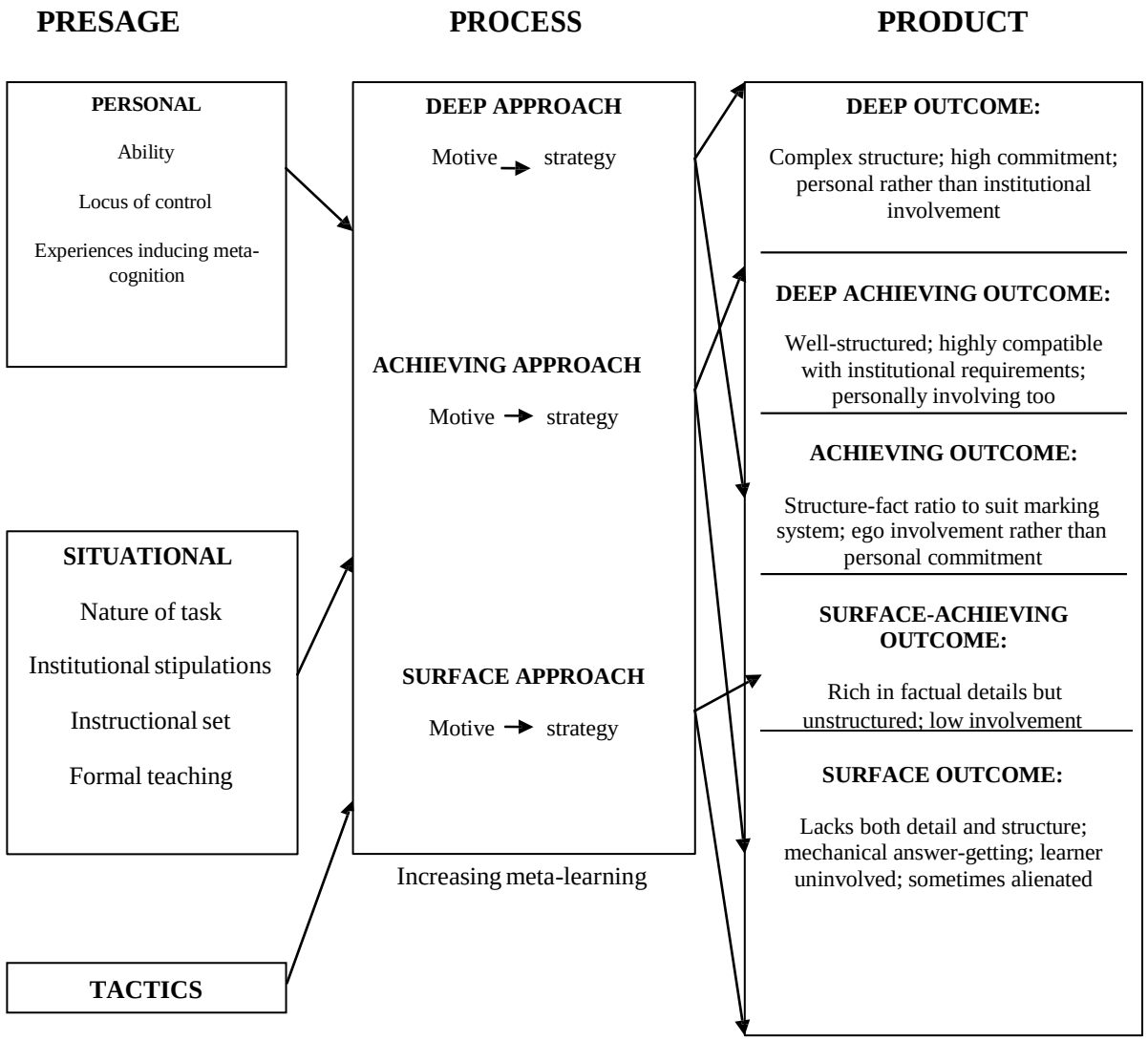

Figure 3: A General Model of Student Learning (Biggs, 1987)

3. Research design and methodology

This inquiry seeks to establish first year university students' perceptions about the nature of the study process as its primary objective. This was accomplished by administering the Biggs' Study Process Questionnaire [2] to two groups of first year physics students enrolled for the Optometry Degree Programme (main stream) ($N = 60$) and National Diploma in Mechanical Engineering Programme (Extended) ($N = 50$) as part of a survey. The Biggs' Study Process Questionnaire is a 20 item inventory with a 5 point Likert scale. The nature of the data obtained necessitated analysis through quantitative means. This inquiry is underpinned by the Systems Model of Study Process [2] and a General Model of Student Learning [2] as theoretical frameworks with a view to ensure appropriate epistemological coherence.

4. Results

The questionnaire data provided predominant students' perceptions about the nature of the study process. Table 2 below provides students' predominant perceptions about the nature of the study process. These predominant perceptions are based on the SPQ items which reflected higher scores.

Table 2: Predominant students' perceptions about the nature of the study process

I find that at times studying gives me a feeling of deep personal satisfaction.
I find that I have to do enough work on a topic so that I can form my own conclusions before I am satisfied.
I only study seriously what's given out in class or in the course outlines.
I feel that virtually any topic can be highly interesting once I get into it.
I find most new topics interesting and often spend extra time trying to obtain more information about them.
I learn some things by rote, going over and over them until I know them by heart even if I do not understand them.
I find that studying academic topics can at times be as exciting as a good novel or movie.
I test myself on important topics until I understand them completely.
I work hard at my studies because I find the material interesting.
I make a point of looking at most of the suggested readings that go with the lectures.
I find the best way to pass examinations is to try to remember answers to likely questions.

The scores for deep and surface approaches were 1733 (59%) and 1181 (41%), respectively. The scores suggest that a significant number of students (41%) enrolled for the National Diploma in Mechanical Engineering Programme (Extended) appeared to lean towards surface approach. This practical consideration appears to be commensurate with the nature of Grade 12 achievement levels for students admitted to the National Diploma in Mechanical Engineering Programme (Extended) which are generally lower in terms of the admission point score. As a key requirement, students in this programme are subjected to intensive tuition characterised by several compulsory academic support interventions in order to address knowledge gaps associated with their academic background. The scores for deep and surface approaches were 1647 (56%) and 1317 (44%), respectively. The scores suggest that a significant number of students (44%) enrolled for the Optometry Degree Programme (main stream) also appeared to lean towards surface approach. Within the contexts of the two academic programmes, Optometry students were expected to demonstrate deep approach in view of their admission requirements while the extended mechanical engineering students were expected to demonstrate surface approach. Table 4 below provides a summary of the scores for both surface and deep approaches for the two groups.

Table 4: A summary of the scores for both surface and deep approaches for the two groups

Group	Deep Approach Score	Surface Approach Score
Optometry (Degree Programme)	1647 (56%)	1317 (44%)
Mechanical Engineering (National Diploma Programme)	1733 (59%)	1181 (41%)

5. Discussion

The scores obtained seem to suggest that a significant number of students enrolled for the National Diploma in Mechanical Engineering Programme (Extended) and the Optometry Degree Programme (main stream) appeared to lean towards surface approach. In terms of the Systems Model of Study Process [2], this prevailing scenario may be attributed to the complexity of factors such as student characteristics and teaching context. Student characteristics include key parameters such as prior knowledge, abilities, conception of learning and language competence while teaching context include critical aspects such as curriculum, method, assessment and climate. As a matter of fact, the use of a

deep learning approach is generally associated with higher quality learning outcomes and a surface approach with lower quality learning outcomes [12,13].

In a similar vein, students are admitted to the National Diploma in Mechanical Engineering Programme (Extended) on the basis of relatively weaker Grade 12 achievement levels as required by the stipulated admission point score in recognition of various deficiencies associated with their schooling background. Key parameters associated with critical factors such as student characteristics and teaching context may to some degree create a dissonance with regard to the adoption of surface and deep approaches by the students. In fact, the differences in quantitative learning outcomes between students using surface or deep approach is only significant for questions measuring insights and not for questions measuring reproduction of knowledge [14]. In addition, it has been established that there is no evidence that a deep approach to learning would be more effective for questions assessing more complex components of problem-solving [15]. However, problem-solving as an instructional approach has the potential to facilitate deep approaches to learning [16].

6. Conclusion

While the use of deep approach appeared to be a predominant learning tool within the context of this inquiry, a substantial number of students still appeared to employ surface approach to navigate their studies. There is a need to develop a critical understanding of students' approaches to learning in order to provide a coherent interpretation of their prevalent pedagogic learning orientation.

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