

A Study of Pedagogy, Attitude towards Learners and Self Concept of Secondary School Science Teachers and Its Relationship with Students' self Efficacy

Amita Jaiswal,¹ Eklak Ahmad,²

¹Research Scholar, Faculty of Education, Integral University, Lucknow.

²Assistant Professor, Faculty of Education, Integral University, Lucknow

Corresponding Author: Amita Jaiswal

ABSTRACT: The purpose of this research paper was to study the pedagogy, attitude towards learners and self concept of secondary school science teachers and its relationship with students' self efficacy. With the help of purposive sampling technique 100 secondary school science teachers and 400 students were selected for the study. Finding of the study indicates that there is a significant difference in the pedagogy of male and female secondary school science teachers. Male and female teachers have differences in their attitude towards learner. The self concept of male and female teachers also differs significantly. On the part of students, the male and female students have significantly different self efficacy. Students self efficacy have a positive relation with teachers pedagogy, attitude and self concept. Self efficacy is the key predictor of students' motivation and achievement. Hence it suggested that along with appropriate teaching pedagogy, teacher must have a positive attitude and high self concept.

KEYWORDS: Pedagogy, Attitude, Self concept, self efficacy

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I. INTRODUCTION

Education functions in an atmosphere largely determined by the attitudes, interest and values of pupils, teachers, administrators, parents and school members. The primary goal of education should be the intellectual development of the individual. Its special function is to impart knowledge, develop understanding and skills. The main aim of teaching is to bring about socially desirable behaviour change in the students and this can only be achieved if the teaching is effective and based on the principles of teaching. Teaching is an attempt at controlling and modifying learner's behaviour by showing them how they need to behave and what they need to do in order to be able to drive long term benefits from the content of the course. Effective teachers use an array of teaching strategies because there is no single, universal approach that suits all situations. Pedagogy is the science of teaching. The effectiveness of teaching depends mainly upon the method that the teachers adopt. Method is the style of presentation of content in classroom. In the widest sense the method of teaching is called as pedagogy which might include the philosophy, sociology, psychology and methodology involved in teaching. (Winch & Gingell 2004)

Pedagogy involves being able to convey knowledge and skills in ways that students can understand, remember and apply. After pedagogy the other things which greatly affect the teaching learning process is the attitude and self concept of teachers. It directly affects the students' belief and their performance in the classroom. Beliefs in one's capabilities are called as self efficacy.

Huy, P. Phan (2014) has done a study on self efficacy, reflection and achievement. Examination of the literature indicates that self efficacy serves as a powerful mediator and determinant of achievement.

Tingue and Liew (2011) conducted a study on principle and practices for building academic self efficacy in middle grade language art classroom. The important findings are academic self efficacy contributes to students' motivation and persistent for learning. However motivation for reading and learning and students' self efficacy in school often declines in adolescence.

Moore (2011) has done a study on the influence of students' motivation and students' self efficacy on teachers' behaviour. Findings of the study suggest that students' self efficacy and motivation thrive in the culture where teacher uses effective teaching strategies.

Johnson (2009) conducted a study on the link between teacher practices and high school student's mathematics self efficacy: a multilevel analysis. The purpose of the study was to investigate the link between teacher practice, their self efficacy and their students' mathematics self efficacy. The study recommended regular professional development activities to help teachers, implement teacher practices that can positively impact student self efficacy. Through enhancing student's mathematics self efficacy, student's mathematics achievement is likely to improve.

Dawkins (2007) conducted a study on the influence of classroom experiences on community college students self efficacy, attitude and future intentions. According to the theory of the planned behavior the attitude and self efficacy belief a person holds regarding an object or activity will influence behavioral intentions. In this study analysis of data supported the hypothesis that a positive change in chemistry self efficacy beliefs mediated student intentions to participate in chemistry related activities.

Hence self-efficacy, a key element of social cognitive theory, appears to be an important variable because it affects students' motivation and learning.

II. OBJECTIVES OF THE STUDY

The following were the objectives of the present study

1. To study the pedagogical practices used by secondary school male and female science teachers.
2. To study the attitude of secondary school male and female science teachers towards learners.
3. To study the self concept of secondary school male and female science teachers.
4. To study the self efficacy of secondary school male and female students.
5. To find out the relationship between self efficacy of secondary school students and pedagogical practices, attitude, self concept of secondary school science teachers.

III. HYPOTHESES

1. There is no significant difference in the pedagogical practices used by secondary school male and female science teachers.
2. There is no significant difference in the attitude of secondary school male and female science teachers towards learners.
3. There is no significant difference in the self concept of secondary school male and female science teachers.
4. There is no significant difference in the self efficacy of secondary school male and female students.
5. There will be no significant relationship between self efficacy of secondary school students and pedagogical practices, attitude, self concept of secondary school science teachers.

IV. METHOD

The purpose of the research is to study the pedagogy, attitude towards learners and self concept of secondary school science teachers and its relationship with students' self efficacy. For this purpose 'Descriptive Survey Method' of research was selected. Descriptive method is designed to obtain pertinent and precise information concerning the current status of a phenomenon and, whenever possible to draw valid general conclusion from the facts discovered.

According to Kotari (2004), descriptive research concerns with describing the characteristics of a particular individual or of a group and includes survey and fact finding enquires of different kinds. The major purpose of descriptive research is the description of the state of affairs as it exists at present. It is mainly concerned with the present.

V. POPULATION

The population of the present study comprised of all the secondary school science teachers and class VIII science students of secondary schools of Lucknow district.

Sample

Sample of the present study consist of 100 secondary school science teachers and 400 secondary school science students of class VIII.

Tool

In order to achieve the objectives of the study following tools were used:

S.No.	Tool	Variable
1	Self developed PAT (Pedagogy Analysis Test)	Pedagogy
2	Teachers Attitude Inventory (TAI) (S P Ahluwalia)	Attitude towards learner
3	Personality Differential Scale (PD) (K G Aggarwal)	Self Concept
4	Self Efficacy Scale (SES) (Arun Kumar and Shruti Narain)	Self Efficacy

VI. STATISTICAL TECHNIQUE

The data related to present study were analyzed with the help of mean, Standard deviation, t- test and regression analysis.

VII. ANALYSIS AND INTERPRETATION

For the analysis of the data, the collected data was tabulated

Significance of difference between male and female teachers on their pedagogy

Gender	N	Mean	S.D	Degree of Freedom	t-value calculated	Level of Significance
Male	50	90.30	13.37	98	1.873	0.05
Female	50	85.82	10.37			

Table-1 Mean of the pedagogy score of secondary school science teachers

The statistically calculated t-value is 1.873 which is significant at 0.05 level of significance with df 98. The result indicates that there is significant difference in the pedagogy of male and female secondary school science teacher. Therefore the null hypothesis that, ‘There is no significant difference in the pedagogical practices used by secondary school male and female science teachers’ is rejected.

Significance of difference between male and female teachers on their attitude towards learner

Gender	N	Mean	S.D	Degree of Freedom	t-value calculated	Level of Significance
Male	50	190.38	33.38	98	1.86	0.05
Female	50	180.94	11.93			

Table-2 Mean of the attitude score of secondary school science teachers

The statistically calculated t-value is 1.86 which is significant at 0.05 level of significance with df 98. The result indicates that there is significant difference in the attitude of male and female secondary school science teacher towards learner. Therefore the null hypothesis that, ‘There is no significant difference in the attitude of secondary school male and female science teachers towards learners’ is rejected.

Significance of difference between male and female teachers on their self concept

Gender	N	Mean	S.D	Degree of Freedom	t-value calculated	Level of Significance
Male	50	58.32	12.06	98	1.69	0.05
Female	50	54.98	7.06			

Table-3 Mean of the self concept score of secondary school science teachers

The statistically calculated t-value is 1.69 which is significant at 0.05 level of significance with df 98. The result indicates that there is significant difference in the self concept of male and female secondary school science teacher. Therefore the null hypothesis that, ‘There is no significant difference in the self concept of secondary school male and female science teachers’ is rejected

Significance of difference between male and female students on their self efficacy

Gender	N	Mean	S.D	Degree of Freedom	t-value calculated	Level of Significance
Male	200	63.44	14.42	398	1.98	0.05
Female	200	60.52	14.95			

Table-4 Mean of self efficacy score of male and female students

The statistically calculated t-value is 1.98 which is significant at 0.05 level of significance with df 398. The result indicates that there is significant difference in the self efficacy of male and female secondary school students. Therefore the null hypothesis that, ‘There is no significant difference in the self efficacy of secondary school male and female students’ is rejected.

Significance of relationship between self efficacy of secondary school students and pedagogical practices, attitude, self concept of secondary school science teachers

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.132 ^a	.017	-.013	9.19006

- R is a Pearson correlation between predicted values and actual values of dependent variable.
- R² is multiple correlation coefficients that represent the amount of variance of dependent variable explained by the combination of three predictors.
- 1.7% variance of Self Efficacy is explained by three predictors.
- Adjusted R² is a more conservative than R².

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	144.305	3	48.102	.570	.636 ^b
	Residual	8107.885	96	84.457		
	Total	8252.190	99			

1. Predictors: (Constant), Self-concept, Attitude towards learn, Pedagogy
2. Dependent Variable: Self Efficacy

The significant F value, F (3, 96) = .570, indicates that there is a significant relationships between Self Efficacy and three predictors.

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	64.926	10.042		6.466	.000
	PEDOGOGY	.020	.077	.027	.265	.792
	Attitudetowardlearn	-.004	.036	-.012	-.118	.906
	Selfconcept	-.121	.095	-.132	-1.274	.206

The regression equation should be:

Self Efficacy (Y) = 64.926 + 0.020 Pedagogy - 0.004 Attitude towards learner - 0.121 self concept

VIII. CONCLUSION

The present study explore the pedagogy, attitude and self concept of secondary school science teachers and its effect on students self efficacy. Findings of the study indicate that there are significant differences in the pedagogy, attitude and self concept of secondary school science teachers. These factors affect students self efficacy. Self-efficacy, a key element of social cognitive theory, appears to be an important variable because it affects students’ motivation and learning. Individuals with a weak notion of self-efficacy are inclined to think that tasks seem more difficult than they actually are. These thoughts are a breeding ground for feelings of failure and depression, tension and helplessness. A strong notion of self-efficacy, on the other hand, creates feelings of tranquility and challenge in the face of difficult tasks. Research on Australian science students showed that those with high self-efficacy showed better academic performance than those with low self-efficacy. So teachers must have a healthy relationship with their students and must follow the psychological principal of learning.

IX. IMPLICATIONS

The present study shows the importance of teachers in the teaching learning process. Student's beliefs are affected by the behavior of the teacher. Students develop a high self efficacy if they get a supportive environment by their teacher. This is only possible when the teacher have high self concept and positive attitude towards their learner. So from the study it is suggested that a strong effort must be done by the teachers and administrators to provide such conditions in which teachers use a variety of teaching pedagogy with a high self concept.

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