HOW TEACHERS RELATE TO HIGH-ACHIEVING STUDENTS

Jessie Ee
Nanyang Technological University, Singapore

Abstract: Motivation and strategy are important variables in students’ learning. Similarly, teachers’ goal orientations and the way they teach students also impact on students’ achievement. Past research have shown that the pursuit of task goal orientations are likely to enhance the usage of self-regulated learning strategies. However, what are the goal orientations, knowledge and usage of self-regulated learning of high-achievers and to what extent are their goals, self-regulated learning and achievement influenced by teachers’ classroom goal orientations and strategy-based instruction? This study examines high-achievers’ goal orientations, knowledge and usage of strategies and the relationship among their teachers’ classroom goal orientations and strategy-based instruction and their goal orientations, self-regulated learning and achievement. Participants are 566 high-achieving students and their 38 Primary 6 teachers in 34 Singapore schools. Each student responded to The Personal Goals Scale adapted from Nicholls, Patashnick and Nolen (1985) and the Self-Regulated Learning Strategies Scale of Youlden and Chan (1994) whilst each teacher responded to the Teachers’ Classroom Practices developed by the researcher. Students’ achievement was obtained from their standardized Primary Six Leaving School Examination (PSLE). PRELIS and LISREL7 were used to form one-factor congeneric analysis to overcome the problem associated with large numbers of indicator variables as well as for a more realistic representation of the data. The pattern of influence of the teacher and student variables on achievement was examined using multi-level modeling (Mln) to cater for the hierarchical structure of the data. The results and implications of the study will be discussed.

The focus of this study is on motivation and strategic orientations of high achieving Primary Six students and their teachers in the Singapore schooling system. In the Singapore system, all primary students progressed through a common course of instruction until Primary Four where examinations then determined which stream the students will follow for the subsequent years. Students performing at 85% or better on all examination components were streamed as EM1, the high achieving students involved in this study. All students in Primary Six also sat for the standardized Primary Six Leaving Examination (PSLE) which determined placement in one of the three secondary level courses (Special or Express, Normal Academic, Normal Technical). Examinations play a substantive role for students, teachers and parents, because the success, or otherwise in such examinations largely determines the course of future education and associated employment opportunities as meritocracy and competition are emphasized (Smart & Ang, 1992).

There are four inter-related areas of research relevant to this study: student motivation, student self-regulated learning, teacher motivation, and teacher strategy-based instructional practices. For student motivation, the focus was on motivational goals. According to motivational theory, goals are drives or purposes that guide students’ behaviour, cognition and affect as they engage in an academic task (Ames & Archer, 1988; Dweck & Elliott, 1983). Students who adopt task goals are focused on learning whilst those who adopt ego goals are focused on obtaining good grades, comparing and competing with others. Different goals are likely to lead to different patterns of cognitive engagement (Archer, 1992; Pintrich & Schrauben, 1992).

Studies have shown that students who adopt task goals are likely to use deeper processing strategies such as elaboration and self-regulated learning strategies (Pintrich & De Groot, 1990; Pintrich &
Gracia, 1991). Meece, Blumenfeld and Hoyle (1988) reported that students who adopt task goals reported greater use of cognitive and metacognitive strategies and Nolen (1988) showed that task goal oriented students are more focused on learning whilst those who adopt ego goals tend to focus on self and comparing and competing with others.

Borkowski, Carr, Rellinger & Pressley (1990) also suggested that there is a reciprocal relationship between self-regulated learning and motivational constructs such as self-concept, attitudes about learning and attributional beliefs about personal control. Students active in self-regulated learning not only attain higher levels of achievement (Weinstein & Mayer, 1986), but are also able to manage and control their effort on academic tasks leading to persistence in learning (Corno, 1986). The success of the performance will perpetuate the use of the strategies learners consider effective. Their task goal orientation and beliefs that the tasks are interesting and challenging will further increase their use of strategies and persistence. In turn, they would be more task goal-oriented and expend more strategy usage with the likelihood of strategy generalization and fostering greater self-regulated learning (Borkowski, 1992). This implies that there is a relationship among self-regulated learning, goal orientations and achievement and that the possession of knowledge and use of self-regulated learning strategies may be a mediating variable between students’ motivational orientations and achievement.

Further, goal theorists assume that the individual’s goals are dependent on and situated within the classroom context (Ames, 1992; Blumenfeld, 1992). The nature of classroom environments may have an impact on students’ goals (Ames & Archer, 1988; Ames, 1992; Meece, 1991). Furthermore, Ames (1992) and Elliott and Dweck (1988) maintain that a learning environment that focuses on competition and social comparison can result in different goal orientations. Thus, the degree in which students are cognitively engaged and the amount of effort expenditure and persistence placed in the face of challenging tasks may be influenced by teachers’ classroom practices. According to Dweck (1986), classrooms in which students perceive improving competence or learning as the goal have fewer individuals who show negative motivational patterns than do classrooms in which students have the goals of comparing and competing with their peers. If appropriate goal orientations are provided for students’ early experiences, they are likely to try hard to achieve and attribute their success to controllable factors, being more self-directed, persisting in face of difficulties, thus maximising their self-worth and self-esteem (Borkowski, et al., 1990). However, if classroom goal orientations are negative or confusing, students are likely to develop low self-esteem and misconceptions about the causes and effects of their attempts to achieve (Borkowski, et al., 1990). This is likely to result in the development of maladaptive motivational orientations that may be resistant to change in the future. Anderman and Midgley (1997) showed that as students progressed through school their ego goals increased and task goals declined, which they attributed to students’ perceptions of a more ego-oriented class structure later in their schooling.

Blumenfeld (1992) stress the need for teachers to change not only their instructional strategies for teaching but also their classroom practices such as tasks, authority and evaluation structures that help students to focus on task goals. Furthermore, teachers need to consider these changes in the light of both instructional and curriculum concerns (Ames, 1992; Blumenfeld, 1992) so that the classroom practices can influence students’ motivation and cognition instead of hindering it. Ames (1990) suggests that if students are taught to focus on strategies rather than the product, they are more likely to “own” the outcome and feel responsible for the outcome. Thus, ultimately this ownership of personal control for their successful outcomes will be an integral part of empowering students so that they can legitimately expect to succeed later.

Finally, teachers are not only engaged in providing a motivational context, they are also in a
position to provide self-regulatory, strategic instruction to their students across a variety of subject domains (Rosenshine & Meister, 1994). Combined strategy and attributional retraining has also illustrated that providing cognitive and metacognitive strategies for learning can influence motivation, knowledge and use of strategies and subsequently achievement (Chan & Moore, 1997).

To date, most of the literature on student goal orientations and self-regulated learning and teachers’ orientations and strategy-based instruction has been conducted separately, and with North American samples. Little attention has been paid specifically to high achieving students. This study then, attempts to bring a greater degree of integration of students and teachers’ motivations and strategies and achievement using a sample of high achieving students and their teachers. [It should be noted that this study forms part of a more comprehensive examination of teachers and students reported by Ee (1998) and in reporting the development of one factor congeneric models below, reference will be made to the larger study.]

More specifically this particular study aimed to examine:

• the goal orientation and self-regulated learning profile of high achieving Primary 6 students and determine if gender is a factor in such student profiles;
• the goal orientation and instructional profile of Primary 6 teachers who teach these high achieving students, and;
• the relationships among students’ goal orientations, self-regulated learning and achievement and teachers’ goal orientations and instructional practices.

Method

Sample

The study consists of 566 High Achieving (HA) Primary Six students (291 males and 275 females) and 38 teachers teaching in HA classes in 34 Singapore schools.

The age range of the teachers was from 20 to above 50 years, with 68% above forty years of age. The majority of the teachers were non-degree teachers holding the Certificate in Education (three years of pre-service primary teacher training). A total of 75% of these teachers have had more than ten years of teaching experience and like all primary school teachers are normally required to teach most subjects in the class.

Assessment Instruments

The Personal Goals Scale adapted from Nicholls, Patashnick and Nolen (1985) and The Self-Regulated Learning Strategies Scale (Youlden and Chan, 1994) were used to measure HA students’ goal orientations and self-regulated learning. The measure of academic achievement was obtained from the Primary Six Leaving Examination (PSLE) results provided by the school. The Teacher Survey Questionnaire developed by Ee (1998) was used to measure their classroom orientations and strategy-based instruction.

The Personal Goals Scale adapted from Nicholls, Patashnick and Nolen (1985) was used to assess students’ task, ego and work avoidance orientations in school situations. The original scale consists of 24 items grouped into the three sub-scales. The stem for each item is “I feel most successful if...”. Respondents were requested to rate each item on a four-point scale and the ratings were averaged across the items in each subscale. In the formation of one factor congeneric models using PRELIS and LISREL, 15 items produced the 3 factors as intended. The three sub-scales were then
formed with the task orientation sub-scale consisting of 5 items (e.g. “something I learned makes me want to find out more”), the ego orientation sub-scale consisting of 5 items (e.g. “I do the work better than other pupils”), and the work avoidance orientation sub-scale consisting of 5 items (e.g. “I can get away without doing homework”). For example, a high score on the work avoidance orientation sub-scale indicates that the student is more academically alienated, that is, more concerned with avoiding work and doing well with minimum effort. The reliability coefficients for each one factor congeneric analysis of the task, ego and work avoidance orientation sub-scales computed from the whole sample of 4,995 students from Ee’s (1998) study, of which these high achieving students formed part, are shown in Table 1.

The Self-Regulated Learning Strategies Scale (Youlden & Chan, 1994) was used to assess students’ reported knowledge and use of self-regulated learning strategies. The scale consists of 24 items for the Knowledge (KNOW) sub-scale and 24 items for the Usage (USAGE) sub-scale. Each item is a description of a learning strategy (e.g. “thinking up questions that might be asked and then trying to answer them when studying for a test”), followed by two questions which require students to rate on a four-point scale how helpful that way of learning and studying would be for them and to what extent they would use the strategy to learn and study in that manner. In the formation of one factor congeneric models using PRELIS and LISREL7, twelve items form the sub-scale for knowledge of self-regulated learning and twelve items form the sub-scales for usage of self-regulated learning were obtained. Respondents were requested to rate each item on a four-point scale and the ratings were averaged across the items in each subscale. For example, a high score on the usage of self-regulated learning sub-scale indicates that the student is more likely to use strategies in the USAGE sub-scale. The reliability coefficients for each one factor congeneric analysis of the two self-regulated learning subscales, KNOW and USAGE are shown in Table 1. Again these coefficients were calculated from Ee’s (1998) larger sample of Primary 6 students in Singapore.

### Table 1: Unit Weight and maximised scale reliability coefficients for student and teacher variable scales with the measurement model fixed parameter values for use in the non-recursive equation models

<table>
<thead>
<tr>
<th>Variable</th>
<th>Reliability-maximised ($r_m$)</th>
<th>Loading ($\lambda = \sqrt{r_m}$)</th>
<th>Error Variance ($\theta = 1 - r_m$)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Student Variables</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task Goal (TG)</td>
<td>0.846</td>
<td>0.920</td>
<td>0.080</td>
</tr>
<tr>
<td>Ego Goal (EG)</td>
<td>0.926</td>
<td>0.962</td>
<td>0.038</td>
</tr>
<tr>
<td>Work Avoidance Goal (WAG)</td>
<td>0.817</td>
<td>0.904</td>
<td>0.096</td>
</tr>
<tr>
<td>Knowledge of Self-Regulated Learning (KNOW)</td>
<td>0.867</td>
<td>0.931</td>
<td>0.069</td>
</tr>
<tr>
<td>Usage of Self-Regulated Learning (USAGE)</td>
<td>0.858</td>
<td>0.926</td>
<td>0.074</td>
</tr>
<tr>
<td><strong>Teacher Variables</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Classroom Task Goal (TGO)</td>
<td>0.785</td>
<td>0.886</td>
<td>0.114</td>
</tr>
<tr>
<td>Classroom Ego Goal (EGO)</td>
<td>0.788</td>
<td>0.888</td>
<td>0.112</td>
</tr>
<tr>
<td>Strategy-Based Instruction (STPRAC)</td>
<td>0.868</td>
<td>0.932</td>
<td>0.068</td>
</tr>
</tbody>
</table>

**Teacher Survey Questionnaire** (Ee, 1998)

As the study required the development of the teacher scale, considerations were made to ensure that the most efficient and simplistic implementation and administration to a large group of teachers be also one of the factors to consider besides content validity and reliability.

The questionnaire was accompanied by a brief covering letter explaining the specific nature and
intent of the study and assuring teachers that all individual responses would be treated confidentially. The questionnaire is outlined as: Part 1: Background Data and Part 2: Classroom Practices.

Part 1 seeks teachers’ personal particulars, such as, gender, age, highest academic and professional qualifications, participation in in-service courses, teaching experience as well as the name of their school and the stream that they are teaching currently as well as previously taught.

Part 2 of the survey assesses teachers’ classroom practices, namely, their enhancement of task and ego orientations and promotion of cognitive self-management in the classroom. The scale comprises 13 statements grouped into 3 sub-scales, five statements describing task orientation (e.g. “I encourage my pupils to continue trying their best even when they encounter difficulty with given tasks in exams”), three statements describing ego orientation (e.g. “I encourage my pupils to compete with one another to see who can do the best”) and five statements describing cognitive self-management (e.g. “I teach my pupils to use different strategies and discuss with them why, how and when they should use these strategies”). For each statement, the teachers are required to circle on a four-point scale from “Rarely” to “Almost Always” what they perceive as best in describing their classroom. Scoring involves averaging the ratings across the items on the three sub-scales. A high score on the task orientation sub-scale indicates that teachers reported enhancing task orientation in their students. The reliability indices for these teacher scales are presented in Table 1. These test data were derived from Ee’s (1998) full sample of Primary 6 teachers (n=311). The teachers of the high achievers in this paper were part of that sample.

Results

Profiles of Students and Teachers

In order to examine the student variables, the means and standard deviations were obtained from the one-factor congeneric models of the three student goal orientation (task, ego and work avoidance) variables and two self-regulated learning strategies (knowledge and usage of self-regulated learning) variables (Table 2). T tests were conducted to determine the nature of any differences between the males and females on the variables. All statistics were obtained from SPSSx, Release 7.5 (Tables 2 and 3).

<table>
<thead>
<tr>
<th></th>
<th>Goal Orientations</th>
<th>Self-Regulated Learning</th>
<th>Achievement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Task</td>
<td>Ego</td>
<td>Work-Avoidance</td>
</tr>
<tr>
<td>HA Boys</td>
<td>3.42 (.46)</td>
<td>2.96 (.82)</td>
<td>1.32 (.46)</td>
</tr>
<tr>
<td>HA Girls</td>
<td>3.47 (.46)</td>
<td>2.96 (.81)</td>
<td>1.22 (.35)</td>
</tr>
</tbody>
</table>

1. Maximum averaged possible score = 4
2. T-score was the sum of the T-scores for four subjects

Goal Orientation

Examination of the means revealed high-achieving students scored higher on task and ego orientations than on work avoidance orientations.
Self-Regulated Learning

High-achieving students tended to report “frequently” to “almost always” of their knowledge of self-regulated learning strategies whilst, reporting to use these strategies only “sometimes” to “frequently”. Furthermore, these high-achieving students reported high use of self-regulatory strategies (e.g. using the dictionary, studying class notes and test papers to ensure that the same mistakes do not occur again).

Gender Differences

Females did not differ reliably from males on either task or ego orientations, but males scored reliably higher than females on the work avoidance measure, $t = 78.72$, $p < 0.01$. Furthermore, comparisons between males and females on their self-regulated learning showed no significant differences on either reported knowledge or reported usage of strategies.

Table 3: Means and Standard Deviations of Classroom Goal Orientations and Strategy-Based Instruction of Teachers in High-Achieving Classes

<table>
<thead>
<tr>
<th>Teachers in HA Classes</th>
<th>Classroom Goal Orientations</th>
<th>Strategy-Based Instruction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Task</td>
<td>Ego</td>
</tr>
<tr>
<td></td>
<td>3.60</td>
<td>2.99</td>
</tr>
</tbody>
</table>

1. Maximum averaged possible score = 4

Classroom Goal Orientations

There were two measures of the type of classroom goal orientations encouraged by the teachers: task and ego classroom goal orientation. The means and standard deviations of these two measures for the EM1 teachers are presented in Table 3. An examination of the means revealed that both task and ego orientations were “frequently” reported as being encouraged in these higher ability classes.

Strategy-Based Instruction

An examination of the means in Table 3 revealed that teachers reported “frequently” their provision of strategy-based instruction in classes by teaching their students different strategies and discussing with them why, how and when they should use these strategies; and brainstorming the possible ways of solving problems to guide them to find out the most effective strategy.

Relationships of Teacher and Student Variables in Explaining Achievement, Self-Regulated Learning and Motivation in HA Classes

Multi-level modeling (Mln) was used to ascertain for the hierarchical structure of the data. “The advantages of multilevel over single level linear modeling stem from the former’s more realistic portrayal of the effects of grouping. A multilevel model incorporates the fact that individuals within naturally occurring groups share common features; they are not the completely independent entities assumed in ordinary linear modelling” (Prosser, Rasbash & Goldstein, 1991). However, in this study, in particular, the influences over achievement and other student variables were considered as dependent upon teacher and student variables. The analysis assumes a two-level hierarchy with student variables at level 1, teacher variables at level 2, and school at level 3. In instances where level 3 proved not to be significant, two-level analyses were then used to analyse the data (Holmes-Smith & Rowe, 1992).
The Mln analyses and path diagram (Figure 1) showed that schools accounted for more than half of the variance in PSLE achievement in HA streams. In the case of HA stream, this between-school variation in achievement depends on students’ task orientation and usage of self-regulated learning in schools. The significant covariances from the random part of the model showed that in high-achieving HA schools, HA students who are both task- and ego-oriented are likely to make a difference in their school mean achievement whereas in low-achieving HA schools, HA students who are more predisposed to knowledge and usage of strategies will make a difference in their school mean achievement.

Students who were task-oriented were more predisposed to greater knowledge and usage of strategies, whereas work avoidance orientation had a negative effect on the knowledge and usage of self-regulated learning. These findings were consistent with Meece et al. (1988). HA students who have work avoidance tendencies were also less likely to use self-regulated learning strategies as well as less likely to achieve in their studies.

Figure 1: Path Diagram showing relationship between teachers and students of EM1 Classes

In HA streams, the more ego-oriented the students, the more likely they would perform well academically as ego goal orientation is likely to have a positive direct influence on their achievement. Considering that HA students also possess task goal orientation besides ego goal orientation, it is possible to pursue both task and ego goal orientations and yet be motivated to achieve academically as task goal orientation focuses on task mastery whereas, ego goal orientations reminds students of their long term consequences of these actions (Wentzel, 1991). Singapore, being a meritocratic society with the schools, teachers and parents emphasizing the importance of high achievement if students want to ensure that they have a bright future, students may be oriented in pursuing these goals. However, much of the literature on goal orientations demonstrates that task goal orientations rather than ego goal orientations predict achievement (see Ablard & Lipschultz, 1998; Meece & Holt, 1993). Why would a desire to learn, take on challenging work and improve skills (task goals) not be more strongly related to achievement? Why are ego and
work avoidance goals not more negatively related to achievement? According to Jussim (1991), it may be a reflection of the school task and the evaluation procedure which do not reward challenge seeking and placing mastery above achieving high marks. This may be especially reflected in HA classes where students’ ego goals are more strongly related to achievement than their task goals. Second, it may be that goals affect motivation through their relationship with other variables rather than directly. For example, in the present study students’ knowledge and usage of self-regulated learning strategies were the mediating variable between task goal and achievement for HA classes. Third, teachers’ classroom goal orientations and strategy-based instruction may further weaken the direct link between students’ personal goals and achievement. Fourth, it may reflect the Asian culture and philosophy as stressed by our prime minister, Mr Goh (1997) and others (e.g. Urdan & Maehr, 1995). Could it be then that the cultural milieu of Singapore, with its recognized emphasis on achievement, competition and quest for excellence has played a role in the findings presented here?

Students who reported knowledge of self-regulated learning were also reported having greater predispositions to use self-regulated learning. Students’ knowledge and usage of self-regulated learning mediates between task goal orientations and achievement for HA students. Usage of self-regulated learning was also positively linked to HA students’ achievement.

Teachers’ classroom task goal orientations has a positive influence on the ego goal orientations of HA students. In the case of teachers’ classroom ego goal orientations, it was found conducive for enhancing HA students’ achievement but not HA students’ knowledge of strategies. It looks as if one of the emphasis from both teachers and students is ego goal orientations. It may be that the very nature of being the top 10% in such a culture reinforces the competitive nature of the society (reflects what the culture wants e.g. Hau & Hui, 1996).

Teachers’ strategy-based instruction tends to be negatively related to HA students’ ego goal orientations. Perhaps what is most interesting is the negative effect of teachers reported strategy-based instruction at HA level. The negative impact of strategy-based instruction on HA students’ ego goal orientations could probably be due to the following reasons:

- Students may have reached automaticity in their self-regulated learning strategies and perceived that they do not need strategy-based instruction that their teachers were providing or
- The kind of strategy-based instruction that teachers are providing to HA classes may be redundant as HA students may either not perceive their importance or these students may have already acquired these strategies or
- HA students may perceive that their teachers may not think well of them and that they need to work harder through these strategies which they have already learnt. Therefore, it is like eating “humble pie” thus, reducing their egoism and lack of self-esteem.

Implications for Classroom Practice in HA Stream

The following are some specific implications arising from the classroom practices of HA classes:

The HA class seems to strive under ego goals as their ego goal orientation has a direct positive influence on their achievement. Furthermore, both teachers’ classroom ego and task goal orientations are likely to enhance their ego goal orientations. Thus, it seems essential that HA classes provide both task and ego classroom goal orientations for enhancing students’ ego goal orientations. However, in the case of low-achieving HA classes, where the ego goal orientations of the HA students may be low, there is a need to enhance it through greater provision of both
teachers’ classroom task and ego goal orientations as well as through low-achieving HA students’ knowledge and use of strategies.

HA’s work avoidance goal orientations should be decreased as this has a detrimental effect on the knowledge and usage of strategies. Focusing on task goal orientations may be helpful in reducing such avoidance tendencies by using motivational strategies such as cooperative learning and high interest tasks on problem-solving. An HA classroom that perpetuates both task and ego goal orientation will enhance both student knowledge, and indirectly perpetuate their use of strategies which will then enhance their achievement.

The negative impact of strategy-based instruction on HA students’ ego goal orientations may suggest the need for a different set of strategies for enhancing HA students. Strategy-based instruction for the high-achievers may also need to focus on challenging activities to allow these students to manage and organize their environment to meet their individual needs and interests as well as require them to assess, record or report real life context (Stein & Poole, 1997) with the provision of higher-order thinking skills (van der Westhuizen & Rautenbach, 1997).

References


