



# Academic Resilience and Problem Solving Ability of Higher Secondary School Students in Chennai District

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## Abstract

The present study was undertaken to study the Academic resilience and Problem solving ability among higher secondary students. A total sample of 300 higher secondary school students were selected through stratified random sampling technique based on Gender, Medium of instruction, and Stream of study from 10 higher secondary schools for the present study. For the collection of data the investigator used Academic Resilience Scale. ARS-30 was constructed and validated by Cassidy (2016) and Problem Solving Inventory (PSI) was constructed and validated by Ntina Kourmousil (2016). The results of the study showed that there exists positive high correlation between academic resilience and problem solving ability among higher secondary school students and significant difference was found in academic resilience and problem solving ability among higher secondary school students with respect to gender. Further, the significant difference was not found between Tamil medium and English medium students, Arts and Science students in their academic resilience and problem solving ability.

**Keywords:** Academic resilience, Problem solving ability, higher secondary students.

## Introduction

Academic resilience and problem-solving abilities are important elements of education. It is an essential component of everyone's life. A good problem solver has a better chance of succeeding in life. Every day, students face academic and social problems in the classroom, at home, at colleges, and in their communities. Despite obstacles and challenging circumstances, there are students who are able to adjust to difficulties and reach great levels of academic achievement and success because they believe that good learning is the result of continuous efforts and positive thinking. Academically resilient students are those who are able to deal

with these kinds of challenges. States that, in order for an individual to be considered as resilient, he/she needs to have a positive result in a situation that involves high risk. For this reason, high risk factors are necessary constituents that are needed to define and understand resilience. (Brackenreed, 2010). Resilient students are faced with difficulties, but they are able to overcome them. Although this is a natural ability, social support, particularly that offered by the teacher, who stimulates the development of coping mechanisms while narrating any story, can significantly strengthen it. These social supports assist pupils in adjusting to their new environment, allowing them to survive and succeed.

### **Academic Resilience**

Human life sometimes related to success or possession of materialistic items, and as a result, to gain success or possession of money, a lot of trouble arises, which further complicates life by adding stress, tension, and obstacles. Depression and life stress have become an integral part of modern life. Even if life has become more competitive and challenging these days, there are still those who manage to keep their morale high in such situations. Such people are called resilient because they do not easily give up on a mission; instead, they struggle with circumstances and effectively overcome hurdles. These people, in particular, make use of several motivational remarks. In the words of Luthans (2002, p.702), Resilience is the developable capacity to rebound or bounce back from adversity, conflict, and failure or even positive events, progress, and increased responsibility.

Resilience means student's ability to adjust or recover from adversity in the environment, such as failing in school, college, or university, being a victim of child abuse, criminality, poverty, or encountering violence. The process of dealing with disruptive, unpleasant, or challenging life situations in such a way that the individual gains greater protective and coping skills than they did before the incident.

According to Martin and Marsh (2006), academic resilience is the students ability to attain positive school outcomes despite academic setbacks, stress, and school related pressures (Mwangi, Ireri, & Mwaniki, 2017, p.1). Academic resilience, which focuses primarily on processes that allow students to succeed in school, despite the presence of significant adversity or risk factors that typically lead to poor academic outcomes (Martin & Marsh, 2006, 2009; Wang et al., 1994). (Skinner, Graham, Brule, Rickert, & Kindermann, 2020, p.2)

## Problem Solving Ability

Problem-solving is an intellectual process that determines the larger problem process, including problem discovery and problem shaping. A problem is described as a desire to reach a specified objective from a current state that is either not immediately advancing toward the goal, is far from it, or requires a more advanced reason for identifying a missing explanation of situations or a stumbling block. Problem-solving is a higher-order cognitive function that necessitates the regulation and control of more basic or everyday talents. It is said to be the most difficult of all mental operations. There are two forms of problem-solving: mathematical problem-solving and personal issue-solving, both of which require some sort of obstacle or barrier. More problem solving occurs when moving from a given condition to a desired objective state is required for real humans or an artificial intelligence system. Kantowski (1975) problem solving is the interaction between knowledge and application process errors that use cognitive and affective factors in problem solving. (Rohmah & Sutiarto 2017, p.672)

While problem solving has always been a part of human evolution, particularly in the history of mathematics, psychologists have spent the last century studying the nature of human problem-solving processes and strategies. Introspection, behaviourism, simulation, computer modelling, and experiment are all methods for investigating problem-solving. Independent and interdependent problem-solving have lately been distinguished by social psychologists.

Germi, (2006) described that People with problem solving skills; innovative, responsible, flexible, courageous, adventurous, different thinker, self-confident, logical, objective, comfortable, emotional, energetic, effective, creative and producer has a structure. These characteristics are important for the success of one's life. (as cited by Arora, Arora, Chadha, 2020, p.938).

Polya (1973) states that, Solve the problem doesn't contribute to students' mental development. He believes that to provide the opportunity for students to develop high-order thinking in the process of understanding, analysis, exploration, and application of mathematical concepts, no routine problems should be employed. (as cited by Amalia, Surya, Syahputra, 2017, p.3404). Academic resilience and problem-solving abilities are important elements of education. It is an essential component of everyone's life.

## Review of Literature

Gonsalves, Hodgson, Bhat, Sharma, Jambhale, Michelson & Patel, (2021). Attami, Budiyo, & Indriati, (2020) have found that learners mathematical problem-solving skills are strong in resilience, meaning they can deal with and overcome barriers and unpleasant conditions connected to problem-solving. Kumar, (2020) has found that high school students have high problem solving ability. Dawngliani, Ralte & Fanai, (2019). Praveen, (2018). Singh & Veer, (2017). Gupta & Pasrija, (2016). In their study reveals that Gender and locality of high school students have high problem solving ability. high school students have high problem

solving ability Ji, Bang, & Jeon, (2013). The findings suggest that the study explored that to improve nursing students problem-solving abilities, they must strengthen their communication skills. Azam, (2012). The correlations and regression analysis results demonstrated a significant positive association between resilience and protective variables at home and school. Abdul Gafoor & Neena Kottalil (2011). The study revealed that teachers could foster resilience through short-and medium-term interventions to promote resilience by creating an environment that protects at-risk children at the personal, domestic, school, and societal levels

### **Justification of the Study**

Adolescents are young people between the ages of ten and nineteen. It is an era of physical, physiological, and psychological progress between puberty and legal maturity. Adolescents make up about 21% of India's population (about 243 million people). They constitute the nation's future, constituting a significant economic and demographic force. They have unique needs that vary depending on gender, life circumstances, and socioeconomic circumstances. Poverty, a lack of access to health care, unsafe living conditions, and other challenges are among the problems they encounter. It is a preparation phase for taking on more duties as an adult, such as dealing with familial, social, cultural, and economic issues. Physiological changes in students occur during adolescence, which has a significant impact on academic and social behaviour. The present study aims at finding the relationship between academic resilience and problem-solving ability among Higher Secondary Students. Academic resilience is a set of characteristics in students that aid in successful adaptation and transformation, even when faced with risk and adversity. Resilient people have the ability to face, overcome, or recover from serious academic threats. In simple terms, resilience is the ability to bounce back after a setback. Wang et al. (1994), Academic resilience, which focuses primarily on processes that allow students to succeed in school, despite the presence of significant adversity or risk factors that typically lead to poor academic outcomes. (cited by Skinner, Graham, Brule, Rickert, & Kindermann, 2020, p. 291). Vernon (1969). Higher secondary school students have been seen to have a variety of issues relating to their academic success. As a result, the study's scope is drawn from the limitations of previous studies, indicating the need for more research into these areas. The significance of the study is shown in the necessity to comprehend the relationship between academic resilience and problem-solving ability. Although there are several studies on adolescents, there has been less attention on examining academic resilience among school children. By doing this study, the investigator has made a modest attempt to close the gap.

### **Academic Resilience:**

Academic resilience is student's ability to deal with academic drawbacks successfully; challenges and academic pressure (grades, exam pressure), stress and difficulties in the academic or school life Academic resilience in the present refers to the scores obtained by the sample subjects on the Academic resilience scale by Cassidy (2016).

## Problem Solving Ability:

Problem solving is an outline or design that allows for innovative thinking and understanding. Problem solving ability intelligence in the present study refers to the scores obtained by the sample subjects on the problem solving ability scale by Ntina Kourmousil (2016).

## Higher Secondary School Students:

Higher secondary school (HSS) students refer to those students who are enrolled in a school at 11th & 12th class in any government or private higher secondary school in Chennai District of Tamil Nadu.

## Objectives

1. To find out whether there is any significance difference in academic resilience and problem solving ability among higher secondary students with respect to
  - Gender,
  - Medium of instruction
  - Subject of the specialization
2. To find out whether there is any significance relationship between academic resilience and problem solving ability among higher secondary students.

## Hypotheses

The following hypotheses are formulated based on the objectives of the study

- There will be no significant difference between boys and girls students with respect to
  - i. Academic Resilience
  - ii. Problem solving ability
- There will be no significant difference between students belonging to Tamil and English medium with respect to
  - i. Academic Resilience
  - ii. Problem solving ability
- There will be no significant difference among students who have specialized in science and arts with respect to
  - i. Academic Resilience
  - ii. Problem solving ability
- ii. There will be a significance relationship between academic resilience and problem solving ability among higher secondary students.

## Methodology

The research design is of normative survey method and sampling technique used for the study is stratified random sampling technique. To find out the level of academic resilience and problem solving ability among higher secondary students with respect to gender, medium of instruction and subject of the specialization data were collected from higher secondary school students studying in various types of schools.

## Sampling Strategy

Data for this study are collected from 300 higher secondary school students (Boys = 148, girls = 152, Tamil medium = 122, English medium = 178) studying in 10 different schools. These 10 schools are selected randomly. Among 10 higher secondary schools, 05 are Government schools and 05 are self-finance schools.

## Instruments Used

Academic Resilience Scale. ARS-30 was developed by Cassidy (2016). The scale consists of 30 items in total. The measurement tool consists of perseverance, reflective and adaptive help-seeking, negative affectivity, and emotional response. The Cronbach alpha internal consistency reliability coefficient values for the sub-dimensions of the scale were .83, .78, and .80, respectively; The total score of the scale was found to be .90. Item-total correlations range from .41 to .63. Scale questions are in five-point Likert type. The highest score that can be obtained from the scale is 150. The high scores obtained from the scale indicate a high level of academic resilience.

Problem Solving Inventory (PSI) was developed by Ntina Kourmousil (2016) is a 35-item instrument (3 filler items) that measures the individual's perceptions regarding one's problem-solving abilities and problem-solving style in the everyday life. As such, it measures a person's appraisals of one's problem-solving abilities rather than the person's actual problem-solving skills. It consists of three factors, thus yielding three separate subscales. Problem-Solving Confidence (11 items) assesses self-perceived confidence, belief and self-assurance in effectively solving problems. Approach-Avoidance Style (16 items) assesses whether individuals tend to approach or avoid problems Higher scores reflect a style of avoiding rather than approaching problems. Personal Control (5 items). All items are scored on a six-point Likert scale, ranging from 1 = Strongly Agree to 6 = Strongly Disagree. A total score can be calculated as a general index of problem-solving appraisal that ranges from 32 to 192. Lower scores on each factor and on the total PSI score are considered more functional.



## Analysis and Interpretation of Data

Table showing the correlation between Academic Resilience and Problem solving ability among higher secondary school students

Table1

Variables	N	Calculated r value	Results
Academic Resilience and Problem solving ability	300	0.399**	Positively and significantly correlated

From the table above the coefficient of correlation value is 0.399 which reveals that there is a positive and significantly correlation between academic resilience and problem solving ability among higher secondary students.

### Hypothesis 1

There will be no significant difference between boys and girls students with respect to Academic Resilience and Problem solving ability

Table 2.

Variable	Gender	N	Mean	S.D	C.R.	Level of significance
Academic resilience	Boys	148	96.08	8.276	2.36	Significant
	Girls	152	96.94	8.329		
Problem solving ability	Boys	148	84.43	18.241	1.98	Significant
	Girls	152	84.49	18.295		

From the above table it is observed that the mean scores and standard deviation of Academic Resilience of boys are 96.08 and 8.276 and of girls are 96.94 and 8.329 respectively. The critical ratio of academic resilience of boys and girls students is 2.36 which is significant at 0.01 level. It indicates that boys and girls differ significantly in their academic resilience.

Also from the above table it is observed that the mean scores and standard deviation of problem solving ability of boys are 84.43 and 18.241, and of girls are 84.49 and 18.295 respectively. Also the critical ratio of problem solving ability of boys and girls students is 1.98 which is significant at 0.01 levels. It indicates that boys and girls differ significantly in their problem solving ability.

**Hypothesis 2**

There will be no significant difference between students belonging to Tamil and English medium with respect to Academic Resilience and Problem solving ability

**Table 3.**

Variable	Medium of instruction	N	Mean	S.D	C.R.	Level of significance
Academic Resilience	Tamil Medium	122	96.67	8.343	0.513	NS
	English Medium	178	96.20	8.949		
Problem Solving Ability	Tamil Medium	122	85.18	22.124	0.809	NS
	English Medium	178	83.21	17.610		

From the above table it is observed that the mean scores and standard deviation of Academic Resilience of Tamil medium students are 96.67 and 8.343 and of English medium are 96.20 and 8.949 respectively. The critical ratio of Academic resilience of Tamil medium and English medium is 0.513 which is not significant. It indicates that Tamil medium and English medium do not differ significantly in their academic resilience. Also from the above table it is observed that the mean scores and standard deviation of problem solving ability of Tamil medium students are 85.18 and 22.124, and of English medium are 83.21 and 17.610 respectively. Also the critical ratio of problem solving ability of boys and girls students is 0.809 which is not significant. It indicates that Tamil medium and English medium do not differ significantly in their problem solving ability.



### Hypothesis 3

There will be no significant difference among students who have specialized in science and arts with respect to Academic Resilience and Problem solving ability

**Table 4.**

Variable	Subject of specialization	N	Mean	S.D	C.R.	Level of significance
Academic Resilience	Arts	101	96.27	9.228	0.413	NS
	Science	199	96.53	7.481		
Problem Solving Ability	Arts	101	83.87	18.551	0.184	NS
	Science	199	83.57	19.687		

From the above table it is observed that the mean scores and standard deviation of Academic Resilience of Arts students are 96.27 and 9.228 and of Science are 96.53 and 7.481 respectively. The critical ratio of Academic resilience of Arts students and Science is 0.413 which is not significant. It indicates that Arts and Science do not differ significantly in their academic resilience.

Also from the above table it is observed that the mean scores and standard deviation of problem solving ability of Arts higher secondary students are 83.87 and 18.551, and of Science higher secondary students are 83.57 and 19.687 respectively. Also the critical ratio of problem solving ability of boys and girls students is 0.184 which is not significant. It indicates that Arts and Science do not differ significantly in their problem solving ability.

### Educational Implications

- The present study examines academic resilience and problem-solving ability among higher secondary school students of Chennai District in Tamil Nadu. As a result, the findings have significant implications for students, teachers, parents, school counsellors, school administrators, and policymakers. These are as follows
- In terms of academic resilience, cultivating academic resilience can help students achieve academic success while also supporting their overall wellbeing. It can also assist students in coping with and recovering from the adversity that challenges their academic success.
- Schools should also implement initiatives and train teachers to teach students about their innate resilience.

- Teachers should be provided with workshop training, refresher courses, and in-service training courses to help them get the required skills and competencies to improve their students' academic resilience, and problem-solving ability.
- According to the Right to Education Act, schools should establish guidance and counselling cells on campus so that students can receive timely help appropriate to their needs.
- Teachers must also identify students with poor problem-solving abilities and work with them to adapt their learning, creativity, and thinking abilities using a variety of audio-visual tools

## Conclusion

- Based on the analysis of data the investigators conclude the finding that there is significant difference was found in academic resilience and problem solving ability among higher secondary school students with respect to gender. Further, it is shows that the girls have high level of mean score than the boys counterparts. Further that there is no significant difference in the academic resilience and problem solving ability of higher secondary students with respect to medium of instruction and subject of the specialization. Academic resilience is a set of characteristics in students that aid in successful adaptation and transformation, even when faced with risk and adversity. Resilient people have the ability to face, overcome, or recover from serious academic threats. Therefore, the relationship between the academic resilience and problem solving ability is deserves attention in future research. Finally, this study replicated that the academic resilience power leads increase to student problem solving ability in learning environment.

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