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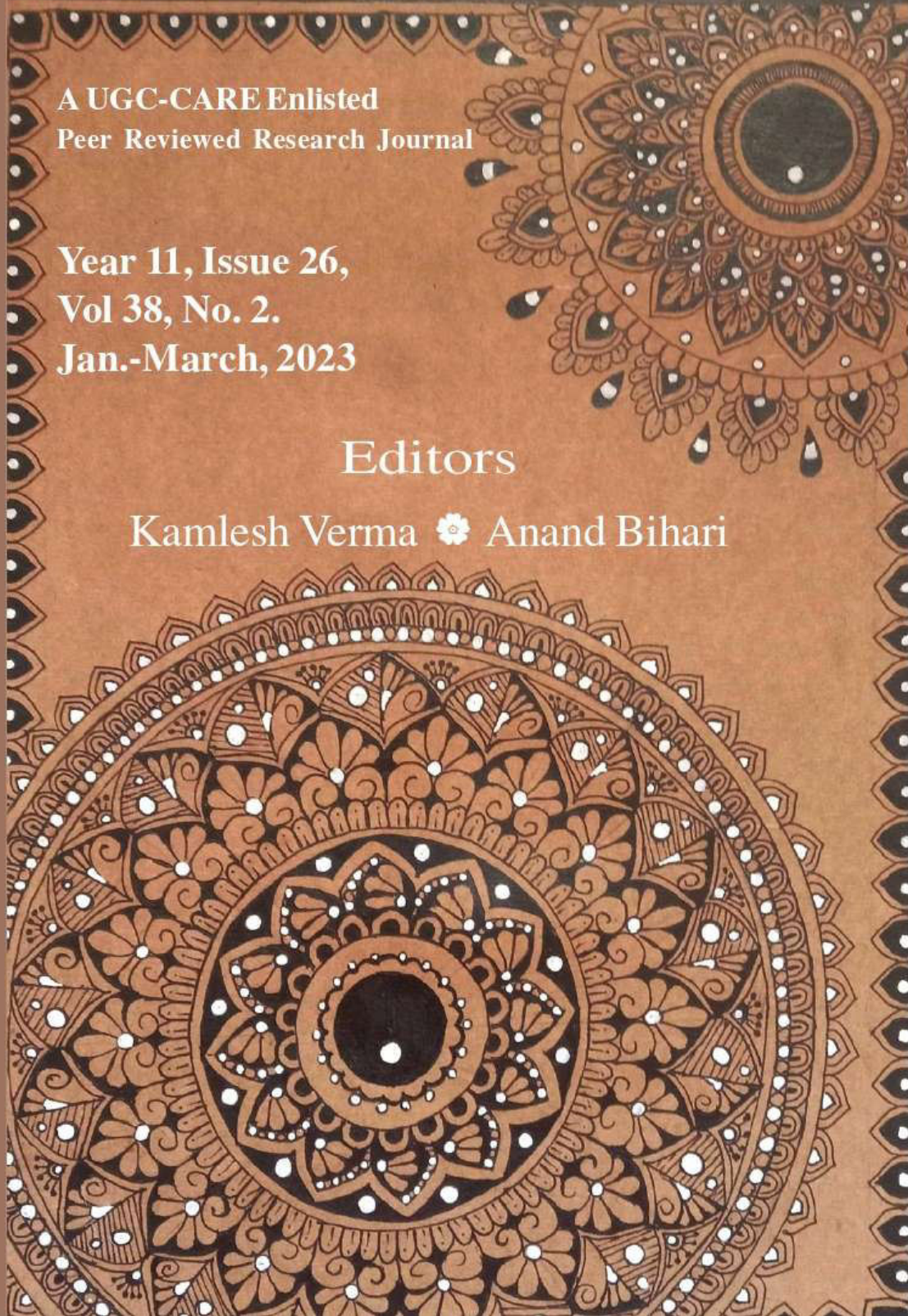
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Exploring the Less Explored Intelligences of Schools Teachers

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Abstract

In the formal education system, teaching-learning is a process where teacher is actively engaged in providing quality education to the learners. Teacher is the only one who can recognize and identify the unique capabilities of the students. In a diverse classroom, every student is different from others, keeping this in mind, a teacher has to design teaching-learning process as per the learning needs of the learners. One way of knowing and addressing the individual needs of students is by identifying and implementing theory of multiple intelligences in classroom. Research studies have shown that profile of multiple intelligences of a teacher has a direct impact on teacher effectiveness and teaching learning practices. Studies also claim that majority of the schools tend to focus mainly on two intelligences, those associated with academic intelligence, i.e., linguistic and logical/mathematical and teachers are low when it comes to intelligences like interpersonal, intrapersonal, naturalistic and existential. Hence, the primary research question of this study is to explore about this less explored intelligences of the teachers. The present study is a cross-sectional survey study when the data about the multiple intelligences of 96 randomly selected teachers working in various schools of Delhi was collected using a pre-developed tool of multiple intelligences. The results of the study reveal that there is strong need to organize training programme to improve the multiple intelligences of the teachers. The findings also reveal that gender of the teacher has an influence on their multiple intelligences and female teachers scored better than male teachers in this regard. Also teachers from schools located in urban area were better in multiple intelligences than the teachers from schools located in rural areas. It was however observed that both government and private school teachers performed almost

same and educational qualification of the teachers and their teaching experience did not have any influence on their multiple intelligences. The study also recommended about the scope of further research in this area of multiple intelligences.

Keywords:

Multiple intelligences, interpersonal intelligence, intrapersonal intelligence, naturalistic intelligence, existential intelligence, school teachers

Exploring the Less Explored Intelligences of Schools Teachers

Introduction

National Education Policy (2020) keeps the teacher at the centre of the fundamental reforms in the education system in India (NCTE, 2021). It is an established fact that, teacher is an important factor in the lifelong learning journey of a student and a teacher who is passionate, motivated, highly qualified, professionally trained, and well equipped can bring miracles in the life of a student. A good teacher implies a good student and plays a pivotal role in the academic achievement of the students. Teacher is the only person in the education system who can correctly recognize and identify the unique capabilities of the students. Both teacher and student are the heart of a teaching learning process and a teacher who can understand how a student learns can be called a best teacher. Such a teacher can motivate the students not only towards conceptual learning but can also take the students towards lifelong learning. The technological advancements happening around the world and the COVID-19 pandemic effects are drastically changing the role of a 21st century teacher. In today's world, a teacher must be creator and facilitator of enabling environment in which students can develop their higher order thinking skills. With the penetration of technology into classrooms especially after the pandemic, now learning can happen everywhere and it needs to be customized as per the learning styles and preferences of the students. Hence, a teacher can no more be just an information gatekeeper but also has the responsibility to enhance one's own ability to understand each student's learning needs proactively. One way of knowing and addressing the individual needs of students is by identifying their multiple intelligences (MI). Gardner's MI theory (Gardner, 1983, 1999) helps an individual to look at life in a new way. It not only encourages examining the intelligences that are lying dormant and hidden inside an individual but also motivates them by propounding that these frames of intelligences are autonomous, changeable and trainable and interact with each other to facilitate in problem solving (Armstrong, 1999). When the theory of MI is incorporated in teaching practices, the educators become more engaged with their students and can create conducive learning environment (Bowker, 2020). Teachers who apply MI realize the benefits such as active learners and successful students (Heming, 2008). In a study carried out on teaching effectiveness and multiple intelligences (Costa, 2008), the researcher revealed that among the nine intelligences given by Gardner, interpersonal intelligence, logical intelligence

and existential intelligence have the most important bearing on teacher effectiveness. Also, kinesthetic intelligence has a strong bearing on the profile of an effective teacher. Intelligences such as spatial/visual, naturalistic, and interpersonal intelligences play a predictive role on teaching strategies adopted by teachers (Serin, et.al, 2009). Through action research, Hanafin(2014)claimed that when teachers were encouraged to use MI theory in classrooms, they renamed and extended their existing teaching practices to include MI approaches and this led to a methods-shift and, ultimately, to indication of a mind-shift.Gul and Reba (2017)claim that both male and female teachers' ability of quality teaching increased when they used multiple intelligence-based approaches.Barco et al. (2021)observed that self-efficacy and self-confidence of the teachers were influenced by their multiple intelligences and teachers who were aware of learners learning styles and their multiple intelligences were more likely to handle emotions. However, it is observed that majority of the schools tend to focus mainly on two intelligences, those associated with academic intelligence, i.e., linguistic and logical/mathematical (Gardner, 1983; Castil, 2016) and hence the other types of intelligences as propounded by Gardner remains unexplored both among students and teachers. Burhan et al.(2010) claimed that primary school teachers were partly aware of MI theory, and they found it useful and partly took it into consideration while planning the teaching process.Kennedy and Murray (2016),DolatiandTahari (2017)also claimed that majority of teachers are not aware of MI theory. ErdemandKeklik (2020)also claimed that teachers were found to be good in verbal-linguistic and musical- rhythmic intelligences and were lagging in all other intelligences.Hence, the primary research question of this study is to explore the level of multiple intelligences especially interpersonal intelligence, logical intelligence and existential intelligence of the teachers.

Method :

The present study is a cross-sectional survey study carried out with the objective of measuring the level of MI of teachers especially with reference to their Interpersonal, Intrapersonal, Naturalistic and Existentialist Intelligence. To enhance the external validity of the obtained results, the influence of socio-demographic variables like Gender, Location of the School, Type of School, Educational Qualification of teacher, and Teaching Experience of teacher on their MI is also studied.The MI tool developed by Costa, 2008 was used for data collection.The reliability coefficient of Interpersonal, Intrapersonal, Naturalistic and Existentialist Intelligences on this tool was 0.79, 0.68, 0.6, and 0.68 respectively. The tool consisted of 12 indicators in each intelligence which are to be rated by the teachers on a 5-point scale of Strongly Disagree, Disagree, Unsure, Agree, and Strongly Agree.Thus, the total number of indicators in the tool is 48 and hence the maximum score a teacher can score is 240 and the minimum score they can obtain is 48. Apart from this, the socio-demographic information about the teachers was also collected through the tool. The tool was distributed to around 450 teachers working in various schools of Delhi. However, due

to pandemic scenario, the data was received from 115 teachers who constituted the sample of the study. After removing the outliers (figure 1), 96 teachers constituted the final sample for the study. Further, the obtained score of MI is normally distributed (figure 2). The data was analyzed using SPSS software.

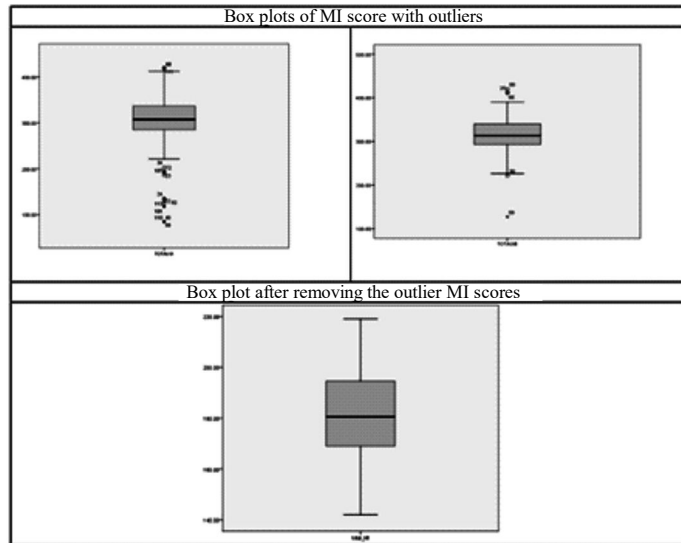


Figure 1 : Box plot of the obtained score of MI
Source: Research Data

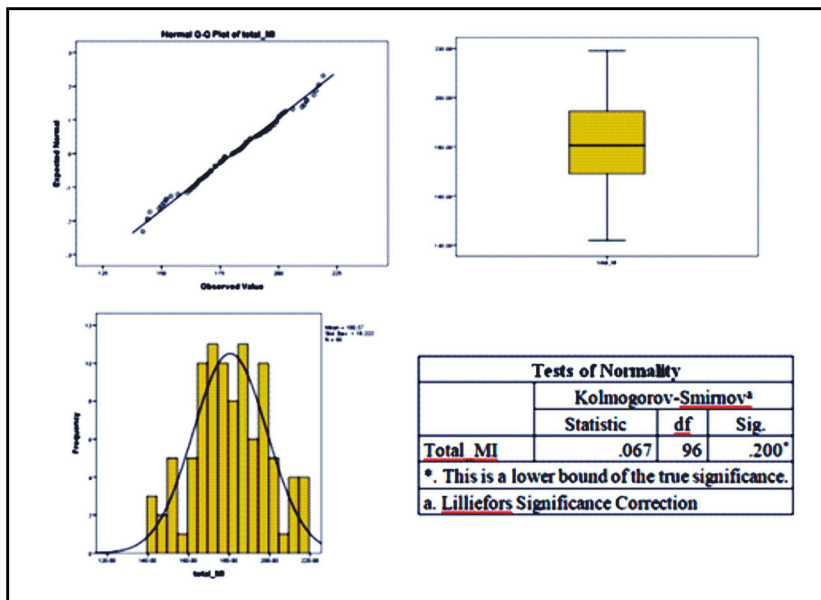


Figure 2 : Normality of MI scores
Source: Research Data

Results :

Among the nine types of intelligences propounded by Gardner, the academic intelligences, i.e., linguistic and logical/mathematical are the much used one in the education system and many studies also indicate that teachers were found to be good in these intelligences and were lagging in other intelligences like Interpersonal, Intrapersonal, Naturalistic and Existential intelligence etc. Not only this, but teachers were even experiencing many problems in applying MI theory in classrooms because of reasons like lack of knowledge about MI approach etc. (Burhan et al., 2010). Hence, an attempt is made to study the MI of teachers especially with reference to the less explored intelligences. The results of the present study show (table 1) that the maximum score obtained on MI is 219 and the minimum is 142. The mean score of MI (180.57) shows that Interpersonal, Intrapersonal, Naturalistic and Existential intelligences of teachers is low, and the standard deviation score (18.22) indicates that most of the teachers are alike in terms of their MI score. Out of the 96 teachers who participated in the study, 48 teachers scored above the mean score and 48 teachers scored below the mean score. This shows that there is a need to organize programmes to improve the multiple intelligences of teachers.

Table 1 : Summary of Multiple Intelligences Score

	Statistic
Mean	180.5729
Median	180.5000
Variance	332.058
Std. Deviation	18.22245
Minimum	142.00
Maximum	219.00

Source : Research Data

From table 2, the minimum scores of intelligences indicate that all teachers have Interpersonal, Intrapersonal, Naturalistic, and Existentialist Intelligences. Further, the maximum score in each intelligence indicates that there are some teachers who are good in these intelligences. Further, the mean score on each intelligence shows that the level of these intelligences is medium among teachers. Further, it is also observed that in all these intelligences, more than 50% teachers scored below the mean score. The item wise analysis of the indicators also revealed that teachers are towards the positive score in each indicator.

Table 2 : Summary of Dimension wise Intelligences Score

		Statistic
Interpersonal Intelligence	Mean	41.9479
	Std. Deviation	5.83523
	Minimum	27.00
	Maximum	58.00
Intrapersonal Intelligence	Mean	44.2292
	Std. Deviation	5.48583
	Minimum	31.00
	Maximum	56.00
Naturalistic Intelligence	Mean	48.3333
	Std. Deviation	5.88784
	Minimum	35.00
	Maximum	60.00
Existential Intelligence	Mean	46.0625
	Std. Deviation	5.26920
	Minimum	36.00
	Maximum	59.00

Source : Research Data

Further, to study the influence of socio-demographic factors on MI of teachers, information related to those variables was collected by the researchers. Gender is considered to be one of most important socio-demographic factors in social sciences. Hence, an attempt was made to study the influence of gender on MI. From table 3 it is evident that the score of MI with regard to gender is not normally distributed (Male: $KS=0.115$, $df=31$, $p > 0.05$; Female: $KS=0.112$, $df=65$, $p < 0.05$) and gender has a significant influence on the MI of teachers (Mann-Whitney $U = 1373$, $p < 0.05$) and female teachers are better in MI than male teachers.

Table 3 : Influence of Gender on MI of teachers

	Kolmogorov-Smirnov ^a			Levene's Test for Equality of Variances		Mean Rank Score
	Statistic	Df	Sig.	F	Sig	
Gender						
Male	.115	31	0.200*	1.514	0.222**	36.71
Female	.112	65	0.040			54.12
*Not Normal			**Equal variances assumed			
Null hypothesis			There is no significant difference in the mean rank scores of MI of Male and Female teachers			
Test			Independent Samples Mann-Whitney U Test			
Sig			0.004			
Decision			Null Hypothesis Rejected			

#Research Data

The influence of location of school on MI of teachers was also studied. From the table 4 it is evident that the score of MI with regard to location of school is normally distributed (Rural: KS=0.198, df=11, $p > 0.05$; Urban: KS=0.093, df=85, $p > 0.05$) and location of school has an influence on MI of teachers ($t=2.10$ with $df=94$, $p < 0.05$). Teachers from the schools located in urban areas(mean = 182) are better in MI than teachers from the schools located in rural areas (mean=170).

Table 4 : Influence of Location of School on MI of teachers

	Kolmogorov-Smirnov ^a			Levene's Test for Equality of Variances		Mean
	Statistic	Df	Sig.	F	Sig	
Location of School						
Rural	.198	11	0.200*	0.991	0.322**	170
Urban	.093	85	0.067*			182
*Normal			**Equal variances assumed			
Null hypothesis			There is no significant difference in the mean rank scores of MI of Rural and Urban teachers			
Test			Student's t-test			
Sig			0.038			
Decision			Null Hypothesis Rejected			

#Research Data

To study about the influence of type of school on MI of teachers, the data was collected from both government and private schools. From table 5 it is evident that the score of MI with regard to type of school is normally distributed (Government: $KS=0.099$, $df=40$, $p > 0.05$; Private: $KS=0.060$, $df=56$, $p > 0.05$) and type of school does not have any influence on MI of teachers ($t=1.66$ with $df=94$, $p > 0.05$). Thus, teachers from both government and private schools are almost same in terms of their MI scores.

Table 5 : Influence of Type of School on MI of teachers

Type of School	Kolmogorov-Smirnov ^a			Levene's Test for Equality of Variances	
	Statistic	df	Sig.	F	Sig
Government	.099	40	0.200*	0.000	0.993**
Private	.060	56	0.200*		
*Normal			**Equal variances assumed		
Null hypothesis			There is no significant difference in the mean rank scores of MI of Government and private school teachers		
Test			Student's t test		
Sig			0.100		
Decision			Null Hypothesis Not Rejected		

#Research Data

The educational qualification of teachers categorized into 3 levels i.e., diploma, graduation, and post-graduation. The influence of this variable was studied and presented in table 6. From the table it is evident that the score of MI with regard to their educational qualification is normally distributed (Diploma: $KS=0.320$, $df=6$, $p > 0.05$; Graduation: $KS=0.079$, $df=52$, $p > 0.05$; Post Graduation: $KS=0.068$, $df=38$, $p > 0.05$) and the educational qualification of the teachers did not have any influence on their MI ($F(\text{One-way ANOVA})=1.33$ with $df_1=2$, $df_2=93$, $p > 0.05$). Thus, both graduate and post-graduate teachers performed almost same in MI.

Table 6 : Influence of Educational Qualification of Teachers on their MI

Qualification	Kolmogorov-Smirnov ^a			Levene's Test for Equality of Variances	
	Statistic	df	Sig.	F	Sig
Diploma	.320	6	0.055*	1.766	.177**
Graduation	.079	52	0.200*		
Post Graduation	.068	38	0.200*		
*Normal			**Equal variances assumed		

Null hypothesis	There is no significant difference in the mean rank scores of MI of Diploma, Graduate and Post Graduate school teachers
Test	One Way ANOVA
Sig	0.053
Decision	Null Hypothesis Not Rejected

#Research Data

Influence of teaching experience on the MI of teachers was also studied and presented in table 7. From the table it is evident that the score of MI with regard to their teaching experience is normally distributed (10 and more than 10 years: $KS=0.107$, $df=22$, $p > 0.05$; Less than 10 years: $KS=0.060$, $df=74$, $p > 0.05$) and teaching experience does not have any influence on MI of teachers ($t=0.793$ with $df= 94$, $p > 0.05$). Thus, teachers with more than 10 years of experience and less than 10 years of experience performed same in MI.

Table 7 : Influence of Teaching Experience of Teachers on their MI

	Kolmogorov-Smirnov ^a			Levene's Test for Equality of Variances	
	Statistic	df	Sig.	F	Sig
Teaching Experience					
10 and More than 10 years	0.107	22	0.200*	2.019	0.159**
Less than 10 years	0.060	74	0.200*		
*Normal			**Equal variances assumed		
Null hypothesis	There is no significant difference in the mean rank scores of MI of Diploma, Graduate and Post Graduate school teachers				
Test	Student's t-test				
Sig	0.430				
Decision	Null Hypothesis Not Rejected				

#Research Data

Discussion

The theory of multiple intelligences as propounded by Gardner has made the practitioners of education to re-look at the process of education. Further, with the advancements in the field of information and communication technologies in general and increase in the use of artificial intelligence in particular in education, the thought of

implementing individualized learning/personalized learning is becoming feasible. In such a scenario, it is highly essential that the teachers should know more and more about the individual needs of the learners and a teacher who possess MI can encourage developing the same among the students. Further, research studies on one side reveal that teachers who apply the theory of MI make their teaching effective and can also create conducive learning environment for students, studies on the other side reveal that the other types of intelligences like Interpersonal, Intrapersonal, Naturalistic, and Existential are very less explored or find least place in the classroom both among students and teachers (Chisholm, 1998; Heming, 2008). It is also observed in studies that, even though teachers have these intelligences they are not putting this trait into action (Costa, 2008). Keeping this in mind, the present study tried to explore the level of these less explored intelligences among the school teachers. The results of the present study also revealed the same that the level of these intelligences among the teachers is medium and hence there is a strong need to organize programmes which will help the teachers to improve or explore these intelligences. Interpersonal intelligence helps a person to understand others and communicate better. It plays a vital role in teacher effectiveness (Costa, 2008). It is observed in the present study that teachers are scoring least on interpersonal intelligence and hence efforts should be made to improve this aspect of the teachers which has a direct impact on communication between the teacher and the taught. Dolati and Tahari (2017) also concluded that teachers don't have enough knowledge regarding MI and majority of them are comfortable only with logical-mathematical intelligence based instructions. However, the item wise score on each indicator of MI in the present study indicates a positive scenario regarding the MI score of teachers. Moving further, the study reveals that gender has an influence on MI of teachers and hence, training programmes related to MI should be organized for both male and female teachers. Erdem and Keklik (2020) and Manjita (2019) also concluded that gender has an influence on MI profile of prospective teachers and teachers respectively. However, Serin et al. (2009) concluded that there is no significant difference in MI of male and female teachers. A study by Inan and Erkus (2016) also revealed that gender has no influence on how teachers view about the implementation of MI theory in classroom. Gul and Reba (2017) also concluded that, teachers of both the genders increased their ability of quality teaching using MI approach. In the same line, a study by Vebrianto et al. (2020) concluded that there is no significant difference in the competency of pre-service elementary male and female school teachers based on their MI. Further, it is also found that teachers working in schools located in urban areas have more MI than the teachers working in rural areas. Hence, various institutions like District Institute of Education and Training (DIET), State Council of Educational Research and Training (SCERT) etc., can focus on training the teachers in rural schools in area of MI. Also, teachers in both Government and private schools have performed almost same in MI. Vebrianto et al. (2020) and Manjita (2019) also observed that the type of institution does not influence the MI of pre-service elementary school teachers and secondary school teachers respectively. It is further observed that the educational qualification of the

teachers also did not have any influence on their MI which implies that diploma teachers, graduate teachers and even the post graduate teachers performed almost same in area of MI. Regarding the teaching experience of teachers, it is observed that teachers who had more than 10 years of experience and teachers who had less than 10 years of experience were almost same in terms of the MI. This implies that maybe both less experienced and more experienced teachers are equally lagging in their MI. However, this finding is in contrast to the findings by Inan and Erkus (2016) where the researchers claimed that new experienced teachers could implement MI better than teachers with higher experience. Thus, the findings of the present study reflect a strong need to develop the MI of teachers. The literature referred for this study also indicates that there is a strong need to improve the awareness of teachers regarding MI theory and also there is a strong need in the schools to focus on less explored areas of intelligence like Interpersonal, Intrapersonal, Naturalistic and Existential intelligences. The researchers would like to accept the limitation of study where they just explored the level of Interpersonal, Intrapersonal, Naturalistic and Existential intelligences of teachers. It is felt that, studies that would focus on various aspects like developing MI related awareness among teachers, exploring MI based practices adopted in schools, measuring the outcomes of MI based instructions, analyzing MI profile of teachers and students can also be carried out. Studies to explore the relationship between MI of teachers and their various aspects of teaching like teaching strategies adopted by them, teacher effectiveness; self-efficacy, teacher competency, self-esteem etc. can also be carried out.

According to Gardner, multiple intelligence theory alone cannot be educational goal in itself, but his theory aids the accomplishment of educational goals and values. With the growing need of providing individualized/personalized instructions to students, it becomes very essential to know the learning styles of students and plan the teaching learning activities accordingly. For all this to happen, teachers should be aware of MI theory and also should possess MI.

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