

CHAPTER-5

DISCUSSION

The study explores the linkages between teachers' attributes of professionalism and students' achievement at the secondary school level. The attributes of professionalism were extracted by exploring existing knowledge to formulate a measure for the professionalism aspect of teachers. The study incorporated mixed methods approach with the help of both quantitative and qualitative data to comprehend the underlying perspectives of teachers regarding their professionalism and also explore the factors that inhibit or facilitate students' learning and their perception towards their teachers. The results of the study have been explained in detail in the previous chapter. The current chapter discusses the objective-wise major findings of the study with theoretical frameworks, citing attributions and supporting evidence enumerated by previous researches along with the interview excerpts gathered from the field.

Objective 1

To examine the differences in teacher professionalism across various demographic characteristics such as gender, highest degree, age, experience, job description, annual income, and teacher training at the secondary school level.

In order to assess the differences in teacher professionalism across various demographic characteristics, the discussions of the findings have been subsequently dealt with. The concern seeking reasons being a highly gendered occupation gives rise to many contradictions emanating from gender and teaching perspectives. The finding of the current study states that there is no significant difference in the professionalism of male and female teachers which is inconsistent with the findings of other studies in the Indian

context; which further states that male teachers outperform female teachers on attributes like the quality of teaching practice, professional ethics, student-teacher relationship and responsibility towards society and students (Dhinakaran & Sivakumar, 2014; Muhammed & Aruna, 2014). Muhammad & Aruna (2014) found a significant difference in the professional development of male and female teachers.

The gendered aspect of a profession is evident not only in the teaching sector but also concerns other professions in some way or the other (Asimaki & Vergidis, 2013; Bourdieu, 2001; Drudy, 2008; Richardson & Watt, 2006; Tell & Riddel, 2006). Gender difference in occupational interest and choice has continued to be an area of interest for social scientists. Gender has often been observed to play an important predictor of an individual's engagement with a particular occupation or activity.

Similar to the findings of this study, some of the recent studies conducted in Asian nations have reported no significant difference in the professionalism of male and female teachers. Tambak, Ahmed & Sukenti (2020) measured professionalism through five constructs namely, pedagogic competence, social competence, professional competence, personality competence, and leadership, and found no significant difference in the performance of male and female teachers. While in the past, research conducted in the same country reported that there exists significant gender difference in the performance of male and female teachers on the behavior-attitude practice aspect of professionalism measures (Tanang & Abu, 2014). The absence of significance in the differences in mean scores of male and female teachers might also indicate the fact that the workplace and the school leadership do not reinforce gender biases while dealing with teachers and

evaluating their professionalism, instruction, and classroom environment (Rinehart & Young, 1996).

International trends in the teaching profession have evinced the profession to be majorly practiced by women. Although in the nineteenth century, women have served as flag-bearers of education dissemination, they were largely hired because they worked at lesser salaries than men (Milharčič Hladnik, 1995). In the contemporary scenario, women continue to be at the forefront of the profession due to several demographic, economic, political, and cultural factors (Acker, 1995). Studies have also observed that female teachers are perceived differently from male teachers by the students (Whitworth, Price & Randall, 2002; Basow & Silberg, 1987; Goodwin & Stevens, 1993; Tartro, 1995). “Feminization” of the teaching profession has taken a long duration in developed countries and is now becoming a trend in developing nations. Internationally, this feminization of the profession can be attributed to the socio-economic development because of which it becomes obvious for men to seek jobs for better payment leaving more teaching job opportunities for women (Kelheller et al., 2011).

Moreover, the prevalent traditional gender role of men which is to serve as the sole economic provider of the family bounds men to not enter the teaching profession as the salary is low. Another reason is that teaching synchronizes with the gender roles assigned to women where they are expected to function as caregivers and nurturers (Drudy, 2008). The feminization of the teaching profession has been observed to be less in the secondary education phase as compared to primary education. The most probable reason behind this is the larger attrition of male teachers at the primary school level (Edmonds, Sharp & Benefield, 2002).

Some studies found that female teachers exhibit between professionalism than their male counterparts, for example, Odunaike, Ijaluola & Epetimehin (2013) found that female teachers were more committed to the teaching profession than male teachers. Debates on whether male teachers are better professionals or female teachers, often reflect a lack of respect for teachers' intellectual abilities and low regard for women teachers (Acker & David, 1994). However, there is a lack of evidence in support of claims considering female teachers to be inferior to their male counterparts. A secondary grade student taught by a female mathematics teacher stated that her teacher interacts very well with both male and female students – “...*she interacts very well with the male and female students in the class. She uses real-life situations to explain the concepts of time, distance, and speed. she makes studying mathematics fun for us and is quite approachable whenever we need her help with studies and even when we need to use digital equipment in school.*” Similar views were reported by a student from another teacher about their male mathematics teacher. No difference was reported in the perception of effectiveness or use of digital aid by male and female mathematics and science teachers by the students, both in public and private schools.

Existing research on skills of teachers has identified that women perform more on literacy and men perform better on arithmetic skills with no significant difference in ICT tests. Studies exploring the gender differences in the professional competency of teachers lack robustness. There is no evidence that the feminization of the teaching workforce has led to a decline in the competency of teachers, rather the problem is that there exists a gap in the performance of male and female teachers in their initial teacher education and training courses (Drudy, 2008).

Teachers who need maximum support are getting the least opportunities to train and improve professionally (OECD, 2005). Literature suggests that in most of the countries around the world, the least qualified teachers are receiving the least training. The present research found that there is no significant difference in the professionalism scores of teachers possessing bachelor's and master's degrees and also there was no significant difference between the Professionalism scores of TGT and PGT teachers. The findings coincide with the observation of Toh et al. (1996), where the authors found that teachers' professional prudence and commitment do not depend on academic qualification and that teachers possessing a post-graduation do not necessarily have greater professional competence. A recent study conducted by Syafril et al. (2021) found that there was no significant difference in the professionalism of teachers based on their academic qualifications. They also argue that according to qualitative findings of their study, school principals also do not attribute higher professionalism in teachers to higher qualifications only. Similar opinions were reported by a senior teacher who was also working as a vice-principal of the school. According to her – “... *in our school we have more post-graduate teachers than graduate teachers. There is no difference in the effectiveness of both kinds of teachers. Even though post-graduate teachers are better qualified, some of them are not as popular as some graduate teachers among the students due to their teaching styles.*” Smith (2019) uses the case study method and asserts that historically teaching profession in Australia witnesses a decline in the professionalism of teachers and the quality of the program due to low levels of qualifications possessed by teachers.

The qualifications of teachers have been considered to be an imperial factor in promoting professionalism in teachers by some researchers (Igberadja, 2016; Utami & Kartini,

2017). Teacher academic programs and training are assumed to enhance teachers' mastery of teaching material (Kamila, 2017; Easton-Brooks & Davis, 2009), however, research evidence in support of the assumptions is quite less. These findings along with the findings of the current study indicate that higher teacher qualifications are not sole indicators of professionalism which co-insides with the findings of a large pool of studies (Syafri et al., 2021; Nusa & Irawan, 2020; Barida & Muarifa, 2019). Such findings indicate that many internal and external aspects of teachers holistically contribute to their professionalism (Kaya & Godek, 2016).

It is also argued that the academic qualification of teachers does not determine professional competence; still, it remains an important aspect of teacher recruitment as it represents the subject content knowledge of the teacher. The aim behind exposing teachers to training before entering the teaching profession is to enhance competencies like any other profession for example for management professionals (Quinn, et al., 2003) and health professionals (Betancourt, Green & Carrillo, 2002). Competency-based standards are set for teachers in the academic realm for teacher education and curriculum; approval of programs; assessment of teachers; rewards and certification; setting standards for professional teaching; and revising pay scales for teachers (Mulder et al., 2009). The Indian teacher education system needs to effectively restructure the curriculum keeping in view the need for competency-based education for sustainable development.

Literature suggests that competency-based profiling of teachers serves the purpose of both the teaching profession and the education system. (Conway, et al., 2009). These competencies are a step ahead of training that is acquired while practicing the profession and consciously developing in that practice. Competency-based teacher education has

garnered attention recently in literature wherein it is also referred to as the single most significant but controversial trend in the teacher education sector (Atkin & Raths, 1974). Focusing on the improvement of competencies both when teachers are in pre-service and in-service training is important to achieve the desired change in the profession.

The findings of the present study indicated that there is no significant difference in the professionalism of teachers belonging to different age groups. Menkhoff, Schmeling & Schmidt (2013) found that age and experience are correlated but often have negative effects on professionalism. They also found that there are significant differences between occupation and profession even after controlling the effects of the experience of the practitioners. Literature consists of mixed views on the importance of experience in the teaching profession. Several studies traced that new teachers are less effective than teachers who have good years of experience (Clotfelter, Ladd & Vigdor, 2007; Harris & Sass, 2007; Gordon, Kane & Staiger, 2006; Ladd & Pelletier, 2008). The National Center for Education Statistics (Ingersoll, 1997) did a multilevel analysis to see the relationship between teacher professionalism and commitment. Their findings are opposite to the present study which says that experience is inversely related to the professional commitment of school teachers; however, this relationship was insignificant. Similarly, there was no significant difference in the professionalism of teachers above and below six years of experience as reported by Shukla, Nirban & Dosaya (2018).

Research suggests that over time teachers experience tensions in adapting to new values that form the basis of reforms before eventually adapting to the changes (Osborn et al., 1996). Primary and secondary school teachers have been found to perceive educational reforms undermining their professional identities temporarily (Helsby, 1999; Menter et

al., 1997) which explains why no direct increasing or decreasing trends are observed in the professionalism scores of teachers across age groups and years of experience. When the teaching-learning space goes through reforms, experienced teachers are critical about losing on opportunities to morally educate children and contribute towards their holistic development thus causing a temporary professional identity crisis while newly recruited teachers are more satisfied with exercising their pedagogical skills in a narrow range of autonomy they get as a result of reforms (Day, 2002).

The *Experience Theory* propounded by Dewey augments the understanding of pre-service teacher training and learning. The theory proposes that what a person learns from experiences depends on their current and past experiences. The same educational experiences to different individuals are, therefore, capable to produce different learning by the virtue of attribution of different values to learning different things (Dewey, 1986). Such an assertion can explain why each teacher goes through a unique journey of professionalism. This is also true with students as student learning cannot be always controlled by the teacher but the teacher can ensure good educational experiences for students by developing in themselves, a deeper understanding of utilization of resources, physical and social surroundings so that maximum learning takes place. The principles of continuity and interaction have had an effect on the teaching practices of teachers over the years and enhance their capabilities. Continuity between the pre-service-learning and classroom teaching practice makes their experiences meaningful; and, interaction with peer teachers and learning from each other also plays a role in shaping experiences (AlHaqwi et al., 2010). Peer teaching as a part of the pre-service teacher training program

has been recognized as highly important (Butler & Shevlin, 2001) and was also found to be positively correlated with high performance in the initial years of teaching.

The inclusion of such methods in teacher preparation can give a head start to the professionalism of teachers, right at the beginning of their teaching careers. Teaching occupation, in its continuous strife to increase its professional status, fails to compete with established professions like that of doctors or lawyers. This condition of the teaching profession is a challenge not only in India but also in developed countries.

Remuneration is highly related to the attributions of teachers' professionalism. The structure of salaries is found to be related to professionalism (Hanushek, 2016). According to Benedek & Lelkes (2008), income is equal to award, as it has the nature and meaning of equality. Andrew (2008) suggests that awards and recognition work as a driving force or motivator. Naranpanawa, Selvanathan & Bandara (2013) observed that income and rewards aim to improve employee satisfaction concerning the teaching profession. Subroto (2013) suggested that improvement in the salary of teachers leads to improvement in teacher performance and improves the quality of education in India. In the present research, it can be seen that the levels of professionalism differ significantly with income. The average professionalism scores can be observed to increase with an increase in the income of teachers. The decade since has seen an increase in the measures taken to increase the pay of teachers to enhance educational quality and outcomes (Fryer, 2013).

Poor salaries have been found to demotivate teachers and acts as a barrier towards professionalism and teachers' satisfaction. Salary is an important extrinsic factor that

elicits intrinsic motivation from teachers to engage in activities that enhance their professional practice (Shishigu, 2015). Herzberg's Two Factor Theory (Herzberg, 1966) of motivation states that two types of factors are responsible for motivation, namely, the Motivators (satisfiers) and the Hygiene (dissatisfiers) factors. Due to the complex nature of salary, Macarov (1972) argues that salary is not and cannot be a motivator. Motivators are the drivers of job satisfaction and include factors like achievement, recognition, and work advancements, whereas, Hygiene factors act as inhibitors of job satisfaction and include factors like working conditions, collegial relationships, and salaries. According to this theory, salary forms a part of the hygiene factors that cannot cause absolute dissatisfaction but can alter the degree of satisfaction induced by the motivators (Herzberg, 2003). Therefore, for motivators to act adequately to push teachers towards professionalism, it is crucial that the levels of satisfaction or dissatisfaction from the salary structures of the teaching profession remain acceptable (Alrawahi et al., 2020).

The teachers who are getting paid less than 3 Lakh per annum mostly worked as Assistant Teachers. The job of an Assistant Teacher was no different than a TGT or PGT teacher, the only difference being the lesser qualification they possessed. This might also be the reason behind their poor performance on the professionalism scale. The Assistant Teacher though less qualified shares an equal workload with other better-qualified teachers in the school which can easily be understood as "unfair" by them especially in the school environment, where they work in the same space with other teachers and having regular interactions. It is very normal for the Assistant Teachers in such a scenario to evaluate their roles, pay, and abilities in comparison to the other qualified teachers, as supported by the social comparison theory (Festinger, 1954; Larkin, Pierce & Gino,

2012). Such “unfairness” may result in employee conflict, less effort and motivation, unethical behavior, and less satisfaction among teachers (Greenberg, 1988; Nosenzo, 2010; Cropanzano, Rupp, & Byrne, 2003; Pruitt & Kimmel, 1977; Gino & Pierce, 2010; Edelman & Larkin, 2009; Faulkender & Yang, 2010; DiPrete, Eirich, & Pittinsky, 2010; Larkin, Pierce, & Gino, 2012). Such variations among the teachers inside the school need to be paid special attention to. However, the literature suggests that teaching professionals are not always motivated by monetary incentives. Teaching is also motivated by social incentives where the teacher believes to be doing a job to make a difference in society by doing social good. Sometimes, they’re also motivated by their intrinsic vision or goal as an individual (Mallah, 2019).

According to the *Expectance Theory* by Vroom (1964), a teacher’s decision to push themselves in their jobs depends on the valence of the rewards offered; the chances that their effort will lead to an outcome; and the instrumentality – the likelihood that achieving the outcome will fetch them a reward. Valence seems to exert the maximum effect where teachers' decision to exert, is followed by the chances of this exertion to be dependent on the quality of the goal. The introduction of a system of rewards and recognition for teachers can act as an instrument in improving the perception of the teaching profession in the Indian education system. The above-discussed theories emphasize that increment in salaries based on performances of teachers rather than qualifications can lead to better performance of teachers which can prove to be an important step towards increasing the learning outcomes of students.

Objective 2

To assess the differences in students' achievement across various demographic characteristics such as gender, preschool, tuition, board at the secondary school level.

In India, education is a state governed system and the decision-making power resides with the state. The delegation of authority takes place from the legislative branch to the local school board. The powers, duties, and agenda of the education system differ from state to state. States exercise control through the state boards of education which are administered by a Department of Education at the state level headed by an elected or appointed chief of the Human Resource Development. School boards function locally and are maintained under the state's delegation and the geographical confinements of the district. A school board is a legal agency that derives its strength from the state's constitution, laws, and judicial decisions. School boards are invested with the authority to develop rules, regulations, and policies and direct the important operation of schools which includes, system organization, finance, location, expenditures, staffing, curriculum, to name a few.

In India, every state has an education board that governs the above-mentioned functions. These boards differ in functioning and structure as per the requirements of the state. In this particular study, it is the Rajasthan Board of Secondary Education (RBSE). The other group of schools was affiliated with the Central Board of Secondary Education (CBSE) which is an eminent board of secondary education. The jurisdiction of this Board is extensive and stretches beyond the boundaries of the state and the nation. Schools located in the union territories of the country are all affiliated with the CBSE. The board has set up regional offices for the regulations of schools under CBSE. Schools affiliated with the

CBSE are required to follow the curriculum of the National Council of Education Research and Training (NCERT). Students belonging to schools affiliated with this board compete at the regional and the national level, at the end of their secondary and higher secondary grades.

The difference in the performance of students belonging to schools affiliated to these boards was assessed and t-test results depict that there exists a significant difference between the performances of students studying in both types of schools. The difference can be seen even though the students in both types of schools use the same textbooks and follow the same curriculum. The RBSE board schools are also on their way towards implementing a similar assessment system based on the Comprehensive Continuous Examination (CCE) system used by the CBSE board. The findings are consistent with the findings of the National Achievement Survey (2018) conducted by NCERT where state boards students performed poorly than the students from CBSE board schools which emphasizes the difference between the standard of education imparted by the central and the state board at the national level.

The current research found that female students outperform male students in cognitive achievement in secondary grades. Andreas Schleicher (2018) in his report for the OECD named "*PISA 2018- Insights and Interpretations*" has discussed that in Asian nations like Singapore, Macau (China), Hong Kong (China), Saudi Arabia, Malaysia, Philippines, The UAE, and Saudi Arabia female students outperformed in Reading and Mathematics. Also, in all the countries where females outperformed males, it was found that less than 3% of girls in any country were willing to join an ICT-related profession whereas, on the other hand, more than 8% of boys wanted to join an ICT profession. Such results portray

both genders have a very different career expectations and that outperforming in cognitive abilities does not necessarily convince girls to enter professional fields that are considered to be driven by abilities in Mathematics or Science. Past PISA assessments (2013) have also pointed out that even if daughters possess better cognitive abilities than sons, parents expect their sons to join a STEM field. In some western countries like Chile, Hungary, and Portugal, the percentage of such parents is more than 50% against less than 20% of parents having such expectations from their daughters. Narrowing gender gaps in this aspect does not require an expensive and exhaustive reform. The requirement is to proceed by molding the conscious and unconscious biases of parents, teachers, and employers so that equal opportunities are given to both boys and girls for succeeding in school and after.

Females have been stereotyped as inferiors in cognitive abilities and mathematics and science performance but the assessment of their actual performance using scientific data gives a contrasting image. Men were found to score higher on mathematics on overall averaged samples whereas women were found to perform better in samples of the general population as opposed to the highly precocious or low ability samples but the difference was negligible (Hyde, Fennema & Lamon, 1990). Many studies have found girls to perform better than boys at the end of their high school (Dwyer & Johnson, 1997; Kenney-Benson, et al., 2006; Kimball, 1989). Previous research shows that gender differences in mathematical abilities are rather very small and depending upon the sample and outcome measure, sometimes favored boys and sometimes favored girls (Lindberg, et al., 2010).

Studies have recently continuously pointed towards the bridging of learning gaps in Mathematics between boys and girls (Cornwell, Mustard & Van Parys, 2013; Quinn & Cooc, 2015) but the findings of the current study raise an important question as to even after lagging in enrollment and educational attainment, women in India are taking huge strides in outperforming male counterparts in academics. Studies exhibit that female student tend to perform more consistently during test-taking than men which have also been attributed to non-cognitive skills. Females tend to perform better on cognitive tasks as studies have found them to be better at non-cognitive abilities like self-discipline (Duckworth & Seligman, 2006), fewer behavioral problems (Jacob, 2002), less overconfidence (Niederle & Vesterlund, 2007), and better attitude towards learning (Cornwell, Mustard & Van Parys, 2013).

Prominent gender differences in the performance of students were also observed at all the levels of cognitive abilities tested in both the Mathematics and Science Achievement Test in the present study. Most of the studies around the world have time and again reported gender differences in mathematics-related learning and achievement in favor of males (Woolgar et al., 2010; Lamb & Fullarton, 2001; Sappington & Topolski, 2005; McGraw, Lubienski, & Strutchens, 2006). Studies also state that gender differences in mathematical learning do not emerge until puberty and also depend upon the content and cognitive level of the instrument used for measurement (Hyde, Fennema & Lamon, 1990).

The theoretical approaches to gender differences have been mostly biologically or psycho-socially dominated. The biological approach primarily concerns brain activity differences (Levy, 1976), hormonal influence (Broverman, Klaiber, Kobayashi, & Vogel,

1969), genetic factors (Bock & Kolakowski, 1973), and even evolutionary processes (Geary, 1996). Psycho-social approaches mostly identify learned helplessness (Dweck & Licht, 1980), autonomous learning behavior (Peterson & Fennema, 1985), and expectations and values (Eccles et al., 1983) to be determining factors. The integration of biological and psycho-social approaches has also been used to explain the differences (Baenninger & Newcombe, 1995; Casey, 1996; Halpern, 2000).

Another important approach is the use of Stereotype Threat Theory (Spencer, Steele & Quinn, 1999; Steele, 1997) to explore and explain the gender differences in cognitive abilities. The approach suggests that negative stereotypic expectations in testing situations create interfering pressure on the performance of stereotyped groups. The approach can be identified as a social cognitive perspective as it places the cognitive abilities of an individual related to the applicability of negative stereotypic expectations to test. The stereotype threat effect is most likely to be observed when the test has items that are high in difficulty level; when abilities are evaluated and scrutinized; and lastly when negative stereotypic expectations are directly attachable to performance.

A few studies have also explored and highlighted the better performance of female students on the Mathematics Achievement Test especially in Asian countries (Sarsani & Maddini, 2010). The reason behind the outperformance of female students has been attributed to their self-discipline (Duckworth & Seligman, 2006) and out-of-school study (Mullis et al., 2000). Females globally tend to spend more time studying or doing homework than male students which gives them an edge over boys in mathematics classes. A study on the students' choice of subjects for post-secondary majors using the Hollands' types (R-I-A-S-E-C) model reflected that mathematics majors were largely

chosen by male students or female students from a low socio-economic background (Trusty & NG, 2000). Uzoka-Walker (2009) explored the influence of teachers, parents, religion, and gender on students' perception of Mathematics in Nigerian students. It was reported that parents' and teachers' attitudes had a big role to play in shaping students' perceptions of Mathematics. Students reported a statistically significant difference in male and female students' attitudes in only two scales out of the eight scales used to measure their attitude towards learning mathematics.

Contrary to the belief that male students possess better cognitive abilities than female students, cognitive-developmental studies on humans, preschool students and students across all the levels of education develop equal capabilities for mathematics and science (Spelke, 2005). Studies usually report that men and women equally possess the abilities to perform well in mathematics and sciences. Still, it has been observed that in most of the nations around the world males have an advantage over females when it comes to learning and performing in mathematics and science achievement tests. The disadvantages of females in mathematics and science have been promoted by negative stereotypes that threaten their growth and performance in the subjects. In the current research, a contrary scenario is witnessed where females outperform males in both mathematics and science at the secondary level.

The status of gender inequality is very acute in Rajasthan which is evident through indicators like highly skewed child sex ratio (Government of India, 2011), high levels of the mortality rate of females under 5 years of age (Government of India, 2013), and low female literacy rates (Government of India, 2011). In such a scenario where female students' access to basic education and chances to transition to higher grades are low as

compared to male students, the performance of female students can be a reflection of the efforts of the Indian Government and its several policies undertaken to address and bridge the gender gap. At the same time, it raises concerns, where along with enrollment, retention, and transition of female students, it is important to address the achievement gap in male students to facilitate their cognitive development.

The current study found that there exists a significant difference in the cognitive abilities of secondary school students who attended and those who did not attend preschool in their early childhood days. Similar findings have been reported by several studies cross-nationally. Studies have continuously stated the importance of Preschool especially for students belonging to disadvantaged or poor families (Campbell et al., 2002). The oral vocabulary of children at age five has been found to affect English assessment at age 11 (Sylvia et al., 2010). Children who do not have access to preschool have been found to demonstrate low levels of abstract or academic language which is needed to perform well after the age of nine.

Preschool has been often seen as a solution to unequal educational opportunities and reduces the readiness gaps among students from low-income families. Early cognitive interventions of preschool have an effect on students' later years at school, educational attainment, and social development (Reynolds et al., 1997). Students belonging to different socio-economic status bring a different level of skills to the school. Preschool ensures that every child irrespective of their background gets an equal pedestal to start their educational journey (Siraj-Blatchford, 2004). The largest evidence of long-term effects of preschool on the later cognitive Development comes from the High/Scope Perry Preschool model (Schweinhart et al., 2005).

Under this program, students from socio-economically challenged families were enrolled. The schools had highly trained teachers and the teacher-student ratio was kept low. This model was found to have a positive effect on the development of students (Barnett, 1995). The positive effects of preschool are not just seen in students from very poor economic status but similar effects are seen in students from middle-class families (Leob et al., 2007). Quality of preschool processes (staff-child relationships) rather than structures (carer-child ratio, staff qualification) has been found to have a significant positive impact on the cognitive development of five-year-old children (Hall et al., 2012). Evans (2004) and Evans & Kim (2013) have established the interconnectedness of poverty, quality early education stating that children coming from poor families have no access or access to poor quality preschool education which again widens the economic and academic gap.

In the Indian context, a recent study conducted by Dean & Jayachandran (2020) on the preschools of Karnataka has found that students who attended preschool with the help of a scholarship experienced a gain in cognitive development. The study also found that 40% of the effect of preschool on cognitive development was carried forward to the first grade with more perseverance of higher-order thinking skills. Data from the Young Lives Survey depicts that students who attended private preschools have better cognitive achievement than students who attended public preschools (Singh & Mukherjee, 2018). In other words, Anganwadi centers in India which were opened as a part of the Integrated Child Development Services (1975) are performing poorer than the private preschools which are growing in number and discharging services in India in remote rural and tribal regions (Singh et al., 2014). According to the latest data, Anganwadis are catering to 48%

of students aged between three to six years of age (Ministry of Women and Child Development, 2011) and in the rural areas, 64.5% of three-year-old children and 76.39% of four-year-old children are attending Anganwadis (Wadhwa, 2014).

Studies capturing preschool effects on the cognitive development of students in South Asia, including India, have found that even mediocre and low-quality preschool programs have a significant positive effect on the developmental outcomes of students (Rao & Sun, 2010). In Madhya Pradesh and Chhattisgarh, clear variations in access to preschools were observed where boys and students from higher socio-economic groups attend private preschool, and girls and students from lower economic groups attended Anganwadis (CREATE, 2010). In Assam, Rajasthan, and Telangana, out of 13,000 four-year-olds, around 43% of students attended private preschools on the pretext of the perception that private schooling offers better quality education (OECD, 2015) and that private preschool would help students of aspiring parents, later in adjusting to English medium teaching and learning (Streuli, Vennam & Woodhead, 2011). However, the Indian government has addressed the gaps in preschool education by proposing to unite preschool education under the Right to Education Act after implementation of which government schools would be providing free and compulsory education to children from three years of age (Jebaraj, 2019). Some states have already started introducing this reform by expanding the capacity of schools, for example, the state of Karnataka announced to open 276 formal preschool centers within primary schools by the year 2019 (Belur, 2019).

According to Haywood (2020), Cognitive Constructivism that emerges from the theories of Piaget and neo-Piagetian thought argues that it is important for children to build their repository of cognitive processes. Piaget's theory of development states that the initial

cognitive task of children is to build their knowledge about themselves, the environment around them, the people around them, and the difference in the concept of self and the non-self. When the child is able to accumulate and assimilate knowledge, stage progression takes place where the child now needs to assimilate and accommodate knowledge and resolve conflicts between new knowledge and pre-existing knowledge. Accommodation of new knowledge leads to expansion of knowledge with the creation of new categories. The neo-Piagetian movement (Pascual-Leone & Smith, 1969) stated that cognitive processes through developmental stages are dynamically synthesized by endogenous constructive processes. They quantified interstage transitions as an increase in essential elements, relations or constraints that children have to work upon together in order to perform on a question (Cardellini & Pascual-Leone, 2004). Preschool poses increased number of such opportunities to children where they can encounter multiple information to be processed at the same time to perform on a task.

The socio-cultural view of cognitive development devised by Vygotsky (1978) emphasized that cognitive development takes place through the process of mediation in which adults pass on important psychological instruments to children, for example, language mnemonics and rules. Children practice and slowly become independent in using such tools and engaging in complex mental processes. Assimilating the elements of Piagetian and Vygotskian theories, Feuerstein (1991) elaborated the important role of mediation played by more cognitively advanced persons like parents and the teachers and proposed the concept of mediated learning experience as an integral aspect of cognitive development. The researcher stated that deficiency in cognitive learning is a consequence of lack of mediated learning experiences and developed materials for classroom

management and teaching methods to serve both as preventive and remedial measures (Feuerstein et. al, 2006). This theory explains the difference in the performance of the students who go through the mediated learning processes in preschool and those who do not. The need for mediated learning experiences in preschool goes against the notion of readiness that implies that teaching cognitive processes and academic subjects should start only when children are neurologically ready for the natural occurrence of the developmental process. Despite this, the use of proper teaching and learning has been found to have enormously positive effects on the developmental journeys of children, especially in the American context (Bredekamp, 2014; Copple, et al., 2013).

The findings of the current study suggest that there exists a significant difference in the mathematical and science-related abilities of students who take private tuitions and students who do not take private tuitions. Mean scores indicate that students who do not take tuition score more than students who take tuition. Although it is easy to find literature that argues in favor of positive effects, some researchers have continuously argued rather skeptically. Byun (2014), states that the empirical evidence in favor of private tutoring has been “inconsistent, contradictory and confusing”. Private tutoring also known as the Shadow Education System has been found to have mixed effects on the learning abilities or achievement of students. The concept of private tutoring has expanded from East-Asian countries to the whole continent and eventually to the whole world. Prevalence of Shadow Education can be seen in South Asia, Southern Europe, parts of North Africa and Sub-Saharan Africa, North America, South America and Western Europe (Bray & Kwo, 2014) and New Zealand being one of the countries with

the lowest engagement of students with private tutoring (Enrich, 2017). Such observations assert shadow education as a phenomenon approaching to be universal.

Private institutes in Japan offering academic aid to students are known as Juku. The effects of Juku on the academic performance of Japanese students on PISA assessments were studied by Rappleye & Komatsu (2020). They found that attending Juku was not the primary factor responsible for the higher performance of students in Japan, as class four students who were mostly not attending Juku also performed quite well on PISA assessments. The Japanese prefectures which had higher attendance of Juku did not always report higher achievement. Studies from Bangladesh reveal that there exists a positive correlation between private tutoring and academic achievement but the cause-and-effect relationship between the two variables were not explored which raises an unaddressed concern as to whether the increase in academic achievement was because of private tuition (Nath, 2008; Hamid et al., 2009). Studies in Taipei and China that controlled for the student's socio-economic status, ability, and attitude found that students who attended tuitions were already studious, high achievers, and belonged to high social classes (Kuan, 2011). Coaching or tuition classes has evolved from a one-on-one teaching phenomenon to more structured and organized programs that aid students' learning in the crucial years of secondary education. These coaching institutes have increased in number throughout the state and have emerged as business models that not only claim to make the transition of students through secondary grades smoother but also train them for various competitive exams that the students would be taking after completing higher secondary grades. These institutes charge students abundantly and expose them to the pressure of performing at the national level entrance exams too early along with the

pressure of performing in the class Xth board examinations. Private schools in India are majorly located in the urban areas as compared to very few schools in rural areas. So is the case with coaching institutes, because of which we find a larger effect of coaching on private school students. If at all government school students sign up for academic aid outside school, it is mostly a non-structured one-on-one tuition class at a much lower fee as compared to the urban coaching institutes. This probably explains the difference in the effect of coaching/tuitions on the performance of public and private school students.

The neo-institutional theory suggests that the popularity of shadow education is a consequence of strong support for formal education (Mori & Baker, 2010). Institutionalization of education has led to an increase in norms regarding participation in formal education and heightened emphasis on educational training and credentials (Baker, 2014). Institutionalization of education has not only promoted the opening of public schools by nation-states to ensure equal and good quality education for all, but it has also motivated families to opt for many more out-of-school services to help children enhance their academic performance (Baker & LeTendre, 2005). The economic model, however, refutes the institutional model and states that the existence of shadow educational institutes jeopardizes the higher education enrolment rates (Byun, Chung & Baker, 2018). According to the economic model, higher levels of shadow education results in lower levels of economic development due to lower school enrollments and lesser funding. The negative effect of coaching on the achievement of private school students depicts that the “facilitation” provided by these coaching institutes proves barriers for the cognitive development of students. Studies on the education systems of the West have acknowledged this harm by associating coaching institutes synonymously

with “cram schools” which focus on examination skills more than cognitive skills in the South Asian countries (Roesgaard, 2006; Kim & Chang, 2010; Liu, 2012). Coaching institutes give a false impression to students about their mathematical competence and often end up being less attentive in school and consequently underperform (Huang, 2004).

Many private schools in the state provide dummy enrolment to students where they have to pay large amounts of fees to the school after which they are not required to attend school regularly and instead attend classes in their respective coaching institutes all day long. The students appear in school only at the time of exams. A study conducted in the coaching hub of the country i.e., Kota which is a district in Rajasthan found that only 50 percent of the students enrolled in such institutes feel that they would be successful in their exams and even less than 50% of students were satisfied by the coaching classes (Mishra & Singh, 2017).

Paramita’s ethnographic study (2015) reveals that the shadow education system is leading to the “phenomenon of inverted roles” where students complete tuition assignments in school classrooms. These coaching institutes lure youth from across the nation by claiming to place them in institutes of national importance for higher education (eg. IITs, AIIMS, Central and State Medical Colleges). All these circumstances lead to an undervaluing of the country’s education system (Bray & Lykins, 2012) and place the cognitive development of students at risk.

Objective 3

To analyse the effect of gender, highest degree, age, experience, job description, annual income, and teacher training on teacher professionalism and to analyse the effect of gender, preschool, tuition, and board on the achievement of students at the secondary school level.

The causal linkages depict that a Ph.D. degree contributes highly to the professionalism of teachers as compared to graduation. Post-graduation had no significant effect on the professionalism of teachers as compared to graduation. The emerging importance of a Ph.D. from the results of this study indicates that teachers having a research background and aptitude makes their professional journey outstanding as compared to other teachers with masters or bachelor's degree. The findings coincide with other studies that advocate research-active teaching practice as a less common but effective path of professional development (Snoek et al., 2011; Lunenberg et al., 2014; Klink et al., 2016). The prominence of research also reflects universalization (Ball, 1998) by raising research demands from teachers and teacher educators to garner respect in the academic profession and can also be understood as a need to have knowledge and capacity of research in their field (Murray et al., 2009).

A study conducted on the English teachers of Anglo-Saxon countries found that teachers often hesitate in engaging in research-related and scholarly activities because they think that their work is demanding and encouragement from peers or students is rare (Kosnik et al., 2013). Research-related activities such as self-study and inquiry have been considered as important aspects of the advancement of professional development (Cochran-Smith, 2003; Loughron and Berry, 2005). According to Ball (1998), research conducted by

teachers enrolled in Ph.D. in education focuses less on adding to the existing knowledge base. Ball argues that teacher education focused on improving the status of the academic profession is likely to facilitate an increase in the number of researches that generate academic knowledge by the means of completion of Ph.D. Finland being one of the most outstanding performing countries in PISA credits its good learning outcomes to the fact that all the teachers possessed a master's degree (Kansanen, 2014). The country follows a research-based approach to train the teachers, where integration of educational research and teaching student teachers takes place. Research based on Finland has found that teaching based on scientific inquiry and theory is what governs the teachers' pedagogical actions (Kansanen, 2014; Niemi & Jakku-Sihvonnen, 2006). A teacher as a researcher possessing a research-based teacher education degree is considered to be important eligibility for entering into the profession (Puustinen et al., 2018).

Such focus on research-based training of teachers can also help improve the status of the teaching profession in India, which is also reflected in the current study. Not only an academic degree but also professional training at the master's level has emerged as an important predictor of higher professionalism of teachers in the current sample. A mathematics teacher stated similar views – *“the duration of B.Ed. program is two years.... the training module is huge which includes theoretical knowledge and practical training. The module of training changes every semester i.e., in approximately 6 months, which according to me is very little time to spend on a module because of which teachers are not sufficiently skilled. Such short-period does not help in skill acquisition rather just makes us aware of the concepts without any in-depth understanding.”* Another teacher possessing B.Ed. degree expressed her dissatisfaction from the training by reporting that

– *“B.Ed. is just important to have a government job. It does not provide you with updated and relevant knowledge. The modules are regressive and redundant in today’s teaching-learning scenario, for example, components like lesson planning and chart building, etc. In reality, lesson plans are all duplicated from senior teachers, charts have disappeared from school. Many new teachers are left clueless after training as nothing they learned in training matches the actual school environment these days. They struggle in coming up with teaching methods other than conventional methods on their own.”* The process of research-based teacher training and the consecutive rise in the status of the teaching profession has been termed as the academization of teacher education. According to Zeichner (1983), there are four paradigms of teacher training- behavioristic, personalistic, traditional craft, and inquiry-oriented. This categorization has been considered as having a high explanatory value (Zeichner & Conklin, 2005). The paradigms produce a ‘matrix of beliefs and assumptions’ which helps in forming the goals of teacher training and achieving them. The inquiry-oriented paradigm enables teachers to self-reflect on their actions and the consequences. The existing literature supports the findings of the current study which emphasizes the need for research-oriented teacher training in the form of Ph.D. training or master’s thesis. Also raising the professional qualifications to master’s level would help contribute to the higher professionalism of teachers teaching at the secondary school level. Thus, it can be reemphasized that higher academic, professional qualifications, and research-oriented learning prior to entry into the profession can lead to enhancement of the status of the teaching profession in the Indian context.

The study also observed high compensation as an indicator of higher professionalism of teachers. The finding has been supported by a plethora of prior studies of both

sociological, educational and economic perspectives. High compensation has been regarded as one of the most important characteristics of a profession (Ingersoll, Merrill & Hay, 2011). Professionals are typically highly compensated throughout their careers along with many more benefits. The assumption behind high compensation is that after going through intense training and acquiring a complex knowledge base, high compensation is crucial for recruiting and retaining capable professionals. Teachers have been traditionally called the “economic proletarians of the professions’ (Mills, 1951) and the data continues to back such claims to date. Different data sources continuously point towards the gap in income of fresh graduates entering the teaching profession as compared to graduates entering other professions. Indian teachers also face such unequal pay even after performing one of the most important and complex jobs towards nation-building. Lately, the country has even witnessed the migration of capable teachers in search of better compensation and working conditions playing a barrier in the attainment of educational goals (George & Rhodes, 2020). By 2010, 53,859 Indian teachers were teaching in SA alone with an immigration rate of 7.2% (Ruggles et al., 2010).

While India was suffering from a shortage of teachers during the implementation of RTE, the USA and Britain were quite contented with the functioning of Indian teachers in their respective education systems (George & Rhodes, 2020). The most important factor that pulls Indian teachers to the USA is the better standard of living, health, and education opportunities available to them (Sharma, 2012). The most highlighted push factors that force teachers out of India are the historically low pay (Caravatti et al., 2014), less professional development opportunities, social problems, and corruption (George and Rhodes, 2020). The study by Caravetti et al. (2014) also revealed that 73% of Indian

teachers considered better income as the most encouraging factor to push them to migrate. Similar opinions were reported by teachers in the current study. According to a science teacher earning 1.5 Lakh a year – *“it would be a lie if I say that salary does not determine teachers’ performance. Increment in salary and promotions are something that is awaited by all the teachers. If we do not get timely increments and promotions what is the use of all the education and training, I invested in to become a teacher”*.

A large variation is seen in the income of teachers across the states in India. Although the 7th pay commission increased the salary of teachers, the pay scale of all the teachers is very narrow with TGTs falling in the third or the fourth pay band. The exact salary of a teacher depends on the experience and the place of work. When compared to the UK, the starting salary of similarly qualified teachers could be as high as 48,243£ (approx. 50 Lakhs in INR) after acquiring 5 years of teaching experience, thereafter moving up the pay scale with more experience and achievement of other performance-based goals. Substantial pay gaps were found in the average salary of teachers in India and abroad among teachers having less than 5 years of experience. The gaps in the salaries of teachers in India and UAE were reduced as a result of an increment in the salaries of teachers in India after the implementation of the 7th pay commission (George & Rhodes, 2020). Teacher wages have been linked to teacher and school productivity in past researches where the results exploring the relationship between them have remained mixed owing to the large variance in the range of teacher payment within and between nations (Britton & Propper, 2016). Still, studies assessing the impact of performance-based wages of teachers on their performance are plenty, (for example, Woessmann, 2011) but direct investigations of teachers’ wages on their performance are very rare.

Large scale data across 39 studies also reinstated the direct relationship between teacher salaries and students' performance (Dolton & Marcenaro-Gutierrez, 2011), labor supply of teachers, entry into the profession, teaching duration, teacher mobility, and absenteeism (Murnane & Olsen, 1990; Dolton, 1990; Barr & Zeitlin, 2010; Leigh, 2012). Some of the most important researches addressing this gap found that increasing teachers' wages reduces dropout rates (Loeb & Page, 2000) and improves academic achievement by increasing retention rates (Hendricks, 2014).

Another important finding of the study was that age inversely affects the professionalism of teachers at the secondary school level. Young teachers belonging to the 25-35 years age group showed a significant impact on professionalism. Teachers belonging to the higher age groups performed significantly poorer than young teachers especially teachers belonging to 46-55 years of age. Since the research conducted by Cornwell in 1974, which served as a milestone, many researches in the past have reported that the effectiveness of teachers decreases with their age as perceived by students (Wilson, Beyer & Monteiro, 2014; Joye & Wilson, 2015). On the other hand, a few recent researches have also reported that there was no significant difference in the perception of students for young and old teachers (Daud & Kassim, 2011; Shah & Udgaonkar, 2018) suggesting that students no longer consider age to be an important factor while judging teachers' effectiveness (Tran & Do, 2020) but the results of this study show that students might not consider teachers' effectiveness to be affected by their age, but teachers' professional journey is impacted by their age with young teachers exhibiting more professionalism than their older counterparts.

Under this objective, effects of students' demographic characteristics namely gender; the board of education their school is affiliated to; whether they attended preschool, and whether they take private tuitions outside the school was assessed on their mathematics and science performance. The results depicted that the board of school and gender of students significantly predicted both science and mathematics achievement of students. Mathematics achievement was also found to be significantly affected by preschool. Tuitions impacted performance negatively in both science and mathematics but the coefficients were not significant enough to be generalized.

The present study also found that female students scored significantly better than male students in both mathematics and science. This might indicate that the education system, most importantly, the schools and the teachers have not stereotyped mathematics to be a subject mastered by the male students. The same is reflected in the statements of students where female students asserted that they are not treated differently from boys by their school teachers. According to a female student of class ten – *“I think our school has provided us with the best mathematics and science teachers. None of our teachers judge us based on our gender. They do not resent girls for taking interest in scientific subjects ... rather we are encouraged to have an experimental approach to the concepts of science and mathematics.”* A male student also supported the notion and stated that *“our teachers treat male and female students equally and fairly. Fair chances are given to girls to interact and participate in class. Similarly, boys are also encouraged to take up subjects like literature, art, and home science that were traditionally considered as feminine subjects. There is no concept of hard-soft subjects in our school”*.

Previous studies which highlighted the gender gap between male and female students' performances on mathematics tests have claimed that male students mostly performed better where female students are stereotyped. Such stereotypes against women in mathematics degrade their performance even more as it makes them think that even if women studied, they would never be able to perform at par with their male counterparts (Appel & Kronberger, 2012; Wheeler & Petty, 2001; Dar-Nimrod & Heine, 2006). Recent literature points out the fact that gender differences in mathematics and science performance indicative of students' cognitive abilities no longer exist but rather depend on numerical skills (Primi, et al., 2017) and conceptual understanding (Andamon & Tan, 2018). In an interaction with a female student from a senior secondary school, it was found that that the female students themselves have observed an increase in the number of female students opting for science in higher secondary schools. She acknowledged that the distinction of subjects as boys' subjects or girls' subjects no longer exists in their school. She shared that she has seen many of her female seniors opting for science streams and that there are quite a good number of girls studying subjects in higher education that were earlier considered to be boys' subjects. A male student also viewed the same and perceived that there were an almost equal number of boys and girls in his class who liked mathematics and science. A recent study conducted in China found that there exist no gender differences in the mathematical achievement of grade five students but the gender gap becomes prominent by grade 8 where female students outperformed male students especially in rural schools (Li, Zhang & Wang, 2017). Baye & Monseur, (2016) used effect sizes and found that effect sizes of gender differences were either zero

or slightly favored females. Halpern (2007) argued that so far research has proved incapable of finding explanations for more variance in scores of male students.

The widening of the gender gap as students proceed from lower grades to higher grades indicates that in earlier grades both boys' and girls' groups of students believe that they are better than their counterpart group in mathematics which makes both of them perform equally (Martinot, Bages, & Desert, 2012; Powlishta, 1995; Yee & Brown, 1994). But as students get older, they become more sensitive towards others' opinions and ideals and use them as building blocks to construct their own attitudes which further influence academic performance and career choices (Ambady, et al., 2001; Guimond & Roussel, 2001; Martinot & Desert, 2007). Ranjeeth, Latchoumi & Paul (2020) show that at the secondary school level, a greater number of female students spend more than two hours on studies outside the school in Guntur (Andhra Pradesh, India) which can be a probable explanation of behind why girls achieve more than boys as has been reflected in many other Asian as compared to western nations (Tsui, 2005; 2007). In Asian countries parents' expectations also play a great role in the academic achievement of students (Wang, King & Rao, 2019; Kim, 2020) and the results may also be a reflection of an increase in expectations from female students by their parents which was quite less in older times.

Preschool also emerged as a significant positive predictor of mathematics achievement of students at the secondary school level. Preschool has been found to have both short-term and long-term benefits for the developmental aspects of students (Gustafsson-Wright & Atinc, 2013; Kaga, Bennett & Moss, 2010). The reason behind the positive effects of preschool on later years of the school lies in the fact that early stimulation leading to

cognitive and social-emotional development are strong determinants of school progress in developed countries (Currie & Thomas, 1999; Pianta & McCoy, 1997; Feinstein, 2003). A study conducted in Guatemala indicated the role of preschool on the enrolment of students in secondary schools and achievement in the adolescent years (Gorman & Pollitt, 1996). Even studies that controlled for important variables like wealth index, maternal education, child's sex, and age also found preschool to be a significant predictor of learning outcomes of students in the later years of schooling (Filmer & Pritchett, 2001). The interventions undertaken at the early childhood stage of students have sustained cognitive and achievement gains (Daniels & Adair, 2004; Walker et al., 2005). Preschool as an intervention affects students' cognitive attainment since their development is impacted by psychosocial, biological, and genetic factors, and the first few years are crucially responsible for a vital development in all of these domains (National Research Council, 2000).

The development of the brain by the means of neurogenesis at the axon, dendrites, synapse, cell death, and rest ontogenetic events are all interconnected and any disturbance or intervention in the initial years of life have long term effects on the structural and functional capacity of the brain (Grantham-McGregor, et al., 2007). High-quality and early learning settings are especially beneficial for four-year students (Ramey & Ramey, 2004). It is during these years that the foundation of linguistic, cognitive, emotions, and their regulation are created that predicts the performance of students in their later years of life and education (Trawick-Smith, 2014; Woolfolk & Perry, 2012; Bakken, Brown & Downing, 2017). In Rajasthan, a large number of parents believe in sending their students directly in Grade 1 skipping the preschool, which is why a large number of four-year-old

students can be seen attending the preschool. The reason as reported by Alcott et al., (2020), being no influence of Anganwadi or any other kinds of outreach on students' learning. The negative opinions of parents about the infrastructure, sanitation, and lack of activities directed to stimulate students were also found to be major factors. The states of Rajasthan and Assam do not believe in the usefulness of preschool as opposed to the perception of parents living in Telangana who are well aware of the importance of preschool especially with respect to their child's socialization and development of critical skills (Alcott et al., 2020).

The opportunities are needed for teachers to learn and refine the pedagogies required to teach these skills (Darling-Hammond, Hyler, & Gardner, 2017). Teachers in the secondary school of India, in the contemporary context, have two major challenges to face. On one hand, they have to work towards the retention of students transiting from elementary education to secondary school, and on the other hand, they have to work meticulously on improving the quality standards of education as the curriculum becomes more detail-oriented and sophisticated. Teachers' centrality in the education system is undeniable yet the identification of the characteristics that relate to a good teacher is nearly impossible to observe. Studies have found differential teacher effectiveness as a strong determinant of differences in student learning, which outweigh the effects of class size and heterogeneity drastically (Sanders & Rivers, 1996; Sanders, Wright & Horn, 1997; Jordan, Mendro, & Weerasinghe, 1997). It has been observed that recent research has increasingly focused on exploring the direct relationship between teacher characteristics and students' performance. This outcome-based approach commonly known as the value-added analysis states that a good teacher is simply one who

continuously elicits high performance from students (Hanushek & Rivkin, 2012). Some evidence suggests a positive effect of qualified teachers on student learning at the classroom, school, and district levels, but studies exploring effects on achievement which can affect large scale policies and institutional practices that affect the overall level of teachers' knowledge and skills in a state or region are rare (Darling-Hammond, 2000).

Research studies assessing the effects of teacher qualifications on students' academic performance show mixed results. Few research evinces there is a slight or no effect of teacher credentials on student performance (Hanushek, 1986), on the other hand, some researches reveal contrary results. As an example, Ferguson (1991), found that scores of Teacher Licensing Test, Texas – which assesses reading, writing, and professional knowledge of teachers- were responsible for 20-25% of variations in students' average performance. Teacher quality has shown large effects on student achievement, but studies have also pointed out the minimal effect of teachers' educational qualifications and experience. Also, most of the variations in teacher quality exist within schools indicating that high-performing teachers were scattered and not concentrated in the same school (Rivkin et al., 2005, Jacob & Lefgren, 2008).

The literature reflects that the quality of teaching cannot be solely determined by experience or credentials. These attributes add to the existing quality but the role they play is, in reality, less than it is perceived to be. Teachers' behavioral attributes, teacher efficacy, for example, as an attribute of teacher motivation, has a major role to play in influencing teachers' decisions to take up professional learning activities and improve their quality of instruction (Geijsel et al., 2009; Goddard, Hoy & Hoy, 2001; Tschannen-Moran & Hoy, 2001; Wheatley, 2002).

Objective 4

To identify the differences in the way the demographic indicators predict student achievement and teacher professionalism in private & public secondary schools.

This objective addresses the impact of teacher characteristics and student characteristics on teachers' professionalism and students' achievement respectively in public and private schools. The results depict that teachers' gender, experience, highest academic degree, job description, professional training/degree, annual income, and age significantly predicted the professionalism of teachers at the secondary school level in private schools. Whereas, for the public schools, none of the predictor variables affected the dependent variables significantly (excluding board and professional training as all the public schools were state education board affiliated and all the teachers possessed a B.Ed. degree). Similarly, for students' mathematics and science achievement, students' characteristics were checked for their predictive value for both types of schools. The study found that board of school emerged as an important factor for private schools where CBSE school students performed significantly better than RBSE school students. On the other hand, students' gender emerged as a significant predictor of both science and mathematics achievement of students with female students performing significantly better than male students.

Numerous reasons can account for such discrepancies in the professionalism of teachers in the private and public school settings. Gender does not emerge as a significant predictor of professionalism of teachers for the overall data as was found in the third objective of this study. But when the public and private school systems are looked at separately, gender emerges as a significant predictor for private schools only. The

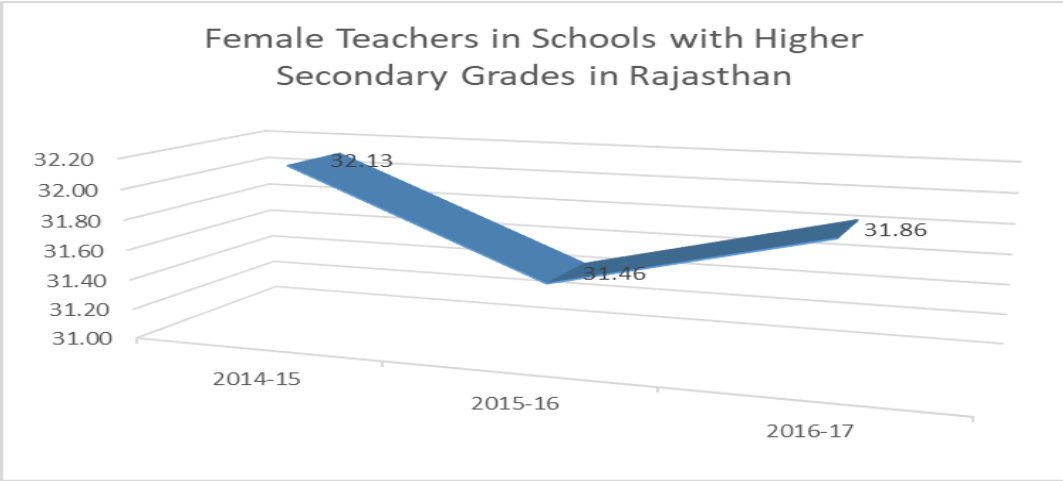
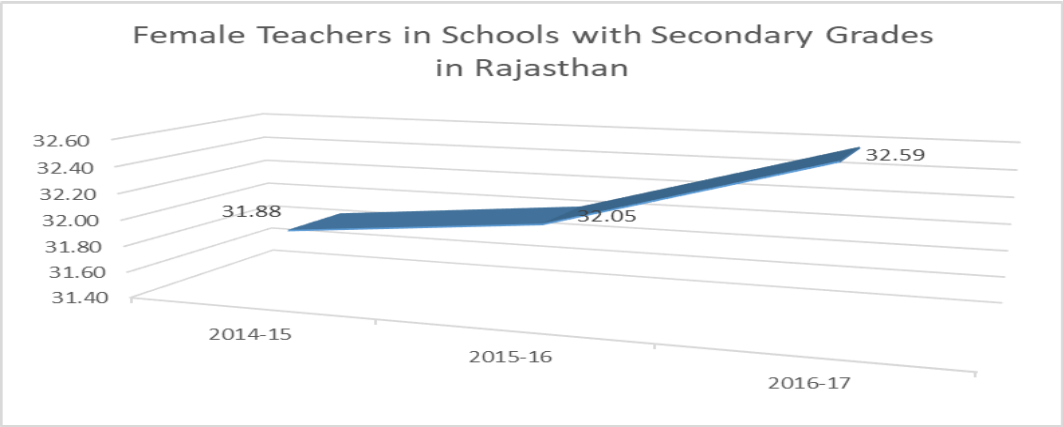
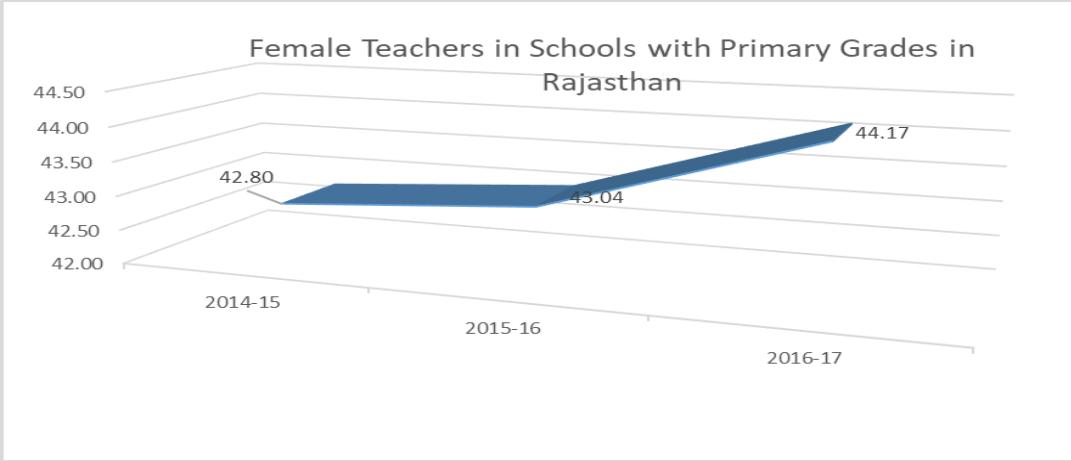


Figure 19: Share of female teachers across levels of education over the years (Source: U-DISE, 2016-17)

disappearance of gender effects when the data for private and public schools are combined might indicate a lower effect size of gender effects in a private school which implies that the significance of the effect might reduce when more data is collected. It could also mean that the significance of gender effects in private schools is overshadowed by the stronger non-significance of gender effects in public schools.

However, private school results depict that female teachers score less on the professionalism scale as compared to their male counterparts. Public schools also reflected similar gender effects but the effects were not significant enough to be generalized. The lower scores of females on professionalism can be understood by using the *Theory of Cultural Hegemony* (Hui, 2011; Drudy, 2008) which proposes that ideologies favoring hierarchy are inculcated into the culture and society in such a way that it becomes a normative understanding. This theory has been attributed to the facilitated patriarchal perspective where women are understood through a single lens of physicality and nurturance (Lin & Raval, 2020; Niu et. al, 2018) which lead to the belief that women tend to be house-chore oriented rather than being profession-oriented (Arham et al., 2019). This view has also explained the classification of teaching as a ‘soft job’ rather than a profession highly suitable for females (Moreau, 2019).

Also, the assumption that teaching is a highly feminised profession exists only till the primary grades but the situation is opposite as we move higher up on the levels of education where the representation of females in the teaching profession continues to decrease as can be seen in Figure 19 that the percentage of female teachers decreases after the primary grades from almost half of the teaching workforce comprising of female

teachers at the primary school level to almost 31% teachers at the higher secondary school level. The underrepresentation of female teachers may also be a reason behind female teachers' poor performance on the professionalism scale. The *Social Expectancy Value Theory* explains the smaller number of female teachers in the secondary grades by attributing decision making to one's self-image and the utility of the decision as perceived by the society (Richardson & Watt, 2014). This aspect emerged from the qualitative findings of this study as the difference in the reasons behind why male and female teachers take up the teaching profession and the circumstances they go through at home while leading their professional lives.

According to the qualitative data collected female teachers bore dual responsibilities where they often face home-work conflict. Some teachers even reported being resented by their family members for going out to work leaving the house and students behind. Young unmarried female teachers preferred working in a private school on contractual positions because of the uncertainty surrounding the continuation of job after getting married. A young contractual teacher working in a private school stated – “...*my family won't allow me to practice any other profession than teaching, that too only until I get married. In that case, how can I care about whether I teach primary or secondary grades? When I know I'm working temporarily why should I make efforts towards teaching better. After I get married, I might not be able to teach at all...male teachers do not have any such problems, they can continue to work as they want whether they're married or not...*”.

Male teachers also acknowledge that their professional journeys are much easier than female teachers. The fact that they are less interested in teaching primary grades is that

their families and society expect them to engage in *'tough jobs'*. Such a statement reflects that women are “allowed” to practice the teaching profession because it is considered a safe career option especially contractual positions for unmarried teachers and once these young teachers get married this safe option drops its importance against the social notion that women are supposed to prioritize their families before education or career.

Students opined that they do not observe any difference or preference for a particular gender of teachers for any kind of subjects. Interviews with class 10 students of two different public schools wherein one school a male teacher taught mathematics while in the other a female teacher taught mathematics. Students in both the schools found both the teachers equally capable and engaging where both the teachers used real-life situations to make students understand mathematical concepts. Both of these teachers used digital aides in the classroom whenever necessary to teach mathematics. This implies that even after facing hardships at the personal and family level, female teachers try to put in equal efforts with limited resources and freedom they have. Along with this, the absence of contractual teachers in public schools might lead to non-significant gender differences in the professionalism of male and female teachers in public schools.

Experience did not emerge as a significant predictor for the overall data but with respect to the private schools, experience of teachers did emerge as a significant predictor. As compared to newly recruited teachers or teachers having less than ten years of experience, teachers having 11-20 years of experience score significantly less, but the professionalism scores again see a rise as the teachers gain more experience. Available literature reports a mix of results where some studies show positive effects of experience and others show negative effects of experience or rather no significant effect on the

professional practice of teachers (Hanushek, 1971; 1986 & 1992). Classic studies connecting teachers' experience to their professional practice have found similar results to the current study. Initial couple of years of teaching experience have been found to have a huge impact on teacher quality but the positive effects witness a dip in any number of additional years after the initial couple of years (Hanushek, Kain & Rivkin, 1998).

The distinction in the views regarding the importance of experience was revealed in the interviews conducted from public-private schools. Private schools seemed to rely hugely on the experience of teachers due to the presence of a lot of professionally untrained teachers, on the other hand, teachers in public schools seemed to acknowledge the capabilities of newly recruited teachers. One of the senior science teachers in a public school of Jhunjhunu stated that – *“Some teachers teaching the secondary grades have joined in the recent year without any prior experience. Yet they are quite popular among the students as they prepare deeply for lectures and display mastery in their specialisation subject in the classroom”*.

Such attitudes towards the newly recruited teachers diminish the impact of years of experience. It can also be pointed out that teachers having experience between 11-20 years of experience show a dip in their professionalism scores. The same can be seen when the effects of age are checked in private schools. Teachers aged between 36-45 years of experience display a negative effect on professionalism. Also, the annual income of teachers having experience of 0-10 years and 11-20 years is not much different which also has a huge negative impact on the professionalism aspect of teachers belonging to the 11-20 years of experience. As they proceed in their age and experience, ultimately, their annual income witnesses a rise which consequently leads to an increase in their

professionalism scores. Such is also reflected in overall results where higher annual income emerges as an important predictor. Age, experience, annual income, academic and professional qualification are highly interlinked in private schools due to the presence of a significantly large number of contractual or untrained teachers. Fuller et. al, (2016) stated that teachers entering into the teaching profession at the same time share some common characteristics which are unrelated to experience but can be mistakenly attributed to experience rather than attributing to the common traits that are consistent in the cohort of teachers.

Teachers possessing master's degree display negative effects on the professionalism of teachers in both public and private schools when compared to graduate teachers. Teachers who have completed Ph.D. were found to score significantly more than teachers with lower academic qualifications in the private schools. Such effects of Ph.D. could not be checked for public school teachers as none of the teachers in the sample possessed a Ph.D. degree. The findings evince the less effectiveness of master's degree and the effectiveness of Ph.D. degree might imply towards the usefulness of research background in the teaching profession.

Similar results were reported in overall data where the importance of research-based teaching and learning has been reinstating for teachers' development in their professional roles. Higher teacher training was not found to be effective in public schools. The negative effects of a master's degree can also be explained with the help of the interview excerpt from a senior teacher in public school – *“when I enrolled in masters' degree I expected that I would get a deeper insight into the concepts taught to me in graduation....but in reality, no such extensions exist. Both the degrees are absolutely*

identical. The curriculum does not support extensive knowledge inculcation in students regarding concepts like classroom management or pedagogy.” The quote provides a straight insight into the perception of teachers regarding higher training and education. Such perceptions can prove to be a major barrier in affecting teachers’ willingness to opt for higher education or professional qualifications. A public-school teacher explained why higher qualifications are not effective in the public schools by saying – “... *the entry to the professional degree of teaching is the easiest in India ... we can enter through an intermediate degree at the least along with an easy entrance exam... another option is to opt for the degree after the completion of graduation degree in any other subject although this is an unequal and confusing criterion, it provides the comfort of doing the professional degree anytime, which reduces the gravity of the course....*”. This statement reflects the undermining of professional qualifications by the professional community itself due to the perceived ease in entering into the profession, especially at the primary school teaching level.

Effect of higher annual income was found to observe different patterns in private and public schools of Jhunjhunu. In private schools, annual income had significant positive effects on the professionalism of teachers. Teachers having an annual income between 3-6 Lakhs were found to score the maximum on the professionalism followed by teachers with an annual income of more than 6 lakhs and lastly, teachers having an annual income below 3 Lakhs. The results might imply that as long as there exists a scope for increment in their roles as teachers their professionalism increases but when the teachers reach the bar 6 lakhs and above since their reach towards the end of their teaching careers their professionalism scores drop. A similar phenomenon happens for the job description as

both the criteria are dependent largely on years of experience and qualifications in private schools along with many subjective criteria which differ from school to school in private schools. These criteria remain less effective in public schools as promotions and increments happen strictly based on pre-listed eligibilities and requirements of the state government. Their performance and any extra efforts towards enhancing students' performance remain unacknowledged. As put forth by a private secondary school teacher – *“I started working as a teacher in a school with a starting salary of just 1,00,000at that time I did not like teaching.... higher salary is the most important benefit of being a secondary teacher in school, but the benefit only works if the cost of living is lower than the earning it is only after I started earning above 5 lakhs, I felt responsible towards my students and the school....”*. Many researchers have suggested performance-based pay schedules for teachers, like other professions, to enhance the performance of teachers and eventually the students in the school. Due to such differences, there were different opinions of teachers on whether performance-based pay should be used to reward and pay teachers and also become a basis for promotion.

The interviews showed that private school teachers were not much resistant to the phenomenon of a performance-based pay system as opposed to the thoughts of teachers working in the public sector who stated that they were highly satisfied with the current system of payment and promotions. In the Indian, context large-scale research on the primary public schools of Andhra Pradesh found that implementation of a performance pay program for teachers increases the mathematics and reading performance of students significantly. Such results were observed after the end of two years of implementation of the program. Such programs should be designed based on incentive theory to reward

teachers at every point of increase in the students' achievement and to minimize the risk of adverse effects on the learning outcomes of students (Muralidharan & Sundararaman, 2011a). The acceptance of the teacher performance pay program was also assessed in the same schools in Andhra Pradesh. The study found that 80% teachers supported such intervention but the support decreases with age, experience, training, and base pay. Exposure of teachers to actual performance pay programs increases their acceptability. The study also found that teachers are aware of their effectiveness and participation in a performance pay program makes teachers feel more supported and attracts better teachers into the profession (Muralidharan & Sundararaman, 2011b).

According to a senior secondary school teacher - *“As a teacher, I believe training, working with community and parents for the development of students, participation in decision making for the betterment of students, etc. are an important part of our professional practice... ..but more than that I believe that the time we spend with students inside the classroom is the most important part of our job.....off course being able to spend more time with students for teaching-learning will help them score more but it is equally important for us to develop in our teaching roles.....According to me, managing teachers' time such that we spend maximum time with students is the best way for the betterment of both students and teachers....”*. The statement coerces the importance of student-teacher interaction in school and its effects on not only the performance of students but also the teacher's professional practice.

Teachers in public schools continuously pointed out the fact that they are satisfied with the pay they receive, the school schedule, school budgets they receive; the lack of infrastructure and facilities are barriers that can still be handled and adjusted to enhance

the performance of students. But the only problem according to public school teachers that possibly hold back the performance of public-school students is the fact that as compared to the teachers in private school, public school teachers spend less time with the students inside the classroom on activities pertaining to teaching and learning. The additional roles and responsibilities endowed by the government on teachers such as arranging for mid-day meals and performing duties outside school from time to time not only divides the precious school hours that should be spent with students, such expectations from public school teachers negatively affects the perception of teachers regarding the importance of their own jobs and the value they possess in the nation-building process.