Impact of Self – Concept on Scholastic Achievement of 9th Class Students in Physical Sciences

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ABSTRACT: *The study looked at the relationship between students self – concept and how it affects their academic achievement in Physical Sciences in some selected secondary schools in Chittoor District, Andhra Pradesh. The sample consisted of randomly selected 1800 9th class students. Self- concept scale developed by Dr. (Miss) Mukta Rani Rastogi (1974) was administered on the sample to asses their self-concept. F test and regression analysis was used to analyze the data. The result of the findings showed that students have good self – concept of them selves is performing well in physical sciences to please themselves, their parents and to get admission into higher institution of their choice. Better Self – Concept is associated with better scholastic achievement in Physical sciences. It is possible to predict the scholastic achievement of 9th class students in physical sciences with Psychological variables like Self – Concept . It is therefore suggested class room teachers should teach students good student habits and self – management skills together with appropriate self attribution strategies.*
***Key words:** Self – concept, scholastic achievement, physical sciences,student habits, self – management skills*

I.   Introduction

The term self – concept can be built up within or interrogated into different theoretical frame works like those of subjective theories or belief systems. The researcher would like to view self – concept within the frame work of attitude.   According to Meinefeld, (1988), the concept "attitude" is a lasting, permanent stable orientation and readiness or intension to action of an individual towards a social object. The class room teachers should teach students good habits and self - management skills together with appropriate self – attribution strategies. This would result in education is the process of developing the capacities and potentials of the individual so as to prepare that individual to be successful in a specify society or culture. From this perspective, education is serving primarily as an individual development function.

Education begins at birth and continues throughout life. It is constant and ongoing. Schooling generally begins some where between the ages four and six when children are gathered together for the purpose of specific deems important. In the past, once the formal primary and secondary schooling was completed, the process was finished. However, in today's information age, adults are quite often learning in informal setting through their working lives and even into retirement.

In our society academic achievement is considered as a key criterion to judge one's total potentialities and capacities. Hence academic achievement occupies a very important place in education as well as in the learning process. Academic achievement is defined by Crow and Crow (1969) as the extent to which a learner is profiting from instruction in a given area of learning i.e. achievement is reflected by the extant to which skill and knowledge has been imparted to him. Academic achievement also denotes the knowledge attained and skill developed in the school subject, usually designed by test scores. Achievement is influenced by several factors like personality, motivation, opportunities, education socio economic status and also self – concept.

Self – Concept is the mental and conceptual awareness and persistence regard that sentient begins hold with regard to themselves. Self – Concept is organized. Self – Concept has a generally stable quality that is characterized by orderliness and harmony. Each person maintains countless perception regarding one's personal existence and each perception is orchestrated with all others. It is this generally stable and organized quality of self – concept that gives consistency to the personality". (Wikipedia Encyclopedia,2003).

II.   Review of Related Literature

Self – Concept is a person's total internet view of self in relation to the experience of being and functioning within the environment. It includes value attached to such a view"(Gilliand, 1998). Self concept has been variously defined as "The self as known to the self" (Murphy, 1947) The term self –concept has come into common use, to refer to the second meaning, which refers to the phenomenological approach. Self-concept refers to "The pictures or images a person has himself" (Taneja, 1991).

Allport (1961) has described self–concept as "Some thing of which we are immediately aware. We think of it as the warm, central, private region of our life. As such it plays a crucial part in our consciousness (a concept broader in itself), in our personality (a concept broader than consciousness), and in our organism (a concept broader than personality). Thus it is some kind of core in our being.

The studies conducted in this area which are relevant to the Indian context are Manger and Eikeland (2006), Thomas and Robert (2006), Krishna Reddy (2008), Corlos & Rodrgvez (2009), Philias Qulatunde (2010)etc. The details of the studies are as follows.

Manger and Eikeland (2006) studied that the effect of mathematics self concept on girls and boys mathematical achievement found that Norwegian elementary school boys showed significantly higher mathematics , self concept than girls. Boys also had a significantly higher mathematical achievement score than girls.   Thomas and Robert (2006) found that self concept of academic ability and to lesser extent, students study activity were positively associated with student achievement. Students self concept of academic ability ratings were also linked to students engagement in generative, proactive study activities.

Krishna Reddy (2008) found that self concepts have significant influence on the scholastic achievement of X class students in Mathematics. Corlos & Rodrgvez (2009) found that high students academic self - concept and unambiguous out come expectations encourage critical thinking, reflective approaches and academic performance. Philias Qulatunde (2010) showed that students of secondary schools have good self - concept of themselves in performing well in mathematics.

The findings of the above studies shows that self-concept is dominant in personality pattern and hence the measurement of self-concept becomes very essential. Understanding the personality of an individual, predicting his life adjustment and his success and failure are based on the self concept.

Need for the study

Scholastic achievement continuous to be one of the most important variables held in high esteem, in all cultures, countries and times. Hence the research related to the area of academic achievement is an ever growing concern of the researchers, educationalists and administrators. Achievement is included by several factors like personality, Motivation, Opportunities, Socio – Economic status and also Self – concept and academic ability and to lesser extent, students activity were positively associated with student achievement (Thomas Robert) the achievement in Physical science, particularly 9th class level has been chosen occupying in view the fact then Physical sciences is a compulsory subject of study up to X class. Hence it is felt that there is a need for research study to find out the influence of various Psycho – Sociological factors on the achievement in Physical sciences at IX class level.

In view of the above, an attempt has been made in the study to find out the Impact of Self – Concept on Academic Achievement of 9th class students in Physical Sciences. To be specific the objectives of the study are as follows

Objectives of the study
1. To study the impact of Self - Concept on scholastic achievement of IX class students in physical sciences.
2. The study weather it is possible to predict the achievement in physical sciences with the help of Self - Concept.

Hypothesis of the study
Keeping in view of above objectives the following hypothesis were formulated.
1. Self - Concept would not have any significant influence on scholastic achievement of IX class students in Physical sciences.
2. It would not be possible to predict the achievement in physical sciences with the help of Self - Concept.

Sample of the study

The aim of the study is to identify the role of different factors on the achievements in physical sciences of IX class students. The study was conducted in Chittoor District of Rayalaseema region of Andhra Pradesh. The District consists of four educational divisions. Namely . Madanapalle, Puttur, Chittoor and Tirupati. The District has 849 High schools under four educational divisions. For the purpose of the present study, the stratified proportionate Random sampling method was adopted for selecting the schools, for educational divisions. However while selecting the students sample purposive sampling method was adopted where in all the students of IX class of selected schools were chosen as sample. The sample frame of the study is as follows.

Table 1 :
Sample frame of the Study

S.No	Educational Divisions	No. Of. Students	Percentage
1	Madanapalle	450	25%
2	Puttur	450	25%
3	Chittoor	450	25%
4	Tirupati	450	25%
TOTAL		1800	100%

Thus the total sample of the study includes 36 schools under four educational divisions.

Research Tool

Keeping in view of the objectives of the study and review of related literature, the investigator has chosen the self-concept scale (Scs) developed by **Dr. (Miss) Mukta Rani Rastogi** (1974) which is more suitable for the purpose of present study. This scale consists of 51 items, divided into 10(ten) areas. Out of these 51 items, 23 are positive and 28 are negative. It is a five-point attitude scale with alternatives, Strongly Agree (SA), Agree (A), Doubtful (D), Disagree (DA), and Strongly Disagree (SDA). The ten areas are:

1. Health and sex appropriateness
2. Abilities
3. Self-confidence
4. Self- acceptance
5. Worthiness
6. Present, past and future
7. Beliefs and convictions
8. Feeling of shame and guilt
9. Sociability
10. Emotional maturity

Further in order to study the achievement of the students in physical sciences, the investigator found that there is no standardized tool in physical sciences for 9th class students in telugu. Hence the investigator has developed and standardized an objective achievement test and utilized for studying the achievement in physical sciences of 9th class students. The test consists of 100 multiful choice items, where the student is supposed to check the correct item. The test yields 100 marks.

III.   Results and Discussion

The collected data was analyzed keeping in view of the objectives of the study. The data collected from the students relating to self-concept has been segregated into 10 areas. Mean and standard deviation were calculated for each area as a whole further the mean scores of each area have been classified into 3 groups as a low, moderate and high, based on quartiles.

The impact of Self- concept on scholastic achievement of 9th class students in Physical sciences evident from Table - 2 that the computed values of 'F' for the areas of Self-Concepts scales namely, 1.Health and sex Appropriateness (SC_1), 2) Abilities (SC_2), 3)Worthiness (SC_5), 4) Present, Past and Future (SC_6), 5) Beliefs and convictions (SC_7), 6) Emotional maturity (SC_{10}) and 7). Self – Concepts Total score (SCT) are far greater than the critical value of 'F' (4.60) for 2 and 1797 df at 0.01 level of significance. Therefore Hypothesis- 1 is rejected for the above areas of SCS at 0.01 level of significance. It is clear from mean values that who are better in Health and sex appropriateness, Abilities, worthiness, present, past and future, Belief's and convictions, emotional maturity and Total self – concepts are also significantly better in Scholastic Achievement.

The Computed values of 'F' for the areas of SCS namely 1)Self confidence (SC_3)and 2) Sociability (SC_9) are greater than the critical value of 'F' (2.99)for 2 and 1797 df at 0.05 level of significance .Therefore Hypothesis – 2 is rejected for the above two areas at 0.05 level. It is observed from Table - 1 who are better in Self – Confidence and less in sociability are significantly better in Scholastic Achievement.

TABLE-2
Impact of Self-Concepts on the Scholastic Achievement

S.No	Self Concept	No.of Observations			Mean			S.D.Values			F' Values	Level of Significance
		I	II	III	I	II	III	I	II	III		
1	SC_1	553	930	317	33.64	35.98	37.61	10.83	11.61	10.76	14.00	**
2	SC_2	597	785	418	33.27	35.60	38.71	10.35	11.05	12.32	29.33	**
3	SC_3	648	772	380	34.64	35.79	36.61	11.48	11.08	11.40	3.93	*
4	SC_4	455	925	420	35.52	35.29	36.16	11.61	11.27	11.07	0.89	@
5	SC_5	570	850	440	34.73	35.32	36.95	10.9	11.22	11.85	4.93	**
6	SC_6	525	924	351	34.66	35.39	37.28	11.48	11.00	11.69	5.88	**
7	SC_7	539	971	290	34.12	36.01	36.68	11.01	11.60	10.65	6.60	**
8	SC_8	587	780	433	35.68	35.61	35.25	10.82	11.31	11.97	0.21	@
9	SC_9	793	660	347	36.19	35.38	34.41	11.65	10.70	11.58	3.12	*
10	SC_{10}	464	891	445	36.74	35.51	34.39	12.28	11.05	10.66	4.93	**
11	SC_T	481	898	421	33.14	35.73	37.91	11.03	10.94	11.88	20.60	**

It is evident from Table - 2 that the computed values of 'F' for the areas namely 1)self acceptance (SC_4)and 2)Feeling of shame and guilt (SC_8), are less than critical value of 'F' (2.99) for 2 and 1797 df at 0.05 level of significance . Therefore Hypothesis – 2 is accepted for the above two areas at 0.05 level. Hence it is concluded that the areas namely: 1) self acceptance (SC_4) and 2)Feeling of shame and guilt (SC_8), do not have significant influence on the Scholastic Achievement of IX class students in physical sciences.

Further it is clear that there is a significant difference in the achievement scores among the there groups namely low, moderate and high groups of students. The Mean values group – II (Moderate) for all the areas SCs concluded that students who have better self – concept achieved 'Significantly' better in Physical Sciences.

Prediction of Scholastic Achievement in Physical sciences with the help of self-concepts.

Scholastic Achievement of IX class students in physical sciences is predicted (Dependent variable,) with the help of 10 areas of Self – concepts and Self – Concepts Total scores (Independent variables, variable numbers 1 to 11 in Table - 2) using step wise multiple regression analysis. The results of the regression analysis are presented in Table – 3.

TABLE-3
Prediction of Scholastic Achievement in Physical sciences with the help of self concepts

Step No.	IV (VN)	R	R^2	SER	F value for R	b (VN)	't' value for b	Constant	B	R	% of variance
1	2	3	4	5	6	7	8	9	10	11	12
1.	**SC_2 (28)**	**0.198**	**0.0394**	**11.088**	**73.66** (1,1798)	**0.50(28)**	**8.58**	**22.287**	**0.198**	**0.198**	**3.94**
2.	SC_1 (27)	0.220	0.0485	11.038	45.87** (2,1797)	0.44(28) 0.32(27)	7.30** 4.17**	17.509	0.174 0.099	0.143	3.44 1.41
3.	SC_{10} (36)	0.233	0.0545	11.006	34.54** (3,1796)	0.45(28) 0.29(27) - 0.30(36)	7.50** 3.76** 3.37**	20.695	0.178 0.090 - 0.078	- 0.083	3.53 1.28 0.64
4.	SC_6 (32)	0.240	0.0578	10.991	27.54** (4,1795)	0.43(28) 0.27(27) - 0.30(36) 0.22(32)	7.10** 3.52** 3.38** 2.49*	18.104	0.170 0.084 - 0.078 0.058	0.097	3.37 1.20 0.64 0.57
5.	SC_5 (31)	0.245	0.0600	10.980	22.94** (5,1794)	0.26(28) 0.41(27) - 0.31(36) 0.21(32) 0.16(31)	6.71** 3.41** 3.47** 2.35* 2.08*	15.248	0.162 0.082 - 0.080 0.055 0.049	0.088	3.22 1.16 0.66 0.53 0.43
6.	SC_7 (33)	0.248	0.0615	10.975	19.60** (6,1793)	0.40(28) 0.24(27) - 0.30(36)	6.50** 3.10** 3.36** 2.30*	14.010	0.158 0.075 - 0.078 0.054	0.093	3.13 1.07 0.64 0.52

Step No.	IV (VN)	R	R^2	SER	F value for R	b (VN)	't' value for b	Constant	B	R	% of variance
1	2	3	4	5	6	7	8	9	10	11	12
						0.20(32)	2.02*		0.047		0.42
						0.16(31)	1.67@		0.040		0.37
						0.20(33)					

It is observed from the Table - 3 the most important independent variable that entered first into the step-wise regression analysis is 'Abilities'(SC2). The multiple correlation 'R' is obtained is 0.198. It indicates that the strength of the relationship between the two variables ATS and SC2 is about 19.8 percent. It could be seen that 'R' is significant (F = 73.66) beyond 0.01 level of significance for 1 and 1798 df. The coefficient of R^2 is 0.0394. This shows that 3.94 percent of variance in ATS is accounted by SC_2.

The standard error of estimation (SER) is 11.088. From this it can be inferred that nearly 68 percent of the actual ATS value would lie within M $\pm$ 11.088 of ATS value predicted with the help of this variable (SC_2).

The partial regression coefficient (b) presented in column 7 of Table - 3 is 0.50. this value indicates that the ATS value would change by 0.50 units for every unit of change in SC_2. The 't' value for 'b' (col 8) is 8.58 which is significant beyond 0.01 level of significance for 1798 df. The value of constant that could be written to predict ATS at this stage is 22.287. The multiple regression equation at the end of this step could be written as:

ATS =22.287 + 0.50 (SC2).

The second important predictor variable that entered into the step-wise regression analysis is SC_1 (VN 27) i.e 'Health and Sex appropriateness . The value of R and R^2 at this stage from the Table - 2 are 0.220 and 0.0485 respectively. Thus the amount of variance in ATS contributed by these two variables put together is 4.85 per cent out of which SC2 has contributed 3.44 per cent of variance and the remaining 1.41 per cent of variance is contributed by SC_1 .

The multiple regression equation with these two predictor variables SC2 and SC1 could be written as ATS = 17.509 + 0.44(SC_2) + 0.32 (SC_1).

There are six steps in this regression analysis. The value of R^2 in the 6th step from the Table - 2 is 0.0615. This shows that these six variables put together could explain 6.15 percent of variance in the dependent variable (ATS). The regression equation at the end of 6th step could be written as:

ATS = 14.010 + 0.4. (SC2) + 0.24 (SC1) − 0.30 (SC10) +0.20 (SC6) +0.16 (SC5) + 0.20 (SC7)

With the help of the above six variables namely 1. Ability (SC2) 2.Health and sex appropriateness (SC1)3. Emotional maturity (SC10) 4.Present ,past , future , (SC6), 5. Worthiness (SC5), and 6. Beliefs and convictions (SC7) , it is possible to explain 6.15 percent of variance in the dependent variable.

IV.   Conclusion:

1. It is found that the self-concepts namely; I) Health and sex appropriateness (SC_1), ii) Abilities(SC_2), iii) Self-confidence(SC_3), iv) Worthiness (SC_5), v) Present-past-future (SC_6), vi) Beliefs and convictions (SC_7), vii) Sociability (SC_9), viii) Emotional Maturity (SC_{10}) and ix) Self-Concepts total scores, have significant influence on the scholastic achievement of IX class students in Physical sciences. Better Self-concepts are associated with better scholastic achievement in Physical sciences.
2. It is possible to predict the scholastic achievement of IX class students in Physical sciences, with psychological variables like Self – Concept.

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