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Self-efficacy and Self-regulation Linkage with Mathematics Achievement in Girls from Secondary Schools

Tahira Batool*

Abstract: *Research studies have proved that students' mathematics elf-efficacy and self-regulation is directly related to students' mathematics achievement and overall learning. In this research, correlations and differences of students' mathematics self-efficacy, self-regulation and mathematics achievement in a sample of five hundred female students from five public sector secondary schools studying in grade nine were investigated. The sample was selected by multistage random sampling technique. Two questionnaires were administered to collect data and then it was analyzed. The study exposed that self-efficacy, self-regulation and achievements regarding mathematics are positively connected. Furthermore, it was concluded that students from different schools have no difference in self-efficacy and self-regulation when compared with achievement with mathematics. It was recommended that efficacy beliefs might be built at higher level mathematics students.*

Keywords: Mathematics self-efficacy, self-regulation, mathematics achievement, nine graders.

Introduction

Most of the experimental studies present in literature related to four sources of self-efficacy are based on Bandura (1986)'s theory which has explained that persons improve and figure their self-efficacy by understanding and assimilating evidences from four grounds of self-efficacy. These grounds are: mastery experience, verbal encouragement, vicarious learning and emotional states. Mastery experience is learning from first-hand understanding of attainment and disappointment (Butz & Usher, 2015). Researchers have shown that mastery experience has become most powerful source of self-efficacy. This study aims to discover connection between mathematics self-efficacy and self-regulated learning and mathematics achievement in students of grade nine. According to Usher (2009), mastery experience is the self-experience that shapes the self-efficacy, in this way, students' way of constructing self-efficacy is affected by contextual and personal factors. Students also gain self-efficacy related information from indirect learning. Mbathia (2005) has explained in their research that good in academic presentation impacts students' choices in most important choices made by them in high school. It also affect their admission in university.

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According to Pajares (1996) beliefs on self-abilities to perform thoroughly on task assigned lead towards academic motivation. Motivation level be determined by what individuals believe on, it do not depend upon what is really true (Bandura, 1986). Individuals show behavior which is totally different from what they actually are, and frequently do different things in spite of having same level of knowledge and skills. Self-efficacy in academics reflects level of students believe that students have on their success. Woolfolk (1998) has defined self-efficacy is as individual's beliefs in his excellence of abilities in a given setting to do successful performance. Therefore mathematics self-efficacy indicates students' confidence on their competencies in mathematics and promote students' mathematics learning and mathematics achievement to preferred level.

Chan and Lam (2008a) has explained the importance of modeling because it facilitate students' competence and ultimately result in it increase students self-efficacy. Social comparative information is used as a double edge sword to self-efficacy. Social compression enables students to improve relative abilities by getting information about them which may help to improve self-judgment of abilities. Conversely, over-emphasis to comparisons also reduce motivation that is a cause of decrease in self-efficacy. Some qualitative researchers has conducted more detailed studies of how the learners proceed in getting information cognitively developed (Usher, 2009; Zeldin & Pajares, 2000; Zeldin, Britner, & Pajares, 2008).

Self-regulation is a key feature of student learning and achievement in educational framework (Corno & Rohrkemper, 1985). A range of meanings of self-regulation exists, however, three components are most important for students' performance in any subject. First, self-regulated learning includes students' metacognition that may be defined as: planning strategies and adapting their reasoning (Zimmerman & Pons, 1986; Zimmerman & Martinez-Pons, 1988). Schraw, Crippen, and Hartley (2006) has done a study on science education, they focused on three components of self-regulation namely cognition metacognition and motivation. They relate components to six learning strategies and relate to current practices of science education. It is evident from literature that activities in mathematics curriculum develop self-regulated learning skills in mathematics students and problem solving skills in mathematics (Marchis, 2011). These problem-solving skills in line with cognitive and meta-cognitive abilities in the procedure of self-regulation are believed to be the most key abilities in math education. More recently, researcher have studied self- regulation relationship to other concepts such as motivation, cognition and meta-cognition. Another side of self-regulation is cognition that researchers have used in their understanding of cognitive strategies, also, that students use to learn (Corno & Rohrkemper, 1985; Zimmerman & Pons, 1986).

Zimmerman and Martinez-Pons (1990) do work on academics self-regulation strategies for education. Some factors of self-regulation are cognition and emotional states, arranging one's environmental and behavioral connection with mathematics achievements. Andrade and Evans (2015) stated about four groups of self-regulation, the first is metacognition that is planning and evaluation, second is motivation that refers to one's ability to shoulder responsibility for successes and it enhancing self-efficacy, the third and last is cognition that are strategies to understand information.

Owiti (2001) explained that education delivers persons specific abilities and therefore

it allows them to do their responsibilities in effective manner. When an individual is capable then he/she will be more satisfied. Factors having influence on performance are attitudes that leads towards achievement. Bandura (2006) established that intelligent abilities and motivation are noteworthy factors on performance in educational context. He has told that attitude link with gender are powerful to some degree for some people regardless of their refereeing things on self-efficacy beliefs

The study was designed to find out the relationship of mathematics self-efficacy, self-regulation and mathematics achievement in girls from secondary schools in Lahore district. In accordance with Bandura (2006) research, supposed efficacy is the conclusion about ones' own ability to perform given types of performance. Students that are confident about their abilities take interest in academic activities, they take challenges and put more effort to get success. Pajares (1996) has explained in his study that failures in academics and declining interest in schooling are not due to absence of competences but because of low self-efficacy. Mathematics has a great part in supporting individuals in the development of reasoning, and problem-solving skills therefore it has got an important position in curriculum. In this respect, the question such as "How to increase student achievement in math?" is going to be popular. Therefore, the main objective of this study was to explore the relationship of mathematics self-efficacy, self-regulation and mathematics achievement in girls from secondary schools. Furthermore, to explore if the four sources of self-efficacy and three component of self-regulated learning students.

Methodology

Quantitative research design followed by the positivist point of view was used in this research work. A quantitative research approach was selected for the study because the strengths of the quantitative were that quantitative method produce quantifiable, reliable data that was usually generalizable to some larger population to confirm reliability and objectivity (Kuhn, 2012). This study was led through survey of concerned schools. The public sector girls' high schools of Lahore city (180) were considered as population of current study. Multi stage random sampling technique was used to select participants. By systematic random sampling technique five Govt girls high schools were nominated as the sample of the study. Again by random sampling technique (500) students studying in different sections from five Govt girls high schools were selected as the sample of the study through public sector girls high schools in Lahore district.

Research Instruments

Researcher developed questionnaire of students' mathematics self-efficacy and self- regulation scale. The students' mathematics self-efficacy scale was consisted of 30 statements related to the four sources of self-efficacy explained by Bandura (1986). It was a Lekert scale with five points on it. In the same way, self- regulation scale was consisted of 22 statements related to three factors based on Schraw et al. (2006) was developed. It was a Lekert scale with five points on it. Is this way mathematics self-efficacy and self-regulation

was measured through questionnaires but for students achievement record of school register was taken for their marks in grade eight examinations. Since data was collected immediate after grade eight examination therefore it was justified. Both questionnaires of students' mathematics self-efficacy scale and self- regulation scale were validated by experts and were pilot tested on seventy students and their reliability (.820, .790) was found respectively.

Data Collection and Data Analysis

Students were asked to fill mathematics self-efficacy scale and self-regulation scale. Researcher has used two research instruments to collect data of current study. Researcher was used two scales first mathematic self- efficacy and second mathematic self -regulation. Likert scale questionnaires were used for date collection. The data analysis was carried out by using the SPSS "(statistical program for social science)" to calculate relationships and comparisons through person correlation coefficient, multiple regression, ANOVA and post hoc. After that, result of the analysis, have been shown in tables with interpretation.

Results

The researcher collected the data on students' Self -efficacy and Self- regulation and achievement in Mathematics. Analysis of data gave these results shown in tables.

Table 1
Distribution of Sample by Schools

Variables	Frequency	Percentage
School A	65	13
School B	57	12
School C	99	20
School D	148	28
School E	131	27

Table 2
Pearson Correlation of Mathematics Self-efficacy, Self-regulation and Mathematics Achievement

	1	2	3	4	5	6	7	8	9	10
1. Achievement	-	.194**	.250**	.091*	.039	-.181**	.353**	.078*	.264**	.051
2. Self-efficacy		-	.428**	.424**	.674**	.244**	.429**	.413**	.447**	.278**
3. Experience			-	.388**	.078	-.078	.329**	.536**	.714**	.207**
4. Encouragement				–	.096*	.019	.259**	.457**	.463**	.323**
5. Learning					-	-.058	.070	.032	.060	.062
6. Emotional State						-	0.025	.086	-.086	.125**
7. Self-regulation							-	.438**	.432**	.312**
8. Cognition								-	.811**	.715**
9. Meta Cognition									-	.348**
10. Motivation										-

p**0 < 0.01, p* < 0.05, Verbal Encouragement = Encouragement, Mastery Experience = Experience, Mathematics Achievement = Achievement, Vicarious Learning = Learning, Mathematics Self-efficacy = Self-efficacy

Five schools were selected for the purpose of data collection. Schools were named as

A, B, C, D and E. Three percentage of participant from School A, B, C, D and E was 13%, 12%, 20%, 28% and 27% respectively.

The relationship of Mathematics Achievement with Self-efficacy, Mastery Experience, Verbal Encouragement, Vicarious Learning, Emotional State, Self-regulation, Cognition, Meta Cognition and Motivation was investigated by Pearson product moment correlation coefficient. It was found as shown in table 2 that Mathematics Achievement has a significant ($p < 0.01$) relationship with Self-efficacy, Mastery Experience, Verbal Encouragement, Emotional state, Cognition, Metacognition and Self-regulation. Conversely, mathematics achievement has no notable relationship with Vicarious Learning and Motivation. Also, Self-efficacy is significantly correlated with ($p < 0.01$) with Mastery Experience, Verbal Encouragement, Vicarious Learning, Emotional State, Self-regulation, Cognition, Meta Cognition and Motivation. Mastery Experience is significantly correlated ($p< 0.01$) with Verbal Encouragement, Self-regulation, Meta Cognition and Motivation and Cognition but not significantly related with Vicarious Learning and Emotional State.

It was found that Verbal Encouragement has a noteworthy ($p < 0.01$) relationship with Cognition, Metacognition and Self-regulation. It was found as shown in table 2 that emotional state, has a notable ($p < 0.01$) relationship with motivation, but not noteworthy with Cognition, Metacognition and Self-regulation. It was found as shown in table 2 that Self-regulation, has a notable ($p < 0.01$) relationship with motivation, Cognition and Metacognition. It was found as shown in table 2 that Cognition has a significant ($p < 0.01$) relationship with Motivation and Metacognition. Therefore, metacognition has noteworthy relationship with motivation.

Overall, the relationship of Mathematics Achievement, Self-efficacy, Mastery Experience, Verbal Encouragement, Vicarious Learning, Emotional State, Self-regulation, Cognition, Meta Cognition and Motivation was significant.

Table 3
Summary of Regression Analysis: Result of mathematic self-efficacy and self -regulation on students' academic achievement

Variables	B	SE	β	t	p
(Constant)	62.509	12.89		4.812	<.001
Mastery Experience	3.759	1.946	0.125	1.970	0.062
Verbal Encouragement	-0.757	2.413	-0.033	-0.263	0.765
Vicarious Learning	0.215	0.522	0.017	0.421	0.640
Emotional State	-4.066	1.298	-0.138	-3.142	0.002
Cognition	-0.456	1.672	-0.014	-0.253	0.783
Metacognition	8.288	2.511	0.224	3.343	<.001
Motivation	7.032	2.614	0.127	2.676	0.007

R^2 = 0.117, F (7,492) = 9.344, $p < .001$, Unstandardized Coefficient = B, Standardized Coefficient = β, Dependent Variable = Mathematics Achievement, Predictors: (Constant), Vicarious Learning, Cognition, Emotional State, Verbal Encouragement, Mastery Experience, Metacognition, Motivation.

Multiple linear regression was conducted to find the impact of mathematics self-efficacy and self-regulation on learners' mathematics achievements. There was no major effect of mastery learning on learners' mathematics achievement (β = 0.125, t = 1.670, p = 0.062). There was no significant relationship of Verbal Encouragement on students' mathematics achievement (β = -033, t = -263, p = 0.765). There was no significant effect of Vicarious

Learning (β = 0.017, t = 0.421, p = 0.640). There was significant effect of Emotional State on students' mathematics achievement (β = -0.138, t = -0.3.142, p = .002). There was no major effect of Cognition on students' mathematics achievement (β = -0.014, t = -0.253, p = 0.783). There was a significant effect of metacognitive on students' mathematics achievement (β = 0.224, t = 3.343, p = .001). There was no significant relationship of motivation on students' mathematics achievement (β = 0.127, t = 2.676, p =.007). Multiple linear regression has shown relationship of mathematics self-efficacy and self-regulation on learners' mathematics achievements on some factor significant.

Table 4
Comparison of School A, B, C, D and E regarding Mathematics Achievement, Self –efficacy, Mastery experience, Verbal encouragement, Vicarious Learning, Emotional State , Self-regulation, Cognition, Metacognition and Motivation.

	A	B	C	D	E	ANOVA	
	M(SD)	M(SD)	M(SD)	M(SD)	M(SD)	F	P
Achievement	44(14)	46(15)	70(11)	63(17)	68(16)	5(0.94)	.061
Self-efficacy	4(0.26)	4(0.25)	4(0.30)	4(0.57)	4(0.31)	4(0.49)	<.001
Experience	3(0.51)	3(0.51)	4(0.56)	4(0.51)	4(0.54)	4(0.41)	<.001
Encouragement	4(0.47)	4(0.29)	4(0.38)	4(0.43)	4(0.37)	4(0.42)	<.001
Learning	4(0.21)	4(0.28)	4(0.44)	4(2.51)	4(0.36)	5(1.67)	.973
Emotional State	3(0.42)	3(0.38)	3(0.71)	3(0.65)	3(0.78)	5(1.69)	.077
Self-regulation	4(0.40)	4(0.37)	4(0.47)	4(0.57)	4(0.56)	4(0.55)	<.001
Cognition	3(0.28)	3(0.33)	4(0.38)	4(0.33)	4(0.34)	4(0.37)	<.001
Metacognition	4(0.59)	3(0.46)	4(0.50)	4(0.46)	4(0.44)	4(0.54)	<.001
Motivation	4(0.25)	4(0.31)	4(0.37)	4(0.36)	4(0.36)	4(0.39)	<.001

P < .001, Verbal Encouragement = Encouragement, Mastery Experience = Experience, Mathematics Achievement = Achievement, Vicarious Learning = Learning

Results of One -way analysis of variance are shown in table 4 to find out the difference among school A, B, C, D and E with respect to Self –efficacy, Mastery experience, Verbal encouragement, Vicarious Learning, Emotional State , Self-regulation, Cognition, Metacognition and Motivation. There was no statistical significant difference among School A, B, C, D and E with respect to mathematics achievement (F = 5(0.95), p = 0.061). There was a statistical significant difference among School A, B, C, D and E with respect to self- efficacy (F = 4(0.45), p<.001). A statistical noteworthy alteration among School A, B, C, D and E with respect to mastery experience (F = 4(0.41), p<.001). There was a statistical significant difference among School A, B, C, D and E with respect to verbal encouragement (F = 4(0.42), p < .001). A statistical noteworthy difference among School A, B, C, D and E with respect to vicarious learning (F = 5(1.67), p <.001). There was a statistical significant difference among School A, B, C, D and E with respect to emotional state (F = 3(1.69), p = 0.001). There was a statistical noteworthy difference among School A, B, C, D and E with respect to self- regulation (F = 5(1.69), p = 0.077). A statistical notable difference among School A, B, C, D and E with respect to cognition (F = 4(0.37), p<.001) was found. There was a statistical notable difference among School A, B, C, D and E with respect to metacognition (F = 4(0.54), p<.001). There was a statistical significant difference among School A, B, C, D and E with respect to motivation (F = 4(0.39), p<.001). Difference among school A, B, C, D and E with respect to Mathematics Achievement, Self –efficacy, Mastery experience, Verbal encouragement, Vicarious Learning, Emotional State , Self-regulation, Cognition, Metacognition and Motivation was overall not significant. As ANOVA could

not find the pairwise difference among the groups that's why we apply post Hoc test.

Table 5
Comparison of School, regarding self-efficacy, competency in math, Hardworking, problem solving, problem in math, work with other, self-regulation, Cognitive and self- motivation.

Dependent Variable	(I) public	(J) public	Mean Difference (I-J)	Std. Error	P
Achievement	A	B	-2.642	5.97	0.992
		C	-26.764*	5.667	0.000
		D	-19.851*	5.482	0.003
		E	-24.304*	5.573	0.000
Self-efficacy	A	B	0.33604	0.16604	0.256
		C	-.71509*	0.15762	0.060
		D	-.85302*	0.15247	0.063
		E	-.76791*	0.15498	0.120
Experience	A	B	-0.11538	0.12456	0.887
		C	-.41955*	0.11824	0.064
		D	-.48365*	0.11438	0.057
		E	-.46238*	0.11626	0.001
Encouragement	A	B	-0.20385	0.51356	0.995
		C	-0.0844	0.48751	0.900
		D	-0.16907	0.47159	0.996
		E	-0.214	0.47935	0.992
Learning	A	B	-0.08923	0.21136	0.993
		C	0.14223	0.20064	0.954
		D	-0.04343	0.19409	0.999
		E	0.11047	0.19728	0.981
Emotional State	A	B	0.31846	0.16675	0.313
		C	0.00721	0.15829	0.990
		D	-0.04904	0.15312	0.998
		E	-0.23146	0.15564	0.571
Self-regulation	A	B	0.05538	0.13499	0.994
		C	-0.23496	0.12814	0.355
		D	-.35204*	0.12396	0.038
		E	-0.3335	0.126	0.064
Cognition	A	B	0.12636	0.10823	0.77
		C	-0.16384	0.10274	0.502
		D	-.31932*	0.09939	0.012
		E	-.34043*	0.10102	0.007
Metacognition	A	B	0.23405	0.14865	0.514
		C	-.43323*	0.14111	0.019
		D	-.62967*	0.1365	0.000
		E	-.60918*	0.13875	0.000
Motivation	A	B	0.13956	0.11345	0.734
		C	0.09581	0.1077	0.901
		D	-0.03228	0.10418	0.998
		E	-0.07064	0.1059	0.963

The mean difference is significant at $p^* < 0.05$, Verbal Encouragement = Encouragement, Mastery Experience = Experience, Mathematics Achievement = Achievement, Vicarious Learning = Learning

Post Hoc Test was conducted to find out pairwise differences among School A, School B, School C, School D and School E, with respect to mathematics achievement, Self –efficacy, Mastery experience, Verbal encouragement, Vicarious Learning, Emotional State , Self-regulation, Cognition, Metacognition and Motivation. There was notable difference between school A and school C, D and E with respect to mathematics achievement ($p < .05$) the mean score of school C (M=70, SD=11) was bigger than the mean score of school A (M=44, SD =14). There was major difference between school A and School D with respect to mathematics achievement (p=.003) the mean score of school D (M=63, SD=17)

was greater than the mean value of school A (M=44, SD =14). There was major difference between school A and School E with respect to Mathematics achievement (p=.000) the mean score of school E (M=68, SD=16) was bigger than the mean value of school A (M=44, SD =14).There was no notable difference between school A and School B, C, D, E and E with respect to Self –efficacy at ($p < .05$) the mean score of school C (M=4, SD=.30) is not bigger than the mean Score of school A (M=4, SD =.26).

There was no major difference between school A and School B, D, E with respect to mastery experience at ($p < .05$) the mean score of school A (M=3, SD=.51) was not bigger than the mean Score of school C (M = 4, SD =.56).

There was no major difference between school A and School D with respect verbal encouragement at ($p < .05$) the mean score of school D (M=4, SD=.38) was not bigger than the mean Score of school A (M=4, SD =.47).There was major difference between school A and School B,C D, E with respect to vicarious learning the mean score of school A (M=4, SD=.21) was not bigger than the mean Score of school B (M=4, SD =.23). There was major difference between school A and School B,C D, E with respect to Emotional state the mean score of school A (M=3, SD=.42) was not bigger than the mean Score of school B (M=3, SD =.38).

There was major difference between school A and School B, C, E with respect to self-regulation the mean score of school A (M=4, SD=.40) was not bigger than the mean Score of school B (M=4, SD =.37). There was no major difference between school A and School B, C with respect to cognition the mean score of school A (M=3, SD=.28) was bigger than the mean Score of school D (M=4, SD =.33). There was major difference between school A and School E with respect to metacognition at ($p< .05$) the mean score of school A (M=4, SD=.59) was bigger than the mean Score of school E (M=4, SD =.44). There was major no difference between school A and school B,C,D.E with respect to motivation at ($p< .05$) the mean score of D (M=4, SD=.37) was bigger than the mean score of school E (M = 4, SD=.25). Post Hoc Test has find out no pairwise differences among School A, School B, School C, School D and School E, with respect to mathematics achievement, Self –efficacy, Mastery experience, Verbal encouragement, Vicarious Learning, Emotional State , Self-regulation, Cognition, Metacognition and Motivation.

Discussion

The connection of mathematics achievement with Self-efficacy and its components namely Mastery Experience, Verbal Encouragement, Vicarious Learning, Emotional State was tried to explore in this study. Similarly, association of Mathematics Achievement with Self-regulation and its components namely Cognition, Meta Cognition and Motivation was investigated by Pearson product moment correlation coefficient. It was found that mathematics achievement has a noteworthy association with Self-efficacy, Mastery Experience, Verbal Encouragement, and Emotional state, Cognition, Metacognition and Self-regulation (Ahmadi & Najafi, 2014; Karim Zadeh, 2000; Pintrich & De Groot, 1990). Conversely, mathematics achievement has no notable link with Vicarious Learning and Motivation (Bandura, 1986). Self-efficacy beliefs control the course of action and therefore has

impact on achievement (Pajares, 1996).

Also, Self-efficacy is significantly correlated with Mastery Experience, Verbal Encouragement, Vicarious Learning, Emotional State, Cognition, Self-regulation, Meta Cognition and Motivation. Mastery Experience is significantly correlated with Verbal Encouragement, Cognition, Self-regulation, Meta Cognition and Motivation but not meaningfully related with Vicarious Learning and Emotional State. Thus, the components of self-efficacy and self-regulation is also interrelated. This is in line with many studies that have explored the four sources of self-efficacy (Usher & Pajares, 2008a; Zimmerman & Martinez-Pons, 1990).

It was found that Verbal Encouragement has a significant relationship with Cognition, Metacognition and Self-regulation. It was found that emotional state, has a significant relationship with motivation, but not significant with Cognition, Metacognition and Self-regulation. It was found that Self-regulation, has a significant relationship with motivation, Cognition and Metacognition. It was found that Cognition has a significant relationship with Metacognition and Motivation. Metacognition has significant relationship with Motivation (Usher & Pajares, 2008b).

Overall, the findings of the study has shown simple and multiple associations with of Mathematics Achievement with Self-efficacy. Similarly, the simple and multiple relationship of Mathematics Achievement with Self-regulation was significant (Ahmadi & Najafi, 2014; Karim Zadeh, 2000).

Difference among school A, B, C, D and E with respect to Mathematics Achievement, Self-efficacy, Mastery experience, Verbal encouragement, Vicarious Learning, Emotional State , Self-regulation, Cognition, Metacognition and Motivation was overall not significant. It is may be due to the public sector secondary schools have no pairwise differences among School A, School B, School C, School D and School E, with respect to mathematics achievement, Self –efficacy, Mastery experience, Verbal encouragement, Vicarious Learning, Emotional State , Self-regulation, Cognition, Metacognition and Motivation was found. According to Marsh and Jackson (1986), students' mathematics learning competences bounded with their teachers' self-efficacy beliefs. In the same way, Armstrong (1980) stated that higher level of self-efficacy originate to be a strong source of prediction in mathematics achievement.

The results of the present study showed a notable positive association between the self-efficacy and their performance in academics, this result is in line with research conducted by Ismail, Aziz, AB, Ismail, and PM (2017). Bandura (1986) expressed that self-efficacy effects the helps in assignment, the energy spent in performing it, and the level of the performance. Further there is a difference in the self-efficacy of respondents with respect to their school type was not significant.

Conclusion and Recommendations

The study was aimed to investigate the connection and differences in mathematics Self-efficacy and Self-regulation with mathematics achievement in public sector high schools. Study reveals that Mathematics achievement is related to self-efficacy and self-regulation in general. It might be reason that students who are very high in self-efficacy and self-

regulation may be positive towards their beliefs and are able to execute their academic activities. They may be good in preparation in class tests but further research on this issue is needed. Self-efficacy and self-regulation both construct are important in students' achievement. The study also reflects no notable difference in mathematics self-efficacy and self-regulation in all sampled schools. It can be concluded from the research findings of this study that mathematics Self-efficacy and Self-regulation has no particular difference in public sector secondary schools. These results gives recommendations that researches like present one may be conducted on students of elementary level and qualitative research methods can also be used for current study to see results in detail. The students should get information about self-efficacy and self-regulated learning skills in order to increase mathematics achievement. The teacher should also help the students to increase self-efficacy and trained them for learning self-regulated learning skills. In this ways they can be mathematics learners.

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