

The Influences of Conceptions of Learning and Learner Self-Concept on High School Students' Approaches to Learning

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ABSTRACT This study investigated the mediating effect of learner self-concept between conceptions of learning and students' approaches to learning using structural equation modelling. Data were collected using a modified version of Biggs' Learning Process Questionnaire, together with the recently developed 'What is Learning Survey' and 'Learner Self-Concept Scale'. A sample of 355 high school students participated in the study. Results indicate that learner self-concept does mediate between conceptions of meaning and approaches to learning. Students who adopted a deep approach liked learning new things and indirectly viewed learning as experiential, involving social interaction and directly viewed learning as personal development. Implications for teachers are discussed, with consideration given to appropriate classroom practice.

Introduction

Educational researchers have identified a considerable body of research indicating that individuals differ in their conceptions of behaviour, learning and knowledge (Entwistle and Entwistle, 1992; King, et al., 1983; Ryan 1984; Sternberg, 1985; Vermunt and van Riswijk, 1988), and that these conceptions influence how they approach learning tasks (Bereiter and Scardamalia, 1989; Eklund-Myrskog, 1998; Ryan 1984).

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School Psychology International Copyright © 2003 SAGE Publications (London, Thousand Oaks, CA and New Delhi), Vol. 24(1): 54–66. [0143-0343 (200302) 24:1; 54–66; 019621]

Additionally, the significant influences of the learning context and the personal characteristics of learners on student learning have been stressed at the secondary level (Campbell and Smith, 1997; Dart et al., 1999, 2000a; Ramsden et al., 1989). Dart et al., (2000b) and Pillay et al. (2000) highlighted the important role of personal characteristics of students (such as their beliefs about learning, their perceived self-ability and their locus of control orientation) in influencing their approach to learning. This study builds on the previous research in the personal characteristics area by undertaking an investigation of the relationships between secondary school students' conceptions of learning, their learner self-concepts and approaches to learning.

Conceptions of learning

In early work, Perry (1970) concluded that the lack of congruence between the conceptions of learning held by university undergraduates and their teachers were responsible for some learning difficulties, particularly where students saw knowledge as simple, certain and authority based, while teachers stressed ambiguity and conflicting truths. Many other researchers (Bennack, 1982; Dahlin, 1999; Ryan, 1984; Schommer, 1990, 1993; Schommer et al., 1992; Stonewater et al., 1986; Wilkinson and Schwartz, 1990) have examined students' beliefs about knowledge. In a manner that parallels student conceptions of learning, students revealed absolutist views of knowledge, where knowledge is good or bad, right or wrong or, alternatively, relativist views that consider knowledge to be flexible and mediated through reason.

More direct studies of conceptions of learning have developed from the work of Marton and Saljo, (1976a, 1976b) and Saljo, (1979), who identified the contrasting conceptions of deep and surface learning with their respective emphases on constructing meaning and memorizing details. Furthermore, they established an important link between the level of understanding reached and the level of processing adopted, with the approach to learning being a function of the student's conceptions of the learning task.

There has been a great deal of consideration given to how conceptions of learning arise, with sources such as ethnicity, family, community and culture being noted (Mugler and Landbeck 1997; Niles, 1995; Pillay et al., 2000; Volet et al., 1994; Watkins and Biggs, 1996). These factors are external to the teaching-learning process and its context. A number of authors (Crawford et al., 1994; Lonka et al., 1996; Slaats et al., 1999; Thomas, 1999) have viewed conceptions of learning as being closely related to specific subjects and classrooms.

The research literature suggests that students' conceptions of learning are related both to their approaches to learning and the quality of their learning outcomes (Dart, 1998; Marton et al., 1993; Prosser and

Millar, 1989; Trigwell and Prosser, 1991b; Van Rossum and Schenk, 1984). Van Rossum and Hamer (1985) identified that students' learning conceptions provided a clear indication of qualitatively different views on learning, and seem to be strongly connected to different ways of thinking and acting, including the adoption of different study strategies. Moreover, the conception of learning held by the student is seen as a part of a developmental process capable of stimulation or inhibition by contextual factors. Even though some authors (e.g. Tversky and Kahneman, 1971) have emphasized the enduring nature of informal knowledge, the type of teaching experienced by students may well influence the way in which they conceive learning and their personal constructs of themselves as learners.

Considerable attention has been given to identifying and categorizing conceptions of learning. Saljo (1979) identified five conceptions of learning, which he related to levels of processing. This work was developed further by Van Rossum and Schenk (1984), Martin and Ramsden (1987) and Giorgi (1986) who used a different type of phenomenographic investigation to develop similar conceptions of learning. Marton et al. (1993) developed a framework whereby they identified six conceptions of learning and arranged students' conceptions about learning hierarchically. The six levels were: (1) increasing one's knowledge; (2) memorizing and reproducing; (3) applying; (4) understanding; (5) seeing something in a different way and (6) changing as a person. Conceptions 1 to 3 correspond with surface learning and a reproductive approach and 4 to 6 with deep learning.

Biggs (1994) identified two major perspectives about learning – 'quantitative' and 'qualitative'. The quantitative view proposes that learning is concerned with acquisition and accumulation of content, whereas the qualitative view suggests that learning is about understanding and meaning-making through relating or connecting new material with prior knowledge. Applying these notions to the hierarchy of Marton et al. (1993), levels 1, 2 and 3 are considered quantitative while levels 4, 5 and 6 are indicative of a qualitative view.

Dart et al. (2000a) noted that Allan (1996) found that the critical variable in determining students' approaches to learning was their conception of learning. Similarly, Martin and Ramsden (1987) and Van Rossum and Schenk (1984) provided evidence of a relationship between students' conceptions of learning and their learning outcomes, while Purdie et al. (1996) and Marton et al. (1993) demonstrated that broader conceptions of learning as understanding lead to a greater range of learning strategies. Gibbs (1995) noted that the relationship between conceptions of learning and how students proceed with specific learning tasks was of such magnitude that it is possible to predict the quality of learning outcomes directly from these conceptions.

Learner self-concept

Even though there is a large body of research relating to students' self-concept and self-efficacy beliefs in classroom situations, learner self-concept in the primary school setting has received less attention. Recently, however, Burden (1998) and Burnett (1999) have developed scales to assess students' perceptions of themselves as learners. Burden investigated general self-perceptions of self as a learner and problem solver while Burnett developed a scale to measure descriptive and evaluative beliefs about oneself as a learner and reported positive relationships between the scores on this scale and reading and maths self-concepts in primary school students. Within the secondary context some information is available regarding the relationships between general academic self-concept and approaches to learning. Biggs and Moore (1993) referred to studies in which 'poor' academic self-concept was related to surface approaches while 'good' academic self-concept was linked with deep approaches to learning. Their findings confirmed the earlier findings of Watkins and Hattie (1990) and Drew and Watkins (1998) who also reported that high academic self-concept was related to deep approaches to learning.

Burnett et al. (1996) focussed on learner self-concept when they investigated the relationship between learner self-concept and learning strategies in a pilot study with Australian secondary students. They reported that students with positive learner self-concepts (those who said they liked and were good at learning) tended to use a deep approach to learning and those with low learner self-concept tended to adopt a surface approach to learning. Interestingly, learner self-concept was more predictive of a deep approach to learning than it was for a surface approach. Students' conceptions of learning are influenced by their previous experiences including interaction with significant others such as teachers and parents, as is their self-concept. Hence, while the two are different constructs, it is plausible to predict a relationship between the two.

Approaches to learning

Biggs (1987a) proposed three approaches to learning that are comprised of learning strategies and motives for learning. First, a deep approach to learning is characterized by an intention to seek meaning from the material being studied through relating to it in ways that elaborate and transform the material. Dart et al. (2000a) noted that this approach to learning is related to: (a) constructivist teaching which suggests learners actively construct knowledge for themselves and (b) high quality outcomes such as developing knowledge that is structured around a unifying theme. Second, a surface approach to learning is one in which the intention is to reproduce the material being studied through using

routinized procedures. This approach is related to the transmission model of teaching, where information is transferred from teachers to learners and in which learners assume passive roles, and to low quality outcomes such as fragmented learning and 'missing the point' of the material (Biggs, 1999; Biggs and Moore, 1993; Dart, 1997, 1998; Prosser and Trigwell, 1999; Tang, 1998; Trigwell and Prosser, 1991a,b). There is also a third approach in which the intentions for learning are ego-enhancement or to excel through organized activities (such as appropriate use of study skills) and cue-seeking behaviour. This is known as an achieving approach.

General learning theory is limited in its applicability to specific complex learning situations, (Bereiter, 1990), while the functionalist approach (Hildegard and Bower, 1974) is limited to the identification of independent variables and consideration of their individual effects. As Cronbach (1975) observed, the effect of one variable depends on the state of the others. Consequently, a process approach using structural equation modelling is appropriate in understanding the enculturation of individuals into conceptions of and approaches to learning. This is particularly true for investigations such as this carried out in an authentic context and not involving atypical subjects engaged in relatively simple learning tasks.

The present study

The research reported in this study used structural equation modelling to investigate the relationships between: conceptions of learning, learner self-concept and approaches to learning.

Methods

Subjects

355 Australian students from 16 predominantly middle class, metropolitan state secondary schools and two metropolitan, middle to upper class private secondary schools participated in this study. The sample contained 162 females and 193 males ranging in age from 12 years to 20 years. There were a small number of students above 17 years in these schools due to the alternative pathways program that allows students to stay on or return to school at an older age. 134 were in Year 8, 102 in Year 9, 30 in Year 10, 61 in Year 11 and 28 in Year 12. A large percentage of students were in Years 8 and 9 while the percentage of students from ethnic minority backgrounds included in the sample was low, being less than five percent.

The students completed questionnaires relating to their conceptions of learning, self-concepts of themselves as learners and approaches to

learning. They were asked to answer the questions within the context of the particular subject in which they completed the questionnaire. These subjects ranged over those typically offered in secondary schools – English, Languages, History, Maths, Science, Art and Legal Studies.

Instruments

The instruments used were the What Is Learning Survey (WILS; Dart et al., 2000a), the Learner Self-Concept Scale (LSS; Dart et al., 2000a) and a modified version of the Learning Process Questionnaire (LPQ; Biggs, 1987b).

The What Is Learning Scale (Dart et al., 2000a) has 23 items and five subscales that measure:

- (a) Learning as viewing something in a different way, (Different, four items) (e.g. 'Through learning, I begin to look at life in new ways');
- (b) Learning as developing understanding, (Understanding, four items) (e.g. 'I know I have learned something when I can explain it to someone else' and 'Learning is finding out what things really mean');
- (c) Learning as a product of experience, (Experience, eight items) (e.g. 'I can learn from many different kinds of experiences');
- (d) Learning as developing social competence, (Social, four items) (e.g. 'Learning is developing good human relationships') and
- (e) Learning as personal change, (Personal, three items) (e.g. 'Increased knowledge makes me a better person').

Reliability scores for these subscales were $\alpha = 0.79$ for Different, $\alpha = 0.65$ for Understanding, $\alpha = 0.81$ for Experience, $\alpha = 0.79$ for Social and $\alpha = 0.71$ for Personal.

The Learner Self-Concept Scale (Dart et al., 2000a) consists of two subscales, each containing four items. One scale measures how much students like and enjoy learning new things (Lerlike) while the other scale measures how good they think they are at learning (Lergood). Reliability coefficients were sound, being $\alpha = 0.89$ and $\alpha = 0.84$ respectively.

The Learning Process Questionnaire contains six subscales of six items each: three of the subscales measure students' motives for studying (Surface, Deep and Achieving), and three measures corresponding to learning strategies utilized by students (Surface, Deep, Achieving). The corresponding subscales for motive and strategy can be combined to produce a score representing approaches to learning – Surface, Deep and Achieving. Items are rated by students on a five-point Likert scale (5 = always or almost always true of me, 1 = never or only rarely true of me). Dart et al. (2000b) modified the LPQ using factor analysis that resulted in nine items being retained for the Deep Approach subscale (Deep),

eight items being retained for the Surface Approach subscale (Surface) and six items for the Achieving Approach subscale (Approach). Reliability scores were $\alpha = 0.79$ for the modified Deep Approach scale, $\alpha = 0.68$ for the modified Surface Approach scale and $\alpha = 0.78$ for the Modified Achieving Approach Scale.

Analysis

Structural equation modelling was performed using the maximum likelihood estimate of parameters in LISREL 7. Covariance matrices were used to evaluate the goodness-of-fit of the structural models being tested. Bagozzi and Heatherton (1994) suggested a method in which subsets of items within factors are summed to create aggregate variables and proposed that it is appropriate to have two aggregate variables per factor when the number of measured items per factor is similar to those in the present study (four to seven items per factor).

Results

The model tested was a saturated model that hypothesized a mediating effect for learning self-concept between conceptions of learning and approaches to learning. This model hypothesized that conceptions or beliefs about learning influence students' self-concepts as a learner which in turn impacts on the way students go about their learning. The results ($\chi^2(164) = 198$; GFI = 0.92, AGFI = 0.88, RMSR = 0.04, TLI = 0.93, RNI = 0.94) strongly supported the hypothesized model but some paths were not significant at the 0.05 level. These paths were removed one by one until all paths were significant. The results for the resultant modified model were $\chi^2(188) = 344$; GFI = 0.92, AGFI = 0.89, RMSR = 0.04, TLI = 0.94, RNI = 0.95.

The 11 significant completely standardized paths identified are indicated in Figure 1.

These results indicated that the secondary school students in this study who use a Deep Approach liked and enjoyed learning new things and viewed learning as a product of experience, as developing social competence (indirectly) and as personal change (directly). Of note was the finding that learning something in a different way, ('Different' subscale) was unrelated to other measurements. Additionally, students who adopted a Surface Approach to learning reported that they were not good at learning, and also adopted an Achieving Approach. They also indirectly viewed learning as developing social competence. Finally, students who adopted an Achieving Approach also had a Deep Approach, liked learning new things, viewed learning as developing understanding and indirectly viewed learning as a product of experience and as developing social competence.

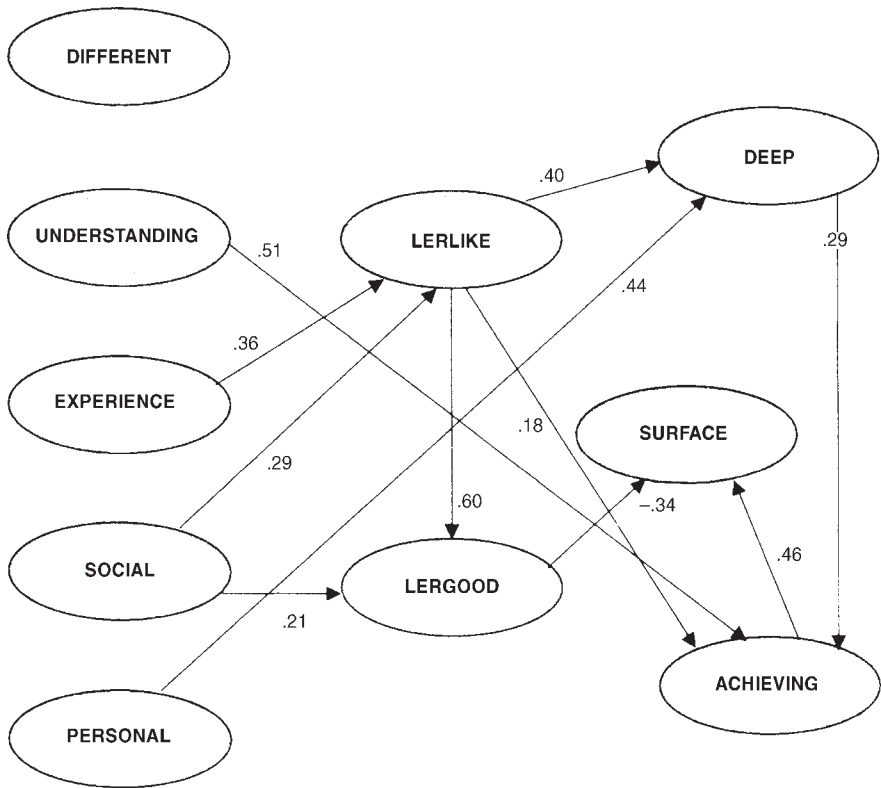


Figure 1 *Final structural model*

Discussion

The overall findings of this study indicated that learner self-concept mediates between conceptions of learning and approaches to learning. As such it contradicts the view that conceptions of learning are the direct antecedents of approaches to learning, (Dart, 1998; Marton et al., 1983; Prosser and Millar, 1989; Trigwell and Prosser, 1991b; Van Rossum and Schenk, 1984), by introducing learner self-concept as a mediating variable. The structural model found in this study goes some way towards characterizing the ways in which high school students experience and conceptualize not only what learning is but how it is carried out, and the influence of their perceptions on themselves as learners.

Considerable work has been carried out on identifying relationships between students' conceptions of learning and how they go about the task. As one would expect, there is a reasonably high degree of correlation between these phenomena. However, the relationship is not always straightforward, suggesting that other variables may act as mediating

agents. For example, a qualitative view of learning could be seen as a necessary, but not a sufficient condition for a deep learning approach to be adopted that will result in improved learning outcomes. Possible mediating factors include the assessment system, teaching methods and even the generalized self-concept of the student. Therefore, there is no suggestion that the relationships found in this study are part of a closed system with no other influences. However, the results of this study identify learner self-concept as a significant variable in understanding the relationship between learners' conceptions and strategies, and refute the idea of the primacy of simplistic unidirectional relationships.

Previous studies have linked conceptions of learning with cultural influences, (Mugler and Landbeck 1997; Purdie et al., 1996; Watkins and Biggs, 1996), stages of development, (van Rossum, and Hamer, 1985), knowledge domains (Crawford et al., 1994; Lonka et al., 1996; Slaats et al., 1999; Thomas, 1999) and even basic personality types (Haygood and Iran-Nejad, 1994). Such studies provide a range of understandings of the factors influencing beliefs about effective learning in a rich but inconclusive literature permitting limited generalization due to the types of samples used and the various learning contexts considered. Only rarely do these studies penetrate the authentic context of educational institutions at the primary or secondary level. This study is an attempt to remedy such omissions and has highlighted a key mediating variable in an actual learning situation.

The identification of the mediating effect of learner self-concept has several implications for teaching and learning. If a developmental perspective is assumed then it is necessary to change both the mediating agent and conceptions of learning in order to change learning strategies. Developing students' concepts of the self as a learner needs to parallel the refinement of conceptions of learning per se to result in effective approaches to learning, and hopefully, desirable learning outcomes. The results of the study suggest that to enhance desired deep approaches to learning in the classroom it may not be sufficient to provide students with a supportive classroom environment and a set of study skills, which may in themselves be derived from the need to satisfy an inherently inhibiting examination system.

Secondary teachers should talk with students regarding their beliefs about learning, emphasizing the development of meaning and understanding, and social engagement, as well as the personal development/fulfilment aspect of learning and provide appropriate classroom experiences. Such experiences include: group work enhancing social constructivism; experiential learning; tasks and assessment involving the development of personal meaning; graded assignments permitting achievement at the individual level and positive teacher feedback.

Finally, learning new things should be viewed as enjoyable and teacher strategies designed to make it fun. Pintrich and de Groot (1990) suggest students need both the skill and the will to learn, to this we would add the thrill.

The study raises some important issues amenable to further investigation such as the possibilities of replication in other educational contexts, links with outcomes and assessment procedures, the manner in which conceptions of the self as a learner are developed and the stability and strength of learner self-concept over time.

Acknowledgement

The support of David Meacham who worked as Senior Research Assistant on the article is gratefully acknowledged.

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Burnett et al.: Influences of Conceptions of Learning

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