Everyone wants an A - but will they even get a C?

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Abstract

This paper reports the preliminary results of a year long study in which university students’ learning goals, learning strategies, attempted grades and perceptions were investigated. The study sought to describe changes and identify relationships of these variables for students enrolled in their first year of study. Results challenge assumptions that these variables are stable in adult learners. Students' learning goals, use of some learning strategies, attempted grades, and perceptions of themselves as learners and their units of study decreased during the first semester but not during second semester. Relationships were identified between learning goals and learning strategies but not between learning goals, perceptions and attempted grades.

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Introduction

Students enter university with different goals, strategies,
skills, knowledge, perceptions and expectations. The success of students at university depends on many of these factors. Our focus is on the goals that students aim to achieve, the learning strategies they adopt, and their perceptions of themselves and unit of study. This paper describes the results of the first year of a three year investigation of goals, use of learning strategies and perceptions of first year undergraduate teacher education students.

Nature of goals
In any learning situation it can be expected that the goals students adopt will affect the way that they go about their learning (e.g. Corno, 1986). Goals are important in giving meaning and direction to the learning activities in which students engage, and provide criteria for students to evaluate their progress (Volet, 1988; Zimmerman, 1986). However, despite the importance of students’ goals, little empirical attention has been given to the way in which they affect learning in university learning situations, or how they are affected by students’ perceptions and experiences in the course of their study (Volet & Chalmers, 1992).

In the context of academic learning, theorists currently distinguish between learning and performance goals (Dweck & Elliot, 1983). Learning goals are concerned with achieving mastery and understanding of an area of study, while performance goals are concerned with the learner appearing to be competent by performing better than others, demonstrating more ability, winning approval and succeeding in a course of study (Ames & Archer, 1988; Hayamizu & Weiner, 1991). In a university learning setting, students motivated by learning goals seek challenge and aim to become competent in their subject matter, while those motivated by performance goals focus their attention on achieving particular grades. Although learning and performance goals are directed at different types of achievement, students can hold both types of goals simultaneously (Nichols, Patashnick & Nolen, 1985). A student holding both types of goals seeks to master and understand the area of study as well as achieving high grades.

The work of Saljo (1979) on conceptions of learning provides a basis for learning goals to be described in qualitative terms along a hierarchy of goals. As a result of interviews with adults, Saljo inferred from their descriptions of their learning practices that learning could be described in terms of five different conceptions: increase of knowledge, memorising, acquisition of information that can be used later, abstraction of meaning, and interpretation of reality. Saljo's five conceptions
of learning have been confirmed by Marton, Dall'Alba and Beaty (1993) who provide more precise definitions of the conceptions.

Volet and her colleagues (e.g., Volet & Lawrence, 1989; Volet & Chalmers, 1992) worked with university students in a variety of subject areas to investigate whether Saljo’s (1979) conceptions of learning could be used as a basis for developing a hierarchy of specific goal statements. They derived statements of goals from the various conceptions of learning and presented them to students to determine whether students perceived them as hierarchic, and whether they accepted them as describing the type of outcomes they intended to achieve. Using an unfolding model of stage development (Andrich, 1989), they developed and validated the following hierarchy of goals: remembering, understanding, critically assessing theories, and constructing one’s own theoretical perspective (Volet & Chalmers, 1992). In a subsequent study, Volet (personal communication) found that the goal of comparing and contrasting could be located between understanding and critically assessing. This hierarchy provides a means of describing more precisely the nature of students’ learning goals, and allows investigation of relationships that exist between these goals and other aspects of the learning situation.

In contrast with learning goals, performance goals are essentially extrinsic in nature and relate to external feedback and personal judgements of competence that are based on the student’s performance relative to others (Stipek, 1993). In the university context these goals would be reflected in the grades that students try to achieve, and differences between students would be evidenced by their attempting to achieve different grades. For example, some students will be content with low grades that require minimum effort, while others will seek to achieve high grades and be prepared to expend considerable effort to achieve them. These students will not necessarily hold learning goals to be important, and their attempts to achieve high grades may not involve seeking high levels of understanding of the subject matter. An intention of this study is to examine both the learning and performance goals that first year education students try to achieve.

Stability and change in goals
Much of the previous research on goals has assumed that the learning goals of university students are fairly stable, since they have developed over years of experience as a student in a variety of formal learning situations. However, recent findings suggest that this may not be the case. For example, Volet and Styles (1992) used both learning and performance goal measures to
investigate first year university students’ goals in a computer course, and found a shift from higher level to lower level goals over the course of a semester. A similar observation was made by Volet and Chalmers (1992) with the learning goals of first year economics students. On the other hand, Gibbs, Morgan & Taylor (1984) found evidence of change towards higher level goals, and Volet and Renshaw (1990) found that introducing a reflective assessment procedure into a course was associated with a significant upward shift in the level of students’ personal goals for the course. It seems that the context of learning is important in affecting the level of student goals (Chalmers & Volet, 1992), and that students may set different goals for the various units in which they enrol and adjust them according to their changing perceptions and the learning context.

Overall the evidence suggests that students’ learning goals are dynamic, and are likely to change according to their experiences and perceptions of various aspects of the learning situation. In this study the stability of education students’ goals over their first year at university is examined.

Learning strategies
Learning strategies refer to the activities in which students engage in order to achieve their intended learning outcomes. These include cognitive activities, such as rehearsal, elaboration and organisation, metacognitive activities such as planning, monitoring and self regulation, and resource management activities such as management of time and effort. (McKeachie et al 1987). The particular learning strategies used by students can be expected to be affected by the goals that students seek to achieve (Nolen, 1987). Students motivated by learning goals that are directed towards developing personal meaning would be expected to use different learning strategies from those who are only intending to acquire more knowledge. In order to achieve personal meaning, students must engage in cognitive activities such as organisation and elaboration, and in metacognitive activities that enable them to monitor their performance in terms of personal judgements of their success. On the other hand students motivated by performance goals who seek to achieve particular grades engage in whatever activities they see as being useful in obtaining these grades, and monitor their performance on the basis of how other people judge the quality of their work. However, they are likely to make more use of surface strategies (Nolen, 1987), and take shortcuts that help them achieve their goal but do not promote high levels of understanding (Stipek, 1993).

While this research indicates that goals and learning strategies are related, the relationship between specific goals and the use of particular learning strategies is not clear. Students who
seek to achieve high levels of understanding will not necessarily use high level strategies (Nolen, Meece & Blumenfeld, 1986), perhaps because they lack knowledge of the appropriate strategies, or lack the metacognitive knowledge of when to use them. Furthermore, students who are trying to achieve high level goals may use strategies that are directed mainly at acquiring knowledge. There are times when it is appropriate for them to do so, such as when they are beginning a new area of study (Biggs, 1993; Brown & Atkins, 1987; Shuell, 1990) This study systematically explores relationships that exist between students’ learning and performance goals, use of learning strategies, perceptions, and grades they obtain.

Perceptions.
Student perceptions of the learning situation have an important influence on their motivation (Wittrock, 1986), their achievement (Entwistle, 1991), and on the approach they adopt to learning a particular task (Biggs, 1993). Perceptions that have been found to be important are student perceptions of their personal competence, how successful they expect to be, and how interesting and relevant they find the task (Boekaerts, 1987; Volet & Lawrence 1989, Volet & Styles, 1992). These perceptions are likely to affect the goals that students try to achieve and the strategies they use to achieve them. For example, Pintrich & de Groot, (1990) reported that students who saw themselves as competent learners and perceived the task to be interesting and important were likely to engage in more metacognition, use more cognitive strategies and more effective effort management.

Perceptions of personal competence of students motivated by learning goals are based on their own judgments of how well they feel they are learning and understanding the subject matter (Stipek, 1993). On the other hand, those who are motivated by performance goals rely to a large extent on external feedback provided by others, such as grades. Perceptions vary across different learning contexts (Boekaerts, 1987; Chalmers & Volet,1992), and within one context, can change over the duration of a semester (Chalmers & Volet, 1992). Despite their importance, there has been little systematic study of how student perceptions develop and change over a period of time, and how they relate to goals and use of learning strategies.

This paper describes changes that occurred in students' learning goals, use of learning strategies, attempted grades, and perceptions of themselves as learners and their units of study during their first year at university.

Method
Participants
Participants were 206 first year pre-service teacher education students in the Bachelor of Arts (Education) course at a university in Perth, Western Australia. Forty one percent (84) were aged over 20 years and fifty nine percent (122) were aged under 20 years of age. Thirty three percent of students (67) were male and sixty seven percent (139) were female.

Procedure
Students were invited to participate in a study on students’ learning and study management on their first day of university. They were informed this would involve them in completing a total of four questionnaires over their first year of study. Questionnaires were completed by the participants on four occasions, the first week of university, the middle of semester 1, the end of semester 1, and the end of semester 2. Administration of the questionnaires took place at the beginning or end of the regular lecture periods of a core first year education unit. All questions asked the students to respond in relation to the Education unit in which the questionnaires were administered. A total of 96 students completed all four questionnaires. The questionnaires were based on instruments used by Volet and Chalmers (1992) and Chalmers (in preparation). The different components of the questionnaire and the occasions on which they were administered are illustrated in the design.

Design

<table>
<thead>
<tr>
<th>Start Semester 1</th>
<th>Mid Semester 1</th>
<th>End Semester 1</th>
<th>End Semester 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning Goals</td>
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<td>●</td>
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<tr>
<td>Learning Strategies</td>
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</tr>
<tr>
<td>Organisation Strategies</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Perceptions</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Attempted Grades</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Obtained Grades</td>
<td></td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

N= 195 N = 177 N = 159 N = 124

Questionnaires
The questionnaires included questions on students’ learning goals, learning and organisational strategies, perceptions and attempted grades. In addition, the first questionnaire sought background demographic data such as age, gender and programme of study.

Learning Goals. The five learning conceptions identified by Saljo (1979) and Marton and Saljo (1984) were incorporated into
goal statements by Volet and Chalmers (1992). Of these 4 were endorsed by students as a hierarchy of learning goals. Subsequently another goal statement was developed and endorsed by students (Volet, personal communication) and Chalmers (in preparation). Each of these five goal statements were paired with each other to make a total of ten pairwise combinations. Students were asked to choose a goal statement that reflected their preferred goal for the Education unit from each pair of statements. The goal statement stems in order were: Remember the key features, Understand the key features, Compare and contrast theories, Critically assess theories, and Construct my own theories - of the principles and practices of effective teaching. Each goal was given a number according to its position in the hierarchy with 1 for Remember and 5 for Construct. Learning goals scores were computed by adding the scores for a total learning goal score for each occasion.

Learning Strategies. Learning strategies refer to the activities in which students engage to achieve their intended learning outcomes. Learning strategy statements were developed to describe activities which students may engage to achieving their learning goals. Originally 10 statements were developed and used in the Chalmers and Volet (1992) interview study. They were further developed and included in questionnaires in the Chalmers (in preparation) study. For this study an additional strategy statement was developed for each of the 5 learning goals for a total of 15 learning strategy statements. For example, the goal statement Remember is matched with the learning strategy statement I read and re-read notes to help me remember. The learning goal Construct Personal Theories is matched to the learning strategy statement I reflect on what I have learned in order to form my own personal theory. Students were required to respond to each of these statements on a 4 point scale: I do this - Very Often (4), Often (3), Not Often (2), Never (1). The scores for each of the three statements relating to the learning goal were combined to provide a learning strategy score for that goal for each of the three test occasions.

Organisational Strategies. Organisational strategies involve conventional study activities or resource management strategies (Mckeachie, 1987) that students use in order to manage their time and study. They were derived from the Volet and Chalmers (1992) and Study Process Questionnaire (Biggs, 1987). The 6 items include organisation of study schedules, getting help from others, and meeting unit requirements.

Perceptions. On each of the four occasions, students were asked to rate their perceptions of study in the two Education units in
terms of their competence, success, interest, relevance of the programme to their course of study and to their personal interest in the subject. These were scored on a 5 point scale of 5 (Very) to 1 (Not at all). The instrument was initially based on Boekaert’s (1987) research, and has been used in previous studies with computing students (Volet & Dawes, 1989), and economics students (Volet & Chalmers, 1992; Chalmers, in preparation).

Attempted Grades. On each of the four occasions, students were asked to indicate the grades they were trying to get in the unit. These ranged from A grade (4), B grade (3), C+ grade (2) and C grade (1). These are also the grades awarded by the university.

Data Analysis.
Changes over time were computed using repeated measures MANOVAs for the different time occasions as indicated in the design. Specific information on the contrast occasions is described in the Results section. Relationships between the learning goals, learning and organisational strategies, perceptions, attempted grades and obtained grades were investigated using ANOVA and Pearson product moment correlation analyses. All analyses were computed by the SPSS statistical program.

Results
The results are described in two parts. First, the stability and changes over the course of a year for first year students’ goals, learning and organisational strategies, perceptions and attempted grades will be presented. This will be followed by the identification of relationships between students’ goals, learning strategies, perceptions, attempted grades and obtained grades.

Stability and Changes Over Time
A series of 2 age by 2 gender repeated measures MANOVAs were carried out on the questionnaire occasions to identify differences over time in students’ goals, learning and organisational strategies, perceptions, and attempted grades of their first year of university study.

Learning Goals
Students were asked to indicate their learning goals on three occasions, at the beginning of semester 1, the end of semester 1 and the end of semester 2. A total of 96 students completed all 3 of the questionnaires. The five learning goals were scored 1 - 5 according the hierarchy of learning goals, with the 1 for Remember and 5 for Construct. The individual goal scores were added for each occasion to provide a total goal score for each
student. Two age by 2 gender repeated measures MANOVAs were carried out on each of the 3 questionnaire occasions to identify changes in students' learning goals in their first year of university study. The contrast occasions for the repeated measures were taken from the beginning of semester 1 to the end of semester 1 (occasions 1 Vs 2), and the end of semester 1 to the end of semester 2 (occasions 2 Vs 3).

Students' learning goals changed over time, $F(2,91)=5.12$, $p=0.008$. Their learning goal scores decreased from the beginning of semester 1 (mean, 29.87) to the middle of semester 1 (29.29) but this was not significant, $p=0.06$. This trend continued with students learning goals continuing to decrease from the end of semester 1 to the end of semester 2 (mean, 27.04), $F(1,92)=7.45$, $p=0.008$. Learning goal scores are shown in Table 1.

Learning Strategies
Each of the five learning strategy scores comprised of 3 individual items which were added to provide a strategy score. Students were asked to indicate the learning strategies they were currently using in the unit on a 4 point scale on three questionnaire occasions: the middle of semester 1, end of semester 1 and the end of the year. A total of 96 students completed all 3 of the questionnaires. The 2 age by 2 gender repeated measures MANOVAs were carried out with the contrast occasions for the repeated measures taken from the middle of semester 1 to the end of semester 1 (occasions 1 Vs 2), and the end of semester 1 to the end of semester 2 (occasions 2 Vs 3). The learning strategies as they relate to the learning goals are identified as Remembering, Understanding, Comparing and contrasting, Critically assessing and Constructing personal theories.

(i) Remembering
There was an age by time multivariate interaction for reported use of the learning strategy which focused on remembering, $F(2, 91)=3.70$, $p=0.03$. Older students reported more frequent use of remembering strategies in the middle of semester 1 (mean, 8.74) than younger students (8.23), but by the end of semester 1 this pattern was reversed with older students reporting less frequent use of remembering strategies (mean, 8.40) than younger students (8.62), $F(1,92)=7.29$, $p=0.008$. The interaction is illustrated in Figure 1.

Figure 1: Age by time interaction for reported use of the remembering strategy.

Students' reported use of remembering strategies did not change
over time, p>.05. The mean scores for students’ reported use of remembering and all other learning strategies are shown in Table 1.

Table 1:
Learning goals and learning strategy mean scores for three occasions

<table>
<thead>
<tr>
<th>Learning Goals</th>
<th>Start Semester 1</th>
<th>End Semester 1</th>
<th>End Semester 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>29.87</td>
<td>29.29</td>
<td>27.04</td>
</tr>
<tr>
<td>sd</td>
<td>(4.22)</td>
<td>(4.98)</td>
<td>(5.56)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Learning Strategies</th>
<th>Mid Semester 1</th>
<th>End Semester 1</th>
<th>End Semester 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remember</td>
<td>8.42</td>
<td>8.54</td>
<td>8.78</td>
</tr>
<tr>
<td>Understand</td>
<td>9.01</td>
<td>8.53</td>
<td>8.69</td>
</tr>
<tr>
<td>Compare &amp; contrast</td>
<td>8.07</td>
<td>7.99</td>
<td>7.93</td>
</tr>
<tr>
<td>Critically assess</td>
<td>8.53</td>
<td>8.16</td>
<td>8.19</td>
</tr>
<tr>
<td>Construct</td>
<td>8.34</td>
<td>7.94</td>
<td>7.66</td>
</tr>
</tbody>
</table>

(ii) Understanding
Students' reported use of the understanding strategy changed over time, F(2,91)=4.94, p=0.009. Students' reported use of understanding become less frequent from the middle of semester 1 (mean, 9.01) to the end of semester 1 (8.53), F(1,92)=7.71, p=0.009. Students reported more frequent use of the understanding learning strategy from the end of semester 1 to the end of semester 2 (mean, 8.69), but the change was not significant, p>.05.

(iii) Comparing and contrasting
Students reported no differences in their use of the comparing and contrasting learning strategy from the middle of semester 1, the end of semester 1, or from the end of semester 1 to the end of semester 2, p>.05.

(iv) Critically assessing
Students' reported use of the critically assessing strategy
changed over time, F(2,91)=3.96, p=0.02. They reported using critically assessing strategies less frequently from the middle of semester 1 (mean, 8.53) to the end of semester 1 (8.16), F(1,92)=7.08, p=0.009. Students did not change their use of the critically assessing learning strategy from the end of semester 1 to the end of semester 2 (mean, 8.19), p>.05.

(v) Constructing personal theories
Students reported use of the strategy to construct their own personal theories of the information changed over time, F(2,91)=5.97, p=0.004. Students used this strategy less frequently from the middle of semester 1 (mean, 8.34) to the end of semester 1 (7.94), F(1,92)=11.47, p=0.001. Their use of this strategy did not change from the end of semester 1 to the end of semester 2 (mean, 7.66), p>.05. Mean scores for students' reported use of learning strategies are shown in Table 1.

In summary, students reported changes to their learning goals and learning strategies. Their learning goals decreased as the year progressed. Their reported use of four of the five learning strategies also changed over the duration of their first year of university study. These changes indicated less frequent use of all learning strategies over time, with most changes taking place in the first semester. There were no significant changes in the students' learning strategies from the end of semester 1 to the end of semester 2. Students did not differ in their use of these strategies by gender, and only one effect was found for age, with older students decreasing their use of the remembering strategies over time.

Organisational Strategies
Frequency of use of organisational strategies was collected on the same occasions and recorded on the same scale as the learning strategy data. A series of 2 age by 2 gender repeated measures MANOVAs were carried out on each of the 3 questionnaire occasions to identify changes in students' organisational strategies.

Of the six organisational strategies, four did not change over time. Students did not change their frequency of: organising a study schedule, handing in assignments on time, seeking help from staff, or studying with other students. However, two organisational strategies did change over time: attendance at lectures and classes, and reading the set readings each week. The mean scores for students' organisational strategies are shown in Table 2.

(i) Attendance
Students' reported attendance at lectures and classes varied
according to age and over time. There was a multivariate interaction for age by time, F(2, 91)=4.78, p=0.01. Older students reported attending class less at the middle of semester 1 (mean, 3.86) than younger students (mean, 3.92). At the end of semester 1 both older and younger students reported attending less than they had at the beginning of the year, (mean, older 3.77, younger, 3.87), F(1,92)=4.04, p=0.047. By the end of the year this pattern had changed with older students attending more than younger students (mean, 3.80 > 3.54), F(1,92)=8.52, p=0.004. The interaction is illustrated in Figure 2.

Figure 2: Age by time interaction for attendance at classes

Students' attendance at classes changed over time, F(2,91)=5.02, p=0.009. Students reported they attended more classes in the middle of semester 1 (3.90), than they did at the end of semester 1 (3.83) F(1,92)=9.81, p=0.002.

(ii) Reading Weekly Set Readings
Students were not different according to age or gender in their reading of the set readings each week, p=>.05. There was an overall effect for time, F(2.91)=4.36, p=0.016. Students' reading of the set readings was higher in the middle of semester 1 (mean, 2.91) than it was at the end of semester 1 (2.73) and the end of semester 2 (2.88), but they were not significantly different for each of the contrast occasions, p>.05. The mean scores for students' organisational strategies are shown in Table 2.

Students generally reported consistent use of organisational strategies over the whole year. They handed in assignments on time and attended at classes almost all the time. Although their attendance did decrease over time, they still maintained a high level of attendance. Given that penalties were applied if they did not hand in assignments on time or attend class, this was not unexpected. Students did not work with other students very often, and were more likely to seek assistance from staff than other students. While most of the reported changes over time involved a decrease, students' reported use of reading set weekly reading increased by the end of semester 2.

Table 2:
Organisational strategy mean scores for three occasions

<table>
<thead>
<tr>
<th>Organisational Strategies</th>
<th>Mid Semester 1</th>
<th>End Semester 1</th>
<th>End Semester 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study Schedule Mean</td>
<td>2.39</td>
<td>2.30</td>
<td>2.30</td>
</tr>
<tr>
<td>sd</td>
<td>(0.79)</td>
<td>(0.80)</td>
<td>(0.80)</td>
</tr>
</tbody>
</table>
Perceptions
Six perceptions were examined to identify changes over time. A total of 93 students completed all 4 of the questionnaires. These were administered at the beginning of semester 1, the middle of semester 1, the end of semester 1, and the end of semester 2. The contrast occasions for the repeated measures were taken from the beginning of semester 1 to the middle of semester 1 (occasions 1 Vs 2), the middle of semester 1 to the end of semester 1 (occasions 2 Vs 3), and the end of semester 1 to the end of semester 2 (occasions 3 Vs 4).

(i) Competence
There were no differences in students' perceptions of competence over the year according to their age or gender, p > .05. There was an overall effect for time, F(3, 87) = 33.76, p = 0.000. Students' initial perception of competence decreased from the beginning of the semester (mean, 3.99) to the middle of semester 1 (3.43), F(1, 89) = 97.31, p = 0.000, and decreased again from the middle of semester 1 to the end of semester 1 (mean, 3.32), F(1, 89) = 6.52, p = 0.01. The students did not significantly change their perceptions of competence from the end of semester 1 to the end of semester 2 (mean, 3.25), p > .05. The mean scores for students' perceptions are shown in Table 3.

(ii) Success
Students' perceptions of how successful they expected to be in the unit varied according to age and over time. There was a multivariate interaction for age by time, F(3, 89) = 3.12, p = 0.03. Older students did not change their perceptions of expectation of success from the beginning of semester 1 (mean, 3.80) to the middle of the semester 1 (3.71) while younger students' perceptions of success decreased over the same period (mean, 4.02 > 3.50), F(1, 91) = 4.80, p = 0.03. The interaction is illustrated in Figure 3.

Figure 3: Age by time interaction for the perception of
Students' perceptions of expectations of success changed over time, \(F(3,89)=23.63, p=0.000\).

Students’ perceptions of success decreased from the beginning of semester 1 (mean, 3.94) to the middle of semester 1 (3.58), \(F(1,91)=51.14, p=0.000\), and decreased again by the end of semester 1 (3.38), \(F(1,91)=16.10, p=0.000\).

(iii) Difficulty
Students' perceptions of difficulty of the unit did not change over time, nor were they different for age or gender, \(p>.05\).

(iv) Interest
Students' perceptions of interest changed over time, \(F(3,89)=7.51, p=0.000\).

Students' perceptions of interest decreased from the beginning of semester 1 (mean, 3.88) to the middle of semester 1 (3.79), \(F(1,91)=13.04, p=0.000\), and decreased again by the end of semester 1 (3.47), \(F(1,91)=10.88, p=0.001\).

(v) Relevance of the unit to their programme of study
Students' perceptions of the relevance of the unit to their programme of study changed over time, \(F(3,88)=30.23, p=0.000\).

Students’ perceptions of relevance decreased from the beginning of semester 1 (mean, 4.69) to the middle of semester 1 (4.04), \(F(1,90)=87.34, p=0.000\), and decreased again by the end of semester 1 (3.75), \(F(1,90)=9.31, p=0.003\).

(vi) Relevance of the unit to their personal interest in education
Students' perceptions of the relevance of the unit to their personal interest changed over time, \(F(3,84)=11.05, p=0.000\).

Students’ perceptions of relevance to their interest decreased from the beginning of semester 1 (mean, 4.37) to the middle of semester 1 (3.96), \(F(1,86)=31.50, p=0.000\), and decreased again by the end of semester 1 (3.62), \(F(1,86)=8.10, p=0.006\). The mean scores for six perceptions are presented in Table 3.

<table>
<thead>
<tr>
<th>Perception and attempted grade mean scores for four occasions</th>
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<tbody>
<tr>
<td>Start Semester 1</td>
</tr>
<tr>
<td>Competence</td>
</tr>
<tr>
<td>3.99</td>
</tr>
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</table>
In summary, students’ perceptions changed over the duration of their first semester of university study. This change resulted in a decrease in all but one of the perceptions examined, difficulty of the unit. While this perception remained constant, the students’ perceptions of competence, success, interest and relevance in the unit all decreased. The changes occurred by the middle of semester 1, and again by the end of semester 1. There were no significant changes in perceptions from the end of semester 1 to the end of semester 2. Students’ perceptions of the unit did not differ according to their age or gender.

Attempted Grades
On each of the 4 occasions the questionnaires were administered, students indicated the grade they were trying to achieve. At the beginning of semester 1, 49% of students indicated they were trying to get an A grade, 43% a B grade and 6% for a C+ grade. By the end of semester 1 only 8% indicated they were trying for an A grade, 41% for a B grade and 42% for a C+ grade. The changes in students’ attempted grades were identified in a 2 age by 2 gender repeated measures MANOVA. The grades were scored on a 4 point scale with 4 for A grade, 3 for B grade, 2 for C+ grade, and 1 for C grade.

There was a multivariate interaction for age by time, F(3, 89)=3.97, p=0.01. Older students attempted a higher grade than younger students at the end of semester 1 (mean, 2.75 > 2.37), but by the end of semester 2 this was reversed. Older students attempted a lower grade than younger students (mean, 2.35 < 2.57), F(1,90)=11.19, p=0.001. The interaction is illustrated in Figure 4.

Figure 4: Age by time interaction for attempted grades
Students’ attempted grade for the unit changed over time, $F(3,88)=39.60, p=0.000$. Students’ attempted grades decreased from the beginning of semester 1 (mean, 3.37) to the middle of semester 1 (2.80), $F(1,90)=110.67, p=0.000$, and increased again by the end of semester 1 (2.50), $F(1,90)=20.83, p=0.000$. Students did not significantly change their attempted grade from the end of semester 1 to the end of semester 2 (mean, 2.49), $p>.05$. The mean scores of students' attempted grades are shown in Table 3.

In summary, students’ attempted grades decreased over the duration of their first semester of university study. As for learning goals, learning strategies and perceptions, the changes occurred by the middle of semester 1, and again by the end of semester 1. There were no significant changes in their attempted grades from the end of semester 1 to the end of semester 2. Students’ goals, perceptions of expected success, attendance at class and attempted grades were different for age over time, but not for gender.

Relationships
To identify relationships that exist between the students’ goal scores, learning and organisational strategies, perceptions and attempted grades a number of ANOVAs and correlations were carried out. The data for male and female, and older and younger students were combined as there were no systematic age or gender differences.

Learning Goals and Learning Strategies
To explore the relationship between goals and learning strategies the learning goal scores for each of the three occasions were categorised as low, medium and high goal scores. The minimum goal score was 20 and the maximum was 40. Students whose goal score was less than 27 were identified as holding low learning goals. Students whose scores ranged from 27 to 33 were identified as holding medium learning goals and students who scored more than 34 were identified as holding high learning goals. A series of ANOVAs were carried out to identify the relationship between the three goal types and 5 learning strategy scores for 3 occasions, the middle of semester 1, the end of semester 1 and the end of semester 2.

The students did not differ in their use of learning strategies for the three occasions for Remember or Understand regardless of their learning goals. All students reported frequent use of these strategies. However, differences emerged for the three higher level learning strategies for students who held different learning goals.
(i) Comparing and contrasting
Students did not differ in their reported use of the comparing and contrasting strategy according to their goals at the middle of the semester, p > .05. However, at the end of semester 1 students who held low learning goals reported they did less comparing and contrasting (mean 7.13) than students who held medium learning goals (8.12). Students with high learning goals also reported they did less comparing and contrasting than students with medium goals (7.83), F(2,155)=3.48, p=0.03. At the end of semester 2, both low and medium goal students reported they did less comparing and contrasting than students with high goals (7.79, 7.72 < 9.00), F(2,117)=4.90, p=0.009.

(ii) Critically assessing
Students did not differ in their reported use of the critically assessing strategy according to their goals at the middle of the semester, p > .05. At the end of semester 1 students who held low learning goals reported they did less critical assessing (mean 7.62) than students who held medium learning goals (8.28) who in turn reported they did less critical assessing than students with high learning goals (8.64), F(2,155)=5.07, p=0.007. This pattern was repeated at the end of semester 2 with low goal students reporting they did less critical assessing than medium goal students who in turn did less than students with high goals (7.93 < 8.17 < 9.35), F(2,117)=8.12, p=0.000.

Table 4:
Learning strategies by learning goal type mean scores for three occasions

<table>
<thead>
<tr>
<th>Learning Strategies</th>
<th>Mid Semester 1</th>
<th>End Semester 1</th>
<th>End Semester 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remember</td>
<td>7.88 (2.10) Mean 8.72 (1.57) Mean 8.75 (1.56) Mean</td>
<td>8.72 (1.57) Mean 8.75 (1.56) Mean</td>
<td>8.75 (1.56) Mean</td>
</tr>
<tr>
<td>Understand</td>
<td>8.80 (1.74) Mean 9.11 (1.57) Mean 8.91 (1.58) Mean</td>
<td>8.70 (1.71) Mean 8.57 (1.59) Mean 8.76 (1.79) Mean</td>
<td>8.76 (1.79) Mean</td>
</tr>
<tr>
<td>Compare &amp; Contrast</td>
<td>7.76 (1.65) Mean 8.12 (1.55) Mean 8.12 (1.53) Mean</td>
<td>7.13 (1.50) Mean 7.72 (1.59) Mean 7.72 (1.59) Mean</td>
<td>7.72 (1.59) Mean</td>
</tr>
</tbody>
</table>
(iii) Constructing personal theories

Students did not differ in their reported use of the constructing personal theories strategy according to their goals at the middle of semester 1, p > .05. At the end of semester 1 students who held low learning goals reported they did less constructing personal theories (mean 7.09) than students who held medium learning goals (8.14) and the medium goal students reported less use of this strategy than students with high learning goals (8.25), F(2,155)=6.77, p=0.002. At the end of semester 2, low goal students reported they did less constructing of personal theories than medium goal students who did less than students with high goals (7.25 < 7.53 < 9.12), F(2,117)=10.21, p=0.000.

Mean scores for students’ learning strategies by goal type are shown in Table 4.

In summary students did not differ in their use of remembering and understanding learning strategies, regardless of their learning goals. All students engaged these strategies consistently throughout the two semesters. Differences emerged for learning strategies that involved more processing and working with the information by comparing and contrasting, critically assessing and constructing personal theories. Students who held high goals engaged these learning strategies more than students who held low or medium learning goals. While the number of students who held high goals decreased over the course of the two semesters, those who did hold high goals increased their use of these strategies while those with low or medium goals did not.
Learning Goals, Organisational Strategies, Perceptions and Attempted Grades

A series of correlations were carried out to explore the relationships that existed between students' learning goals and their organisational strategies, perceptions, attempted grades and obtained grades. Two tailed tests were used when testing the significance of the correlations because clear relations were not necessarily assumed. The correlations that emerged were small. Inspection of the frequency scores indicated that students did not always use the full range of the scale for all the variables. For example, students indicated their perception of competence on only two of the possible 5 points of the scale. All correlations reported are significant at greater than .01.

There were no significant correlations between organisational strategies, perceptions, attempted grades or final marks achieved with the learning goal scores appropriate to the occasion at the end of each semester. There was no relationship between students’ learning goals, organisation, perceptions they held about themselves or the course, the grades they attempted or the final marks they achieved.

Further correlations were carried out to identify the relationship between students' perceptions and their attempted grades, and obtained grades. Significant correlations were found for students' perceptions of competence, success and interest in the unit with their attempted grades. For each occasion, students' perceptions of competence correlated positively with their attempted grade for: the beginning of the semester 1 (r =.42), the middle of semester 1 (r =.25), the end of semester 1 (r =.44), and the end of semester 2 (r =.33). The positive correlation pattern continued for perceptions of success and attempted grade for: the beginning of the semester 1 (r =.44), the the middle of semester 1 (r =.38), the end of semester 1 (r =.49), and the end of semester 2 (r =.45). The only other significant correlation was for interest of the unit which occurred at the end of semester 1 (r =.23). There was only one significant correlation between students’ perceptions and obtained grades. Students who had high perceptions of competence at the end of semester 1 obtained higher grades (r=.31).

Correlations to identify relationships between students' attempted grades with their learning and organisational strategies and their obtained grades were carried out. Positive correlations were found for the remembering strategy and attempted grade at the end of semester 1 (r =.21), and the end of semester 2 (r =.27), for the understanding strategy and attempted grade at the end of semester 1 (r =.29), and the end of semester 2 (r =.33), and for the compare and contrast strategy and attempted grade at the end of semester 2 (r =.21). The two
organisational strategies that significantly correlated to attempted grades were organisation of a study plan at the end of semester 1 (r =.19), and end of semester 2 (r =.24), and reading the set readings each week at the end of semester 1 (r =.17), and end of semester 2 (r =.28). Significant positive correlations were found for students' attempted grades and obtained grades both at the end of semester 1 (r =.26), and the end of semester 2 (r = .42).

Correlations to identify relationships between students’ obtained grades with their learning and organisational strategies were carried out. Positive correlations were found between two learning strategies and obtained grade: remembering at the end of semester 2 (r=.24), and understanding strategy at the end of semester 2 (r =.26). Positive correlations were found for use of two organisational strategies and obtained grade, obtaining staff help at the end of semester 2 (r =.26), and the reading of set readings at the end of semester 2, (r=.36).

Surprisingly, there were no relationships identified between students’ learning goals, perceptions, attempted grades or obtained grades. While students’ learning goals and learning strategies were shown to relate there was no similar relationship between the other variables. Students’ perceptions of competence and success were correlated with their attempted grades throughout the year. Students’ obtained grades were correlated with the learning strategies of remembering and understanding so students who reported they did more of this received higher grades. However, as all students, regardless of their learning goals, reported frequent use of these strategies these correlations do not offer a clear explanation of the findings. Students’ attempted grades and obtained grades were significantly correlated but the low correlation scores indicates that other relationships may exist. The results as they relate to changes and stability over time, and relationships between the different variables will be discussed in the following section.

Discussion

In discussing the results of this study, attention will first be given to changes that occurred to goals, learning strategies and perceptions, and then to relationships that were found between these measures.

Goals
The decrease in students’ learning goals was similar to that reported by Volet and Styles (1992) and Volet and Chalmers (1992). Students placed less importance on achieving higher
levels of understanding such as critical analysis and comparing and contrasting theoretical approaches, and moved towards lower the level goals of remembering and understanding. This effect might be a natural adjustment to the new learning situation. Students may begin their university studies optimistically and expect to be as successful at university as they had been previously. However many students find that the experience of university life is different from what they had expected. Greater importance is placed on independent study and subject content is often more complex and abstract than at school. In addition, students have other demands on their time, such as family, social and employment commitments. Accordingly many students may find that their initial goals are unrealistic in terms of the demands that are placed on them, and so they lower their goals to more realistic levels.

Performance goals as measured by attempted grades also decreased over the first semester. A large number of students initially indicated that they were trying to get an A grade. As the university year progressed the grades students were attempting changed. By the end of the second semester many students were happy to obtain a C grade. Given the nature of performance goals which are characterised by students trying to appear competent and successful (Stipek, 1993), it is not surprising that this effect occurred. All students entering the university had met with reasonable levels of success prior to entry, and at first most were attempting to get high grades. However most of them received lower grades for assignments and other assessments, both because of the quality of their performance and also because of scaling processes that restrict the number of high grades awarded. Accordingly many would have lowered their expectations in order to maintain their sense of self-worth (Covington, 1984). The importance of such feedback on their goals is consistent with the observation that in second semester the highest correlation with attempted grade was the grade they achieved in first semester.

Learning and organisational strategies
It was observed that there was an overall decrease in the level of learning strategies used in first semester, and that this remained relatively stable during second semester. Students progressively made less use of learning strategies that would develop higher levels of understanding and personal meaning, but did not reduce their use of strategies directed at remembering and understanding. This observation is consistent with previous research (e.g. Biggs, 1982; Ramsden, Beswick & Bowden, 1986). As students adjust to their first semester in a new educational environment, they may progressively focus their attention on using
strategies that allow them best to cope with the new demands of this environment. In a new subject in first year, students have to master a large body of new knowledge in a short space of time, and this requires the use of knowledge seeking strategies (Shuell, 1990). The decrease in use of learning strategies also relates to the decrease in learning goals observed over the year. As students became less interested in pursuing understanding, so their use of the learning strategies that would foster understanding declined.

Organisational strategies are conventionally emphasised as being important, and students maintain them despite awareness of other strategies that are likely to be more effective (Ramsden, Beswick & Bowden, 1986). In this study, use of these organisational strategies remained stable over the year, apart from students’ reported attendance at classes. The decrease in reported class attendance is not surprising, since initial reports of attendance were so high.

Perceptions
It was expected that student perceptions would change during the year. Since perceptions of competence and success decreased but perceptions of the difficulty of the unit did not change during the two semester, it is likely that students genuinely experienced a sense of reduced personal competence and prospect for success. Reasons for this might be similar to those outlined for goals, including the difficulty of having to learn and understand new material, the effects of the grading system and other demands of the university and their personal life.

Students reported decrease in their perceptions of interest and relevance was not unexpected. The study of education was a new subject for most students and they had little personal knowledge on which to base their initial perceptions. Therefore change in these perceptions over time is to be expected, but they need not change in a downward direction. It might be that their initial perceptions were unrealistically high to start with. It is likely that students who start a chosen course of study will expect it to be intrinsically interesting and relevant to their needs and interests. However if they hold a utilitarian or pragmatic view of relevance, much of the course content may not seem as relevant or interesting as they had expected. Lowered perceptions can also be explained in terms of the negative relationship that has been observed between students’ use of learning strategies that do not promote understanding, and level of interest and perceived relevance in a course (Ramsden, 1992). Understanding of content is necessary for students to be able to see its relevance to other situations. Since students’ use of
the learning strategies that foster understanding declined over the semester, their potential to see the relevance of the content was also likely to decline, and with it their perceptions of interest in the unit.

Relationships between goals, learning strategies, attempted grades and perceptions

Students with higher level goals reported more use of the higher level learning strategies that related to these goals. It seems that pursuit of these goals is significant in affecting students' use of learning strategies. However students holding high goals did not differ from those holding low goals in their use of remembering and understanding strategies. This result is consistent with the goals being conceptualised as a hierarchy. The lower level components of the hierarchy would need to be present with the higher level components. Although use of these strategies is said to indicate surface levels of learning (Biggs, 1991; Entwistle, 1981), they can also be adopted in order to achieve higher levels (Brown & Atkins, 1988). In the early stages of learning, remembering and understanding is prerequisite to being able to deal with new knowledge in a more sophisticated way (Shuell, 1990). If the subject content is new, as was the case for these students, considerable energy must be spent in learning this new content and extending their knowledge base.

The significant correlations on all occasions between attempted grades and the learning strategies remember and understand suggests that students saw these strategies as being important in affecting their grades. This may have been a function of their beliefs about what is required in a new subject at first year university level. Alternatively, it might represent use of familiar strategies that have been successful in the past. However since the strategy of compare and contrast correlated with attempted grades at the end of second semester, students might have begun to see the importance of using higher level strategies in order to achieve higher grades. It might also be a function of the content of the second semester unit, which included a study of cognitive approaches to learning with students applying the relevance of these ideas to their own study situation.

The correlation between organisation of a study plan and reading the set readings each week with attempted grades suggests that students accepted conventional advice about the importance of these activities in determining success. However there is little evidence that they actually are significant in affecting success, and in this study they were not related to achieved grades, apart from a correlation between reading the set readings and achieved grades at the end of second semester.
It was expected that perceptions and learning goals would be related, since they involved perceptions about the unit and about the students’ expected success and competence in the unit (Entwistle, 1991; Volet & Styles, 1992). Students who perceived the unit as being interesting or relevant, or themselves as being competent and likely to achieve success, were expected to hold higher level goals that students whose perceptions of competence and success were lower. However, no significant relationships were found at any stage during the year, even though the overall level of both perceptions and goals declined during the year. This was an unexpected finding, and warrants further investigation.

Significant correlations were found between attempted grades and perceptions of competence and success at the end of each semester. If attempted grades are an indicator of performance goals and students holding these goals are trying to appear competent (Dweck, 1985), this relationship is to be expected. Students will try to get high grades only if they perceive this to be a likely outcome, and also perceive themselves as competent and likely to succeed.

Conclusion

Students goals, strategies, and perceptions can not be assumed to be stable. For first year university students, the first semester can be characterised as a time of change. In this study, students’ goals, use of learning strategies, perceptions and attempted grade decreased over the first semester of study, and then remained relatively stable for the second semester of study. This decrease is similar to that reported by Volet & Chalmers (1992) and Volet & Styles (1992). It raises the question of whether these variables will remain stable during subsequent years of study, or whether there will be another period of adjustment. To explore this question further, data will be collected from these students in their second and third years of study.

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References


differences in university students' learning goals based on an unfolding model of stage development. British Journal of Educational Psychology, 62, 17-34.


