The Effects of Concept Mapping and Academic Self-Efficacy on Mastery Goals and Reading Comprehension Achievement

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Abstract

The purpose of the study is to investigate the effects of concept mapping on mastery goal orientation and academic self-efficacy in a collaborative learning environment. The current study employed a randomized controlled pretest-posttest group design to examine if learning strategies such as concept mapping can help students with both reading comprehension achievement and intrinsic motivation of wanting to master a task at a high level. A total of 42 5th grade students at Ilshin Elementary School in South Korea participated in this study. The experiment group (n=22) has undergone concept mapping training while the control group (n=20) has not. All students were required to fill out questionnaires based on mastery goals, performance goals and academic self-efficacy. The results indicated that concept-mapping did not increase mastery goals and mastery goals had no effect on test scores. In addition, the interaction effect between academic self-efficacy and condition did not increase mastery goals and had no effect on test scores. In conclusion, the reduced number of samples may have caused a potential source of instability considering the statistical procedure chosen.

Keywords: concept mapping, mastery goal orientation, performance goal orientation, academic self-efficacy and collaborative learning environment

1. Introduction

1.1 Purpose of Study

The purpose of this study is to investigate how concept mapping can increase mastery goals and academic self-efficacy. Although students are more likely to be intrinsically motivated to master a subject or task through mastery goals, the problem is that students with weak or no learning strategy skills may not be as successful when compared to their higher performing peers. These students without the development and training may struggle because they are not able to fully manage the absorption of new material that's been taught in class. There is limited research as to how learning strategy called concept mapping can promote and enhance reading comprehension achievement and increase mastery goals. However, if students do not have positive academic self-efficacy then concept mapping may not increase mastery orientation as much. This study addressed these shortcomings of mastery goal orientation.

2. Literature Review

2.1 Background of Study

Educational psychologists have recognized that motivation is a significant factor for students to engage and achieve a desired academic outcome. Research has suggested that encouraging students to do their best through motivation is the key to success both inside and outside the classroom because academic motivation is the enjoyment of school learning characterized by mastery goal orientation, curiosity and persistence (Broussard & Garrison, 2004). In addition, "overcoming difficult challenges will increase student's self-esteem" (Gottfried 1990, p. 525). Concept mapping may increase student's motivation because it is a learning method used to help students acquire cognitive learning strategies through understanding and organizing concepts (Russel, Comello, & Wright, 2007). This is significant because concept mapping can help stimulate the situation response conditionals that help students reflect the organization of materials to enhance academic outcomes. This will ultimately enhance the student's ability to recall information which should help increase test scores (Anderson,

Byrne, Douglass, Lebiere, & Qin, 2004). Empirical research has examined that motivation plays an important role to employ cognitive learning strategies, especially for reading comprehension (Park, 1999). However, little is known about the relationship between concept mapping and motivation and how it may increase reading comprehension achievement.

Goal orientation theory is a social-cognitive concept that explains why students are motivated to achieve a task in their academic work (Benabo & Tirole, 2003). There are two major tyes of motivation which are intrinsic and extrinsic (Amabile, Hennessey, & Tighe, 1994). Although four different types of motivation exist (i.e., extrinsic, intrinsic, instrumental and integrative motivation) they all conceptually overlap one another. Instrumental motivation and integrative motivation are a part of extrinsic motivation and integrative motivation is a part of instrumental motivation. Therefore, intrinsic and extrinsic are two primary types of motivation. According to Deci, Koestner, and Ryan (1999) intrinsic motivation is the ability to want to do something from the heart due to the lust for enjoyment rather than any external or outside rewards. This motivation comes from obtaining pleasure from the task itself and the sense of gratification when achieving results. Students with high intrinsic motivation are most likely to use mastery goal orientation. On the other hand, Lepper, Greene and Nisbett (1973) defined extrinsic motivation as a desire influenced by external factors as opposed to inner willingness to act or behave in a particular way to achieve a task. Extrinsic motivation drives people to do things that will result in tangible rewards such as money or a trophy. Students with high extrinsic motivation are most likely to use performance goals orientation.

Although there has been a strong debate whether mastery goals or performance goals are better than the other, both goal orientations are used in the learning environment to entice students to do well. However, research has indicated that mastery goals are more effective in the long run because students have more willpower to last longer and not burn out as easily. Students are able to weather the storm because there is an inner passionate desire to accomplish a task (Kusurakar et al., 2011). On the other hand, Performance goals may have negative effects in the long term because through this goal, students learn as a means to an end and seek extrinsic reward such as good grades or recognition to prove that they are more superior to their classmates. Many researchers have found new ways to explore how mastery goals can be increased to have a more meaningful and richer learning experience. Intrinsic motivation is a better approach for the learning environment because it's more desirable and will result in better learning outcomes than extrinsic motivation (Deci et al., 1999). Within this study, we explored ways to increase intrinsic motivation through learning strategies and academic self-efficacy.

2.2 Definition of Terminology

Concept Mapping is a learning methods in which students are required to draw a bubble map to represent the conceptual knowledge they read from learning materials. Through concept mapping, students are required to build a visual representation of a set of abstract concepts usually in a form of a bubble or square and chain link those concepts with details. Concept mapping can foster the acquisition of knowledge in individual or collaborative learning (Chang & Chen, 2002).

Mastery Goals is defined as an intrinsic type of motivation and focus on learning a task thoroughly. In addition, according to self-improvement motivation, mastery goals help with the development of new skills and competence of trying to accomplish something challenging. It derives from an individual's motivation for personal enjoyment, interest, or pleasure (Schunk, Pintrich, & Meece, 2008).

Performance Goals is defined as extrinsic motivation. Students are more focused on doing a task because of a reward that will be given. The side effect of this goal orientation is that students usually do well in the short term but will gradually lose interest as the task persists. In addition, students may also give up on a task because the effort may not be worth the reward in terms of work they need to put in for achievement (Midgley, Kaplan, & Middleton, 1998).

Academic Self-Efficacy refers to an individual belief that students are able to successfully achieve a desired result at a designated level on an academic task or specific academic goals (Bandura, 1997; Eccles & Wigfield, 2002; Linnenbrink & Pintrich, 2002). Academic self-efficacy also plays a critical role in how challenges are handled to overcome obstacles and achieve desired results (Bandura, 1997).

Collaborative Learning Environment is defined as a situation in which two or more people learn or attempt to learn something together for the purpose of problem solving. Collaborative learning will also help students re-organize their ideas and elaborate higher thinking with social interactions among peers. Students will share knowledge as a group to better understand concepts and ideas through elaborated explanations which should improve comprehension of task achievement (Dillenbourg, 1999).

Reading Comprehension Achievement is defined as the student's ability to understand learning material with accuracy. It will also be used as a tool to measure the total points scored by each student on taking the quiz. The readings will be comprised of TOSEL jr. passages with multiple choice type questions that all students must answer to determine task achievement levels. The reason why TOSEL jr. test was selected for this experiment is because it was a test designed for Korean 5th grade students to determine their current English level. The test was validated, created and administered by the Educational Broadcasting System (EBS) used as an alternative to the TOEIC and TOEFL test.

2.3 Resarch Questions & Hypotheses

Based on the theoretical literature review, concept mapping will increase mastery goal orientation if there is high academic self-efficacy because students will show a tendency to work harder and achieve greater desired results. However, if academic self-efficacy is weak, there is a possibility that concept mapping may not be as effective and task achievement will be diminished.

1) Does concept mapping promote mastery goal orientation and reading comprehension achievement?

> 1-1. Participants who use concept mapping will increase mastery goal orientation and reading comprehension achievement.

> 1-2. Participants who do who use concept mapping will not increase mastery goal orientation and reading comprehension achievement.

2) Do the effects of academic self-efficacy enhance concept mapping strategy on mastery goal orientation and reading comprehension achievement?

> 2-1. Participants who have high academic self-efficacy will increase mastery goal orientation and reading comprehension achievement after learning concept mapping strategies.

> 2-2. Participants who do not have high academic self-efficacy will not increase mastery goal orientation and reading comprehension achievement after learning concept mapping strategies.

3. Method

3.1 Participants

A total of fourty two (*n*=42) 5th grade elementary students participated in the study. All participants were from Ilshin Elementary School in South Korea and the study took place on Sept 16, 2015 at 10:30am. Participants were recruited by teachers in every 5th grade class. Flyers were produced to promote the study and distributed to all 5th grade students. To ensure that CITI policy was in effect, all students were required to return a signed letter of consent. Since students are under the age of eighteen, students were required to get their parents signature and approval. Those students who did not bring back a letter of consent did not participate in the study and was dismissed.

3.2 Procedures

In the beginning, participants were randomly assigned to one of two groups. The experimental group had concept mapping training and the control group did not. Before the study began, all students were given (2 min.) to fill out pre-questionnaires with questions based on mastery goals (Midgley et al., 2000) performance goals (Boyle & Klimoski, 1995) and academic self-efficacy (Muris, 2001). Questionnaires were based on a five-point Likert scale with 1 representing strongly disagree to 5 representing strongly agree Afterwards, all students were required take a pre-TOSEL jr. test "Test of the Skills in the English Language Junior" with a total of 60 questions (50 min.) to determine their pre-reading comprehension achievement. Then all students were required to take a post-TOSEL jr. test of 3 reading passages comprised of 15 questions to determine post-reading comprehension achievement (10 min). Lastly, students were required to retake the same post questionnaires on mastery goals, performance goals and academic self-efficacy again. All questions and test materials were reviewed by the head of the education department and senior professor that majored in Educational Psychology at Seoul National University.

Experimental Group: After the pre-questionnaires (mastery, performance and academic self-efficacy) and pre-TOSEL jr. test was completed, the experimental group (*n*=22) was required to learn how to create a concept map. The researcher used a Cinderella reading passage as an example to show students how a concept map can be created (10 min). Students were then required to work in a collaborative learning environment in groups of two to create a concept map for three different reading passages using the post-TOSEL jr. test (10 min). When the time was up, students were required to complete the post-TOSEL jr. test and answer all questions (10 min). Lastly, students were required to answer post-questionnaires on mastery, performance and academic self-efficacy

again (5 min).

Control Group: After the pre-questionnaires (mastery, performance and academic self-efficacy) and pre-TOSEL jr. was completed, the control group (*n*=20) was required to take notes using the reading materials from the post-TOSEL jr. test. Students were required to work in a collaborative learning environment with a partner in groups of two (10 min). When the time was up, students were required to complete the post-TOSEL jr. test (10 min). Afterwards, students were required to answer post-questionnaires on mastery, performance and academic self-efficacy again (5 min).

3.3 Materials

The TOSEL jr. test was selected for this experiment because it was a test designed for Korean 5th grade students to determine their current English level. This test was validated, created and administered by the Educational Broadcasting System (EBS) used as an alternative to the TOEIC and TOEFL test. The reason for this is because there was huge support by the Korean government due to the fact that no royalties had to be paid to foreign countries. Since the TOSEL jr. test is a domestic certification test, it is cheaper and more affordable (i.e., to take the TOSEL jr. test it cost one tenth of the amount compared to the TOEFL test).

The TOSEL jr. test is broken down into two sections. The first portion consists of listening and the second is reading comprehension. There are 30 possible points awarded in the first portion and another 30 for the second. There are of 60 points in total with a total percentage score of 100%. The TOSEL jr. test results are broken down in 10 tiers based on how well a student performs and their knowledge of English. The 1st tier represents all the students who scored in the top 10% of the nation. These students score an average of 95-100% on the test. However, the 10th tier represents the bottom 90% in the nation. These students score an average of 10-15% on the test. From the data provided below, the average tier nationwide is 5th. These students score an average of 50-59% on the test. Any scores that that is higher than this threshold is above average.

3.4 Measures

Students responded to items on a 5-point Likert scale with 1 representing strongly disagree to 5 strongly agree. All questionnaires had been translated in Korean and distributed to all participants.

Mastery Goals was used to assess participant's current level or intrinsic motivation before and after the experiment. The scale was created and validated by (Midgley et al., 2000). Five questions included following examples of "It is important to me that I learn a lot of new concepts this year?" and "One of my goals in class is to learn as much as I can?"

Performance Goals was used to determine student's extrinsic motivation levels before and after the experiment. The scale was created and validated by (Boyle & Klimoski, 1995). Five questions included following examples of "I am eager to prove to others how good I am at this task?" and "I wonder how my score on the next trial will compare with people's scores?"

Academic Self-Efficacy was used to measures student's confidence in their ability to execute and perform in order to solve a problem or accomplish a task. The scale was created and validated by (Muris, 2001). Seven questions included following examples of "How well do you succeed in passing a test?" and "How well do you succeed in understanding all subjects in school?"

Cronbach's Alpha was used to determine the internal reliability of "Mastery goals (i.e., "It is important to me that I learn a lot of new concepts this year, pre *a*=.80 and post .90 in the scale)", "Performance Goals (i.e. "I am eager to prove to others how good I am at this task", pre *a*=.81 and post *a*=.81 in the scale) and Academic self-efficacy (i.e. "How well do you pay attention during every class?" pre *a*=.92 and post *a*=.93). All questions were on a 5 point likert-scale. For this study, the English version of all questions were translated into Korean and reviewed by a Korean professor that majored in Educational Psychology.

3.5 Data Analysis

SPSS 18 (IBM, Somer, NY, USA) and Microsoft EXCEL 2010 (Microsoft, Washington, USA) were used to input data. Descriptive statistics were used on all variables to determine the minimum, maximum, mean, standard deviation and Cohen's d. In addition the *n* value for all the participants was used to differentiate between the experiment and control groups. To determine does concept mapping promote mastery goal orientation and reading comprehension achievement and do the effects of academic self-efficacy enhances concept mapping strategy on mastery goal orientation and reading comprehension achievement, ANOVA was used to determine significant differences between three or more groups. In addition, multiple regression was used to predict the internal reliability by computing both the dependent and independent variables.

4. Results

4.1 Demographic Characteristics

The sample consisted of 42 5th grade students. The mean Korean age was 11.95 years (*SD*=0.21). Males (54.7%, *n*=23) were more represented in the sample than were females (45.2%, *n*=19). All respondents were native Korean and their native language was Korean.

4.2 Descriptive Statistics

The statistical descriptions of variables for the experimental group included mean, standard deviation, minimum, maximum and Cohen's d was displayed below. The data shows pre-test (*M*=31.35, *SD*=9.54) post-test (*M*=8.05, *SD*=3.70) and (*d*=3.22), pre-performance (*M*=3.44, *SD*=0.69) post-performance (*M* =3.33, *SD*=0.70) and (*d*=1.10), pre-mastery (*M*=3.92, *SD*=0.65) post-mastery (*M*=4.21, *SD*=0.83) and (*d*=0.38) and lastly, pre-academic self-efficacy (*M*=3.68, *SD*=0.67) post-self-efficacy (*M*=3.74, *SD*=0.61) and (*d*=0.09).

Table 1. Descriptive statistics (experimental group)

Variable	N	Minimum	Maximum	Mean	SD	Cohen's d
Pre-Test	22	16.00	52.00	31.35	9.54	3.22
Post-Test	22	0.00	13.00	8.05	3.70	
Pre-Performance	22	2.00	5.00	3.44	0.69	1.10
Post-Performance	22	2.40	5.00	4.21	0.70	
Pre-Mastery	22	3.00	5.00	3.92	0.65	0.38
Post-Mastery	22	2.80	5.00	4.21	0.83	
Pre-Academic Self-Efficacy	22	2.50	5.00	3.68	0.67	0.09
Post-Academic Self-Efficacy	22	2.75	4.75	3.74	0.61	

The statistical descriptions of variables for the control group included mean, standard deviation, minimum, maximum and Cohen's d was displayed below. The data shows pre-test (*M*=29.59, *SD*=9.70) post-test (*M*=7.82, *SD*=3.01) and (*d*=3.02), pre-performance (*M*=3.48, *SD*=0.93) post-performance (*M*=3.36, *SD*=1.00) and (*d*=0.12), pre-mastery (*M*=3.30, *SD*=0.93) post-mastery (*M*=3.21, *SD*=1.04) and (*d*=.09) and lastly, pre-academic self-efficacy (*M*=3.23, *SD*=1.12) post-self-efficacy (*M*=3.15, *SD*=1.12) and (*d*=.07).

Table 2. Descriptive statistics (control group)

Variable	N	Minimum	Maximum	Mean	SD	Cohen's d
Pre-Test	22	14.00	50.00	29.59	9.70	3.02
Post-Test	22	1.00	13.00	7.82	3.01	
Pre-Performance	22	1.80	5.00	3.48	0.93	1.12
Post-Performance	22	1.00	5.00	3.36	1.00	
Pre-Mastery	22	1.80	4.60	3.30	0.93	0.09
Post-Mastery	22	1.00	5.00	3.21	1.04	
Pre-Academic Self-Efficacy	22	1.00	5.00	3.23	1.12	0.07
Post-Academic Self-Efficacy	22	1.00	5.00	3.15	1.12	

4.3 Correlation Statistics

A statistical correlation was conducted to analyze if a pair of variables are strongly related or not. Within the study, the correlation of variables included both the pre and post results in regards to mastery, performance, self-regulation and test scores. The data suggest that there are correlations amongst all the variables displayed and that there is strong correlation between pre-mastery and post-mastery of (*r*=.76, *p*<.01) which is the highest. In addition, pre-academic self-efficacy and pre-mastery also correlated well with (*r*=.71, *p*<.01) but went down

to (r=.66, p<.01) in the post-test.

Table 3. Correlations among variables

Measure	1	2	3	4	5	6	7	8
1. Pre-Test	1							
2. Pre-Mastery	0.29	1						
3. Pre-Performance	0.2	0.51**	1					
4. Post-Test	0.54**	0.23	0.28	1				
5. Post-Mastery	0.15	0.76**	0.35*	0.22	1			
6. Post-Performance	0.34	0.38*	0.56**	0.28	0.33*	1		
7. Pre-Self Efficacy	0.35*	0.7**	0.47**	0.36*	0.62**	0.49**	1	
8. Post-Self Efficacy	0.26	0.7**	0.29	0.29	0.66**	0.5**	0.84**	1

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

4.4 Results (Research Question 1)

To examine the effects of whether concept mapping and mastery goal orientation increased reading comprehension achievement, the first part of question one is "does concept mapping enhance mastery goal orientation." Multiple regression analysis was used to obtain results. The variables for the first part of the question included: dependent variable post-mastery and independent variable condition (control=0 and experiment=1), pre-mastery, pre-academic self-efficacy and interaction effect (between pre-academic self-efficacy and condition). The ANOVA results indicated that the model significantly explained 66% variance of dependent variable, $F(1,41)$=18.40, p<.05 According to Table 4, the "condition" tab indicated that using concept mapping did not significantly increased mastery goals, β=.19 $t(41)$=1.86, p>.05

Table 4. Output resulting from multiple regression analysis

	Unstandardized Coefficients		Standardized Coefficients			95% Confidence Interval for B	
	B	SE	Beta	t	Sig.	LB	UB
(Constant)	.532	.474		1.112	.269	-.429	1.494
Condition	.409	.220	.194	1.862	.071	-.036	.854
Pre-Mastery	.731	.176	.592	4.158	.001	-.375	1.087
Interaction Effect	.390	.259	.175	1.509	.140	-.137	.914
Pre-Academic Self-Efficacy	.085	.172	.076	.498	.625	-.263	.433

Note. Dependent Variable: Post-Mastery.

The second part of question one is "does mastery goals have any effect on reading comprehension achievement". Multiple regression analysis was conducted to obtain results. The variables used to answer this question were dependent variable post-test and independent variable pre-test, condition (control=0 and experiment=1), pre-academic self-efficacy and interaction effect (between pre-academic self-efficacy and condition). The multiple regression analysis indicated that the ANOVA results explained 34% variance of dependent variable $F(1,41)$=4.94, p<.05 According to table 5. the "condition" tab indicated that mastery goals had no effect on test scores β= -.07 $t(41)$= -.55, p>.05

Table 5. Output resulting from multiple regression analysis

	Unstandardized Coefficients		Standardized Coefficients			95% Confidence Interval for B	
	B	SE	Beta	t	Sig.	LB	UB
(Constant)	1.005	1.984		.507	.615	-.3015	5.025
Condition	-.506	.911	-.077	-.556	.582	-2.351	1.339
Pre-Test	.181	.052	.520	3.475	.001	-.075	.287
Interaction Effect	.926	1.167	.133	.735	.432	-1.438	3.290
Pre-Academic Self-Efficacy	.451	.913	.129	.735	.469	-.791	1.693

Note. Dependent Variable: Post-Test.

4.5 Results (Research Question 2)

To examine the effects of whether academic self-efficacy enhances concept mapping strategy on mastery goal orientation and reading comprehension achievement, the first part of question two is "does the interaction effect between academic self-efficacy and condition affect mastery goal orientation?" Multiple regression analysis was used to obtain results. The variables for the first part of the question included: dependent variable post-mastery and independent variable condition (control=0 and experiment=1), pre-mastery, pre-academic self-efficacy and interaction effect (between pre-academic self-efficacy and condition). The ANOVA results indicated that the model significantly explained 66% variance of dependent variable, $F(1,41)=18.40$, $p<.05$ According to table 4. the "interaction effect" tab between academic self-efficacy and condition did not increase mastery goal orientation, $\beta=.17$ $t(41)=1.50$, $p>.05$

The second part of question two is "does interaction effect between academic self-efficacy and condition affect reading comprehension achievement?" Multiple regression analysis was used to obtain results. The variables used to answer this question were dependent variable post-test and independent variable pre-test, condition (control=0 and experiment=1), pre-academic self-efficacy and interaction effect (between pre-academic self-efficacy and condition). The multiple regression analysis indicated that the ANOVA results explained 34% variance of dependent variable $F(1,41)=4.94$, $p<.05$. According to Table 5, the "interaction effect" tab between academic self-efficacy and condition had no effect on test scores $\beta=.13$ $t(41)=.73$, $p>.05$

5. Discussion

This study investigated how concept mapping can promote mastery goal orientation and reading comprehension achievement. Since concept mapping may be used for helping students with improvement in academic learning (Lanzing, 1997; Novak & Gowin, 1984), the perception of why it can increase intrinsic motivation should also be investigated (Wolters, 2004; Haugwitz, Nesbit, & Sandmann, 2010). As a result, the study also investigated if academic self-efficacy can enhance concept mapping strategy on mastery goal orientation and reading comprehension achievement. The findings of the study in regard to the research purpose and limitations will be reviewed along with suggestions as to how improvement can be made for future research.

5.1 Concept Mapping and Mastery Goal Orientation

First of all, concept mapping did not significantly increased mastery goal orientation and reading comprehension achievement. Our hypothesis "concept mapping will increase mastery goals" was inconsistent with our study according to previous research that shows learning strategies such as concept mapping positively influencing mastery goal orientation. If students experience low self-esteem and academic self-efficacy towards reading comprehension, even with the use of learning strategies, then it can still hinder student's confidence and ability to perform despite being intrinsically motivated. If this happens, students might resort to performance-avoidance goals, rather than mastery goals. The potential reason for this result is because students might be tempted to secure normative validation for their efforts and to protect their egos or feelings (Peixoto & Almeida, 2010). In addition, students who show little motivation to learn are less inclined to seek the use of learning c and therefore, will not enhance positive results (Vande Wallle & Cummings, 1997).

5.2 Concept Mapping and Reading Comprehension Achievement

For the second part "concept mapping will increase reading comprehension achievement" also contradicted our hypothesis. Despite extensive research indicating that it will in previous studies, there are several limitations and issues associated with it. According to Woolfolk and Margetts (2010) concept mapping may diminish reasoning skills if students have low meta-cognition levels because it will make it harder for students to absorb new

material. Chiu (2008) research supports this claim because a sample of (*n*=62) experimental students reported problems that they could not quickly adapt to the approach of concept mapping. The reason for this is because they lacked familiarity which frustrated novice mapmakers (p. 320). However, towards the end of the course, students were happier because they became more familiar with concept mapping and noted that it became easier with time and consistency. The teacher required students to fix their mistakes and reconstruct their concept maps again with the corrections. After each accounting chapter was covered throughout the 12 weeks, the students were required to answer questions based on the main ideas of the readings and construct a concept map.

In addition, although concept mapping can be a great asset when assisting student with academic work to link concepts and idea, it must not be used at the expense of other learning strategies. The reason why this is significant because many high performing students are not fixated on just one learning strategy but rather use a variety of learning strategies to achieve their academic goals (Van Blerkom, 1994). However, if only concept mapping strategy is applied without the aid of other learning strategies then there is a chance that performance levels can actually drop; therefore, it is expected that the average student will benefit from concept mapping more significant compared to very low or high meta-cognition students that will not.

5.3 Interaction of Academic Self-Efficacy and Mastery Goals

Secondly, academic self-efficacy did not enhance mastery goal orientation and it was also inconsistent with our hypotheses that the interaction of academic self-efficacy will increase reading comprehension achievement. Our hypothesis "the interaction effect of academic self-efficacy will increase mastery goal orientation" was inconsistent with previous studies according to our results. Despite extensive research indicating that it will increase mastery goals, there are several limitations and issues associated with it. Breso, Schaufeli and Salanova (2011) explained that psychological state is one of the most important sources for academic self-efficacy beliefs that may influence mastery goal orientation. Students who experience anxiety will usually perform not as well because they may question their own abilities and talents. This is important because despite having the intrinsic motivation of wanting to accomplish a task, if it is hindered by anxiety then it could lead to compulsive behavior or panic attacks because of fear, especially in the form of not performing as well. In addition, Bandura (1977) research supports this claim because even though students may have high academic self-efficacy it may not increase mastery goal orientation. The reason for this is because if students are unable to observe other students to see how a task is done first, then it can create a sense of nervousness when it is their turn to perform and the full potential of reading comprehension achievement may be hindered. Students will not have a solid idea of what they need to do despite the desire of wanting to do the task.

Furthermore, Csikszentmihalyi (1997) would have added that overestimation of ability may also be a huge factor that could have been overshadowed despite extensive research that anxiety and nervousness may have hinder mastery goal orientation when combined with academic self-efficacy. When students overestimate their own ability beyond actual ability, it leads to misjudgment and an overemphasis of competency to complete tasks. The problem is that in today's day and age, students are given feedback in a more positive manner than what they're really saying behind our backs. This in turn could lead to ignorance and an inaccurate calculation of how students should evaluate themselves despite how they perform. In addition, academic self-efficacy is very subjective opinion based on the norms and perceived behavioral outcomes that shape intentions and is influenced by individual judgment.

5.4 Interaction of Academic Self-Efficacy and Reading Comprehension Achievement

For the second part "interaction of academic self-efficacy will increase reading comprehension achievement" the results contradicted our hypothesis. Despite extensive research indicating that it will increase reading comprehension achievement in previous studies, there are several limitations and issues. Pajares (1996) argues that academic self-efficacy beliefs vary greatly between individuals; therefore, it will be hard to make an accurate assessment to evaluate academic self-efficacy. If students are basing academic self-efficacy for a new task on results of a previous task then it could be misleading because personal factors can distort memories of previous performance. Despite the need for improvement to accurately assess academic self-efficacy, Ormrod (2008) would have emphasized that if students do not possess the necessary skills to work out the mechanics of a problem then it may hinder reading comprehension achievement. The good news however is that although achievement may not happen right away, students with have high academic self-efficacy will eventually find ways to better develop skills and knowledge to successfully achieve a task. Students with high academic self-efficacy will find ways to experiment and take greater chance even if it leads to failure because the investment will be well worth the end result rewarded. In addition, resilience will be developed because high academic self-efficacy students will not give up on a task that they are intrinsically motivated to do when

compared with low academic self-efficacy students (Pajares & Schunk, 2001).

Bandura (1993) research supports this claim because students with high academic self-efficacy will face a challenge and view it as something that must be learned and mastered. After students obtain a fair assessment of their current achievement level, they will spend more time trying to improve their current skills by practicing harder and seeking assistance to better themselves by requesting help from a professional with immense experience in the same task that they are trying to achieve. In addition, these students will persist in the face of difficulty and use learning strategies to make studying more meaningful. When students believe in themselves, they are more likely to develop goals as they accomplish the task. Lastly, if students feel that they are making progress on a task then they will build academic self-efficacy in multiple areas that will increase ones confidence in mastering new domains and will remain calmer when approaching challenging task because persistence and focus on a given task will be increased (Ormrod, 2008).

5.5 Limitations and Improvements for Future Research

The results of the current study should be interpreted and applied to other contexts with caution due to the potential for over generalizing beyond the context of this study. The reason is because all participants in the current study attended only one school. Future researchers should be cautious when applying these findings to secondary or tertiary education in general because higher level students may use a combination of multiple learning strategies or more advanced strategies instead of a single learning strategy like concept mapping (Van Blerkom, 1994). In addition, educators should carefully note that this study was only conducted in the context of elementary-level Korean. Since middle school classrooms tend to operate under more competitive goals, educators should carefully consider the learning environment in order to replicate the effects from the current study.

Future research should expand this research by conducting mixed methods because the need for interviews will be very helpful to help understand a student's thought process of why they rated themselves the way they did on the 5 point likert scale. In addition, it will serve as a good baseline to better understand why concept mapping was helpful to them and what can be done to make improvements in the future. Interviews will open up the student's opinions, values, and feelings as to why they behaved the way they did. Also, I think future researchers should ask background and demographic questions to try and understand a student's personalities through open-ended questions. In addition, because of the reduced number of participants, the statistical procedure chosen could have been a source of instability. Usually a minimum of 10 individuals for each variable is needed for the regression equation. However, our experiment uses a ratio of 7.3 individual's per variable.

Furthermore, because there was limited amount of time to conduct this study due to time constraints, future researchers should conduct this experiment over a course of a semester. This experiment was not the best in the world because students only had 10 minutes to learn concept mapping from the researcher. This is an area that could have been improved to help student's fully master concept mapping. If the school allowed a period of three weeks or more to conduct research and fully teach concept mapping then I firmly agree that concept mapping would have increased reading comprehension achievement and test results. This is proven fact because in Chiu (2008) study, she did mention that students were at first frustrated with learning concept mapping as a new learning strategy because it was very unfamiliar to them. However, it took until the end of the semester for students to finally reap the rewards from learning concept mapping and successfully apply the strategy in the correct way after several practices and attempts. The teacher corrected mistakes and showed students what needed improvement in their previous concept maps. In our experiment, even though our students failed to improve reading comprehension achievement, it's really not an issue because with further extensive research and training this trend can and will be reversed.

Finally, it would be helpful to investigate collaborative learning environment. Although this study considered the possibility that working in a collaborative group may improve or hinder academic performance, future researchers should expand this study by incorporating an additional 5 point likert scale based on how students get along with their partner and the atmosphere of the learning environment. Extensive research has proven that students with a sense of belonging are more likely to demonstrate greater positive learning behavior and satisfaction because students experience the emotional warmth and support in relationship to teachers, peers and parents that influence academic performance (Shin et al., 2011).

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Appendix A

1) Questions on Mastery Goals (Midgley et al., 2000)

    1) It is important to me that I learn a lot of new concepts this year.

    2) One of my goals in class is to learn as much as I can.

    3) One of my goals is to mastery a lot of new skills this year.

    4) It's important to me that I thoroughly understand my class work.

    5) It's important to me that I improve my skills this year.

2) Performance Goals (Boyle & Klimoski, 1995)

    1) I am eager to prove to others how good I am at this task

    2) I wonder how my score on the next trial will compare with people's scores.

    3) I am eager to show how much I know about the materials and procedures for this task.

    4) I want to appear competent on the upcoming task.

    5) I want to do better than others on the next trial

3) Academic Self-Efficacy (Muris, 2001)

1) How well can you get teachers to help you when you get stuck on schoolwork?

2) How well can you study when there are other interesting things to do?

3) How well can you study a chapter for a test?

4) How well do you succeed in finishing all your homework every day?

5) How well can you pay attention during every class?

6) How well do you succeed in understanding all subjects in school?

7) How well do you succeed in satisfying your parents with your schoolwork?

8) How well do you succeed in passing a test?

4) Example of script and sample questions from TESOL jr.

Last summer, my mother and I flew to Japan to visit my uncle. This was the first time I had ever been on an airplane, so I was a little scared. We left from San Francisco, and the flight took 12 hours. I didn't know what I was going to do on the plane so I brought some books. When I sat down, I saw a small television screen infront of my seat. My mom told me I could watch movies or play video games. She showed me how to use it. I was so happy. In addition, I could drink as much coke as I wanted. The only problem I had was with the food. Airplane food does not taste very good. I had a choice of chicken or beef with rice. I chose the chicken. However, the chicken was very dry. The rice was a little too hard. When we got near Tokyo, I could see Mount Fuji out of my window. After arriving in Japan, all I could think about was flying back to San Francisco and what I would do on the plan!

1. How did the boy feel at first?

(A) Happy (B) Bored (C) Scared (D) Hungry

2. What did the boy eat?

(A) Beef (B) Uncooked Rice (C) Snacks (D) Chicken

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