CHAPTER-1

INTRODUCTION

Quality education in school is an amalgamation of diverse, but cohesively interwoven facets of educational ecology. Teacher professionalism, teacher qualifications, school infrastructure, school administration are a few of the essential attributes amongst many. To examine the underlying patterns emanating from field acquisition, the present study attempts to explore the significant factors relating to students and teachers that affect the entire education system, specifically secondary school education. The research attempts to unearth the fundamental dimensions of teachers' professional practice contributing towards professionalism through field reality. Moreover, it also attempts to assess the determinants influencing students' academic performance. The chapter discusses the prominent contemporary concerns in the educational scenario and focuses on the challenges faced at the secondary education level. The chapter delves into existing studies and policy interventions in order to establish the linkages between cognitive abilities affecting learning at the secondary school level. Policy discourses concerning teacher education, the status of the teaching profession, and the growing importance of learning outcomes as a reflection of students' cognitive abilities have also been expounded in the current chapter. The chapter introduces the major variables of the study and states the rationale, the problem statement, the research questions, and the objectives.

1.1 Education in the Contemporary World

Current reforms in education cannot be deliberated in seclusion, it needs to be related to diverse sociopolitical ecology in the era of globalization. Globalization, privatization, and technological advancement have placed education at the center

stage in lieu of its importance for socio-economic development towards survival in the competitive world. Quality enhancement is a major challenge affecting the current discourses in the education sector which cannot be dealt without examining the domain of learning. Learning does not take place in a vacuum as it is highly influenced by the social-cultural aspects in the educational milieu and therefore, education is considered to be one of the central factors that contribute to the sustainable developmental process. Sustainable development cannot be achieved without continuous and substantial investment in human capital. Education leads to increased creativity and productivity that endorses required advancement across domains. Thus, education plays an important role in assuring socio-economic progress for better income distribution. An effective and creative educational system has far-reaching benefits that can aid in dealing with unemployment, social exclusion, and poor standards of living. Hence, enhancing the quality of education continuously remains an important concern in the contemporary world.

The Eleventh Five Year Plan emphasized the need for qualitative and quantitative expansion of education and skill formation for increment in the growth rates of the country. Right to Education (RTE) which ensures inclusion of all eligible school-going children within the folds of formal education was an important step towards enhancing the educational realm quantitatively. However, recent evidence suggests that dropout rates and retention rates remain the key contemporary concern at the school level.

Universalization of elementary education ensures free and compulsory education at the elementary school level. The continuous increase in the enrolment levels at this phase of education throughout the world has led to a shift of focus towards higher access and quality in schooling. Several international organizations, and the

developing, as well as the developed nations, have recognized access and quality to be simultaneous elements rather than sequential. Improving the quality of education can also prove to be instrumental in improving access to education. The *Dakar Framework of Action* (2000) and the *Global Monitoring Report* (UNESCO, 2005) have highlighted the importance of raising the quality of teaching-learning in schools. The report links quality school education to higher lifetime income. It is stated that higher quality of education leads to the inculcation of better cognitive skills which directly influences their academic performance at the micro-level and elevated earnings, higher productivity, and economic growth at the macro level. Hanushek (2002) affirms that economic growth depends on educational quality by highlighting that linking the number of educated individuals with the economic development rates of a country is a crude measurement as there are factors beyond schooling that affect a nation's economy. It further states that the importance of achievement of students has been accentuated by the researchers and emphasises individual productivity and earnings and correlates it with higher economic gains at the country level.

European Union's report (2000) entitled *Quality of School Education* prioritized quality of education as the most significant concern for all the member countries. The report states that - 'High levels of knowledge; competencies and skills are considered to be the very basic condition for active citizenship, employment and social cohesion' (European Commission, 2000). School education plays an instrumental role in the inculcation of not only cognitive skills but also non-cognitive skills reliability, honesty, and determination. *The Global Education Monitoring Report* (2005) proclaimed that the attainment of the goal of universalization of education is highly dependent on the quality domain which is unavoidable to research if the ultimate goal is to reach maximum access along with equity issues.

Across nations, school effectiveness or quality of education has been assessed by the means of measuring the cognitive outcomes of students which implies the academic achievement of students which could be examined through standardized tests (Reddy, 2007). Cognitive and non-cognitive skills play a vital role in the development process of an individual and the attainment of these skills at the right age is a crucial concern of quality dimension as witnessed massively in the text.

In the Indian context, there prevails an increasing concern relating to the quality of education being provided by the country's educational system (NUEPA, 2014). According to the Education for All report (2014), one of the most prominent challenges faced by the Indian education system is the quality of education across various levels leading to poor levels of learning among students. The report states that children lack school readiness competencies of the cognitive and language domains which reveal the poor quality of teaching-learning, deficiencies in the curriculum, and lack of quality teachers. There exists unequal access to quality of education in schools where students from diverse backgrounds have easy access to better schools as opposed to students coming from a poor rural background. It is important to understand that every student needs to have an equal opportunity of quality learning as quality education is a right of every student.

1.2 Secondary Education

Enhancement in the quality of education is an alarming concern in the contemporary world. Both eleventh and twelfth five-year plans emphasized extending equal opportunity, greater accessibility, and higher quality education to students from all sections of society. To ensure the quality and learning competencies of students, the Government of India intervened by integrating Sarva Shiksha Abhiyan, Rashtriya Madhyamik Shiksha Abhiyan, and Teacher Education under the umbrella of Samagra

Shiksha Abhiyan for universal access, equity, and quality, thereby strengthening the school education system. In the same direction, *Rashtriya Madhyamik Shiksha Abhiyan (RMSA)* was launched in the year 2009 with the objective of making quality secondary school education available, affordable, and accessible to all individuals between 14-15 years of age group. The program focused on increasing enrolments in Grade IX-X by setting up a large number of secondary schools to enable universal access by 2017 and universal retention by 2020; enhancing the quality of education by prescribing norms for these schools and removing barriers pertaining to gender, socio-economic status, and disability. The reforms made in the secondary education regime under this programme managed to increase the GER from 67% in 2009-10 to 80% in the year 2015-16 (RMSA, GoI, 2017-18). Transition rates from elementary to secondary education witnessed improvement, but the transition from secondary to higher secondary remains as low as 67.7% in 2013-14 which is also revealed by low pass percentage at the secondary school level. The enrolment of girls in secondary grades was 47.51% in the year 2016-17. Although the dropout rates and the percentage of out-of-school children have reduced significantly, the reduction has not happened evenly across social groups. Unsatisfactory learning levels among students continue to be a cause of unease (NAS, 2015; ASER, 2018). Secondary school education experienced a range of reforms to achieve some important milestones over the years since the inception of RMSA but still there remain few concerns that are yet to be addressed.

Recent trends have witnessed a drop in the enrolment of students at all levels of education. Enrolments at secondary and higher secondary levels were observed to increase from the year 2013 – 2016, but the enrolment statistics from the year 2016-2017 have reported a decline as can be observed in Table 1.

Table 1: Percentage Change in Enrolment over 2013-14, School Education. Source: U-DISE (2016-17)

Year	Primary	Upper Primary	Elementary	Secondary	Hr. Secondary	Total
2013-14	-1.75	2.38	-1.59	7.67	12.00	0.74
2014-15	-1.46	1.04	-0.41	2.69	5.32	0.54
2015-16	-1.06	0.64	0.50	2.20	5.25	1.19
2016-17	-4.12	-2.24	-3.47	-0.82	-1.37	-2.87

Global Education Meeting, 2018 (UNESCO), in its report titled, '*Education in an Interconnected World: Ensuring Inclusive and Equitable Development'* stated that the recent years have seen a stagnation in the progress of enrolment in the secondary schools throughout the globe and also a large proportion is not able to acquire foundational skills. The situation is a concern as the Indian subcontinent witnesses less than 50% of students acquiring basic skills. The University Education Commission (1948-49) remarked that "our secondary education remains the weakest link in our educational machinery and needs urgent reforms". The report presented by the Secondary Education commission in 1953, suggested reforms in almost all aspects of secondary education after which secondary school was split into three grades, with two intermediate years in school and one year in university. Ultimately the secondary school structure was brought to its present shape, with secondary education until grade 10 and subject specialization in the 11^{th} and 12^{th} grade after the recommendation of the Kothari Commission (1964-66).

According to Census 2011, one in every ten individuals in India is aged between 14 to 18 years. A large number of students are now heading towards secondary education (Pandey, 2018). Annual Status of Education Report (2018), in its 'Beyond Basics'

survey, assessed the foundational skills of 8th-grade students and observed that although the enrolment in elementary schools doubled, the students at the end of the elementary education lacked foundational skills that were integrally important before transiting to secondary grades. Countries around the world have struggled to find a way to address the diversifying and changing learning needs of students. This struggle can be quite evidently witnessed in the Indian education system also.

Owing to many national-level surveys undertaken by the government and some private agencies, Indian educationists have been able to trace the grade-specific learning trends of students across various socio-economic backgrounds. These surveys have continuously pointed out the lack of foundational skills of the students at the end of elementary education. Elementary school does not guarantee reading and arithmetic skills leading to many challenges (ASER, 2019). The large-scale reforms undertaken since the last ten years in the country, to improve the education system by improving the infrastructure, pedagogy, and curriculum has succeeded in placing a majority of students in schools but has failed to contribute to the improvement of students' learning achievement (ASER, 2011; NAS, 2017).

Learning becomes more important when a student transits from primary to secondary grades (Adeyemo & Adetona, 2005). The positive effects of the expansion of secondary education have proven to give good returns in East Asian countries (World Bank,1993; Tilak, 2001). Secondary education serves as the strongest connecting link between elementary and higher education which largely contributes to the human capital base of the nation as acknowledged by the 11th and the 12th Five Year Plans. Literature suggests that secondary education, out of all the levels of education has the largest impact on the reduction of income inequalities and better socio-economic

opportunities (Bourguignon & Morrison, 1990) and health perspectives (Birdsall, Ross & Sabot, 1995).

The importance of secondary education and inculcation of skills among students at this phase has been regarded as crucial by educators in order to prepare the knowledge base of students at the correct time (Mahmoedi & Moshayedi, 2012). The success, as well as the limitations of the Sarva Shiksha Abhiyan (SSA), poses plenty of challenges to the secondary schools. The responsibility of retention of the students enrolled under SSA rests in the hands of secondary school so that the same number of students can transit towards completing their school education. Thus, it can be stated that secondary school acts as a mediating stage of education between elementary and higher education. Outcomes and competencies developed at the end of this stage become all the more important. Effective forms of teaching are needed to develop 21st-century student competencies, such as deep mastery of challenging content, critical thinking, complex problem solving, effective communication, collaboration, and self-direction.

1.3 Cognitive Development and Student Achievement

Secondary school initializes the process of preparing the students not only to contribute to the nation but also to the global economy (Lewin & Caillods, 2001). Students entering the secondary grades are at a phase where they are entering adolescence. Adolescence marks a heightened period of vulnerability due to the prevalence of gaps between emotions, cognition, and behavior. In this stage, the brain, behavior, and emotions have different rates of developmental paths. The child needs to adjust to all the biological, affective, and cognitive changes taking place at the same time. Such changes from the crux for the shaping of some crucial behaviors like

judgment, decision making, and sensation seeking (Keating et al., 2004). The attempts of adjustment made to understand and regulate oneself during this period are the reason behind the development of atypical personalities and indulgence in behaviors like delinquency, abuse, and depression (Steinberg et al., 2006).

Adolescent cognitive development has focused on deciphering a single-core mechanism that can be accounted for the changes in thought processes and thinking as evident in the literature. However, irrespective of the underlying mechanisms, students show substantial improvement in deductive reasoning, information processing, and expertise (Keating, 2004). As a result of these gains, students at this phase become more capable of abstract, multifaceted, planned, and hypothetical thinking (Eisenberg & Morris, 2004).

Data related to human behavior has portrayed a lack of decision-making abilities in young adolescents. As a result of such portrayal, adolescence was understood to be devoid of cognitive skills related to decision-making (Botvin, 2000; Tobler, 1986). In contrast to these assertions, some studies declare that the risk-taking and decision-making behavior among adolescents involves a proper understanding of the risk involved and not just acts out of impulsivity and rage (Garber et al., 2002; Benthin et al., 1995; Slovik, 2000). Adolescents possess the ability not only to calculate and weigh jeopardies and costs of behavior but their actions are also largely influenced by their feelings and social influences. The emotional upheaval experienced at the onset of adolescence with the decision-making process bears a huge impact on students' personality building. The experiences of personal as well as academic life of students have a long-lasting impact on students (Borman et al., 2019).

Students entering the secondary grades are at the phase of attaining adolescence which is marked with rapid, physical, mental, and emotional growth. Lower secondary education is also referred to as 'basic education' which is universally considered to be the minimum educational requirement. Many countries around the world have mandated lower secondary education along with elementary education. An ideal secondary education system amalgamates "knowledge" with "practical skills" and "social skills" to increase the effectiveness of young graduates (UNESCO, 2005).

Research on cognitive development has primarily emphasized processing speed, the capacity of working memory, and fluid reasoning which are interrelated abilities and start to develop from childhood through adulthood. This development is responsible for predicting differences in performances on numerous measures (Cowen et al., 2005). The interconnectedness of these skills is evident in many studies, which noted that gains in processing speed led to gains in working memory capacity, which in turn, support gains in fluid reasoning (Coyle et al., 2011; Fry & Hale, 1996; Kail, 2007). These mental abilities underpin academic achievement and cognitive skills. Performance on these abilities predicts performance on a range of tasks like comprehension (Daneman & Carpenter, 1980), vocabulary, problem-solving (Engle, Kane, & Tuholski, 1999). These abilities are associated with academic performance. The executive function of students in preschool has been found to predict their academic achievement in mathematics and literacy in kindergarten. Working memory was also found to be correlated with mathematics scores and reading abilities of six-year-old students (Alloway & Alloway, 2010). Strong evidence suggesting cognitive skills' influence on students' academic performance exists (St. Clair-Thompson & Gathercole, 2006; Gathercole et al., 2004).

Cognitive abilities are rarely taught directly to students in schools but schooling does promote cognitive abilities. Students, who attended school regularly for a year, perform significantly better on working memory tests and executive function than students who do not attend school regularly (Burrege et al., 2008). The positive relationship between school attainment and IQ reveals the positive effect of time spent in school on intelligence (Ceci, 1991; Ceci & Williams, 1997). These studies suggest that attending school can improve the cognitive abilities of students better than teaching these skills to them directly. Students in school are traditionally taught knowledge and skills through subjects such as mathematics, science, and language. Such knowledge is termed crystallized intelligence by Cattell (1967). On the contrary, fluid intelligence refers to the ability to solve new problems in the real world independently by building upon the existing knowledge and skills. Studies suggest that schools which work towards improving the academic achievement of students may also improve domain-independent cognitive skills. What is unknown and crucial for reporting is that whether the current traditional educational practices in the country are contributing to the development of the cognitive skills of students or not.

Cognitive abilities play a crucial role in shaping economic and social outcomes. Cognitive abilities, at a macro level, are strongly linked with a country's economic growth (Hanushek & Woessmann, 2008). In addition, at the micro-level, higher cognitive skills are associated with better health and old age functioning, and higher wages (Heckman et al., 2006; Heineck & Anger, 2010). Cognitive abilities share a bipolar relationship with education. Possession of higher cognitive abilities enables an individual to pursue higher and better education, at the same time, education itself increases cognitive abilities. Evidence from research suggests a widening gap amidst schooling and learning. A vast pool of studies recognizes learning to be a part of a

larger set of educational outcomes. UNESCO promotes holistic learning as a part of Sustainable Development Goal 4.7 based on three pillars: cognitive, socio-emotional, and behavioral. Countries around the world have shifted their education goals to education for global citizenship and sustainable development. This shift emphasizes the need for the inculcation of abilities like problem-solving, critical thinking, communication, and collaboration. The major challenge in the implementation of this shift is the exploration of crucial skills in a manner that goes beyond identification and definition. Studies capturing how these skills progress from early childhood to adolescence and then to adulthood are rare.

Due to the prevalence of the gap in understanding the constructs of learning outcomes, the designing of appropriate assessment frameworks is nearly impossible. There is a strong emphasis on focusing on learning outcomes to foster competencies which the students would need in their work life, such as attitudes and abilities; deep learning; skills to learn, relearn and unlearn; higher-order and critical thinking; problem-solving, to name a few. The contemporary scenario suggests that the recruiters are actively seeking professionals with out-of-the-box thinking and innovation skills; abilities to collaborate across cultures and abilities to express and communicate (Pardo-Garcia & Barac, 2020).

The immediate concern in the current education system is to introduce reforms keeping in mind the revision of curricula, pedagogies, educational technologies, and classroom practices to inculcate higher-order thinking skills and abilities. Recent developments in research on education and economic growth declare a strong relationship between cognitive skills and individual earnings, income distribution, and economic growth (Hanushek & Woessmann, 2008). Therefore, it is important to

understand the factors that affect the learning outcomes of students directly for effective policy-making.

1.4 Teacher Training in India – The Policy Context

In India, minimum qualifications and training regulations have been laid by the government by the means of NCTE in pursuance of the National Council for Teacher Education Act, 1993. The objective behind the inception of NCTE was to plan and continuously develop the teacher education system throughout the country by maintaining rules and standards of entry into the teaching profession. In the Gazette Notification dated 12 November 2014, NCTE has put forth the minimum qualification eligibilities for government and aided schools of India, as depicted in Table 2.

Table 2: Minimum eligibility for entry into the teaching profession in India (NCTE, 2014)

Education Level	**Minimum Academic and Professional Qualifications**
1. Primary and Upper Primary (For Classes I-VIII)	Class XII or its equivalent with a minimum of 55% marks from a recognized board.
2. Secondary High School (For class IX-X)	Graduation/Post Graduation from a recognized University with a minimum of 50% marks and a Bachelor in Education from NCTE recognized institution.
3. Senior Secondary/ Intermediate (For class XI-XII)	Post Graduate with at least 50% marks from recognized university and Bachelor of Education from NCTE recognized institute.

The Kothari Commission (1964-1966) also known as the Education Commission has defined the teaching profession as – *''a teacher who, unlike an ordinary worker, acts as a master, craftsman, an artist, a strategist, and a powerful motivator. The environs of a classroom are enlivened by the inspiring, dynamic, enthusiastic, encouraging,*

skillful, and dedicated teacher. It is he who shapes the destiny of students and that of the future citizens who eventually shape the destiny of the country. Such teachers only can successfully in-culture among students' values that strengthen the ideals of social justice, equity, secularism, and pluralism."

The commission emphasized giving teacher education the mainstream but institutes that offer teacher education exist as "insular" organizations. It recommended that the teaching training department should be located inside the premises of larger universities rather than establishing themselves as isolated organizations so that the department of teacher training could attract better students. The commission stated that the higher education institutes are yet to broaden their perspectives and function towards producing a better teaching workforce. There was a strong recommendation of organizing in-service training for teachers for two to three months after every five years. The training should be based on research inputs and the training institutes should work round the year and organize refresher courses, seminars, and workshops. It also stresses the need to recognize that the success of any educational endeavor in the country would depend on the qualities, character, qualifications, and professional competence of teachers. The remuneration and working conditions should be appropriate considering the gravity of the role they play towards nation-building. The commission also stresses the need to protect the autonomy of the teachers to pursue research and independent studies and be vocal about significant national and international issues. The commission highlights the need to focus on the in-service teacher education regime. It recommended that the salaries of teachers employed under the same category across different managements such as the government, private organizations, local levels should be equal. The commission states that the

recruitment methods at the local and the private school level need to be improved and tightened.

The Education Commission emphasizes improving collegiality and bringing together teachers trained for different levels of education to work with the state and teachers' organizations. The commission states that there is a dearth of active interest in the improvement of teacher preparation regime at the secondary school level. It recommends reorganization of subject-knowledge; professional studies; teaching-learning methods and improvement in the curriculum of teacher training modules. Based on the recommendations of the Education Commission, National Policy of Education, 1968 suggested reforms at the teacher training and secondary school level. At the secondary school level, the policy suggested the introduction of technical and vocational education in line with the contemporary economic and employment requirements. The policy acknowledges the recommendations of the Education Commission with respect to the improvement of teacher status by means of enhancing compensation, autonomy, and qualification requirements.

The Report of The National Commission of Teachers (1983) determined teachers to be the agent of change as the teachers not only are responsible for implementing programmes but also responsible for ensuring just implement education programs but also interacts with students to ensure achievement of wide-ranging educational objectives. The report states that it is important to reform teaching practices to promote a deeper understanding of concepts rather than superficial learning.

The report emphasizes the need to focus on the cognitive and non-cognitive learning aspects of students, and accordingly reform teaching regimes to equip themselves with novel tools and ideas. It also addresses the need to elevate the status of teaching as a profession by improving the perception of the practitioners as well as the among

the parents, students, and the people at large. The report determined that the degradation of the status of the teaching profession in India was majorly due to the salary and working conditions. Some of the other reasons were lack of governmental recognition, lack of commitment, integrity, and pride. The report insisted on granting the teaching profession *"a recognition of meritorious service"*; incentivize professional development and increment in remunerations and perks to enhance the status. The report also recommended that teacher education and training for the secondary teacher should be of five years following class 12^{th}. Apart from this, it was suggested that science and art colleges have a Department of Education so that a good number of students can opt for the teaching profession. The commission also suggested the idea of Teachers' Centers which could serve as a platform for teachers to meet regularly and share their talent and experiences. It also suggested that teachers should be granted study leaves for higher learning.

The National Curriculum Framework by NCERT (2005), puts forth the concern that with the recruitment of a large number of para-teachers the identity of teaching as a profession in India has diluted. More emphasis, in the 1990s on the in-service training of teachers, has widened the gap between pre-service and in-service teacher training.

The document states that the pre-service training programs need to be lengthy and comprehensive integrating theory and practice of teaching. The report emphasizes the importance of moving from "concrete to abstract" and from "local to world" in the context of both school education and teacher training. It states that teacher education should be ongoing, onsite, and preparatory. The report addresses the gap between pre-service and in-service teacher training due to the major focus on in-service teacher training during the 1990s. It pointed out that teachers who work with students under the age of 16 years have little or no access to higher learning, thus depriving

themselves of further professional learning and the training programs fail to establish the link between the school and society. The lack of critical evaluation of curriculum and syllabi by the teacher educators is responsible for the slow habituation of no question approach and knowledge to be accepted as it is.

Policymakers and the administrative stakeholders need to shift their focus on the status of teachers in India and ruminate on questions such as – do the teachers in India, possess the characteristics that segregate them as professionals in their field? Are we training teachers in a way that can help the education system achieve the desired learning outcomes of students? If not, what needs to be improved to reach the mark in the coming years? The reactions to such crucial questions and the course of actions to mitigate the prevalent learning crisis in the country at present have also been hinted in the policies and reports of the various committees and commissions appointed regularly to review several aspects of the education system.

The Committee for Evolution of the New Education Policy, in the National Policy on Education 2016, has pointed out the absence of a "credible or reliable system of measurement" of teacher performance; and that the in-service and pre-service teacher preparation training courses in India are "routine, unstructured and generally irrelevant to enhancing teacher quality". Overall, the policy argues that these drawbacks are accountable for the substandard performance by the teaching community who are the key agents of change in the education system. This report also recommended that learning standards can be improved by investing in making the teacher more qualified and professional which would prepare a result-oriented and accountable teaching workforce. There is an urgent need to formulate strategies and set benchmarks for progress as it is high time this area has remained out of the realms of serious consideration.

Attempts have been made worldwide to study the concept of teacher professionalism and there had been persistent efforts towards developing a framework that suits their educational needs. This study attempts to chalk out the interplaying dynamics of the attributes of a professional teacher and student achievement in Secondary Schools of Rajasthan, which is the largest and one of the most populated states of India. Most importantly a systematic approach is applied in order to understand the dynamics of variables used in the study. Professionalizing teaching can be a potential factor in filling the gaps in teaching practice in India, thus having a positive effect on teachers' performance and further improving student achievement.

1.5 New Education Policy, 2020

The National Education Policy, 2020, emphasizes the need to focus on the improvement of the secondary school education scenario in the country. The policy states that the GER drops from 90.9% at the end of grade eight to 79.3% in secondary grades (NSSO, 2017-18). The policy resolves to ensure a 100% GER throughout school education by the year 2030. It also focuses on students not being able to attend school physically by expanding the State Open Schools.

The policy revises the structure and curriculum of the secondary grades, by dividing them into two phases, i.e., 9-10 grades and 11-12 grades. It suggests the curriculum to be more flexible and multidisciplinary by emphasizing the subject-oriented curricular style of the middle stage of education along with in-depth learning that ensures inculcation of abilities like critical thinking. The students would have the freedom to exit the school at the end of grade 10 and then rejoin in grade 11 in any kind of specialized school as desired by them. The students would be able to choose subjects and design their educational paths. The policy supports fluidity in the curriculum with no strict stream-related differences. There is a focus on the three-language learning

formula to popularize multiple languages learning from a very young age in such a way that the students acquire basic proficiency in them by the end of their secondary grades, including one foreign language.

The policy acknowledges the need to control the mushroom growth of coaching culture which harms the students of secondary grades the most by forcing the valuable time of students on excessive preparation of competitive examinations. This results in limiting the learning of students to the content that is nearly relevant for examination purposes debarring them the choice of subjects. A redistribution of high stakes in the secondary and higher secondary grades so that the students do not fall into the trap of cram schooling has been proposed as a serious intervention.

The policy not only suggests intervention at the school and student level but also discusses the corresponding need for refining and restructuring teacher education. It has attempted to bring about a change in the status of the teaching profession in the Indian scenario to attract the best students to become teachers and also shutting down stand-alone substandard teacher training institutes in the country. The policy suggests strengthening of Teacher Eligibility Tests (TETs) with the inclusion of subject-specific tests, interview/ demonstration, and test of local language knowledge in the recruitment process. Huge reforms in the teacher training modules and duration have been suggested in the policy. Training teachers in contemporary pedagogical techniques focusing on the improvement of foundational literacy and numeracy, ICT usage, and learner-centered collaborative learning, with a focus on inside-school practical training, initiation of certification courses under DIETs (District Institute of Education and Training) and BITEs (Block Institute of Teacher Education) for training in special education, leadership, and management has been recommended. The policy also suggests the formulation of the National Curriculum Framework for

Teacher Education (NCFTE) by 2021 that would establish the new guidelines of teacher training and curriculum in accordance with changes in the curriculum and interventions established by the New Education Policy, 2020.

The policy instates the importance of socio-economic and demographic attributes of teachers, their professional practice and training, and its linkages to the performance and learning of students in the schools. The policy has highlighted the replacement of rote learning by cognitive skill-based learning and the elimination of unnecessary pressure by the coaching institutes at the secondary school level. The interventions enumerated at the students and the teacher level, tend to grant more autonomy to the teachers and students where they can design their own teaching-learning experiences based on their circumstances and interests.

The depth and extent of reforms suggested by the NEP, 2020 is however considered a matter of concern as their implementation can take more than a decade (the reforms targeted to be implemented by 2030) especially in the rural side of the country where these reforms might be difficult to reach. Proper implementation of such changes still requires an in-depth understanding of the attributes of teachers, the profession, and the students and their respective relationship with teachers' professional practice and students' performance and learning.

1.6 Teacher Professionalism

Teacher professionalism is the process through which a teacher acquires essential attributes in order to attain the status of a 'professional' based on distinct characteristics. According to the trait theory, professions differ from occupations concerning the traits professions possess; all occupations need to gain certain traits to be become professionalized (Ginsburg, 1997). This approach emphasizes "Professionalization" as a universal process of struggle for occupations to become a

profession. The characteristics that differentiate a profession from other occupations are high-level knowledge obtained through a long education period in a professional organization (Hughes, 1963). This attainment cannot be possible without the realization of duties and responsibilities a teacher is invested with. For teachers, the only consequence of professionalizing themselves that should motivate them is enhancing the learning performance of students (Vogt & Staub, 2020; Tambunan, Hameid & Sundayana, 2018).

The amount of effort teachers put in to enhance students' learning by polishing their abilities identifies the extent of improvement in students' learning, which in turn makes them more professional. 'Occupation' refers to the work done to make a living, while a 'profession' refers to the work of an individual that needs them to complete a particular training that has some minimum entry eligibilities (Airaksinen, 2009). With the help of this training, the individual acquires certain job-specific skills and is guided by certain ethics and code of conduct. These codes are developed by some entrusted professional organization, keeping in mind the 'public good' (Millerson, 1964). The specialized training and education received by an individual form the basis of their professional knowledge.

Professional knowledge is the knowledge used by an individual to facilitate the process of teaching-learning. This knowledge is acknowledged through academic and professional qualifications and membership in a professional community. It is the professional knowledge of a teacher, which differentiates the teaching profession from the other professions. Also, it concerns the content or subject knowledge and pedagogical knowledge which include teaching strategies and classroom management skills acquired through participation in training programs (Darling-Hammond, 2000). Therefore, knowledge of teachers depends upon the formal education the teacher has

taken, the more the teacher preparation the more the teachers' confidence and success with the students.

Teacher development and learning do not end at the pre-service stage rather continuously engaging in professional development opportunities during practice is another important aspect of the process. The timely and quality professional development of teachers helps them to participate in the school to the fullest (Mukeredzi, 2013). Teaching continues to be considered as a 'quasi- profession' or 'semi-profession' as it does not meet the professional criteria entirely (Guerriero & Deligiannidi, 2017; Etzioni, 1969). The developed nations quickly reacted to this need and initiated attempts towards raising the standards of teaching occupation and lifting it towards making it a profession in the 20th century itself. These countries have managed to evolve into high-performing education systems. According to Ingersoll and Merrill (2011), to some, the best way to professionalize a particular occupation, especially teaching, is by providing the practitioner advanced and specialized training, skill, and knowledge development.

For some others, profession relates to the attitude of an individual towards their work. Therefore, in order to professionalize teaching, inculcation of a sense of public service among the teachers is important. For a few researchers, professionalizing teaching would imply an improvement in working conditions and environment.

Due to a varied range of opinions about the concept of teacher professionalism, the meaning of professionalism remains unclear. However, few studies have also claimed that it is not necessary that people following established professions like medicine and law have a high sense of professionalism, but rather suggest that people who follow the semi-professional occupations like teachers, nurses, etc. have a stronger sense of professionalism (Ingersoll, 2003b; Kohn & Schooler, 1983; Rosenberg, 1981).

Teachers' professionalism is an important part of professionalization as teaching cannot be defined as a profession only by the means of standards of technical knowledge and skill. Such an approach leads to neglect of the equally central emotional aspect attached to the teaching occupation which understands teaching as a passionate endeavor towards enhancing students' learning and lives (Hargreaves & Goodson, 1996).

Over the last 20 years, it can be observed that teaching is being 'de-professionalized' as teachers are now entitled to achieve goals set by others, manage students and curriculum technically and be accountable publicly (Locke, 2001). Telling the teachers how to teach what, fails to serve the students (Orazbayeva, Sijde & Baaken, 2021; Van-Der-Sijde, 1989). Some scope to exercise discretion is needed to benefit the most from the expertise and resources professional learning communities offer otherwise teaching would become a mechanical drill. The most vital aspect of autonomy is that it compels the teacher to perform in a dutiful and responsible manner.

Teaching is a distinct profession possessing peculiar characteristics of professionalism in a distinct manner. Professionalization as a process takes it shape in accordance with the need of the profession. Professionalism is a constantly evolving phenomenon and it has altered its meaning with the pressing demand of the time. However, the fact worth noting is that professionalization does not take place the same way as "traditional professionalism", the factors defining professionalization change with time and culture. It is important to understand this transformative process and assess how teachers should ideally go through this process so that their functioning induces a change in the learning achievement of students.

1.7 Rationale of the Study

The world economy is driven by the skills and competencies of the workforce countries possess. In the Indian education system, secondary and higher secondary education play an unparalleled role. Students for the first time in their educational life encounter in-depth subject content and learn to work with skill-sets. Secondary education forms the base of specialized learning and skill development. Personal identities of students start taking shape; the inculcation of cognitive abilities at this stage has long-term effects on the lives of the students. The present research realizes the importance of learning cognitive skills at the secondary school level where students are expected to transition from concrete to abstract thinking. The study attempts to measure the skills that are important for students to evolve into productive future citizens.

Two states from India, Himachal Pradesh, and Tamil Nadu participated in the Program for International Student Assessment (PISA) in the year 2009. The performance of adolescents on PISA tests placed both the states at the very bottom of the PISA league tables. The results implied the deplorable condition of foundational skills of students in these two states on reading, mathematics, and science achievement tests (Walker, 2011). After the 2009 cycle, India decided to quit the assessment, debarring the Indian students to participate in the international assessment. Such reluctance has formed a barrier in gaining insights into the current condition and direction of reforms required in the Indian education system. Important information on aspects related to whether the education imparted in the country is compatible with the cognitive skills that are needed to be possessed by adolescents to become global citizens in the future is missing. The study takes a step in this direction and uses model questions of PISA mathematics and science achievement tests to

assess the current learning levels and cognitive skills possessed by the students in secondary schools on a probabilistic sample of students.

A large number of studies have highlighted the reasons behind the poor learning levels of students in India and have also suggested policy reforms to deal with the problems of low learning levels. A vast number of studies have depended upon studying household factors (Das, Dercon, Habyarimana, Krishnan, Muralidharan & Sundararaman 2013; Muralidharan & Prakash 2017; Lewin & Sabates 2012); identification of motivators for students; gender; disabilities; teacher absenteeism (Kremer, Chaudhury, Muralidharan & Hammer 2005); toilet facilities and ICT integration (Tooley & Dixon 2006; Ohara 2012), etc. The major pillar of support for students i.e., the teacher and the aspects of their professional practice remain unexplored. Researchers have continuously argued in favor of investing in teacher quality as an important approach. In the 21st century society, there is a huge demand for analytical and critical thinking skills for higher education and employment in students, the teachers need to adopt novel ways of teaching that foster higher-order thinking in the students (Teo, 2019). Therefore, it cannot be refuted that a teacher's professional practice has an undisputed impact on students' outcomes.

The world of education has seen a massive diversion of focus from equity to excellence. In a world where professionalization is influencing every sphere of work, it is high time teachers in India become professionalized in their job and plan towards fulfilling the central concern of education, which is, enhancing student learning. Studies on teacher professionalism around the world have taken up the context quite differently. There exist a dilemma and a lack of consent among scholars about the concept of professionalism and the factors that contribute to it. Studies have explored the concept of teacher professionalism mostly on a theoretical level which is

predominantly qualitative. Also, student achievement and learning assessed at the end of primary education in India shows a lack of quality (ASER, 2019). Exploring the relationship between the existing pattern of teacher professionalism and student competency in India can help Indian researchers to move forward in the quest to find a reason behind the differences in the achievement of different schools and school types in the Indian context. Having explored the external forces that play a role in student achievement, this study would help in understanding the factors that are internal to the school and classroom settings that directly affect their achievement and competencies.

1.8 Research Questions

The current study aimed to answer the following research questions:

- How secondary education system has defined and placed the importance of the professionalism aspect of a teacher and what are the recommendations of the policies towards the advancement of the profession?
- How teacher professionalism is related to student achievement and what are the associated factors that contribute towards the quality teaching-learning process in secondary schools?
- How characteristics like gender, degree, age, experience, job description, annual income, and teacher training pose any difference in the professionalism of teachers at the secondary school level?
- How do demographics like gender, preschool, tuition, board pose any difference in the mathematics and science achievement of students at the secondary school level?
- How do the attributes of gender, degree, age, experience, job description, annual income, and teacher training predict teacher professionalism?

- How do attributions as gender, preschool, tuition, and board predict mathematics and science achievement of students at the secondary school level?
- How does the predictive value of teacher and student demographic characteristics differ in predicting teacher professionalism and student achievement respectively across public and private schools?

1.9 Objectives of the Study

i. 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.

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

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

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

1.10 Thesis Structure

The thesis comprises six chapters. The first chapter introduces the major variables under study and establishes their importance and rationale. The chapter in detail addresses the linkages between the academic achievement of students their cognitive abilities. It also unfolds the addressal of quality-related issues pertaining to teaching-learning at the school level by various policies along with the recommendations made by them.

The second chapter elaborates and analyses the existing literature on the various perspectives concerning the status of teaching as a profession and the standing of the teaching profession across nations in the Global Status Index (2018). The chapter in-depth discusses the concept of teacher professionalism and the way various researchers have attempted to explain the construct. Also, the measures taken by various countries to enhance teacher professionalism have been discussed. Teacher quality and the characteristics that shape a professional educator have been elaborated with the help of existing studies. The chapter also dives into the various theoretical perspectives that attempt to explain the construct of professionalism including the structural-functional theories; the power and privilege theory; the process and practice theory and the trait approach. The literature review further deals with the major components and processes that according to the existing knowledge contribute vastly to teacher professionalism. Lastly, the chapter elaborates on the literature related to the academic achievement of students and its cognitive correlates and the relationship between teacher professionalism and students' academic performance.

The third chapter elaborates the methodology adopted by the researcher to answer the objectives of the study. The method used in the study, the data source, the population

and sample for the study, the tools used for data collection, the pilot study undertaken to finalize the tools, data collection, and data analysis techniques used by the researcher have been expounded in the chapter.

The fourth chapter in detail deals with the results of the data analysis carried out by the researcher. The analysis initiates with data normalcy check for both the students' and the teachers' datasets, following which, the t-test results disclosing the significance of the difference in the mean scores of the test takers based on their demographic characteristics has been explained. The effect of these demographic characteristics on teachers' professionalism scores and students' achievement scores have also been tested using regression on the whole data. Lastly, the difference in the cause-and-effect relationship between the demographic factors and the test scores of students and teachers in public and private schools has also been done.

The fifth chapter discusses the findings of the current study with the results of already existing studies and theories. This chapter also attempts to explain the reason behind the prevalence of the results of the statistical analysis undertaken in this study along with the interview excerpts from the qualitative data collected.

Lastly, the conclusion of the study discusses the major findings and their policy implications along with an elaboration of the limitations of the study.