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# A STUDY ON EFFECTIVENESS OF MOTIVATIONAL STRATEGIES IN MATHEMATICS AT MIDDLE SCHOOL STUDENTS

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**ABSTRACT :**

*This study was undertaken to explore and identify the relationship between strategies and learning achievement (marks obtained by students in last test conducted during that learning year) of school students. Thus, relationship between motivation and self-regulated learning components was examined. The study also found out whether motivational strategies and self-regulated learning components influenced learning achievement. The main aim of this study is to find whether motivational strategies influence learning achievement. To answer these questions, data was collected from 8th standard students in group of 12 to 15 years of middle schools in Tamilnadu. Students responded to self- report Questionnaire: the Motivated Strategies for Learning Questionnaire (MSLQ). The alpha Coefficient reliability of the scale showed that these scale have substantial to high internal Consistency with regards to the Indian sample. Some Statistical Techniques such as factor analysis and multiple regression analysis were used. The major findings showed that all components of motivation and self-regulated learning strategies influenced learning achievement of students.*

**KEYWORDS :** *motivational strategies, learning achievement, mathematics.*

## INTRODUCTION:

Student performance in field practicum is critical, because the setting and the skills directly represent the real world of practice for which student is preparing. Although many factors influence student performance, student motivation is particularly important because it can be assessed and changed. If motivation is related to student performance in field, it is possible to predict students' ability to perform well in learning and other related learning activities and thereby employ intervention strategies to improve students' levels of motivation in learning and achievement. Motivating students to achieve in school is a topic of great practical concern to many stakeholders like teachers, parents and governments and of great theoretical concern to researchers. New books on the topic with increasing regularity and pertinent research are proliferating at a rapid rate. Higher education institutions are beginning to provide assistance to students, especially new ones, in developing study skills and self-regulatory skills such as time management.

One of the greatest challenges and opportunity of the 21st century will be for schools at all levels to focus more on assisting students to become motivated and ensure that they succeed in school.

The integration of motivational and cognitive factors was facilitated by the shift in motivational theories from traditional achievement motivation model to social cognitive models of motivation. One of the most important assumptions of social cognitive models of motivation is that motivation is a dynamic, multifaceted phenomenon that contrasts with the quantitative view taken by traditional model of motivation. In other words, these newer social cognitive models do not assume that students are either "motivated" or "not motivated", that student motivation can be characterized in some quantitative manner between two endpoints on a signal continuum. Furthermore, assessment instruments, which generate a single global "motivation", score for students may be misleading in terms of more multifaceted understanding of student motivation.

Chemers, Hu & Garcia (2001), in their work on mathematical problem solving, have shown that children with higher self-efficacy tried for longer periods on their task and used more effective problem solving strategies than students with lower self-efficacy.

Tuckman and Abry (1998) included measures of three constructs for learning achievement. Attitudes (self-efficacy), drive (intrinsic value, test anxiety, student goals, parent goals), and strategy (self-regulation). It also included a somewhat skill-based variable, prior Grade Point Average. The model shows that all seven predictors were represented in the causal path, with significant loadings.

## NEED FOR THE STUDY

- This study can be used to help teachers to enhance students' attitudes or beliefs in their own capability to propel engagement in the learning process.
- The research study can also be referred by instructional designers or curriculum specialists for using self-efficacy beliefs of students in designing learning materials for eighth standard students.
- The research study can help in identifying learners' perceptions, goals and organizational skills, which is invaluable in helping educators to know how best to design courses in such a way that they address motivational components of learners even before a course begins.

## OBJECTIVES OF THE STUDY

- To find out whether significant relationships exist between motivational factors and self- regulated mathematics learning components of students.
- To find out whether motivational components and self-regulated learning components influence learning achievement of mathematics among middle students.

## HYPOTHESIS

- Motivational strategies has a significant influence on mathematics learning Performance

## RESEARCH METHODOLOGY

The sample of this study consisted of 540 students from middle schools in Tamilnadu. The students' age ranged between 12 and 15 years. The mean age of students was 13 years and 6 months as on May 2014, which was the end of the learning year. This successive random sampling of individuals would involve a relatively efficient and inexpensive method of selecting a sample of individuals. To minimize chances of a sampling error, the researcher used a large sample of students. Reason for selecting mathematics as a subject is most of the research shows that students usually prefer other subjects than mathematics. So the knowledge about motivation and the challenges in this subject can help teachers in formulating strategies that would help students to enjoy the subject.

The students responded to self-report questionnaire the Motivated Strategies for Learning Questionnaire (MSLQ) was developed by Pintrich and DeGroot (1990). The items were scored on a 7-point Likert scale from 1 (not at all true of me) to 7 (very true of me). This scale consists of 44 items. Other

measurements in the present study were learning performance, obtained by collecting data on actual classroom tasks and examinations during the learning year 2016-17. The researcher used an average score of three learning tests conducted during the year and the final examination results for mathematics. All marks were calculated out of 100. The investigator approached the principals of the selected schools and took their permission to administer the test. Investigator also sought the co- operation of the class-teacher to conduct-the class test.

## ANALYSIS AND INTERPRETATION OF DATA

**Table 1: KMO Test**

| | | |
|---|---|---|
| **Kaiser-Meyer-Olkin** Measure of Sampling Adequacy. | | 0.973 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 30978.962 |
| | df | 946.000 |
| | Sig. | 0.000** |

** Significant at 1 percentage

The table 1 shows the Kaiser-Meyer-Olkin measure of sampling adequacy and Bartlett's test of sphere city. The KMO statistic value is 0.973, which indicates that factor analysis is appropriate for these data. Bartlett's measure tests the null hypothesis that the original correlation matrix is an identity matrix. For these data, Bartlett's test is highly significant ($p < 0.001$), and therefore factor analysis is appropriate. Based on rotation component matrix, 44 items are classified into five components. From the table 2, it concludes that all five component accounts for 79% of variance.

**Table 2: Total Variance Explained**

| Components | Rotation Sums of Squared Loadings | | |
|---|---|---|---|
| | Total | % of Variance | Cumulative % |
| 1 | 14.195 | 32.262 | 32.262 |
| 2 | 7.614 | 17.305 | 49.567 |
| 3 | 5.513 | 12.530 | 62.097 |
| 4 | 4.783 | 10.871 | 72.968 |
| 5 | 2.655 | 6.033 | 79.001 |

**Table 3: Rotated Component Matrix**

| Factors | Component | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| VAR00040 | 0.824 | | | | |
| VAR00037 | 0.810 | | | | |
| VAR00010 | 0.806 | | | | |
| VAR00039 | 0.804 | | | | |
| VAR00035 | 0.781 | | | | |
| VAR00034 | 0.780 | | | | |
| VAR00033 | 0.780 | | | | |
| VAR00007 | 0.779 | | | | |
| VAR00009 | 0.776 | | | | |
| VAR00038 | 0.773 | | | | |

| | | | | | |
|---|---|---|---|---|---|
| VAR00011 | 0.769 | | | | |
| VAR00021 | 0.769 | | | | |
| VAR00032 | 0.767 | | | | |
| VAR00019 | 0.766 | | | | |
| VAR00020 | 0.757 | | | | |
| VAR00008 | 0.756 | | | | |
| VAR00036 | 0.755 | | | | |
| VAR00012 | 0.750 | | | | |
| VAR00018 | 0.732 | | | | |
| VAR00022 | 0.726 | | | | |
| VAR00044 | 0.721 | | | | |
| VAR00028 | | 0.771 | | | |
| VAR00030 | | 0.755 | | | |
| VAR00026 | | 0.750 | | | |
| VAR00027 | | 0.749 | | | |
| VAR00024 | | 0.737 | | | |
| VAR00029 | | 0.722 | | | |
| VAR00025 | | 0.699 | | | |
| VAR00031 | | 0.694 | | | |
| VAR00023 | | 0.682 | | | |
| VAR00002 | | | 0.754 | | |
| VAR00006 | | | 0.742 | | |
| VAR00003 | | | 0.729 | | |
| VAR00001 | | | 0.718 | | |
| VAR00004 | | | 0.696 | | |
| VAR00005 | | | 0.681 | | |
| VAR00017 | | | | 0.768 | |
| VAR00014 | | | | 0.721 | |
| VAR00016 | | | | 0.703 | |
| VAR00013 | | | | 0.699 | |
| VAR00015 | | | | 0.692 | |
| VAR00041 | | | | | 0.906 |
| VAR00043 | | | | | 0.899 |
| VAR00042 | | | | | 0.795 |

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

The table 3 all five components are named according to the loadings. First component is self-efficacy (21 items), Second component is intrinsic value (9 items) concerning intrinsic interest in and perceived importance of course work as well as preference for challenge and mastery goals. Third component is test anxiety scale (6 items) concerning worry about and cognitive interference on tests. Fourth component is

cognitive strategy (5 items) pertaining to the use of rehearsal strategies, elaboration strategies such as summarizing and paraphrasing, and organization strategies. Last component is self-regulation scale (3 items) and was constructed from meta-cognitive and effort management items.

**Table 4: Impact of motivational strategies on mathematics learning performance**

| Motivational strategies | Beta | T value | P value |
|---|---|---|---|
| Self-efficacy | 0.721 | 31.966 | 0.000** |
| Intrinsic value | 0.218 | 9.654 | 0.000** |
| Test anxiety | 0.227 | 10.054 | 0.000** |
| Cognitive strategy | 0.179 | 7.943 | 0.000** |
| Self-regulation | 0.279 | 12.379 | 0.000** |
| R value | 0.853 | | |
| R square | 0.728 | | |
| F | 286.484** | | |

** Significant at 1 percentage

Table 4 shows that the significance value of the F-Statistic is less than 0.01 which shows that motivational strategies can be used to reliably predict the learning achievements of the middle school students. .The R-square shows that motivational strategies account 73 per cent of changes in learning achievements of the middle school students. Motivational strategies of the middle school students like Self-efficacy ($X_1$), Intrinsic value ($X_2$), Test anxiety ($X_3$), Cognitive strategy ($X_4$), Self-regulation($X_5$) have significant impact on learning achievements of the middle school students particularly Self-efficacy (beta=0.721) is the strongest predictor of learning achievements of the middle school students.

## FINDINGS AND CONCLUSION

This study was undertaken to examine if an association existed between motivation and learning strategies and if it influenced on learning achievement of students in Tamilnadu. The findings from the research question showed that there were significant differences between levels of self-efficacy and their learning achievement. Whenever students had higher self-efficacy, their learning achievement was better too. This study therefore concluded that self- efficacy can strongly influence learning achievement of the students.

An implication arising from this finding is that teachers may need to adopt instructional and management practices that encourage and support the students' perceived efficacy as means to enhance self-regulatory capability and optimize learning outcomes. These practices could include encouraging cooperation and participation from all students, providing opportunities for positive interactions through teamwork and underlining the role of self in successful learning. It is important to facilitate strategy use. Instructors might consider modeling specific strategies or ways of thinking for learning mathematics in class, in addition to encouraging students to share their strategies for learning the course content.

## BIBLIOGRAPHY


- Bandura, A. (1997). Self-efficacy: The exercise of control. New York: Freeman.
- Chemers, M. M., Hu, L. & Garcia, B.F. (2001).Learning self-efficacy and first- year college student performance and adjustment. Journal of Educational Psychology. 93(1), 55-64.
- Fortune, A.E. (2001). Initial impressions and performance in field practica: Predictors of skill attainment and satisfaction among graduate social work students. Clinical Supervisor, 10(2), 43-54.

- Fortune, A.E. Lee, M. Cavazos, A. (2005). SPECIAL SECTION: Field Education in Social Work Achievement Motivation and Outcom in Social Work Field Education. Journal of Social Work Education, Vol. 41, No.1 (winter).
- Kaiser, H.F. (1974). An index of factorial simplicity. Psychometrika, 39, 31-36.
- Knight. (2001). The process of field instruction: A study of MSW and BSW students' view of effective field instruction. Journal of social work Education, 37, 357-379.
- Multon, K. D., Brown, S. D., & Lent, R. W. (1991). Relation of self-efficacy beliefs to learning outcomes: A meta-analytic investigation. Journal of Counseling Psychology, 38, 30-38.
- Pintrich, P. R., & De Groot, E. V. (1990). Motivational and self-regulated learning components of classroom learning performance, Journal of Educational Psychology, 82, 33-40.
- Stajkovic, A. D., &Luthans, F. (1998). Self-efficacy and work-related performance: Ameta-analysis. Psychological Bulletin, 124, 240-261.
- Tuckman, B.W. &Abry, D. (1998). Developing a motivational model of college achievement. Paper presented at the annual meeting of the American Psychological Association, San Fransisco, CA.
- Tuckman, B.W. (1999). A Tripartite Model of Motivation for Achievement: Attitude/Drive/Strategy., Boston. Paper presented at the annual Meeting of the American Psychological Association.
- Wolters, C. A. and Pintrich, P. R. (1998). Contextual differences in student motivation and self-regulated learning in mathematics, English, and social studies classrooms. Instructional Science, 26, 27–47.