

## Mental Health and Teacher Effectiveness of Pre-Service Biological Science Teachers

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### ABSTRACT

The present study aimed to investigate the differential effect of gender and entry level educational qualification on teacher effectiveness and mental health of pre-service biological science teachers; and on the relationship between the variables. The Teacher Effectiveness Scale for Secondary School Teachers and the Mental Health Inventory for Secondary School Teachers, developed by the investigators, were administered on a sample of 464 pre-service biological science teachers, selected on a stratified random basis, from two districts of Tamil Nadu. The data, thus collected, were subjected to statistical analysis (t-test and Pearson product moment correlation) by keeping the hypotheses in mind. The study revealed a differential effect of gender on teacher effectiveness and mental health, the males excelling females in both, while entry level educational qualification has its significant effect only on teacher effectiveness; not on mental health. Significant positive correlation of a substantial degree was found to exist between teacher effectiveness and mental health of the pre-service biological science teachers in the total sample as well as all the sub-samples considered in the study. Neither gender nor the entry level educational qualification was found to be decisive in discriminating the sub-samples on the basis of the correlation between teacher effectiveness and mental health.

**Keywords:** *Teacher Effectiveness, Mental Health, Pre-service Biological Science Teachers.*

The role of teacher in the process of education is vital. Research has emphasized the importance of effective teachers as the most critical factor in determining school and student success (Goldhaber & Anthony, 2005; Marzano, 2003; Mathers & Olivia, 2008). No system of education, no syllabus, no methodology, no textbooks can rise above the level of its teachers. If a country wants to have quality education, it must have quality teachers. The effectiveness of the educational system largely depends on the quality of its teachers (Khatal, 2010), which in turn depends on the quality of teacher education. An effective teacher not only imparts the entire educational curricula allotted to him in the best and most efficient manner, but also bring about healthy development of the personality of the learner (Pandey & Thapa, 2018). In the modern world, role of the teacher is to mould mentally and physically healthy citizens with knowledge, skills, attitudes and values necessary to participate in social

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## Mental Health and Teacher Effectiveness of Pre-Service Biological Science Teachers

life (Shitole, 2018). The effectiveness of a teacher depends largely on his/her personality. His abilities, both inborn and acquired, his talents, professional skills, his attitudes, temperament etc. are all decisive factors in classroom effectiveness (Paul & Arjunan, 2018). Teachers' own mental health and his/her professional effectiveness are, therefore, critical factors in education (Nithya, 2017). Since the emerging world is demanding professionally effective teachers with mentally healthy personality, the teacher education programmed at different levels should take steps to amalgamate these two vital psycho-pedagogic aspects in the teacher preparation. Review of literature carried out in this context convinced the investigators of the presence of a wide research gap in understanding the manner in which professional effectiveness of prospective teachers are related to their mental health. The present study is a modest attempt to explore the relationship between teacher effectiveness and mental health of pre-service biological science teachers of Tamil Nadu.

### *Objectives*

The study has the following objectives in view:

1. To find out gender difference in the teacher effectiveness of pre-service biological science teachers.
2. To find out the effect of entry level qualification on the teacher effectiveness of pre-service biological science teachers
3. To find out gender difference in the mental health of pre-service biological science teachers.
4. To find out the effect of entry level qualification on the mental health of pre-service biological science teachers
5. To find out the relationship between teacher effectiveness and mental health of pre-service biological science teachers.
6. To find out the differential effect of gender and educational qualification on the relationship between teacher effectiveness and mental health of pre-service biological science teachers.

## METHODOLOGY

Normative survey method was adopted for the present study. The study made use of a sample of 464 pre-service biological science teachers (male = 123, female = 341), selected on the basis of 'stratified random sampling' from Kanyakumari and Tirunelveli districts of Tamil Nadu (India).

### *Tools used*

**(a) Teacher Effectiveness Scale for Secondary School Teachers:** The teacher effectiveness of the sample was measured by using the Teacher Effectiveness Scale for Secondary School Teachers (TEST) developed by Vinila & Arjunan (2014). It is a 60 item five-point Likert-type Scale for assessing the professional effectiveness of secondary school teachers, standardized in Tamil Nadu context. The instrument covers the following dimensions of teacher effectiveness: (1) Professional Planning and Preparation, (2) Professional Commitment, (3) Professional Characteristics, (4) Professional Knowledge, (5) Professional Leading and Management, and (6) Professional Relationship. The TEST has been reported to have a construct validity of 0.71; and split-half reliability of 0.77.

**(b) Mental Health Inventory for Secondary School Teachers:** The mental health of the sample was measured with the help of Mental Health Inventory (MHI) developed by Vinila & Arjunan (2015). It is a 100 item standardized instrument consisting of 10 sub-tests, measuring ten independent components of mental health viz.: (1) Optimism, (2) Adaptability, (3) Sense of security, (4) Regularity of habits, (5) Perception of reality (6) Emotional

## Mental Health and Teacher Effectiveness of Pre-Service Biological Science Teachers

maturity (7) Social conformity (8) Positive attitude towards self (9) Positive attitude towards others (10) Freedom from negativism. Each of the sub-tests in the scale consists of 10 statements; each correct item being assigned with one point credit. For the present study, the sum of the total scores an individual gets for all the 10 sub-tests was treated as the mental health status score of that individual. The split-half reliability of the scale is computed to be 0.73 and the concurrent validity estimated with another established test is found to be 0.69.

### Procedure

The tools were administered on the sample in small group situation under standardized conditions, their responses were collected in the response sheets, scored and consolidated on a master tabulation sheet. A personal data sheet was also attached with the instruments, so as to collect the required basal information. The data thus obtained were subjected to appropriate statistical treatment with SPSS and interpreted accordingly.

## ANALYSIS AND INTERPRETATION

*Hypothesis-1:* The male and female pre-service biological science teachers do not differ significantly in their teacher effectiveness.

**Table 1: Comparison of the Teacher Effectiveness of Male and Female Teacher Trainees**

Groups	Statistical Indices				t-value
	N	M	SD	SE <sub>M</sub>	
Males	123	215.11	24.423	2.202	5.643*
Females	341	201.01	23.529	1.274	

\* Significant at 0.01 level

The t-value obtained on comparing the male and female pre-service biological science teachers with respect to their teacher effectiveness is significant ( $t = 5.643$ ;  $p < .01$ ). It shows the presence of a true difference between male and female teachers in their professional effectiveness, the difference being in favour of the male teachers.

*Hypothesis-2:* The graduate and post-graduate pre-service biological science teachers do not differ significantly in their teacher effectiveness

**Table 2: Comparison of the Teacher Effectiveness of Graduates and Postgraduates**

Groups	Statistical Indices				t-value
	N	M	SD	SE <sub>M</sub>	
Graduates	267	201.97	25.943	1.588	2.854*
Postgraduates	197	208.50	22.031	1.570	

\* Significant at 0.01 level

Comparison of the graduate and post-graduate teacher trainees with regard to their teacher effectiveness produced a t-value that is significant ( $t = 2.854$ ;  $p < .01$ ), revealing the presence

## Mental Health and Teacher Effectiveness of Pre-Service Biological Science Teachers

of true difference between the groups. Scrutiny of estimated mean values of the groups shows that the postgraduates surpass graduates in their professional effectiveness.

*Hypothesis-3:* The male and female pre-service biological science teachers do not differ significantly in their mental health.

**Table 3: Comparison of the Mental Health of Male and Female Teacher Trainees**

Groups	Statistical Indices				t-value
	N	M	SD	SE <sub>M</sub>	
Males	123	69.24	11.616	1.047	3.073*
Females	341	65.53	11.417	.618	

\* Significant at 0.01 level

The t-value obtained on comparing the mental health of male and female teachers is significant at .01 level ( $t = 3.073$ ;  $p < .01$ ). It exposes that there exists a significant gender difference in the mental health of pre-service biological science teachers. The male teacher trainees have better mental health than their male counterparts.

*Hypothesis-4:* The graduate and post-graduate pre-service biological science teachers do not differ significantly in their mental health.

**Table 4: Comparison of the Mental Health of Graduate and Postgraduate Teacher Trainees**

Groups	Statistical Indices				t-value
	N	M	SD	SE <sub>M</sub>	
Graduates	267	67.24	11.442	.700	1.574*
Postgraduates	197	65.53	11.709	.834	

\* Not significant

The t-value obtained on comparing the mental health of graduate and post-graduate teacher trainees is not large enough to be significant at least at .05 level ( $t = 1.574$ ;  $p > .05$ ). It means that the graduate and postgraduate pre-service biological science teachers are almost alike in their mental health. To put differently, entry level educational qualification is not a significant factor in discriminating the pre-service biological science teachers on the basis of their mental health.

*Hypothesis-5:* There is no significant correlation between teacher effectiveness and mental health of pre-service biological science teachers.

**Table 5: Relationship between Teacher Effectiveness and Mental Health of Teacher Trainees**

Group	Samples	N	r	SE <sub>r</sub>	r <sub>POP</sub>	
					.05 level	.01 level
<b>Whole Group</b>	<b>Total Sample</b>	464	0.432	0.038	0.36 – 0.51	0.33 – 0.53
Gender	Male	123	0.459	0.071	0.32 – 0.60	0.28 – 0.64
	Female	341	0.397	0.046	0.31 – 0.49	0.28 – 0.52
Qualification	Graduates	267	0.467	0.048	0.37 – 0.56	0.34 – 0.59
	Post-graduates	197	0.421	0.059	0.31 – 0.54	0.27 – 0.57

\*\* Significant at 0.01 level

Pearson’s product moment coefficient of correlation (r) between teacher effectiveness and mental health for the total sample of the pre-service biological science teachers was estimated to be 0.432 with the standard error (SE<sub>r</sub>) of 0.038. The population value of correlation for the total sample was found to lie between 0.36 and 0.51 at .05 level of confidence interval and between 0.33 and 0.53 at .01 level of confidence interval. The estimated coefficient of correlation (r) is positive and significant at 0.01 level indicating the presence of positive correlation of a substantial degree between teacher effectiveness and mental health of pre-service biological science teachers. The r-values estimated for the various sub-samples also show the same trend in the relationship between the variables. The highest degree of relationship between the variables was observed in the sub-sample of graduate trainees (r = 0.467; p<0.01), while the lowest degree of relationship was observed for the subgroup of female trainees (r = 0.397; p<0.01).

*Hypothesis-6:* Gender and entry level educational qualification have no significant differential effect on the relationship between professional effectiveness and mental health.

**Table 6: Comparison of Sub-samples with regard to the Correlation between Teacher Effectiveness and Mental Health**

Group	Subgroups	Statistical Indices			CR
		N	r-value	z	
Gender	Male	123	0.459	0.497	0.715
	Female	341	0.397	0.424	
Qualification	Graduates	267	0.467	0.510	0.606
	Postgraduates	197	0.421	0.448	

# Not Significant

The critical ratio (CR-value) obtained on comparing the gender based sub-samples of the teacher trainees with regard to the coefficients of correlation between their teacher effectiveness and mental health is not significant (CR = 0.715; p>.05), revealing that the male and female teachers do not differ significantly in the degree of relationship between the

variables. Likewise, the CR-value obtained on comparing graduate and postgraduate teacher trainees are also not significant ( $CR = 0.606$ ;  $p > .05$ ) exposing that the entry level educational qualification is not a significant factor in discriminating the pre-service biological science teachers on the basis of the correlation between their professional effectiveness and mental health.

### CONCLUSIONS

The present study revealed that gender is a significant factor in discriminating pre-service biological science teachers on the basis of their teacher effectiveness ( $t = 5.643$ ;  $p < .01$ ). The Hypothesis-1 (*the male and female pre-service biological science teachers do not differ significantly in their teacher effectiveness*) is, therefore, rejected. Comparison of the sub-samples of teacher trainees based on their entry level educational qualification exposed the presence of a significant difference between graduates and postgraduates in their teacher effectiveness ( $t = 2.854$ ;  $p < .01$ ). The Hypothesis-2 (*the graduate and post-graduate pre-service biological science teachers do not differ significantly in their teacher effectiveness*) is, hence, rejected. Significant gender difference was found to exist in the mental health of pre-service biological science teachers ( $t = 3.073$ ;  $p < .01$ ). The Hypothesis-3 (*the male and female pre-service biological science teachers do not differ significantly in their mental health*) is, thus, rejected. Comparison of the mental health of graduate and postgraduate teacher trainees showed that the groups are alike in their mental health as the t-value obtained is not significant ( $t = 1.574$ ;  $p > .05$ ). The Hypothesis-4 (*the graduate and post-graduate pre-service biological science teachers do not differ significantly in their mental health*) is, therefore, accepted. The correlation analysis carried out to find out the degree of relationship between teacher effectiveness and mental health of pre-service biological science teachers exposed the presence of significant positive correlation of a substantial degree in the total sample ( $r = 0.432$ ;  $p < .01$ ) as well as sub-samples based on gender and entry level educational qualification. The Hypothesis-5 (*there is no significant correlation between teacher effectiveness and mental health of pre-service biological science teachers*) is, hence, retained. Comparison of the sub-samples to find out the differential effect of gender and entry level educational qualification on the association between teacher effectiveness and mental health shows that the groups are alike with respect to the degree of relationship between the variables. The Hypothesis-6 formulated in this context (*gender and entry level educational qualification have no significant differential effect on the relationship between professional effectiveness and mental health*), is hence accepted.

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## Mental Health and Teacher Effectiveness of Pre-Service Biological Science Teachers

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### ***Conflict of Interest***

There is no conflict of interest.

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