

## **Motivation and Learning Strategies of High School and University Students**

**Dr. Quamrul H. Mazumder, University of Michigan - Flint**

Dr. Quamrul Mazumder is currently an associate professor of mechanical engineering at University of Michigan-Flint. His areas of research include computational fluid dynamics, multiphase flow, quality in higher education, metacognition, motivation, and engagement of students. He is a Fulbright scholar travelled around the world to promote quality and globalization of higher education.

**Miss Vasudha Kilaru, University of Michigan - Flint**

Department of Computer Science, Engineering and Physics. Research Assistant and Academic Tutor for DEEP program in the University of Michigan -Flint.

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## Abstract

This research paper includes the survey questionnaire that consists of 18 categories. Out of 18 categories, six are related to motivation and nine are related to learning strategies. To investigate and compare the motivation and learning strategies implemented by first-year engineering students and high school students, a study was conducted using the motivation strategy and learning questionnaire (MSLQ). The sample includes seventy-five senior high school students who were dually enrolled in university courses similar to those being taken by university students, and fifty-five first year university students with the same levels participated in the survey. Both groups have the same instructor for offered courses and one of these courses were offered at the offsite location and the other one was at the university main campus. An independent sample t-test was performed showing a significant difference between dual enrolled high school and university students with high abilities in the categories of motivation and learning strategies. In addition, gender comparison also showed a significant difference in some areas. Results of this study may be useful for the development of strategies to improve the level of motivation among first-year engineering students. The results can also be used to develop an initiative that may help students become better learners.

*Keywords:* Motivation, learning strategies, MSLQ, quality in higher education.

## Introduction

The need for improving the quality of student learning has been recognized around the world since the economic development of a nation depends upon the intellectual ability and skills of students. Time is an important factor influencing the development of human intelligence so the learning preferences may vary with age<sup>1</sup>. Higher education can be determined as the special period of a human's life that is connected with the crisis of professional identification. This crisis experience result in the formation of one's own professional identity which is an integral and essential part of the holistic self-image of a mature personality<sup>2</sup>. Empowerment through teaching may liberate and enable students to become more autonomous. Motivation is the key element of student learning. So educators need to emphasize the value of student work and offer rewards to enhance students towards the course work. Independent thinkers enable creativity. Sadi and Uyar concurred to Dewey and Cooke's idea that in today's information societies, the main goal of schools should not be the direct transmission of knowledge to new generations. Instead, their goal should be to teach new generations how to learn<sup>3</sup>. Zajacova reported that the differences in high school and university students learning can be mapped by using the theory of learning styles<sup>4</sup>. Research on motivational and learning strategies amongst diverse populations can help develop an improved perception of how different campus communities, varying societies, and differing experiences shape student's learning and also aid in the development of effective curriculum.

Motivation predicts learners' self-regulatory strategies. Students who are more motivated to engage in learning tasks generally will opt to be more strategic. However, Savoji stated that students' interactions with their courses, particularly in terms of learning and psychological feature methods, has not been widely studied<sup>5</sup>. Hence with the help of MSLQ, students can self-evaluate their learning and motivation strategies that may enable them to succeed in their academic endeavors. The University of Michigan- Flint offers first year engineering courses to high school students at three different offsite locations through a Dual Enrollment Extended Partnership Program (DEEP). The objective of this program is to encourage high school students with high abilities to enroll as freshmen students in engineering courses. During the last five years, it was observed that the success rate of DEEP students was higher than the first year engineering students at University of Michigan –Flint. To analyze whether the motivation and learning strategies of two groups of students are different from each other, the current study was carried out. The current study did not compare student performance with similar HS GPA and test scores as general students.

## **Hypothesis**

The current study examined four hypotheses to understand the diversity makeup of the students and differences in their motivation and learning strategies listed below:

H (1): There is no significant difference between high school students and university students in motivation strategies.

H (2): There is no significant difference between high school students and university students in learning strategies.

H (3): There is no significant difference between male and female students in high school and university in motivation strategies.

H (4): There is no significant difference between male and female students in high school and university in learning strategies.

## **Literature Review**

Rather than motivation being considered a component of self-regulation, several investigations reported that motivation and self-regulatory strategies which can be developed by MSLQ<sup>6</sup>. A major implication of the study for learning and instruction is the need to consider value, cost and self-efficacy separately when examining the impact of motivation on the learning of students<sup>7</sup>. The MSLQ is based on important theoretical insights into the nature of learning and the determinants of academic performance<sup>8</sup>. Despite the relative decrease of values in self-perception, every single feedback received said that the participants felt to be more mature than their peers at home. They reported having more self-confidence, to act more spontaneous and to be more open-minded. Academic performance has been extensively reported to correlate considerably and positively with the choice and application of self-regulated learning strategies<sup>9</sup>.

The self-regulated dimension highlights self-initiated actions and processes aimed at acquiring and applying information or skills that include goal setting, self-monitoring and managing time. It also helps in regulating one's efforts by providing a physical and social environment for goal fulfillment<sup>10</sup>. The outcomes of previous researchers confirmed that attitude and strategies encourage students to get motivated for the accomplishment of tasks in school. The way in which students utilize their time at the university and expertise in their academic tasks may impact their skillfulness in academic performance<sup>11</sup>. Motivation can be defined as the strong desire to take part in academic tasks effectively and applications of motivation theories attempt to explain how such desire is developed and endorsed<sup>12</sup>. When students' opt individual preferences, it helps to improve their motivation to learn, they have the potential gain for enhanced learning as they are self-motivated to learn<sup>13</sup>. Motivation can be described as a multileveled concept comprising key elements like metacognition, task value, orientation, and self-efficacy. These elements play vital role in analyzing students' learning strategies and performance<sup>14</sup>.

In light of the fact that motivation and learning are interrelated, researchers commonly try to find better understanding of the differential effects of various classroom variables on students' motivation to learn<sup>15</sup>. However, motivation and learning strategies have a strong impact on robust factors like academic performance with self-regulation. In traditional classrooms, self-regulated learning has been studied as a means of understanding how successful students adapt their cognition, motivation, and behavior to improve learning<sup>16</sup>. Greene and Azevedo have encouraged researchers to ask whether there might be a developmental progression within self-regulated learning (SRL). According to them, "research in this area would perhaps not only allow us to examine individual phenomena in SRL clearly but also provide clues as to how good SRL behaviors might be taught"<sup>17</sup>. Schunk reported that self-regulated learners tend to have higher self-efficacy for learning than students with less-adaptive SRL profiles<sup>18</sup>.

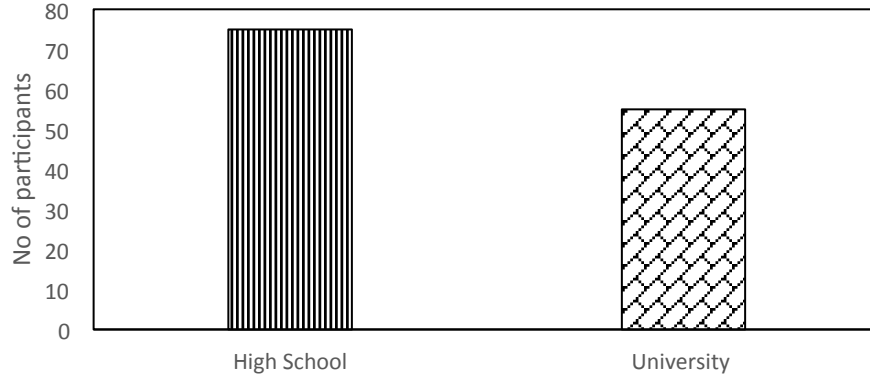
## **Methodology**

### **Questionnaire:**

The Motivated Strategies Learning Questionnaire developed originally by Pintrich, Smith, Garcia & McKeavhie, which is an 81-item, self-reported, Likert-scaled instrument, which students use to rate about their motivational orientation and use of the different learning strategies for a specific course; rating the statements from "1" (not at all true for me) to "7" (very true for me) was used to collect the data<sup>19</sup>. This MSLQ focused on the students' understanding of the course work when utilizing different learning styles. The survey instrument chosen for the current study helps to assess the motivation of students towards academics by using learning strategies. This instrument provides a predictive validity in order to analyze the actual performance of students in course work. The scale of the instrument is well structured and robust for confirmatory analysis of the factors of motivation and learning strategies.

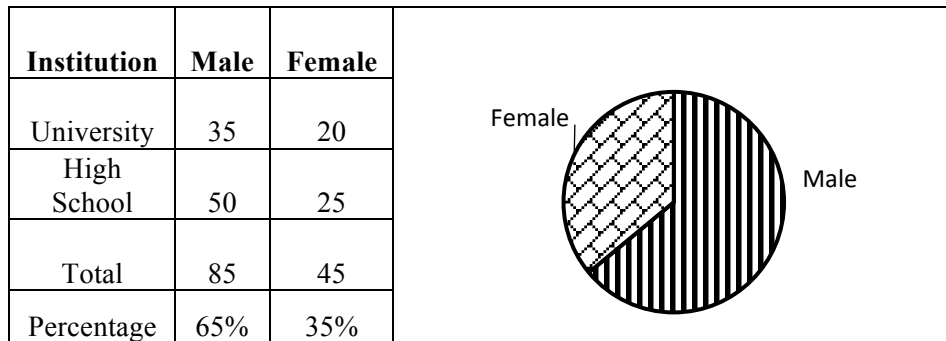
**Participants:**

The MSLQ questionnaire was provided to 90 High school students and 140 University students. The number of responses received was 120 out of 230 with a response rate of 52% as shown in Fig1. The survey was voluntary and some respondents choose not to participate in the study.



**Figure 1: Number of Participants from High School and University**

The participants included 35 male and 20 female students from University and 50 male and 25 female students from high school, respectively. The percentage of male and female participants was 65% to 35% as presented in Figure 2 below. Since one of the hypotheses of the study was to investigate if there is any significant difference between male and female students, the undefined students’ category was omitted from the statistical analysis.



**Figure 2: Gender Information of Participants**

**Data Analysis:**

Statistical analysis was performed using an independent sample t-test to determine the mean values of 18 categories among both categories of students. SPSS22 statistical analysis software<sup>20</sup> was used for the descriptive analysis. The purposes of Independent t- test is to evaluate four different hypothesis listed in the previous section. “A t-test helps you compare whether two groups have different average values. The “paired t-test” is used when each observation in one group is paired with a related observation in the other group.<sup>21.</sup>”

**Results:**

Descriptive statistics of each hypothesis are presented in tables 1, 3, 5, & 7. The independent sample t-test results for each hypothesis are summarized and presented in tables 2, 4, 6 & 8. Descriptive statistics for the motivation of students are presented in table-1 to evaluate hypothesis one. The mean values of high school students are slightly higher than university students for both Task value (5.59 > 5.46) and Self – efficacy (5.22 > 5.11).

**Table 1: Descriptive Statistics for Motivation Strategies-H (1)**

<b>Motivation</b>	<b>Institution</b>	<b>Mean</b>	<b>Std. Dev</b>	<b>Std. Error Mean</b>
Task Value	High School	5.59	1.48	0.17
	University	5.46	1.47	0.19
Self- efficacy	High School	5.22	1.25	0.14
	University	5.11	1.26	0.16

If you are using a significance level of 0.05, a two-tailed test allows half of the value in one direction and the other half in the other direction to test statistical significance. The number of values in the final calculation of a statistic that are free to vary is considered as degrees of freedom. A 95% confidence interval shows that 95% of the population distribution is contained in the confidence interval. Lower and upper limits are interval estimates of mean. The standard error difference of the mean is the standard deviation of those sample means over all possible samples of the given population. “The t-statistic is a ratio of the departure of an estimated parameter from its notional value and its standard error.” It is used in hypothesis testing. An F-test is most often used in order to identify the model that best fits the population from which the data were sampled. The mean difference is a standard statistic that measures the absolute difference between the mean values in two groups. The variance is a numerical value used to indicate how the individuals in a sample group vary.

Independent t-test results presented in table-2 showed significant differences between high school and university students. The level of significance for task value was ( $p=0.02 < 0.05$ ) and ( $p=0.01 < 0.05$ ) for self – efficacy. The null hypothesis is rejected if the p-value is less than the significance or  $\alpha$  level. Hence, this level is considered as the probability of rejecting the null hypothesis given that it is true and is most often set at 0.05 (5%). As the p value of both factors is less than the value 0.05, there is a significant difference in high school and university students’ motivation strategies. The statistical analysis results reject the hypothesis (H1) as high school students appears to have higher levels of task value and self-efficacy. The task value components focus on the causes, why and how students get engaged in an academic task. Self - efficacy refers to students’ beliefs that they can accomplish a task.

**Table-2: Independent t-test analysis for Motivation strategies-H (1)**

Motivation	Equal variances	F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval	
									Lower	Upper
Task Value	assumed	0.23	0.02	0.05	127	0.80	0.02	0.26	-0.50	0.54
	not assumed			0.05	117.21	0.80	0.02	0.26	-0.50	0.54
Self-Efficacy	assumed	0.09	0.01	0.47	127	0.64	0.10	0.22	0.55	0.53
	not assumed			0.47	116.43	0.64	0.10	0.22	0.55	0.55

Descriptive statistics of learning strategies of students are presented in table-3 to evaluate hypothesis (H2). The mean values of high school students are slightly higher than university students for organization (5.82 > 5.79), critical thinking (5.44 > 5.39) and (3.99 < 4.04) for help seeking (seeking help from peers and instructors when needed). The mean value of university students is slightly higher than high school students. However, these results explain that high school students have more learning strategies than university students.

**Table-3: Descriptive Statistics for Learning Strategies-H (2)**

Learning Strategies	Type-of university	Mean	Std. Dev	Std. Error Mean
Organization	High School	5.82	1.36	0.15
	College	5.79	1.35	0.18
Critical Thinking	High School	5.44	1.34	0.15
	College	5.39	1.37	0.18
Help Seeking	High School	3.99	1.51	0.17
	College	4.04	1.56	0.21

Critical thinking refers to students' use of strategies to apply previous knowledge to new situations. Time study management is the better usage of available resources. Independent t-test results presented in table-4 showed significant differences between high school and university students. The level of significance for critical thinking was ( $p=0.04 < 0.05$ ), time study management ( $p=0.01 < 0.05$ ) and ( $p=0.06 > 0.05$ ) for help seeking. The null hypothesis is rejected if the p-value is less than the significance or  $\alpha$  level. The statistical analysis results reject the hypothesis (H2) as high school students appears to have higher levels of critical thinking and time study management. The critical focus is on students' use of strategies to apply previous knowledge to new situations or make a critical evaluation of ideas and better usage of resources available.

**Table-4: Independent t-test analysis for learning strategies-H (2)**

Learning Strategies	Equal variances	F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval	
									Lower	Upper
Critical Thinking	assumed	0.04	0.04	0.21	127	0.76	0.05	0.24	-0.42	0.53
	Not assumed			0.20	115.29	0.71	0.01	0.22	-0.45	0.56
Time Study Management	assumed	0.141	0.01	-0.286	127	0.70	-0.09	0.29	-0.66	0.48
	Not assumed			-0.287	117.05	0.718	-0.09	0.29	-0.66	0.44
Help Seeking	assumed	0.267	0.06	-0.146	127	0.80	-0.04	0.27	-0.59	0.49
	Not assumed			-0.146	114.31	0.81	-0.04	0.27	-0.59	0.49

Descriptive statistics for motivation strategies of male and female students are presented in table-5 to evaluate hypothesis (H3). The mean values of female students are slightly higher than male students for intrinsic goal (3.82 < 4.29). Intrinsic goal orientation refers to focus on learning and mastery. The values of task value (5.69 < 6.03) and (2.95 < 3.27) test anxiety are also slightly higher for female students. These results explain that female students have more motivation strategies than male students.

**Table-5: Descriptive statistics of Male and Female students in Motivation Strategies-H (3)**

Motivation	Gender	Mean	Std. Dev	Std. Error Mean
Intrinsic Goal Orientation	Male	3.82	1.91	0.22
	Female	4.29	1.78	0.23
Task Value	Male	5.69	1.41	0.16
	Female	6.03	1.12	0.14
Test Anxiety	Male	2.95	1.74	0.20
	Female	3.27	1.75	0.23

Independent t-test results presented in table-6 showed significant differences between male and female students. The level of significance for task value was ( $p=0.02 < 0.05$ ), intrinsic goal ( $p=0.05 < 0.05$ ) and ( $p=0.01 < 0.05$ ) for test anxiety. The null hypothesis is rejected if the p-value is less than the significance or  $\alpha$  level. The statistical analysis results reject the hypothesis (H3) as female students appear to have higher levels of task value, intrinsic goal orientation, and test anxiety.



**Table-6: Independent t-test analysis of Male and Female students in Motivation Strategies -H (3)**

Motivation	Equal variances	F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval	
									Lower	Upper
Task Value	Assumed	5.36	.022	-1.49	127	0.13	-.034	0.23	-0.80	0.11
	not assumed			-1.54	126.87	0.12	-.034	0.22	-0.78	0.09
Intrinsic goal	Assumed	3.79	.054	-0.96	127	0.33	-0.21	0.21	-0.64	0.22
	not assumed			-0.98	123.81	0.32	-0.21	0.22	-0.63	0.21
Test Anxiety	Assumed	0.09	0.01	0.47	127	0.64	0.109	0.22	0.55	0.09
	not assumed			0.47	116.43	0.64	0.109	0.23	0.53	0.55

Descriptive statistics for learning strategies of male and female students are presented in table-7 to evaluate hypothesis (H4). The mean values of male students are slightly higher than female students for organization (5.84 < 6.19) and metacognition (3.42 < 4.31). This explains that male students have more organization and metacognition strategies than female students. The mean values of female students are slightly higher than male students for time study management (3.89 < 4.29) and elaboration (2.96 < 3.73). These results explain that female students have more elaboration and time study management strategies than male students.

**Table-7: Descriptive statistics of Male and Female students in Learning Strategies-H (4)**

Learning Strategies	Gender	Mean	Std. Dev	Std. Error Mean
Organization	Male	6.19	1.11	0.13
	Female	5.84	1.37	0.18
Meta cognition	Male	4.31	1.64	0.19
	Female	3.42	1.69	0.22
Time/Study Management	Male	3.89	1.72	0.20
	Female	4.29	1.74	0.23
Elaboration	Male	2.96	1.56	0.18
	Female	3.73	1.57	0.20

Independent t-test results presented in table-8 showed significant differences between male and female students. The level of significance for organization was ( $p=0.05=0.05$ ), elaboration ( $p=0.01<0.05$ ), time study management ( $p=0.02<0.05$ ), and ( $p=0.03<0.05$ ) for metacognition.

The null hypothesis is rejected if the p-value is less than the significance or  $\alpha$  level. The statistical analysis results reject the hypothesis (H3) as female students appear to have higher levels of the organization, elaboration, time study management and metacognition. Cognitive strategies focus on the ability to process information from lectures.

**Table-8: Independent t-test for Learning Strategies of male and female students-H (4)**

Learning Strategies	Equal variances	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval	
									Lower	Upper
Elaboration	Assumed	3.53	0.01	.048	127	0.63	0.14	0.30	-0.45	0.74
	not assumed			0.47	106.70	0.63	0.14	0.31	-0.46	0.76
Organization	Assumed	0.04	0.05	0.21	127	0.76	0.05	0.24	-0.42	0.53
	not assumed			0.21	115.29	0.76	0.05	0.24	-0.42	0.53
Time Study Management	Assumed	4.96	0.02	1.06	127	0.29	0.27	0.25	-0.23	0.77
	not assumed			1.01	92.86	0.31	0.27	0.26	-0.26	0.80
Meta cognition	Assumed	8.85	0.03	-1.04	127	0.29	-0.35	0.34	-1.03	0.32
	not assumed			-1.07	126.40	0.28	-0.35	0.33	-1.02	0.30

**Summary and Conclusion:**

The study revealed important information about both high school and college students. A Significant difference was observed in questions related to motivation strategies like task value (0.02) and self-efficacy (0.04) as shown in table 2 since their p-value is less than 0.05. Task value components focus on the causes, such as why and how students get engaged in an academic task. Self-Efficacy focuses on students' beliefs that they can accomplish a task. The results indicated that high school students are more dedicated towards the given task than college students. Significant differences were observed through questions that related to learning strategies such as time-study management (0.01) and critical thinking (0.04), as shown in table 4. These results prove that high school students have higher levels of critical thinking and time study management. Significant differences were observed between male and female students in both high schools and universities in intrinsic goal orientation, task value, test anxiety, elaboration, organization, time study management and metacognition ( $p < 0.05$ ). Female students showed higher intrinsic goal orientation, higher task value, better time/study management skills, and elaboration when compared to male students. Whereas, male students are more active in Organization and Metacognition to improve their learning process.

Overall, high school students are more motivated and better learners than university students. The possible reasons may be the high school cohort students have higher GPA/test scores than the students who took the course at the University. This may be due to low admission requirements to the engineering program at the university. Female students showed a higher level of motivation towards academic success. The study was based on a limited number of students and will be extended to a larger population to better understand the characteristics of the high school and college students. Although the current study results may not draw strong conclusions about the motivation and learning strategies of these two groups of students, it shed some light on an extremely important topic about how to motivate students towards success in engineering. The main challenge for many educators is how to motivate new students who are entering into the college environment due to the fact that motivation is the key aspect in academic achievement. Some of the factors like self-efficacy and task value that are mentioned in the current study help to improve the effective skills required for academic success.

### **Recommendation and Future work:**

The current study showed that dual enrolled high school students are more motivated and implement efficient learning strategies compared to university students with high abilities. High educational institutions may consider developing initiatives and programs such as peer monitoring, tutoring, or supplemental instructions in order to improve the learning and motivation of university students. Hence other universities offering engineering programs may also consider a similar dual enrolled program to attract quality students from high schools to their programs.

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## Appendix-1

### Motivated Strategies for Learning Questionnaire

<b>Name of the Institution:</b>		<b>High School. <input type="checkbox"/> / College Level. <input type="checkbox"/></b>						
<b>Male <input type="checkbox"/> / Female <input type="checkbox"/></b>		<b>Class: I Year <input type="checkbox"/> / II Year <input type="checkbox"/> / III Year <input type="checkbox"/> / IV Year <input type="checkbox"/></b>						
<b>Department:</b>								
<b>1. Rehearsal</b>		<b>Strongly Disagree</b>	<b>Disagree</b>	<b>Somewhat Disagree</b>	<b>Neutral</b>	<b>Somewhat Agree</b>	<b>Agree</b>	<b>Strongly Agree</b>
a. When I study, I practice saying the material to myself over and over								
b. When studying for classes, I read my class notes and the course reading over and over								
c. I memorize key words to remind me of important concepts when I study								
d. When I study, I make lists of important terms and memorize the lists.								
<b>2. Elaboration</b>								
a. When I study for this class, I pull together information from different sources such as lectures, reading and discussions								
b. I try to relate ideas in one subject to those in other courses whenever possible.								
c. When reading for classes, I try to relate the material to what I already know								
d. When I study, I write brief summaries of the main ideas from the readings and the concepts from the lectures								
e. I try to understand the material in classes by making connections between the readings and the concepts from the lectures								
f. I try to apply ideas from course readings in other class activities such as lecture and discussion.								
<b>3. Organization</b>								
a. When I study the readings for a class, I outline the material to help me organize my thoughts.								
b. When I study, I go through the readings and my class notes and try to find the most important ideas								
c. I make simple charts, diagrams, or tables to help me organize course material.								
d. When I study, I go over my class notes and make an outline of important concepts								
<b>4. Critical Thinking</b>								
a. I often find myself questioning things I hear or read in this class to decide if I find them convincing.								

b. When a theory, interpretation or conclusion is presented in the class or in reading, I try to decide if there is good supporting evidence.							
c. I treat the course material as a starting point and try to develop my own idea about it.							
d. I try to play around with ideas of my own related to what I am learning in a class							
e. Whenever I read or hear an assertion or conclusion in classes, I think about possible alternatives.							
<b>5. Metacognitive self-regulation</b>	<b>Strongly Disagree</b>	<b>Disagree</b>	<b>Somewhat Disagree</b>	<b>Neutral</b>	<b>Somewhat Agree</b>	<b>Agree</b>	<b>Strongly Agree</b>
a. During class time I often miss important points because I am thinking of other things.							
b. When reading for this course, I make up questions to help me focus on my reading.							
c. When I become confused about something I am reading for this class, I go back and try to figure it out.							
d. If course readings are difficult to understand, I change the way I read the material							
e. Before I study new course material thoroughly, I often skim it to see how it is organized.							
f. I ask myself questions to make sure I understand the material I have been studying for this class.							
g. I try to change the way I study in order to fit the course requirements and the instructor's teaching style.							
h. I often find that I have been reading for this class but don't know what it was all about.							
i. I try to think through a topic and decide what I am supposed to learn from it rather than just reading it over when studying for this course.							
j. When studying for this course, I try to determine which concepts I don't understand well							
k. When I study for this class, I set goals for myself in order to direct my activities in each study period.							
l. If I get confused taking notes in class, I make sure I sort it out afterwards							
<b>6. Intrinsic Goal Orientation</b>							
a. I prefer course material that really challenges me so I can learn new things.							
b. I prefer course material that arouses my curiosity, even if it is difficult to learn.							
c. The most satisfying thing for me in classes is trying to understand the content as thoroughly as possible.							

When I have the opportunity, I chose course assignments that I can learn from even if they don't guarantee a good grade.							
<b>7. Extrinsic Goal Orientation</b>							
a. Getting a good grade is the most satisfying thing for me right now							
b. The most important things for me right now is improving my overall grade point average, so my main concern in this class is getting a good grade.							
c. If I can, I want to get better grade in this class than most of the other students.							
I want to do well in this class because it is important to show my ability to my family, friends, employer or others.							
<b>8. Task value</b>	<b>Strongly Disagree</b>	<b>Disagree</b>	<b>Somewhat Disagree</b>	<b>Neutral</b>	<b>Somewhat Agree</b>	<b>Agree</b>	<b>Strongly Agree</b>
a. I think I will be able to use what I learn in this course in other courses.							
b. It is important for me to learn the material in this class.							
c. I am very interested in the content area of this course							
d. I think the material in this class is useful for me to learn							
e. I like the subject matter of this course							
f. Understanding the subject matter of this course is very important to me.							
<b>9. Control of learning</b>							
a. If I study in appropriate ways, then I will be able to learn the material in this course.							
b. It is my own fault if I don't learn the material in this course.							
c. If I try hard enough, then I will understand the course material.							
d. If I don't understand the course material, it is because I dint try hard enough.							
<b>10. Self-efficacy</b>							
a. I believe I will receive an excellent grade in this class							
b. I am certain that I can understand the most difficult material presented in the readings for this course.							
c. I am confident that I can understand the basic concepts taught in this course.							
d. I am confident that I can understand the most complex martial presented by the instructor in this course.							
e. I am confident that I can do an excellent job on the assignments and tests in this course.							
f. I expect to do well in this class.							
g. I am certain that I can master the skills being taught in this class.							
h. Considering the difficulty of this course, the teacher and my skills, I think I will do well in this class.							
<b>11. Test Anxiety</b>							

a. When I take a test, I think about how poorly I am doing compared with other students.							
b. When I take a test, I think about the items on other parts of the test I can't answer.							
c. When I take the tests I think of the consequences of failing.							
d. I have an uneasy, upset feeling when I take an exam							
e. I feel my heart beating fast when I take my exam.							
<b>12. Time/Study Management</b>							
a. I usually study in a place where I can concentrate on my course work							
b. I make good use of my study time.							
c. I find it hard to stick to a study schedule							
d. I have a regular place set aside for studying							
e. I make sure I keep up with the weekly readings and assignments for my courses							
f. I attend class regularly							
g. I often find that I don't spend very much time on school work because of other activities.							
h. I rarely find time to review my notes or readings before an exam	<b>Strongly Disagree</b>	<b>Disagree</b>	<b>Somewhat Disagree</b>	<b>Neutral</b>	<b>Somewhat Agree</b>	<b>Agree</b>	<b>Strongly Agree</b>
<b>13. Effort Regulation</b>							
a. I often feel so lazy or bored when I study that I quit before I finish what I planned to do.							
b. I work hard to do well even if I don't like what we are doing.							
c. When course work is difficult, I give up or only study the easy parts.							
d. Even when course materials are full and uninteresting, I manage to keep working until I finish							
<b>14. Peer learning</b>							
a. When studying for a class, I often try to explain the material to a classmate or a friend.							
b. I try to work with other students to complete eh course assignments							
c. When studying for a class, I often set aside time to discuss the course material with a group of students from the class.							
<b>15. Help Seeking</b>							
a. If I were having trouble understating the material in my course, I would ask someone who could help me understand the general ideas.							
b. The purpose of asking somebody for help is my course would be to succeed without having to work as hard							



c. I would prefer asking another student for help in my courses rather than ask an instructor							
d. If I don't understand something in my course, I would guess rather than someone for assistance.							
e. Even if the work was too hard to do on my own, I wouldn't ask for help with my course.							
f. Getting help would be one of the first things I would do if I were having trouble in my courses							
g. Getting help in my courses would be a way of avoiding doing some of the work.							
h. I would feel like a failure if I needed help in my courses.							
i. I would rather do worse on an assignment I couldn't finish than ask for help							
j. If I were to seek help in my courses I would ask the teacher rather than another student.							
k. I would get help in my courses to learn to solve problems by myself							
l. If I were to ask for help in my courses it would be to quickly get the answer I need.							
m. I would not want anyone to find out that I needed help in my courses							
n. Getting help in my courses would be an admission that I am just not smart enough to do the work on my own							
o. In my course, the teacher would be better to get help from than another student.							
<b>16. Theory of intelligence</b>	<b>Strongly Disagree</b>	<b>Disagree</b>	<b>Somewhat Disagree</b>	<b>Neutral</b>	<b>Somewhat Agree</b>	<b>Agree</b>	<b>Strongly Agree</b>
a. You have a certain amount of intelligence and you really can't do much to change it							
b. Your intelligence is something about you that you can't change very much							
c. You can learn new things but you can't really change your basic intelligence.							
<b>17. Achievement Goal Questionnaire</b>							
a. My aim is to completely master the material presented in this class							
b. I am striving to do well compared to other students.							
c. My goal is to learn as much as possible.							
d. My aim is to perform well relative to other students							
e. My aim is to avoid learning less than I possibly could							
f. My goal is to avoid performing poorly compared to others							
g. I am striving to understand the content of this course as thoroughly							

as possible							
h. My goal is to perform better than the other students							
i. My goal is to avoid learning less than it is possible to learn							
j. I am striving to avoid performing worse than others							
k. I am striving to avoid an incomplete understanding of the course material							
l. My aim is to avoid doing worse than other students.							
<b>18. Percentage of Instrumentality</b>							
a. I will use the information I learn in my math class in other classes I will take in the future.							
b. What I learn in my math class will be important for my future occupational success							
c. The grade I get in my math class will not affect my ability to continue on with my education							
d. I will not use what I learn in my math class							
e. What grade I get in my math class will not be important to my future academic success							
f. I will use the information I learn in my math class in the future							
g. I must pass my math class in order to reach my academic goals							
h. The grade I get in my math class will affect my future.							