

PREDICTING MODEL OF ACADEMIC BUOYANCY: THE ROLES OF ACHIEVEMENT GOALS AND SELF-REGULATION

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Abstract

The existence of challenges in learning Mathematics is an undeniable reality. The challenges come from various sources and each of the sources can affect students' learning progress in certain ways. To ensure students are able to pursue their academic goals, it is important to identify students' ability to overcome the academic challenges that they face. Students' capacity to overcome their daily academic challenges is known as academic buoyancy. Academic buoyancy acts as a protective element to make students persist in the learning process. This paper suggests a model of academic buoyancy in Mathematics where achievement goal orientations and self-regulation are the two individual characteristics postulated as the predictors. The Bigg's 3P model of effective learning is used as the basis of the model. The 3P model involves two main phases (presage and process) which will determine students' learning outcomes. In the model proposed in this paper, achievement goal orientation presages students' self-regulation process which will then influence students' academic buoyancy in Mathematics. The suggested model can become a

guideline for teachers, parents and academic practitioners in assisting students in facing daily academic challenges in the Mathematics.

Keywords: Challenges, Capacity, Academic Buoyancy, Achievement Goal Orientations, Self-Regulation

STUDENTS WELLBEING AND ACADEMIC BUOYANCY

Students' wellbeing which is referred as students' survival in daily schooling life is given much attention in the education system. This is due to the belief that wellbeing is a significant element that is related to positive learning outcomes. Besides, this variable is a social construct emphasized by teachers, psychologists, counselors, parents and educational researchers in assessing student self-development (Miller, Connolly and Maguire, 2013).

Measuring students' academic buoyancy is one of the effective methods to understand and conceptualize students' wellbeing or survival in the education context (Martin and Marsh, 2006, 2008). Academic buoyancy is a significant element in assisting students to manage and face academic risks especially the risks which frequently and continuously occur in daily life (Martin and Marsh, 2009). These risks include the possibility of getting bad marks in evaluation or failed to submit assignment before the deadline. It is important for academic practitioners to give emphasis to the elements of academic buoyancy in assisting students to face academic difficulties.

OVERVIEW OF ACADEMIC BUOYANCY

Adversities and difficulties in learning are the challenges in daily schooling life (Finn and Rock, 1997; Martin and Marsh, 2006, 2009). Recent research showed that student's capacity to face the challenges is a significant element in determining their academic

progress. This capacity is referred to academic buoyancy which is related to the question on how good a student is able to face academic difficulties (Martin and Marsh, 2009). Students who are highly buoyant will have great ability to overcome daily schooling challenges. This is because academic buoyancy acts as a protective element and can also be the activator of calmness in oneself (Martin and Marsh, 2008).

Academic buoyancy actually is a variable originated from the literature of academic resiliency. However, academic buoyancy does have its differences from the constructs of resiliency, everyday hassles or overcome strategies. Specifically, buoyancy is more related with daily resilience and focusing on individual response towards daily challenges faced by most people and not towards the continuous and critical challenges faced by a relatively small number of people (Martin and Marsh, 2008, 2009).

Previous researches indicate that academic buoyancy can be predicted by motivational beliefs (Martin, Colmar, Davey and Marsh, 2010; Martin and Marsh, 2006) and also acts as a predictor of students' academic outcomes (Marsh, 2007). For example, self-efficacy, planning, persistence in doing task, monitoring and low level of anxiety are the predictors of academic buoyancy (Martin, Colmar, Davey, and Marsh, 2010). At the same time, academic buoyancy has also been shown to predict student's engagement, student's achievement and stress level of students (Marsh, 2007; Putwain, Connors, Symes and Douglas-Osborn, 2012). However, the selection process for the predicting variables is somewhat ad hoc without having strong theoretical framework. Therefore the framework of predicting academic buoyancy in Mathematics need to be considered.

STUDENTS' ACHIEVEMENT GOAL ORIENTATION AND ACADEMIC BUOYANCY

Nowadays, Mathematics is no longer passively learnt by students (Dilworth, 1996). The focus of Mathematics education has shifted

from development of Mathematics competencies to prepare students who are fully functioning and able to continue the academic goals (Pajares, 2001). Knowing how a student adopts specific achievement goal orientation is significant in monitoring their learning progress since achievement orientation is a mediator of students learning process. Besides, different achievement goal orientation will affect the different way of students' engagement and response in a certain achievement situation (Pintrich and Schunk, 1996).

Previous studies has showed that students with different profile of achievement goal orientation will differ in their subjective well-being (Tuominen-Soini, Salmela-Aro, Niemivirta, 2008). For example, student with success-oriented profile is reported to have negative emotional effect such as stress and anxiety. Align with that, it is relevant to explore how the construct of wellbeing which is buoyancy in the context of education in order to find out students capacity in facing academic challenges and difficulties.

Specifically in the Mathematics education context, studies reported that the nature of Mathematics tasks, classrooms norm and also the nature of teachers practices are very much influence the students' goals and intention to learn Mathematics (Meyer and Turner, 2002; Pape, Bell and Yetkin, 2003; Turner, , Midgley, Meyer, Gheen and Anderman, 2002). In addition, many educational psychologist have conducted research related to motivation in the context of Mathematics classroom. The significance of conducting the studies is due to the situation that most of Mathematics classrooms induce the negative effect on students' motivation (Ryan and Patrick, 2001). For instance, many teachers tend to teach in the way they are being taught traditionally which much related to performance-approach goal orientation (Brown and Smith, 1997) and contribute to the nature of competition among students (Anderman, Maehr, Midgley, 1999). The nature of classroom setting that affect student motivation is also a strong basis to the exploration of students' academic buoyancy.

STUDENTS' SELF-REGULATION AND ACADEMIC BUOYANCY

In the last decade, the main aim for education has shifted from producing students who are receiving knowledge in certain domain to the enhancement of their autonomy and reflection (Dochy, 2001). Therefore, students nowadays are expected to enhance their autonomy and learning competencies in depth to adopt the lifelong learning and facing unexpected situation (Poldner, Simons, Wijngaards and van der Schaaf, 2012). Self-regulation is one of the important variables in determining academic progress since it is one of the essential competencies to be build up especially in the transition period from secondary schooling to tertiary education (Torenbeek, Jansen and Hofman, 2010) despite of to ensure the success in university learning process (Heikkilaa and Lonka, 2006; Pintrich, 2004).

Many students was reported to have low ability in regulate their learning. This is because learning regulation is high level skill (Perry, Phillips amd Dowler, 2004; Pintrich, 2004; Winne, 2005; Zimmerman, 2002) and also the degree of effectiveness in using self-regulation strategy is differ among students (Annevirta and Vauras, 2006; Hong and Peng, 2008; Veenman, van Hout-Wolters and Afflerbach, 2006). Moreover, enhancement of regulated learning skill is becoming more important during the period of transition from primary school to secondary school. This is because the learning process in primary school is monitored closely by the teacher but independent learning (schedule arrangement, completion of homework, carry out different tasks given by different teacher) is practiced more in the secondary school life (Butler, 2002; Cleary and Zimmerman, 2004).

In order to ensure that students are able to be independent in their learning, acuquisition of regulation skills is very much important. Unfortunately, previous studies showed that students in their transition to the secondary school build up negative motivation belief such as low self-efficacy towards ability in

regulating their learning (Corpus, McClintic- Gilbert and Hayenga, 2009; Usher and Pajares, 2008). This situation happen because students lack of motivation and confidence in planning strategy and academic practice which eventually feel difficult to face akademik needs. Align with the delivery of contemporary science education that emphasize on acquisition of higher order thinking (focus on learning process and skills to acquire new knowledge) rather than only acquisition of basic skills and facts (Resnick, 1987; Zohar, 2004) has shifted the educators pedagogical model in the 21st century which emphasize on the enhancement of self-regulatd learning (Duschl and Grandy, 2008; PISA, 2006).

PREDICTING MODEL OF ACADEMIC BUOYANCY

Academic buoyancy is related with all students in school which establishing and validate a model in predicting students' academic buoyancy is a significant effort. For the purpose of this study, two predictors of academic buoyancy which are achievement goal orientation and self-regulation are chosen based on three main reasons. Firstly, the suggested model is based on the Biggs' 3P effective learning Model. According to Bigss (1993), three elements which are presage, process and product need to be taken into account in learning process. All the three P's are related with each other in determining learning outcomes. Align with the suggested model, the achievement goal orientation is a presage phase which is followed by the process of self-regulation and its lead to learning outcome which is academic buoyancy in Mathematic.

Secondly, selection of achievement goal orientation and self-regulation is because the focus of this study on the individual characteristic. This is based on the research findings on academic resilience which showed that individual characteristic model is one of the significant models in determining students' resilience as compared to effective school model, school resources model or peers group model (Borman and Rachuba, 2001). Lastly, the

positive relationship between achievement goal orientation and self-regulation with other academic variables is used as the basis to establish their relationship with academic buoyancy.

Different achievement goal was given attention in the research on achievement motivation (Wigfield and Cambria, 2010). One of the focus is on the relationship between achievement orientations and academic performance. A lot of studies reported the significant relationship between achievement orientation with academic achievement in school and university setting (Murayama and Elliot, 2009; Steinmayr and Spinath, 2009). Eventhough much studies has indicated the importance of achievement orientation in the academic context but its relationship with other predictor of academic achievement still not much has been explored

Beside that, personal ability to be independent and resilient is much related with academic achievement and academic adjustment. The success adjustment can be seen through students' learning behavior and their academic achievement. Eventhough cognitive ability is related with academic success however recent research reported that ability to regulate learning has a huge influence on academic performance rather than their IQ (Duckworth and Seligman, 2005). Previous research has been conducted by focusing the influence of self-regulation towards academic achievement but its relationship with academic buoyancy still scarce.

SUMMARY

In going through the life as a students in school, the challenges, adversities and difficulties are cannot be avoided to be faced. (Martin dan Marsh, 2009). Specific in learning Mathematics, the nature of the subjects itself and also the negative perception towards the subjects are the big challenges exist among students (Gomez-Chacon, 2000). Moreover, the assessment pressure and feeling of anxiety are another adversities need to be faced by the students throughout their learning process in Mathematics (Arem,

2003; Marzita, 2002). Therefore, exploration on students' academic buoyancy which related to their capacity to face those challenges is very essential in order to ensure the students are able to achieve the academic goals and persist in their Mathematics learning.

Establishing a valid model in predicting academic buoyancy is needed since not much model has existed or validated in previous studies. Therefore the academic buoyancy model as suggested in this study is very relevant. The strong basis of Biggs' 3P effective learning Model and also the significant of individual characteristic model give a significant value to the proposed model.

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