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RESEARCH ARTICLE

PEDAGOGICAL CONTENT KNOWLEDGE (PCK) AND TEACHER EFFECTIVENESS IN GEOGRAPHY TEACHING IN RESPECT OF EXPERIENCE AND QUALIFICATION; A COMPARATIVE STUDY.

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Abstract

The Present study was conducted to compare the pedagogical content knowledge (PCK) and effectiveness of geography teachers in relation to teaching experience, and educational qualification. Descriptive survey method was adopted in this study. A self made tool was used to measure pedagogical content knowledge of geography teacher and a standardized tool was adapted to measure effectiveness of geography teachers. The study found that, there was no significant difference in PCK in respect of teachers' experience variation. Similarly there was also no significant difference in teacher effectiveness in respect of teachers' qualification variation. PCK and teacher effectiveness were not differed significantly in respect of teachers' experience and qualification variation.

Introduction:-

Pedagogical content knowledge is a blending of knowledge about the both of content specific and allied teaching strategies for a regularly taught topic in class room situation, Which also a missing paradigm in the research of teacher education (Shulman, 1986). Content knowledge of a teacher has positive influence on pedagogical content knowledge, which helps them to perform effectively in the class room of mathematics learning (Ozden, 2008). It is necessary in recent years about improving students outcomes is also about improving quality of the teaching personal. Teacher quality is an important factor in determining gains in student achievement (Guerriero, 2016). Like other school subjects knowledge and skills in geographical analysis are becoming even more essential than ever before in the examination and everyday living, driven in measurement by emerging technologies and job demands. To assure that learners in schools get the necessary geographical reasoning required in life, now the time already in front of our society calls for teachers to assure that our learners participate during geography lessons and express their geographical ideas. Adedoyin (2011) found that PCK of mathematics teachers has effect on their academic performance, which was also influence to the pupils learning outcomes and academic performance in mathematics. According to Brodie (2007: p.3), "getting learners to talk is seen as important because it (i) shows that learners are attending to the lesson; (ii) allows learners to express and clarify their own ideas; (iii) enables learners to share ideas with each other; and (iv) provides teachers with information about what learners know and do not know and how learners are thinking and trying to make sense of ideas. Teachers are encouraged to make their lessons more learner-centered by encouraging learners to contribute to the lesson."

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To achieve this type of approach to teaching, schools require such quality teachers who have the appropriate knowledge about the skill of teaching. There is no doubt subject teachers are one of the most powerful influences on students' achievement and engagement with geography. Different reviews showed that, pedagogical content knowledge and Effectiveness of teachers are increased with the passing of services and that also influenced by the educational qualification of the teachers. In this study researcher had try to investigate both the dimension of a geography teacher as variables separately.

The major factor behind the presentation of effective teachers is their enough pedagogical content knowledge, a special combine of content knowledge and pedagogical knowledge that is built up over time and experience (Eames, et al., 2016).

Objectives:-

O1. To compare geography teachers PCK in respect of experience (High; 10 years above and Low; less than 10 years) and educational qualifications (Under Graduate and Post Graduate).

O2. To compare the effectiveness of geography teachers' in relation to experience (high; 10 years above and low; less than 10 years) and educational qualifications (Under Graduate and Post Graduate).

Hypotheses:-

H_O1: There is no significant difference between high-experience and low-experience geography teachers in respect of their mean score in PCK.

H_O2: There is no significant difference between under graduate and post graduate geography teachers in respect of their mean score in PCK.

H_O3: There is no significant difference between high-experience and low-experience geography teachers in respect of their mean score in teacher effectiveness.

H_O4: There is no significant difference between under graduate and post graduate geography teachers in respect of their mean score in teacher effectiveness.

Methodology:-

Keeping objectives of the study, descriptive survey method is used for the study. The researchers selected the six districts (i.e. Howrah, Purba Medinipur, Nadia, Hoogly, Murshidabad and Paschim Medinipur) from the southern part of West Bengal. After obtaining the list of schools from the official website of the West Bengal Board of Secondary Education, schools were selected on random basis. Then researcher attained the geography teachers from those schools. The analysis comprised of 401 geography teachers. Present researchers had used self made PCK Measuring tool to measure the teachers' PCK towards teaching of geography subject in Bengali medium school. Another is Teacher Effectiveness Scale (TES) constructed and validated by Dr. (Mrs. Umme Kulsum), published by NPC Agra, India. Quantitative data analysis procedures were followed for this study. The data were analyzed through IBM SPSS 22.0 version and the significance of 't' were tested at 0.05 level of significance. The collected data were analyzed by using mean, SD, 't'-test.

Result and Discussion:-

Objective 1: It is observed (Table. 1) that, variation wise there were slight differences in the mean scores and standard deviation of scores of PCK with respect to the categorical variables. Therefore, it is decided to study the significance of difference between the two groups of each categorical variable. Hence, the independent sample 't' test is adopted to find out the Levene's Test for Equality of Variance and 't' test for Equality of Means.

Table 1:- Group Statistics of PCK of Geography teachers; Experience and Qualification.

	Variations		N	Mean	Std. Deviation	Std. Error Mean
Pedagogical Content Knowledge (PCK)	Experience	High	183	24.67	3.91	.29
		Low	218	25.31	4.91	.33
	Qualification	UG	83	24.51	3.93	.43
		PG	318	25.15	4.62	.26

The analysis shows (Table. 2) that, in case of Levene's Test for Equality of Variance the F value were 6.17, 2.02 and corresponding p value were .013 ($p < .05$) and .156 ($p > .05$) for the variations in respect of experience and

Qualification respectively. Here, for PCK the variability in the two conditions was not same in experience, thus equal variance not assumed here. But in case of qualification, variability of the two conditions was same, thus equal variance can be assumed.

Table 2:- Independent sample't'- test of PCK of geography teachers in respect of Experience and Qualification

Pedagogical Content Knowledge (PCK)	Levene's Test for Equality of Variance			't' test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
Experience (High, vs. Low)	Equal variances not assumed	6.172	.013	-1.454#	397.960	.147
Qualification (U.G. vs. P.G.)	Equal variances assumed	2.021	.156	1.161#	399	.246

(# Not Significant at .05 level)

In case of comparing the mean score of PCK between high and low experienced teachers, the calculated $\mathbf{t}_{(399)}$ value is 1.454 and p = .147 (p >.05). Hence, 't' is not significant at .05 level. So, $\mathbf{H_0 1}$ is not rejected and it can be said that, the high experienced teachers (M = 24.67) were not significantly different from the low experienced teachers (M = 25.31) with respect to the PCK in geography.

In case of comparing the mean score of PCK between under graduate and post graduate teachers, the calculated $\mathbf{t}_{(399)}$ value is 1.161 and p = .264 (p > .05). Hence, 't' is not significant at .05 level. So, $\mathbf{H_0 2}$ is not rejected and it can be said that, the under graduate teachers (M = 24.51) were not significantly different from the post graduate teachers (M = 25.15) with respect to the teachers PCK in geography.

Objective 2. It is observed (Table. 3) that, variation wise there were differences in the mean scores and standard deviation of scores of teacher effectiveness with respect to the categorical variables. Therefore, it is decided to study the significance of difference between the two groups of each categorical variable. Hence, the independent sample 't' test is adopted to find out the Levene's Test for Equality of Variance and 't' test for Equality of Means.

Table 3:- Group Statistics of Teacher Effectiveness of geography teachers; Experience and Qualification.

	Variations		N	Mean	Std. Deviation	Std. Error Mean
Teacher Effectiveness	Experience	High	183	444.77	74.54	5.51
		Low	218	450.28	78.97	5.35
	Qualification	UG	83	447.35	82.68	9.07
		PG	318	447.87	75.50	4.23

The analysis (Table. 4) shows that, in case of Levene's Test for Equality of Variance the F value were 1.246 and .487 and corresponding p value were .265 (p >.05) and .486 (p >.05) for the variations in respect of experience and Qualification respectively. Here, for teacher effectiveness the variability in the two conditions are the same, thus equal variance can be assumed for both experience and qualification.

Table 4:- Independent sample 't' test of teacher effectiveness of geography teachers in respect of experience and qualification

Teacher Effectiveness	Levene's Test for Equality of Variance			't' test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
Experience (High vs. Low)	Equal variances assumed	1.246	.265	-.714#	399	.476
Qualification (U.G. vs. P.G.)	Equal variances assumed	.487	.486	-.055#	399	.956

(* Significant at .05 level and # Not Significant at .05 level)

In case of comparing the mean score of teacher effectiveness between high and low experienced teachers, the calculated $\mathbf{t}_{(399)}$ value was .714 and p was .476 (p >.05). Hence,'t' was not significant at .05 level. So, $\mathbf{H_0 3}$ was not

rejected and it can be said that, the high experienced teachers (M = 444.77) were not significantly different from the low experienced teachers (M = 450.28) with respect to teacher effectiveness.

In case of comparing the mean score of teacher effectiveness between under graduate and post graduate teachers, the calculated $\mathbf{t}_{(399)}$ value was .055 and p = .956 (p > .05). Hence, 't' was not significant at .05 level. So, $\mathbf{H_0 4}$ was not rejected and it can be said that, the under graduate teachers (M = 447.35) were not significantly different from the post graduate teachers (M = 447.87) with respect of teacher effectiveness.

Findings:-

The high experienced (10 and above years) geography teachers were not significantly different from the low experienced (bellow 10 years) geography teachers in respect to their PCK. The undergraduate geography teachers were not significantly different from the post graduate geography teachers in respect to the PCK. The present research was in conformity of the earlier studies by Mohallik (2013). The high experienced (10 and above years) geography teachers were not significantly different from the low experienced geography teachers in respect to teacher effectiveness. This result supported by Sofat (1977). The undergraduate geography teachers were not significantly different from the post graduate geography teachers in respect to teacher effectiveness. This result supported by Arora (1976).

Conclusion:-

From the above study researchers conclude that, Geography teachers' PCK is not changeable in respect of their experience and educational qualification in West Bengal, India. Therefore PCK in geography is not influenced by teachers' teaching experiences and also by their educational qualification especially in Bengali medium schools affiliated to WBBSE. Teaching experience and educational qualifications are not considerable for the effective teaching of geography at secondary level. Besides that it can be said that, effective teaching is an instinct of the teachers, if an individual think to teach learners effectively, he will be able to do that. Here qualification and teaching experience of the individual not matter. Here it is suggested that, the teacher education program manager and curriculum maker may think for addition of contents and development of strategies in teacher education program, both pre-service and in-service that will help trainees to increase pedagogical content knowledge in a specific subject for raising the level of effectiveness of teachers.

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