



REVIEW OF RESEARCH

ISSN: 2249-894X

IMPACT FACTOR : 5.7631 (UIF)

VOLUME - 11 | ISSUE - 9 | JUNE - 2022



COMPARATIVE STUDY OF B.SC. B.ED INTEGRATED AND B.ED TWO YEAR OF RIE, NCERT AND B.SC. B.ED INTEGRATED OF CENTRAL UNIVERSITY, SAGAR WITH RESPECT TO SECONDARY SCHOOL SCIENCE TEACHER'S COMPETENCIES AND IMPACT ON CLASSROOM TRANSACTION IN MADHYA PRADESH

Mahendra Singh Belwanshi¹, Dr. Hemant Kumar Khandai² and Dr. Jamna Prasad Makwe³

¹Research Scholar, Barkatullah University, Bhopal.

²Prof. Dept. of Continuing Education And Extension, Barkatullah University, Bhopal.

³Associate Prof., Rajeev Gandhi College, Bhopal.

ABSTRACT:

The quality of education is commonly concern of society due to the interactive contribution of Primary to higher education to the countries' strengthen and extension in all directions.. Education provides a vast number of high-skilled man forces and shapes the ethics of workers. In the education and training system, teachers play the key role. With the passing of time, teachers are not only the providers of knowledge, but also contribute to the students' comprehensive development in intelligence, personality, and social level. Teacher education plays a significant role in the preparation of teachers for real classroom situations. According to the National Council for Teacher Education (NCTE) teacher training is a program of training, research and preparation of individuals to educate students from pre-primary to advanced levels of education. There present study is a humble effort made by the investigator whereby an effort has been made to find out how effective the teacher training has been in developing teaching classroom transaction, teaching aptitude of the secondary class science teachers and how much has it been fruitful in developing the skill of proper classroom transaction among them. The study is important and relevant too in the present scenario. The present study is an ex-post-facto study where survey method has been utilized 140 students were part of the sample for the present study. the students pursuing Four Year B.Sc. B.Ed Integrated and Two Year B.Ed course from Regional Institute of Education, NCERT, Bhopal and the students pursuing their Four Year B.Sc. B.Ed Integrated course from Department of Education, Central University, Among all the groups most of the secondary school science teachers possesses moderate teaching competency Most of the secondary school science teachers from both biological and physical sciences have moderate level of teaching competence. There is positive correlation between teaching competency and classroom transaction.



KEY WORDS: quality of education , classroom transaction, teaching aptitude.

INTRODUCTION:

Education is a process of shaping an individual for living a congenial and meaningful comfortable life. The ultimate goal of education is the harmonious and progressive development of human beings. Educating someone or helping somebody to learn something by providing required

information is teaching. India is a developing country. It needs competent teachers to build up a strong foundation for its growth and development. It is believed that the quality of nation depends on the quality of its citizens; quality of its citizens depends more than any other features on the quality of their education. The quality of education in turn depends to a great extent upon the quality of their teachers. The teacher should have an interest and inclination in the profession and then only s/he will be able to do justice with the profession. Teachers are responsible for shaping future citizens. In the recent years, there has come to be a gradual recognition of the fact that personality and motivational variables are important correlates of scholastic achievement. Science education, whether it aims at introducing all learners to the main ideas and principles of science or at the training of future scientists, calls for teachers with specific qualifications. To teach science effectively, that is, in a way that promotes students' understanding and abilities, science teachers need a thorough understanding of the ways their students learn science content and skills, and what sort of learning difficulties may occur, and why. Moreover, it is important that science teachers understand what and how science can be interesting or challenging for their students. Closely connected to this understanding, science teachers need to develop a large repertoire of instructional strategies and representations of science content, which they can use in classroom practice in a flexible way so as to accommodate student learning, stimulate interest in science, and anticipate differences between students.

The quality, competence and character of teachers, are undoubtedly the most significant. Nothing is more important than securing a sufficient supply of high quality recruits to the teaching profession, providing them with the best possible professional preparation and creating satisfactory conditions of work in which they can be fully effective. When it comes to teaching science in the classrooms, science teachers play a central role in educating, inspiring, and guiding students to become responsible, scientifically literate citizens. Science is more than a body of knowledge and a way of accumulating and validating that knowledge. Science connotes both the knowledge contained in and the activities involved in obtaining it. Understanding the nature of Science encompasses elements of Science both as an enquiry process and as a social enterprise. Science teaching and learning at secondary level should ignite among the students the skills of scientific inquiry, critical thinking and problem solving. Therefore it is necessary that science teachers are especially competent enough to prepare future citizens of the country to be active learners who are capable to apply their knowledge to make their and others life better.

In the present scenario two modes of professional courses are available which aim to prepare science teacher with their pre-service curriculum i.e. two year B.Ed and B.Sc. B.Ed integrated. Both integrated and traditional B.Ed. courses boast the same quality. But it needs to be seen in the light of the teaching competency and classroom transaction of the pre service teachers. The Regional Institutes of Education have been the pioneers in the B.Ed integrated courses and have been running them since a long time with success. This model is being adopted pan India. There B.Ed two year course too is a course of repute and provides opportunity to those who opt for a professional degree in teaching later in their career. The Central University of Sagar too has been running B.Ed integrated course now for a long time and the department is name to reckon with when it comes to training pre service teachers. The present research work is a comparative study of B.Sc. B.Ed integrated and B.Ed two year of RIE, NCERT and B.Sc. B.Ed integrated of Central University, Sagar with respect to Secondary School Science Teacher's Competencies and impact on Classroom Transaction in Madhya Pradesh.

RATIONALE

The government is in action for a new and comprehensive National Curriculum Framework for Teacher Education, NCFTE 2021 which mandates that the minimum degree qualification for teaching will be a 4-year integrated B.Ed. degree. Stringent action will be taken against substandard stand-alone Teacher Education Institutions. With all the hue and cry for making 4-year integrated B.Ed. degree mandatory to take up a teaching job it is necessary that a comparison be made regarding its effectiveness. The present study aims at comparing the two-year B.Ed and 4-year integrated B.Sc.B.Ed. degree in the present paper. The institutes chosen for the present study are important as one of them is

the fore runner in the conduct of the 4-year integrated B.Sc.B.Ed. degree. It also runs the two year B.Ed. Other than this the 4-year integrated B.Sc.B.Ed. degree course conducted by the only Central University in Madhya Pradesh is also considered in the present study and a comparative study is conducted between the prospective science teachers undergoing their pre-service training in the above mentioned institution with respect to their teaching competencies and impact on Classroom Transaction.

Singh (2015) believed that no nation can rise above the level of its teachers and it is the teacher who plays pivotal role in the educational system and is a catalytic agent of change in the society. Regarding teachers it is also said that it is clear that good teachers 'have deep knowledge of the subjects they teach, and when teachers' knowledge falls below a certain level it is a significant impediment to students' learning' (Coe et. al., 2014). Variation in student achievement has been systematically related to variation in the classroom behaviors of teachers (Good et al., 1975). The quality of a teacher depends a lot on the training that the teacher undergoes both during pre-service and in-service. Teacher education and job performance are two contexts in which the term teaching competency is majorly used. According Barlow (1985) stated that the teacher competence is the ability of teacher responsibility to show his or her duties appropriately. Pande (2004) found that teaching competency is positively related with intelligence, creativity and teacher attitude.

Teaching competency does depend on classroom transaction. Classroom transaction is the way, a content is delivered by a teacher in the classroom to the students. Classroom transaction is the process of verbal interchange between the teacher and the pupils and also amongst the pupils themselves. It is the process through which the teaching - learning task takes place. Most of the studies have concentrated on the various methods being utilised for improving the interaction in the classroom. There is no study where the impact of teaching competency is seen on classroom transaction and vice versa. The present paper is an account of a study conducted in this regards. The present study is titled as **"Comparative study of B.Sc. B.Ed integrated and B.Ed two year of RIE, NCERT and B.Sc. B.Ed integrated of Central University, Sagar with respect to Secondary School Science Teacher's Competencies, Teaching Aptitude and impact on Classroom Transaction in Madhya Pradesh."**

OBJECTIVES OF THE STUDY

1. To study the status of teaching competency among secondary school science teachers from B.Sc. B.Ed integrated, B.Ed two year of RIE, NCERT and B.Sc. B.Ed integrated of Central University, Sagar.
2. To study the status of teaching competency among male and female secondary school science teachers.
3. To study the status of teaching competency among secondary school teachers from physical and biological sciences.
4. To study the effect of course, gender and their interaction on teaching competency of science teachers.
5. To study the effect of course, stream and their interaction on teaching competency of science teachers.
6. To study the impact of teaching competency on classroom transaction.
7. To study the relationship between teaching competency and classroom transaction.

RESEARCH QUESTIONS

1. What is the status of teaching competency among secondary school science teachers from B.Sc. B.Ed integrated, B.Ed two year of RIE, NCERT and B.Sc. B.Ed integrated of Central University, Sagar?
2. What is the status of teaching competency among male and female secondary school science teachers?
3. What is the status of teaching competency among secondary school teachers from physical and biological sciences?

HYPOTHESIS

1. There is no significant effect of course, gender and their interaction on teaching competency of science teachers.
2. There is no significant effect of course, stream and their interaction on teaching competency of science teachers.
3. There is no significant impact on classroom transaction of students having different levels of teaching competency.
4. There is no significant correlation between teaching competency and classroom transaction.

METHODOLOGY

The present study is an ex-post-facto study where survey method has been utilized. As sample for the present study students from two institutions were selected. The institutions from which the sample was selected were Regional Institute of Education (RIE), NCERT, Bhopal and Department of Education, Central University (Dr. HarisinghGour University), Sagar. From these institutions the students pursuing Four Year B.Sc. B.Ed Integrated and Two Year B.Ed course from Regional Institute of Education, NCERT, Bhopal and the students pursuing their Four Year B.Sc. B.Ed Integrated course from Department of Education, Central University, Sagar were taken as the sample. From the students who were pursuing two year B.Ed only, such students whose teaching subject was maths and science, were selected. The final sample comprised of all the 80 students pursuing B.Sc. B.Ed and 35 students pursuing Two Year B.Ed from Regional Institute of Education, NCERT, Bhopal. The sample also comprised of 25 students pursuing B.Sc. B.Ed from Central University, Sagar. Among these students 63 were from biological sciences stream and 77 were from physical sciences stream. Further there were 68 males and 72 females chosen for the study. Thus in all 140 students were part of the sample for the present study. The demographic differences in the sample need to be highlighted in the study hence the differences in type of course, gender and stream has been considered separately. The data was collected using General Teaching Competence Scale and Classroom Transaction Scale both developed by the researcher.

Analysis and Interpretation

In the lines that follow the analysis and interpretation is done objective wise.

Status of Teaching Competency among Secondary School Science Teachers from B.Sc. B.Ed integrated, B.Ed two year of RIE, NCERT and B.Sc. B.Ed integrated of Central University, Sagar

The teaching competency scores were taken separately for the secondary school science teachers from the three courses and according to the scores obtained they were categorized as having low, moderate and high teaching competency. The same is shown in figure 1.

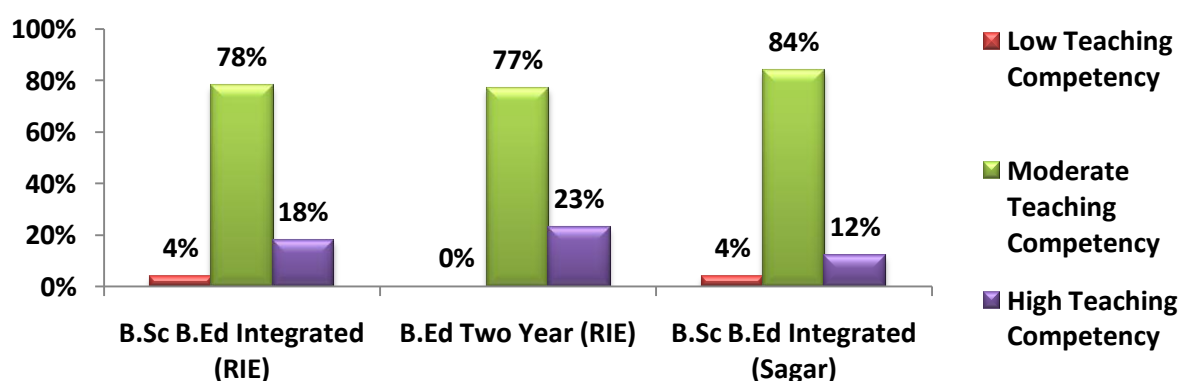


Figure 1. Teaching Competency among Secondary School Science Teachers from different courses.

From figure 1 it can be seen that 4% of the secondary school science teachers pursuing B.Sc. B.Ed Integrated from RIE, Bhopal have low teaching competency, 78% have moderate teaching competency and 19% have high teaching competency, similarly among students pursuing B.Ed two year from RIE, Bhopal, none have low teaching competency, 77% have moderate and 23% have high teaching competency, while 4% of the students pursuing B.Sc. B.Ed Integrated from Sagar University have low teaching competency, 84% have moderate teaching competency and 12% have high teaching competency. From above it can be seen that among all the groups most of the secondary school science teachers possesses moderate teaching competency.

Status of Teaching Competency among Male and Female Secondary School Science Teachers

The teaching competency scores were taken separately for the male and female secondary school science teachers and according to the scores obtained they were categorized as having low, moderate and high teaching competency. The level-wise teaching competence of male and female secondary school science teachers is shown in figure 2.

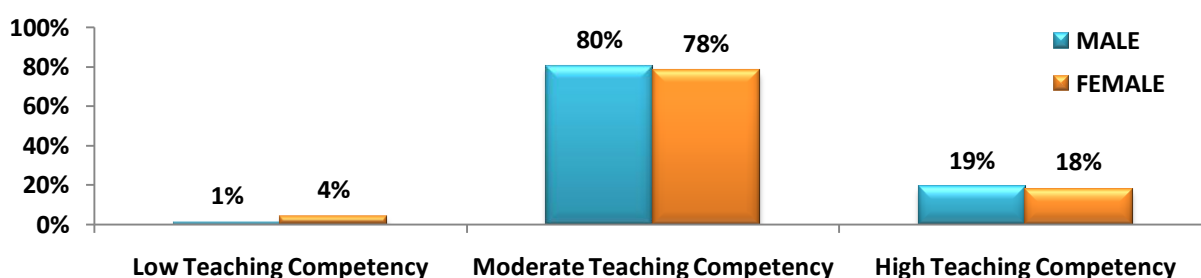


Figure 2. Teaching Competencies among Male and Female Secondary School Science Teachers

From figure 4.3 it can be seen that among the males 1% have low teaching competence, 80% have moderate and 19% have high teaching competence. While among the females 4% have low teaching competence, 78% have moderate and 18% have high teaching competence. From above it can be seen that less than one-fifth of both male and female secondary school science teachers have high teaching competency.

Status of Teaching Competency among Secondary School Teachers from Physical and Biological Sciences

The teaching competency scores were taken separately for the secondary school teachers from physical and biological sciences and accordingly they were categorized as having low, moderate and high teaching competency. The level-wise teaching competence of secondary school science teachers from physical and biological sciences is shown in figure 3.

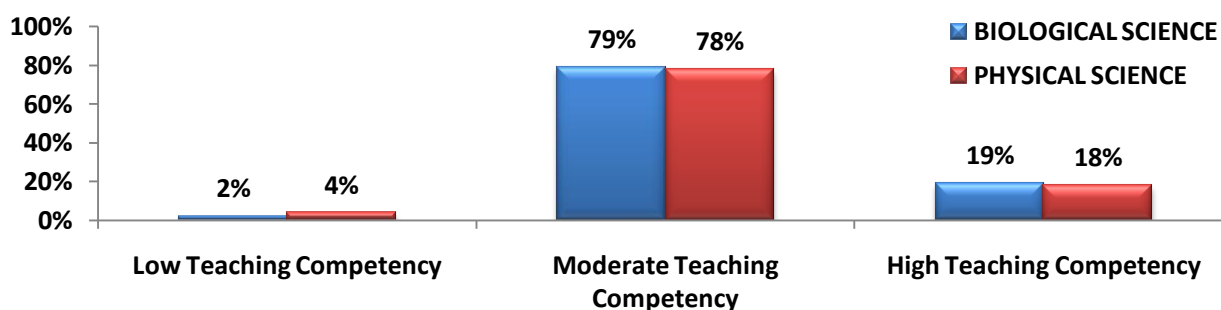


Figure 3. Teaching Competency among Secondary School Teachers from Physical and Biological Sciences

From figure 3 it can be seen that among the secondary school science teachers from biological sciences just 2% have low teaching competence, 79% have moderate and 19% have high teaching competence while among the secondary school science teachers from physical sciences 4% have low teaching competency, 78% have moderate teaching competency and 18% have high teaching competency. From above it can be inferred that most of the secondary school science teachers from both biological and physical sciences have moderate level of teaching competence.

Effect of Course and Gender on Teaching Competency of Science Teachers

The first objective of the study is 'to study the effect of course and gender on teaching competency of science teachers' for which the hypothesis prepared is 'there is no significant effect of course and gender on teaching competency of science teachers.' There are three levels of course, namely, B.Sc. B.Ed integrated, of RIE, NCERT, B.Ed two year of RIE, NCERT and B.Sc. B.Ed integrated of Central University, Sagar. Males and females are the two levels of gender. General Teaching Competency Scale developed by the researcher was used to find the scores of teaching competency among the secondary school science teachers. The data were analysed with the help of Two-Way ANOVA. The results are presented in Table 1.

Table 1

Summary of two way ANOVA for Course, Gender and their Interaction on Teaching Competency

Sources of Variance	df	SS	MSS	F	Remark
Course (A)	2	23091.640	11545.820	14.448	p<0.01
Gender (B)	1	11838.002	11838.002	14.813	p<0.01
A X B	2	952.006	476.003	.596	p>0.05
Error	134	107085.123	799.143		
Total	140				

Table 2

Mean, SD and N for Teaching Competency by Course and Gender

Course	Gender	Mean	SD	N
B.Sc. B.Ed integrated, RIE, NCERT	Males	84.13	24.500	40
	Females	111.88	26.818	40
	Total	98.00	29.092	80
Two Year B.Ed RIE, NCERT	Males	60.13	32.872	15
	Females	79.60	30.746	20
	Total	71.26	32.691	35
B.Sc. B.Ed integrated Central University, Sagar	Males	67.92	32.113	13
	Females	82.92	30.396	12
	Total	75.12	31.584	25
Total	Males	75.74	29.466	68
	Females	98.08	32.147	72
	Total	87.23	32.742	140

From table 1 and 2 it can be seen that the F-value for course is 14.448 which is significant at 0.01 level of significance with df 2/134. The null hypothesis that there is no significant influence of course on the teaching competency of secondary school science teachers is rejected. It is further seen that the mean teaching competency scores (98.00) of secondary school science teachers doing B.Sc. B.Ed integrated from RIE, NCERT is the highest, then is the mean teaching competency scores (87.23) of secondary school science teachers doing B.Sc. B.Ed integrated from Central University, Sagar. The mean teaching competency scores (75.12) of secondary school science teachers doing two year B.Ed from RIE,

NCERT is the lowest. Lower scores indicate low level of teaching competency and higher scores indicate higher level of teaching competency.

Further, table 1 and 2 indicate that F-value for gender is 14.813 which is significant at 0.01 level of significance with $df=1/134$. The null hypothesis that there is no significant influence of gender on the teaching competency of secondary school science teachers is rejected. Further, the mean score of teaching competency of male secondary school science teachers is 75.74 which is significantly lower than that of teaching competency of female secondary school science teachers whose mean teaching competency score is 98.08. It may, therefore be concluded that female secondary school science teachers are found to have significantly better teaching competency than their male counterparts.

On further analyzing, table 1 and 2 indicate that the F-value for interaction between course and gender is 0.596 which is not significant at 0.05 level of significance with $df=2/134$. Thus, the null hypothesis, namely there is no significant influence of interaction between course and gender on teaching competency is not rejected. Hence it can be inferred that there is no combined influence of course and gender on the teaching competency of secondary school science teachers.

Effect of Course, Stream and their Interaction on Teaching Competency of Science Teachers

The second objective of the study is 'to study the effect of course, stream and their interaction on teaching competency of science teachers.' for which the hypothesis prepared is 'there is no significant effect of course, stream and their interaction on teaching competency of science teachers.' There are three levels of course, namely, B.Sc. B.Ed integrated, of RIE, NCERT, B.Ed two year of RIE, NCERT and B.Sc. B.Ed integrated of Central University, Sagar. Biological sciences and physical sciences are the two levels of streams that the secondary school science teachers belong to. General Teaching Competency Scale developed by the researcher was used to find the scores of teaching competency among the secondary school science teachers. The data were analysed with the help of Two-Way ANOVA. The results are presented in Table 3 and 4.

Table 3

Summary of two way ANOVA for Course, Stream and their Interaction on Teaching Competency

Sources of Variance	df	SS	MSS	F	Remark
Course (A)	2	20088.327	10044.163	10.816	$p < 0.01$
Stream (B)	1	423.012	423.012	0.456	$p > 0.05$
A X B	2	2685.371	1342.686	1.446	$p > 0.05$
Error	134	124436.233	928.629		
Total	140				

Table 4

Mean, SD and N for Teaching Competency by Course and Stream

Course	Stream	Mean	SD	N
B.Sc. B.Ed integrated, RIE, NCERT	Biological	93.89	29.723	37
	Physical	101.53	28.408	43
	Total	98.00	29.092	80
Two Year B.Ed RIE, NCERT	Biological	73.63	29.489	16
	Physical	69.26	35.845	19
	Total	71.26	32.691	35
B.Sc. B.Ed integrated Central University, Sagar	Biological	84.20	33.035	10
	Physical	69.07	30.172	15
	Total	75.12	31.584	25
Total	Biological	87.21	30.943	63
	Physical	87.25	34.345	77
	Total	87.23	32.742	140

From table 3 and 4 it can be seen that the F-value for course is 10.816 which is significant at 0.01 level of significance with df 2/134. So there is significant influence of course on the teaching competency of secondary school science teachers. Thus the null hypothesis that there is no significant influence of course on the teaching competency of secondary school science teachers is rejected.

Further, table 3 and 4 indicate that F-value for stream is 0.456 which is not significant at 0.05 level of significance with df=1/134. Thus, the null hypothesis that there is no significant influence of stream on the teaching competency of secondary school science teachers is not rejected. Further, the mean score of teaching competency of secondary school science teachers from biological stream is 87.21 is almost similar to the teaching competency of secondary school science teachers from physical stream whose mean teaching competency score is 87.25. It may, therefore be concluded that the teaching competency of secondary school science teachers from biological and physical sciences is similar.

On further analyzing, table 3 and 4 indicate that the F-value for interaction between course and stream is 1.446 which is not significant at 0.05 level of significance with df=2/134. Thus, the null hypothesis, namely there is no significant influence of interaction between course and stream on teaching competency is not rejected. Hence it can be inferred that there is no combined influence of course and stream on the teaching competency of secondary school science teachers.

Impact of Teaching Competency on Classroom Transaction

The third objective is 'to study the impact of teaching competency on classroom transaction' for which the hypothesis prepared is 'there is no significant impact on classroom transaction of students having different levels of teaching competency.' Teaching competency was divided in to three level namely, low, moderate and high according to the scores obtained by the secondary school science teachers. In order to find the effect of different levels of teaching competency on classroom transaction, the scores of classroom transaction were analysed using one way ANOVA. The results are presented in Table 4.5.

TABLE 4.5
Summary of ANOVA for Classroom Transaction of Secondary School Science Teachers having Low, Moderate and High Teaching Competency

	df	SS	MSS	F-value
Among	2	7486.371	3743.185	15.069*
Within	137	34030.451	248.397	

* Significant at 0.01 level.

Table 4.5 indicates that the F-value for study hypothesis 15.069, which is significant at 0.01 level with df equal to 2/137. The F-value indicates that there is a significant difference in classroom transaction of secondary school science teachers having low, moderate and high level of teaching competency skill. Therefore, the hypothesis, namely, "there is no significant impact on classroom transaction of secondary school science teachers having different levels of teaching competency", is rejected. Thus, it can be inferred that the classroom transaction is dependent upon the teaching competency of secondary school science teachers.

Relationship between Teaching Competency and Classroom Transaction

The fourth objective of the study is 'to study the relationship between teaching competency and classroom transaction' for which the hypothesis prepared is 'there is no significant correlation between teaching competency and classroom transaction.' The relationship of teaching competency and classroom transaction of secondary school science teachers was found out using Pearson's product moment correlation. The value of 'r' is presented in Table 4.6.

Table 4.6
Value of 'r' for Teaching Competency and Classroom Transaction

Variable	N	Mean	SD	r
Teaching Competency	140	87.23	32.742	0.495**
Classroom Transaction	140	110.46	17.282	

** Significant at 0.01 level.

Table 4.6 shows that the value of 'r' for teaching competency and classroom transaction is 0.495 which is significant at 0.01 level of significance. Since the value is significant hence the hypothesis namely "there is no significant correlation between teaching competency and classroom transaction" is rejected. There is found to be significant correlation between teaching competency and classroom transaction. There is positive correlation between teaching competency and classroom transaction, therefore it can be inferred that higher the scores of teaching competency of the secondary school science teachers higher will be the scores of classroom transaction, and vice versa.

CONCLUSION

1. Among all the groups most of the secondary school science teachers possesses moderate teaching competency.
2. Less than one-fifth of both male and female secondary school science teachers have high teaching competency
3. Most of the secondary school science teachers from both biological and physical sciences have moderate level of teaching competence.
4. There is significant influence of course on the teaching competency of secondary school science teachers. There is significant influence of gender on the teaching competency of secondary school science teachers. There is no significant influence of interaction between course and gender on teaching competency.
5. There is significant influence of course on the teaching competency of secondary school science teachers. There is significant influence of stream on the teaching competency of secondary school science teachers. There is no significant influence of interaction between course and stream on teaching competency.
6. There is significant impact on classroom transaction of secondary school science teachers having different levels of teaching competency.
7. There is positive correlation between teaching competency and classroom transaction.

Educational Implications

1. Teacher education needs a radical change. Science teachers pursuing four year integrated B.Sc. B.Ed have better teaching competency and hence their classroom transaction is better. The elements included in the four year integrated B.Sc. B.Ed of Regional Institute of Education should be further studied and replicated in other teacher education institutes to have teachers who have better teaching competency and can transact better in the classroom.
2. Students Teachers can pursue research work as Ph.d degree after four year integrated B.Sc.B.Ed undergraduates programme (FYUP) without having masters programme according to New Regulation onwards by UGC..

REFERENCES

- Barlow. (1985). *Supervision and Teacher: A Private Coldwar*. New York: Berkeley. McCutchan.
- Coe R et al (2014) *What makes great teaching? Review of the underpinning research*. Sutton Trust, October 2014. London: Sutton.
- Jocelyn, Glenn&Sammanasu, Michael.J. (2021).Teacher Competencies of College Teachers.*International Journal of Aquatic Science*, 12(2).603-609.

- Khatoon, H., Azeem, F. and Akhtar, S.H. (2011). The impact of different factors on teaching competencies at secondary level in Pakistan. *Institute of Interdisciplinary Business Research*, 3(5), 20-28.
- Pande, S. (2004). Teaching Competency, *Perspectives in Education*, 12(2), 56-64.
- Singh K (2015). Teaching Aptitude of B.Ed. Teacher Trainees of Himachal Pradesh in Relation to Their Gender and Stream. *International Journal of Academics and Research in Education*, 2(3), 45-54.

WEB BIBLIOGRAPHY

- https://ncte.gov.in/website/PDF/NCFTE_2009.pdf
- <https://ncert.nic.in/pdf/nc-framework/nf2005-english.pdf>
- https://www.education.gov.in/sites/upload_files/mhrd/files/NEP_Final_English_0.pdf
- <http://www.niepa.ac.in/download/Webinar%2027%20May%202022.pdf>
- <https://www.ugc.ac.in/oldpdf/modelcurriculum/edu.pdf>