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A Study Of The Impact Of Intervention Programme Of Implicit Theories Of Intelligence On Academic Self-Efficacy

[1] Reha Chhabra, [2] Dr. Shefali Pandya

[1] Ph. D student, University of Mumbai, University of Mumbai, India
[2] Professor & Head, Department of Education, University of Mumbai, India
Email: [1] reha_04@hotmail.com, [2] srpandya14@gmail.com

***Abstract*—The study seeks to ascertain the impact of intervention programme to enhance implicit theories of intelligence on academic self-efficacy of seventh standard students. The study uses factorial design for conducting the experiment. The intervention programme to enhance implicit theories of intelligence was conducted on 65 students of standard VII studying in schools affiliated to the SSC Board and with semi-english medium of instruction. The tools used in the study is the academic self-efficacy scale and (implicit theories of intelligence scale). The researcher has developed an instructional programme to enhance implicit theories of intelligence. The techniques used to test the hypotheses include ANCOVA. The instructional programme was equally effective in developing academic self-efficacy of seventh standard students, irrespective of their socio-economic status as there was no difference between the students belonging to low, middle and high socio-economic status on academic self-efficacy scores. As compared to the traditional method of teaching or control group, the instructional programme to enhance implicit theories of intelligence is found to be more effective in enhancing academic self-efficacy of seventh standard students.**

***Keywords*— Implicit Theory of Intelligence, Academic Self-Efficacy, Socio-economic status**

I. INTRODUCTION

Education forms the foundation of any society. Quality in education can be facilitated through the cultivation of a healthy thought process, grooming one's cognitive abilities at school. School education contributes immensely to the development of the young minds and thereby preparing them to step into adulthood. The overall development of a child largely depends on training him/her about the development of mind, shaping up and building healthy thought processes, handling emotions and dealing with mind obstacles or mental blocks in the process of learning. This can be done by adopting a flexible curriculum in school. Now-a days, many schools have full-time/part-time counsellors on staff in order to support students who are experiencing personal or academic challenges, to help them choose careers and plan for college, and intervene when they face behavioural, physical, or mental health challenges. This does not help all the students learn to deal with life's situations and difficulties as the counselling is generally restricted to those students who need it or are required to undergo it as per the recommendation of teachers or parents. Therefore, there is a need for a flexible curriculum that designs the time-table for all the students to experience learning about the development of mind in a healthy way and dealing with mind obstacles. Today's education will be irrelevant unless there are efforts made by the educators to bridge the gap between how students think, act, learn and behave. In order to prepare our students, to build a meaningful connect between their thoughts, words and actions, there is a need to understand their implicit beliefs i.e. personal beliefs about themselves.

II. IMPLICIT THEORIES OF INTELLIGENCE

Human attributes like intelligence or personality are viewed by some people as being, to a large extent, fixed and innate while they are viewed by others as being changeable with motivation, through improved effort and by providing social and educational opportunities [1]. Implicit theories of intelligence are the ideas that everyday people have about what constitutes intelligence [2]. Dweck distinguishes two basic beliefs: Entity theorists believe their intelligence is a fixed quantity that cannot be changed, whereas incremental theorists believe their intelligence is malleable and that they can get smarter [3]. Students with incremental theory of intelligence view intelligence as a flexible ability that can be increased with personal effort. They focus on putting more effort to improvise, using appropriate strategies to perform well, accept challenges to adopt the path to mastery. They attribute failure to insufficient effort rather than to a lack of

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ability. Students with entity theory of intelligence view intelligence a fixed quantity that cannot be altered, are likely to blame their intelligence and abilities for failures and believe that intelligence remains the same even if people learn new things. In a longitudinal study and an intervention of implicit theories of intelligence on achievement across an adolescent transition, the results showed that the incremental theory of intelligence predicted an upward trajectory in grades over the two years of junior high school, while entity theory of intelligence predicted a flat trajectory. The intervention teaching also led to a positive impact on classroom motivation [4].

III. ACADEMIC SELF EFFICACY

Academic self-efficacy refers to a student's confidence in his/her abilities to successfully perform academic activities at a desired level [5]. Academic self-efficacy refers to students' perceptions of their competence to do their classwork [6]. Academic self-efficacy plays an important role in influencing academic performance. Academic self-efficacy refers to the students' beliefs and attitudes toward their capabilities to achieve academic success, as well as belief in their ability to fulfil academic tasks and the successful learning of the materials [7]. Within an academic context, self-efficacy is frequently described in terms of Academic Self- Efficacy (ASE), which defines a learner's judgements about one's ability to successfully attain educational goals [8]. Academic self- efficacy beliefs have an impact on students' educational performance as it is influenced by four psychological processes namely, the cognitive, motivational, and affective and selection processes. At the motivational level**,** a high sense of self – efficacy increases students' readiness to put more effort in their learning, persist when they face difficulties and helps them to overcome obstacles and recover more quickly after a negative attainment. On the contrary, a perceived sense of inefficacy diminishes students interest in their learning, lessens their capacity to resist when they face impediments and undermines their commitment to achieve their goals [9]. Thus, academic self-efficacy can be considered as one of the important predictors of academic success, strengthening one's belief system in their abilities to perform well to achieve educational goals.

IV. NEED OF THE STUDY

Studies conducted by Linenbrink and Pintrich (2003) have shown that academic self-efficacy plays a significant role in students' learning, cognitive engagement, analytical thinking , reasoning, commitment, strategy use of strategies , persistence, resilience to negative emotions and achievement. In the academic context, children's beliefs about their personal efficacy facilitates their educational processes and outcomes to become proficient in challenging subject matter and contributes towards scholastic impetus, interest and educational performance [10]. Students with a strong sense of self-efficacy show enthusiasm towards learning, hard work, persistence, and have fewer adverse emotional reactions when they face difficulties than do those who doubt their capabilities [11]. Thus, it can be said that students´ with strong self-efficacy beliefs tend to hold an incremental perspective about intelligence. One's belief about the nature of intelligence (the ability to acquire and apply knowledge and skills) has a very powerful impact on one's behaviour. The implicit theories of intelligence influence the individual interpretation about situations, his/her abilities to learn from experience and adapt to new situations. Implicit beliefs are the underlying beliefs that children have; to make their choices, shape their thoughts to engage in learning activities using their abilities, deal with mistakes, difficulties and failures, thereby developing a positive attitude towards seeing oneself, one's potential and the challenge of actualizing these potentials. It is thus necessary to make students understand their own implicit theories of intelligence that will help them to build higher self-efficacy.

V. AIM OF THE STUDY

The broad aim of the research was to ascertain the effect of intervention programme of implicit theories of intelligence and socio-economic status on academic self-efficacy.

VI. OBJECTIVES OF THE STUDY

Following are the specific objectives of the study:

1. To compare students' post-test scores on academic self-efficacy of experimental and control group after partialling out the effect of pre-test scores.
2. To ascertain the interaction effect of the intervention programme and socio-economic status on academic self-efficacy.
3. To compute the effect size of the intervention programme and socio-economic status on academic self-efficacy.

VII. METHODOLOGY OF THE STUDY

The aim of the present study is to ascertain the interaction effect of implicit theories of intelligence of seventh standard students and their socio-economic status on academic self-efficacy. The methodology used in the present study is the experimental one and the researcher has used the 2×3 factorial design as follows:

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Socio-economic status / Group	Students of Low Socio-economic status	Students of Middle Socio-economic status	Students of High Socio-economic status
Experimental Group	Mean Score on Academic Self-Efficacy	Mean Score on Academic Self-Efficacy	Mean Score on Academic Self-Efficacy
Control Group	Mean Score on Academic Self-Efficacy	Mean Score on Academic Self-Efficacy	Mean Score on Academic Self-Efficacy

VIII. INSTRUCTIONAL MATERIAL

In the present study, the researcher developed an instructional plan based on implicit theories of intelligence. The intervention programme of implicit theories of intelligence i.e. the experimental treatment was conducted in the experimental group. The intervention programme included six modules namely, neuroplasticity, belief about effort, celebrate mistakes, appreciate feedback, praise effort and embrace challenges. The duration of the programme was 23 hours. Time taken for each lesson in a module was approximately sixty minutes. There was no treatment given to the control group. The lesson plans in each module made use of various activities based on art, craft, games, sports, group learning, quiz, puzzles, singing, dancing, etc. The researcher sought permission from two selected schools for administering the tests and administering the treatment. The researcher administered the pre-test to both the groups viz. experimental and control groups. After completion of the intervention programme of implicit theories of intelligence in the experimental group, the researcher administered post-test to the students of both the groups.

IX. PARTICIPANTS OF THE STUDY

In the present study, the sample selected comprised of 117 students – both boys and girls from standard VII of Semi- English medium schools situated in Greater Mumbai. The participants included in the study were 65 students from the experimental group out of which 35 (53.85 %) were boys and 30 were girls (46.15 %) and 52 students from the control group out of which 24 (46.15 %) were boys and 28 (53.85 %) were girls. The schools selected for the study followed Semi-English medium of instruction and were affiliated to the SSC Board, Mumbai. The schools were selected randomly using lottery method. However, the experiment was conducted on intact classes due to reasons beyond the researcher's control.

X. TOOLS USED IN THE STUDY

These are as follows:

1. **Academic Self Efficacy Scale**: This scale was developed by Gafoor and Ashraf (2006). The test-retest coefficient of correlation was .85; Split half reliability of the scale was .90 Content validity was assured through the expert judgments of the face validity and inclusion of representative items from all dimensions of the construct (Learning process, Reading, Comprehension, Memory, Curricular Activities, Time Management, Teacher Student relationship, Peer Relationship, Utilization of resources, Goal Orientation, Adjustment and Examination). The scoring was done using five-point rating scale. Every item in the scale is marked on a 5-point Likert scale, (exactly true = 5 points," "nearly true = 4 points," "neutral = 3 points," "nearly false = 2 points," and "exactly false = 1 point).
2. **Implicit Theories of Intelligence (Self-Theory)**: This scale was developed by De Castella and Byrne (2015). It consists of two subscales, namely, Entity Self Beliefs Subscale and Incremental Self Beliefs Subscale with a total eight items. Its reliability and validity were established in the Indian context. Its reliability and validity were established in the Indian context during a pre-pilot study conducted by Pandya (2017). Cronbach's Alpha was 0.87 and Test-Retest Reliability was 0.82. All items were measured on a 5-point Likert-type scale (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree). The scoring is done in such a way that a high score implies incremental theory of intelligence, whereas a low score implies entity theory of intelligence.

XI. TECHNIQUES OF DATA ANALYSIS

The statistical techniques used in the present research are two-way ANCOVA and wolf's formula. The technique of two-way ANCOVA was used to compare the post-test scores on academic self-efficacy after separating out the effect of pre-test scores by socio-economic status. To measure the extent of effectiveness of the intervention programme of implicit theories of intelligence and socio-economic status on the dependent variable, namely, academic self-efficacy, Wolf's formula was used.

XII. RESULTS

1. Comparison of Academic Self Efficacy Scores by Treatment and Implicit Theory of Intelligence
   a) When the technique of one-way ANCOVA was applied to compare the post-test scores on academic

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self-efficacy after partialling out the effect of pre-test scores, the F-ratio was found to be 110.52 ($p < 0.0001$). The Mean post-test score on academic self-efficacy from the experimental group (167.75) was found to be significantly greater than that of the control group (148.17) after controlling for the pre-test scores using ANCOVA.

2. Comparison of Academic Self Efficacy Scores by Treatment and Socio-economic status
   a) When the technique of two-way ANCOVA was applied to compare the post-test scores on academic self-efficacy after partialling out the effect of pre-test scores, the F-ratio for treatment effect was found to be 106.74 which is significant. ($P < 0.0001$). The mean post-test score on academic self-efficacy of experimental group (EG) is 167.75 which is greater than 148.17, mean post test score on academic self-efficacy of the control group (CG). It states that the instructional programme to enhance implicit theories of intelligence is effective in developing academic self-efficacy of students from the experimental group.
   b) The F-ratio for socio-economic status effect and interaction effect was not significant. This implies that the intervention programme of implicit theories of intelligence was found to be equally effective in developing academic self-efficacy for students of experimental group, irrespective of their socio-economic status background.

The interaction effect of the intervention programme and the socioeconomic status on academic self-efficacy are shown in the following figure.

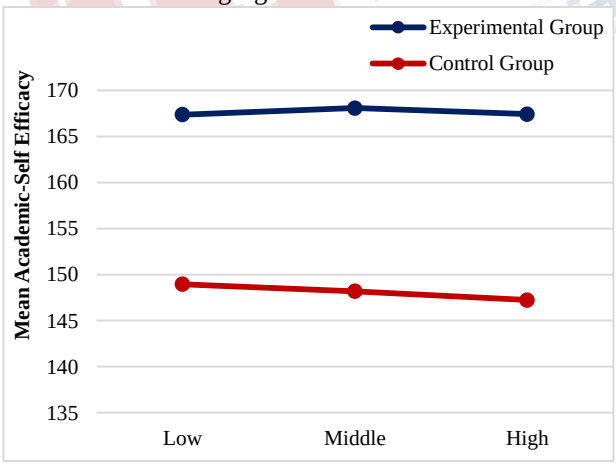

Fig 1

3. Computation of the Magnitude of the Effect Size Using Wolf's Formula.

Table 1: Effect Size

Intervention Programme (Independent Variable) on Academic Self-Efficacy. (Dependent Variable)		Socio-economic status (Moderator Variable) on Academic Self-Efficacy. (Dependent Variable)	
Effect	**Magnitude**	**Effect**	**Magnitude**
1.97	High	1.93	High

XIII. CONCLUSIONS

1. The intervention programme to enhance implicit theories of intelligence has been effective in enhancing the academic self-efficacy of students.
2. The instructional programme to enhance implicit theories of intelligence was found to be equally effective in developing academic self-efficacy of students from experimental group, irrespective of their socio-economic status.
3. The effect size of the treatment i.e. intervention programme to enhance implicit theories of intelligence on academic self-efficacy of students was found to be 1.97 which is high in magnitude. Thus it can be concluded that the intervention programme has a high effect on academic self-efficacy of seventh standard students.

XIV. DISCUSSION

The findings of the study concluded that the intervention programme to enhance implicit theories of intelligence influenced the academic self-efficacy of students positively irrespective of their socio-economic status. Socio-economic status reflects and is measured by the social and economic status of family members. People generally believe that there is a strong and stable correlation between socio-economic status and children's academic achievement and cognitive development. However, the conclusions from studies are inconsistent [12]. The present study's findings agree to this aspect that there is a strong and stable correlation between socio-economic status and academic achievement. The researcher decided and made students feel comfortable while filling up the socio-economic status questionnaire to ignite the flame of willingness and enthusiasm for learning in them throughout the programme. The intervention programme to enhance implicit theories of intelligence was uniformly effective in enhancing academic self-efficacy of students from the experimental group, irrespective of their socio-economic status background because of the activities planned by the researcher in each module of the instructional programme as well as the use of examples of famous people from different socio-economic

status background to help students learn and understand that it is one's implicit belief about intelligence that keeps one going with strong determination and passion for learning in order to become successful.

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