I. INTRODUCTION

Since time immemorial, India has made rich and commendable contributions to education. The education system in ancient India dates back to the Vedic period (1700 – 700 B.C.), which followed the Gurukul system. All learning was closely linked to nature and life and not confined to memorising some information. Teachers enjoyed high esteem and special status during this period and could choose their disciples (Chand, 2015). In the Buddhist period of education (600 B.C.), a new doctrine of religious education was practised. Monasteries were the place of education, and the overall development of students, i.e., physical, mental, and emotional development, was focused as the prime most crucial factor (Cabezón, 1995). The education system has seen many changes during the medieval period, from the 10th century A.D. to the middle of the 18th century (Maheshwari, 2012).

Though religion dominated, the period has seen many reforms such as establishing schools and universities, complete authority to the institutions, emphasis on discipline, and core subjects, namely mathematics, astronomy, grammar, polity and politics, arts and literature, vocational education, etc. Macaulay introduced the modern education system in the 20th century. Since then, the Indian education system has followed the propositions of the Macaulay system of education (Pandya, 2014).

The modern school system (including the English language) was brought to India originally by Lord Macaulay in the 1830s. The curriculum was restricted to "modern" subjects like science and mathematics. Subjects like metaphysics and philosophy were not considered necessary. Teaching was confined to classrooms, and there was no link with nature. Moreover, the close relationship between the teacher and the student was absent.

Only 150 years ago, most of the world's population was illiterate. Today, most people over fifteen have essential reading and writing skills, and 20% of the population attends higher education. It is also well-realised that the effects of the education revolution have transformed the world into a schooled society, that is, a society that is actively created and defined by education (Roser & Ortiz-Ospina, 2018).

In India, as per the 2011 Census, approximately 73% of the people were literate, with 81% of males and 65% of females. The National Statistical Commission Survey Report stated that 77.7% of the total literacy in 2017–18 was 84.7% for males and 70.3% for females (National Statistical Office, 2018). (Pathania, 2020) revealed the present increase in literacy when compared to 1981, when the individual rates were 41%, 53%, and 29%, respectively, and in 1951, at 18%, 27%, and 9%, respectively, shows India's improved education system. It is this improved educational scenario that has been often cited as one of the main contributors to its economic development (Poverty in India Declines, 2020). Progress has been credited to various public institutions, especially in higher education and scientific research. However, the All India Survey on Higher Education (AISHE) report stated that enrollment in higher education has improved steadily over the past decade, reaching a Gross Enrolment Ratio (GER) of 26.3% in 2019 (AISHE, 2019). There remains a substantial distance to catch up with tertiary education enrolment levels of developed nations (Global Education, 2015), a challenge that must be overcome to continue to reap a demographic dividend from India's comparatively young people.

Today's world is more globalised, and education has become all the more important to equip today's students with global skills. Hence, educational choices today are not merely restricted to choosing a school but also choosing an apt education pattern from the various educational boards available in our country. Every board has its own teaching methods, learning schedule, and assessment criteria that contribute to the all-round development of students.

India is divided into 28 states with state-specific elected governments and seven Union Territories ruled directly by the Government of India. As per the Indian constitution, school education was originally a state subject. The states had full authority to decide policies and implement them. The Government of India's role was limited to coordination and deciding on higher education standards. A national organisation that plays a crucial role in developing policies and programmes, the National Council for Educational Research and Training (NCERT) prepares a National Curriculum Framework. Each state has its counterpart, the State Council for Educational Research and Training (SCERT). These bodies propose educational

strategies, curricula, pedagogical schemes, and evaluation methodologies to the state's education departments. The SCERT generally follows guidelines established by the NCERT. However, the states have considerable freedom in implementing the education system (NCERT, n.d.).

Presently, four main educational boards at the National level in India are being coordinated at the national level. They are Central Board of Secondary Education (CBSE), Indian Certificate of Secondary Education (ICSE), International Baccalaureate (IB), and National Institute of Open Schooling (NIOS) (Gupta, 2021). The following section briefly explains the unique features of the various boards of education.

Central Board of Secondary Education (CBSE) was initially meant for children of central government employees who faced periodical transfers and had to move anywhere in the country. Several central schools have been established for this purpose in all the main urban areas in the country, and they follow a standard schedule so that a student going from one school to another will hardly see any difference in what is being taught. All of them follow the textbooks written and published by the NCERT. In addition to these government-run schools, several private schools in the country follow the CBSE syllabus, though they may use different textbooks and follow different teaching schedules (Sahay, 2019).

Indian Certificate of Secondary Education (ICSE), affiliated to the Council for the Indian School Certification Examinations (CISCE) central scheme, was started as a replacement for the Cambridge School Certificate. The idea was moved in a conference held in 1952 under the Chairmanship of Maulana Abul Kalam Azad, who was the then Minister for Education. The conference's primary purpose was to consider replacing the overseas Cambridge School Certificate Examination with an All-India Examination. In October 1956, at the meeting of the Inter-State Board for Anglo-Indian Education, a proposal was accepted for the setting up of an Indian Council to administer the University of Cambridge, Local Examinations Syndicate's Examination in India and to advise the Syndicate on the best way to adapt its examination to the needs of the country. The inaugural meeting of the Council was held on 3rd November 1958. Today, many schools across the country are affiliated with this

Council. All these are private schools catering to students from wealthy families (CISCE, 2022).

Third, the National Institute of Open Schooling (NIOS) was established in November 1989 as an autonomous organisation in pursuance of the National Policy on Education in 1986 by the Ministry of Education (MOE), Government of India. NIOS also provides several vocational, life enrichment, community-oriented courses, and General and Academic Courses at both the Secondary and Senior Secondary levels. Further, it also offers Elementary level Courses through its Open Basic Education Programmes (OBE). Through a gazette notification, the government of India vested NIOS with the power to examine and certify learners registered with it up to pre-degree level courses, whether Academic, Technical, or Vocational (Department of School Education and Literacy, 2021, Dec.20).

Fourth, the International Baccalaureate (IB) curriculum offers a religious, consistent high school curriculum for the students of globally mobile families. It is an international curriculum in India, as most schools abroad adopt it. The IB curriculum was adopted in 1976 in India, and currently, there are about 210 schools in India following the IB curriculum. IB provides world-class education and provides its students with practical, lifelong learning experiences. The IB is an international qualification consisting of a worldwide standardised curriculum, allowing students to transfer from a school in one country to another with few academic problems. It offers a unique blend of both academic and traditional Indian values in its curriculum (IB World Schools Yearbook, 2023).

As already specified, each state in the country has its own Department of Education that runs its school system with its textbooks and evaluation system. As mentioned earlier, the curriculum, pedagogy, and evaluation method are primarily decided by the SCERT in the state, following the national guidelines prescribed by the NCERT. The present study focuses on the school system of the education board of Tamil Nadu as it was less explored in terms of student-related academic factors in a nutshell.

The state of Tamil Nadu has witnessed phenomenal growth in education in the past few years. The state has a unique education system and is also one of India’s most literate

states, with a literacy rate of around 80.09% (Census of India, 2011). The government of Tamil Nadu has always aimed to universalise education and has been engaging in various means to make it accessible to all. Accordingly, Tamil Nadu provides a unified educational system called the Tamil Nadu Uniform System of Education (Samacheer Kalvi) to unify the various school educational systems within the state. (School Education Department Policy Note, 2023-2024, Pg.13). Since its implementation, a total of 13,210 middle, high, and higher secondary schools function across Tamil Nadu, of which 49% are Government schools, while 36% are private and the remaining are aided by the government (School Education Department Policy Note, 2023-2024, Pg.13).

Samacheer Kalvi is a programme initiated by the Government of Tamil Nadu to integrate the whole education system of all the schools under the state board into a uniform system of school education with one standard syllabus, textbooks, and scheme of examinations. Tamil Nadu Uniform System of School Education Act, 2010 has implemented it. The main idea behind Samacheer Kalvi was to diminish all inequality in the education field amongst students from different economic, social, and cultural backgrounds. With several State Board Schools, Oriental Schools, Matriculation Schools, and Anglo-Indian Schools (each having different schemes of examination with different syllabus, textbooks, etc.), there were substantial conformity issues in the educational scenario of the state. With the introduction of Samacheer Kalvi, the non-uniformity was diminished between the different types of schools (Sathyan, 2020).

Though the non-conformity had diminished to a great extent in the pattern of syllabuses after the implementation of Samacheer Kalvi, three types of schools still exist.

a. Government Schools - The government runs its schools on land and buildings owned by it and pays the staff for its resources. The fees are minimal in such schools

b. Private Schools - The land and buildings of these schools are owned by individuals or a family who operate as a management. Here, the fees are high, and the management pays the teachers. Such schools primarily cater to the urban middle class and

c. Government-aided schools - These are the schools provided grant-in-aid by the government, though the school was started by a private agency in their land and building. The grant-in-aid is meant to help reduce school fees and allow low-income families to send their children to education (Kumar, 2022).

The chief concern of education is to bring about reformation in all sectors to achieve its goal. As a result, the whole education system focuses on improving learners' Academic Achievement (AA), and the TN Unified System of Education (Samacheer Kalvi) is not an exemption from the rule. AA refers to the outcome/performance of education. It indicates the extent to which a person has accomplished his or her specific goals that were the focus of activities. As it includes the multifaceted abilities of the learners, it should be considered a multidimensional construct comprising different learning domains. Specifically, AA in a school setting refers to the performance outcomes in different domains taught at schools (Spinath, 2012). As a result, while defining the AA of school students, one is expected to appraise the performance outcomes with the marks scored by the students.

Generally, AA is conceived as the extent to which a student or institution has achieved short-term or long-term educational goals. Usually, the AA can be evaluated by the student's grade points/marks scored on their exam or standardised achievement test scores. As grade points/marks are closely tied to the curriculum, they provide essential information based on the student tipping the teaching-learning process (Bowers, 2011; Koretz, 2002).

One recent study conducted by Qingyan et al. (2023) analysed the factors influencing the student’s AA in developing countries and concluded that the major ones were student factors, namely the students’ learning skills, level of intelligence, motivation, and time management; and teacher factors such as their experience and teaching methods adopted. The other influential factors are school, cultural, and economic factors. This study served as an eye-opener for the present study to understand the intricacies of the student and teacher factors separately and their subsequent interaction effect. Moreover, a study conducted by Suvarna and Bhata in 2016 confirmed that intelligence, learning styles, and teaching patterns are crucial indicators of the teaching-learning process.

With the student factors in mind, two significant theories of the 20th century put forth as an effort to analyse and construe human differences and subsequently to design instructional models based on these variances were considered. Firstly, the Multiple Intelligences (MI) theory has its roots in the cognitive science discipline. Secondly, the Learning Style (LS) theory is based on the psychoanalytic community (Silver et al., 1997). A study done by Kemparaju and Somashekar (2023) revealed a significant association between the dimensions of MI (Linguistic, Logical, Spatial, Naturalistic, Interpersonal, Intrapersonal) and field-dependent cognitive style, with the majority of the respondents displaying average levels of each in association with each other. Further, Aysha and Yusoof's (2018) study stated that there was a significant correlation between MI and LS. It was found that students who scored high on Bodily-Kinesthetic ability also did the same on their LS Scale. Even those who scored high on the Auditory learning style scored the same on the Musical Intelligence. Altogether, LS and MI are two educational constructs that are upfront and essential in education.

Both theories are indeed multidisciplinary by nature as they combine insight from various fields of study like biology, anthropology, psychology, human development, medical case studies, and an examination of art and culture. In general, MI theory is an effort to comprehend the factors that shape human potential, focusing uniquely on the culture and the discipline of interest. However, LS theory accentuates the diverse ways humans think and feel in solving problems, creating products, and interacting. The similarity between these two theories is that the difference in human potential relies on the dominant thoughts of intelligence that the individual possesses (Rohaniyah, 2017). However, these two constructs have to be looked upon differently, as MI deals with the interaction of the contents and products of learning, whereas LS refers to the learning process. Hence, the current study considered the MI and LS as two different constructs and aimed to explore their role in the AA of students. Accordingly, MI and LS are explained below as a construct to design educational models.

Children performing well in school are said to be better equipped to make the transition into adulthood and to achieve occupational as well as economic success (Organisation for Economic Co-operation and Development, 2022). Accordingly, Batdi

(2017) has stated that for students to perform well academically, children must be made aware of not just their intelligence level but also the kind of intelligence that each possesses. The propounder of the theory of Multiple Intelligence (MI), Howard Gardner, defines intelligence as the potential ability to process a particular sort of information.

The theory of MI has influenced educators worldwide, encouraging them to envision more effective ways of teaching. Howard Gardner, a world-renowned psychologist, developed this theory over 30 years ago. In 1983, Gardner drastically transformed the field of education when he published Frames of Mind: The Theory of MI, which proposes that individuals are not born with all the intelligence they will ever have. Gardner's theory was a counterargument to the traditional notion that believed in the existence of one single type of intelligence known as general intelligence, which predominantly focused on cognitive abilities. In this book, he described a new way of thinking about human intelligence, and his theory opened new doors in education. Gardner's theory assumes that every child is unique and has different intelligence, capabilities, and talents. The education system should devise various methods to educate the child to allow learners to exhibit different ways of comprehending a concept and valuing their uniqueness. Most students are highly developed in some intelligence, slightly set in others, and relatively retarded in others (Stanford, 2003). According to Gardner's Intelligence theory, everyone has all the intelligence and a unique combination (Gardner & Moran, 2006; Ferrero et al., 2021).

To elaborate his argument further, Gardner introduced eight types of intelligence: Linguistic, Logical, Spatial, Bodily-Kinesthetic, Musical, Interpersonal, Intrapersonal, and Naturalist intelligence. As cited by Nuzzi (2023), these eight intelligences are grouped into language-related, person-related, or object-related and are explained below.

Linguistic and Musical intelligence are language-related since they engage auditory and oral functions, which Gardner argued were central to developing verbal and rhythmic skills. Those with high verbal-linguistic intelligence can manipulate sentential syntax and structure, easily acquire foreign languages, and typically use an extensive vocabulary. Musical intelligence talks about the ability to perceive and express variations in rhythm, pitch, and melody and also the ability to compose, perform, and appreciate music. It is similar to

Linguistic intelligence's structure and origin and employs many of the same auditory and oral resources.

Person-related intelligence includes both Interpersonal and Intrapersonal cognitive capacities. Intrapersonal intelligence was identified with self-understanding and the ability to discern one's strengths and weaknesses to guide one's actions. Interpersonal intelligence is manifested in the ability to understand, perceive, and appreciate the feelings and moods of others. Those with high Interpersonal intelligence can get along well, work cooperatively, communicate effectively, empathise, and motivate others.

Object-related intelligences include Logical, Bodily-kinesthetic, Naturalistic, and Spatial domains. Object-related is because concrete objects and experiences encourage and involve these intelligences. It is believed that a person with high degrees of Logical intelligence can effortlessly distinguish patterns, solve mathematical problems, make groups and classes, etc. Bodily-kinesthetic intelligence demonstrates physical ability, athletic skills, and an understanding of physical fitness. Spatial intelligence may be highly visual, but its visual element is more directly connected to one’s ability to create mental representations of reality.

Naturalistic intelligence is a later addition to Gardner's theoretical model and is less widely accepted than the other seven. It includes recognising plants, animals, and other parts of the natural environment and seeing patterns and organisational structures found in nature. Most notably, research still needs to be more conclusive as to whether Naturalistic intelligence fulfils the criterion of being able to be isolated in neurophysiology.

Gardner further mentions a few more aspects like spiritual, moral, and existential, which he did not include in his original list of multiple intelligences but, later (in the year 1999), proposed bringing the Existential type of intelligence into his already submitted eight types of intelligence and thereby taking the total to nine from eight. Gardner believes that all of us may have this intelligence but with a different profile depending on an individual's genetics or experience. In the MI framework, all intelligences are equally valid and essential, and though significantly independent of one another, they do not operate in isolation. Human activity typically reflects the integrated functioning of several intelligences.

Most of the studies have conceptualised MI as an antecedent of AA. According to the mutualism model, reciprocal correlations between different aspects of human cognition and AA emerge as a result of their mutually beneficial interactions (Vander Maas et al., 2006). Individuals use their intelligence to learn and also to perform academic tasks (Martinez, 2000; Peng et al., 2019; Ritchie & Tucker-Drob, 2018).

The basic idea behind this theory is to describe how students learn and acquire information, ranging from using words, pictures, music, and numbers in association with social interactions, introspection, physical movement, and being by nature. It is here that the MI construct gains significance. Research carried out by Vadivukarasi and Gnanadevan (2022) pointed out that MI and AA of higher secondary students are significantly correlated. Another study carried out by Ahvan and Pour (2016) found that MI was statistically significant in predicting AA among high school students. However, another study by Pérez et al. (2014) reveals that MI significantly determined academic performance and Logical-mathematical intelligence predicted academic achievement better.

However, MI alone may not contribute to the AA of a student. An appropriate Learning Style (LS) has an important role. Both MI and LS may be termed as complements in contributing towards AA. As indicated earlier, LS refers to the process of learning as a whole; understanding the type of intelligence a student possesses can aid them in adjusting their LS. However, as already indicated, a common fallacy between MI and LS that still prevails is that both constructs mean the same. Howard Gardner, the pioneer of the MI construct, defined LS as ways an individual approaches a range of tasks. He added that LS could be categorised in several ways: visual, auditory, kinesthetic, impulsive, reflective, right brain, left brain, etc. Altogether, Gardner claims that while defining LS, there are no explicit measures or principles of understanding where the style comes from or how it can be appraised. Hence, he verbalised the idea of LS as "a hypothesis of how an individual approaches a range of materials" (Edutopia, 2016)

Learning Style (LS) is a concept traced back to as early as 334 BC when Aristotle opined that each child possesses a specific set of talents and skills. In the early 1900s, there were many theories relating to this, but later on, research in this area witnessed a downtrend

as students' IQ and academic achievement garnered more attention comparatively. LS is an approach that explains how individuals learn or how each person focuses on the process and deals with complex and new information through various perceptions (Ghufron & Risnawita, 2013).

Perhaps, the best definition of LS was provided by Kolb, who defined it as an individual's method of emphasising specific learning abilities over other abilities. Kolb's experiential learning theory is the result of the combination of three templates from the experiential learning process, including Lewin's practical and laboratory model, Dewey's learning model, and Piaget's pattern of learning and cognitive development. Kolb believed learning to be the result of resolving the conflicts among these three models (Kolb & Kolb, 2005). Learning Style is a combination of how an individual absorbs, organises, and processes information into meaning. Hence, LS is an approach or way each individual takes to get, process, understand, and remember information (Cassidy & Eachus, 2000; Harrison et al., 2003).

Although LS benefits all aspects of one's life - personal, academic, and professional - it is considered the stepping stone as far as academics are concerned, as academics form the base for the rest to blossom. Hence, school children, in particular, can be considered the primary beneficiaries as it aids in laying a sound foundation for them that would help them in the long run. Many educationists have talked about the importance of learning styles.

"Styles play a role in the way students learn. Each one of us is born with certain biological characteristics favoring a particular style, which are later influenced by other factors such as culture, family, self-experience, etc." (Tiwana, 2019). Educationist and Learning Style Inventory developer Karuna Shankar Misra defined "Learning style as how one internally represents experiences and recalls or processes information" (Tiwana, 2019). He also categorised learning styles as given below

- ✓ "Enactive Reproducing - Preferences towards processing action-based concrete experiences, and its emphasis is on imitation and practice
- ✓ Enactive constructive - Preferences towards conceptualising one's experiences based on the processing of enactive information

- ✓ Figural reproducing - Preferences for visual experiences related to making diagrams, charts, pictures, maps, and photographs. The emphasis is on imitation and practice
- ✓ Figural constructive - Preferences to process the figural experiences and facilitates leading to conceptualisation
- ✓ Verbal reproducing - Preferences for written or spoken information about the subject matter communicated through words and
- ✓ Verbal constructive - Preference for reflective, accommodative, and abstract thinking about the subject matter to develop conceptualisations" (Tiwana, 2019).

There is general acceptance of the perception that how an individual chooses a learning style directly impacts their Academic Achievement. In the last half of the 1900s, LS again picked up momentum, and much research has been happening relating learning styles and children's AA (Sultana & Kundu, 2022). Gokalp (2013) defines LS as a construct concerned with how the learners learn rather than what they learn, and it is believed to be a crucial factor for students' AA. Accordingly, Bethel and Eremie's (2017) research stated a significant relationship exists between LS and students' academic performance. Another study by Vaishnav, R. (2013) revealed that Kinesthetic LS was more prevalent than visual and auditory LS. Nissei (2015) conducted a correlation study between AA and LS among secondary school students in Kenya. The findings revealed a positive correlation between the target respondents' LS and AA.

Singh and Cutting's (2018) study focused on determining the interrelationship between LS and AA of government and private secondary school students, stating that the kinesthetic learning style was used more than the visual and auditory learning styles. Though all three types of learning styles (visual, auditory, and kinesthetic) were found to be significant concerning academic achievement, a strong positive correlation between kinesthetic learning style and academic achievement was observed. The study by Nanaware and Baviskar (2023) analysed the relationship between AA and LS and found a statistically significant relationship between LS and students' academic success among senior secondary students.

The literature reviewed on LS and AA of learners had a few contradictory studies. Awang et al. (2017) observed no significant impact of LS on the students' AA. Likewise,

Munir et al. (2018) conducted a study identifying secondary school children's LS and AA, revealing no significant relationship between LS and AA. Hence, the current research aiming to analyse the student factors influencing AA has an additional secondary aim of verifying the contradictions regarding the impact of LS on AA.

However, another essential factor that contributes to the AA of school children, as indicated at the beginning of this chapter, is teaching pedagogy (TP). Numerous researchers have provided pragmatic evidence in stating a direct strong correlation between the AA of students and the teaching style or the instruction methods followed from the elementary to the university level (Vizeshfar & Torabizadeh, 2018). A study done by Karatas and Yalin (2021) stated that there was a statistically significant relationship between the students' achievement scores and teaching styles. Teaching strategies that encourage more participant-style learning effectively increased academic performance among Turkish physiotherapy students, as confirmed by Ilcin et al. (2018). However, another study by Damrongpanit and Reungtragul (2013) on 'Matching of learning styles and teaching styles: Advantage and disadvantage on ninth-grade students' academic achievement' observed significant differences between LS and Expert and the Facilitator teaching style of 9th-grade students.

Education has gone through many transformations over the past many decades. The 21st-century student's needs are very different from the 20th-century ones. This calls for a changed approach from the teachers' side. In today's diverse classrooms, teachers must provide adequate and inclusive instructions to students with various learning styles Ocampo et al. (2022). As Mobo et al. (2022) argued, the academic world is full of scientific surprises because education changes rapidly due to its alignment with various sectoral fields. From merely being imparters of curriculum knowledge, the teachers must go beyond and create a pedagogical approach that the children find engaging, attractive, and practical. (Organisation for Economic Co-operation and Development, 2012)

Pedagogy is a term that refers to the teaching methods of teachers consisting of both theory as well as practice. It is formed by an educator's teaching beliefs and concerns that interplay between culture and different learning methods. TP gives insight into the best

practices for a classroom setting, and it allows teachers to understand how different students learn so that they can shape their lesson plans to suit their learning needs. On the whole, appropriate TP will improve the quality of teaching as it will be well received by students (Ahmed, 2020; Dash, 2020; Shaari et al., 2014). Therefore, it becomes essential for a teacher to adjust the teaching style based on the student's interest and for the student to identify their academic activity style to regulate their teacher's teaching style.

A well-thought-out pedagogy is essential in aiding school children in learning more effectively and developing thinking skills of a higher order. So, educationists often advise teachers to develop their unique pedagogical approach. It is viewed as a particular pattern of needs, beliefs, and behaviour that a teacher displays in the classroom (Shirke, 2021). In the course of time, this gained a significant construct of exploration in terms of its effect on academic outcomes as a whole (Sim & Matore, 2022). Consequently, the teacher plays an essential role in ensuring that the learning and teaching process runs smoothly in the classroom, and it is what determines education in the short and long term for both students and teachers.

In 1994, Grasha's interest in students' learning styles extended to teaching styles as she found that learning styles could address only 50% of the teacher-student interaction. Moreover, she identified certain missing links, namely, the teacher's personal qualities, the effect these qualities have on the student's learning styles, and, consequently, what has transpired in the classroom setting. After a detailed thematic analysis, Grasha placed teachers into one of the five teaching styles: Expert, Formal Authority, Personal Model, Facilitator, and Delegator (Grasha, 1994).

Based on the theory of Grasha (1994), Sharma and Saran (2002) have described the teaching style as quite different from the methods of instruction used by the teacher. They specified that teaching style refers to the classroom setting, a pervasive way of approaching the learners that might be consistent with several teaching methods. They also came up with distinctive teaching styles as described by Grasha, only with a difference in the third style –

the personal model replaced as demonstrator style with no change in the meaning of the style. The following describes each of the teaching styles:

- ✓ Expert – This style has the knowledge and expertise that the children require. The teachers focus on transmitting information, knowledge, and skills to the students, which aids them in enhancing their knowledge
- ✓ Formal Authority – This style possesses status because of knowledge. The teachers establish learning goals, expectations, and rules of conduct among students so that they concentrate on correct and standard methods
- ✓ Demonstrator - This style believes in teaching by personal example. The teacher oversees, guides, and directs by showing examples. The children are encouraged to observe and follow the teacher's approach
- ✓ Facilitator - This style lays stress on teacher-student interactions. The teacher encourages self-learning and helps children develop critical thinking skills and retain knowledge that leads to self-actualisation among children and
- ✓ Delegator - In this style, the teacher encourages students to work on projects independently or as part of teams. The teacher is always available as a resource person.

More so, Yasin et al. (2020) have stated that a well-thought-out Teaching Pedagogy (TP) is essential in aiding school children to learn more effectively and develop thinking skills of higher order. Certain studies by Farooq et al. (2022) stated that a robust positive correlation existed between teaching pedagogy and the Academic Achievement of University students. Another study by Yasin (2021) proved that a teacher's educational background affects pupils' academic performance in public primary schools in the Hargeisa District, and one more study by Ganyaupfu (2013) affirms that there exists a significant relationship between the various teaching styles and the academic performance of the university students.

Henceforth, it is realised that a teacher's teaching style plays a crucial role in determining the AA of learners if the teacher understands and tailors his/her instructional method to the learners' preference regarding their intelligence potential and learning style.

With this opinion, the current study attempted to analyse the role of Teaching pedagogy (TP) practiced by the teachers along with the above-explained two student-related determinants, namely the MI and LS.

With the realisation of the importance of MI, LS, and TP on AA in school children, a question of their interrelationship with each other was raised. In an attempt to review similar studies, the researcher found that not many relevant studies are available in this area in general. Few studies found an interrelationship between MI and LS, as Nastor (2016) cited. Hence, the present study not only aimed to find their interrelationship but, unlike other studies, wanted to move a step further to formulate a suggestive model for AA by identifying the predictive capacity of MI and LS possessed by school children and TP practiced by the teachers. Accordingly, four significant research gaps pertinent to the Indian context were identified and pointed out below:

- ✓ Studies collated are only individual studies correlating one predictor (MI, LS, or TP) with AA. No one study links all the predictors with AA
- ✓ No studies are addressing the formative age group crucial for MI and LS (11 – 15 years)
- ✓ The studies on AA were on overall achievement, but not on subject-wise AA. Though few studies are specific to core subjects like Mathematics and Science learning, the other needed subjects like Language (both regional and foreign language) and Social Science were scant and
- ✓ There are no studies related to the Samacheer Kalvi Syllabus (a Unified approach of the state of Tamil Nadu) followed by the schools in Tamil Nadu.

Hence, the present study aimed to formulate a suggestive model for subject-wise AA of school children by identifying the predictive capacity of MI and LS possessed by school children and TP practised by their teachers. Henceforth, the predictive models devised could serve as a base for curriculum developers, teachers, and school administrators to provide a pleasant learning environment to the students. Accordingly, the objectives are:

Primary objective:

To formulate predictive models for subject-wise Academic Achievement (AA) of school children enrolled in Samacheer Kalvi (Tamil Nadu Unified System of Education) integrating Multiple Intelligence (MI) and Learning Style (LS) possessed by the students and Teaching Pedagogy (TP) practised by the teachers.

Secondary Objectives:

- ✓ To assess the subject-wise AA of the selected student respondents
- ✓ To determine the influence of socio-demographic variables on AA of the selected student respondents
- ✓ To assess the level of MI of the selected student respondents
- ✓ To determine the influence of socio-demographic variables on MI of the selected student respondents
- ✓ To assess the various types of LS of the selected student respondents
- ✓ To determine the influence of socio-demographic variables on the LS of the student respondents
- ✓ To assess the levels of TP of the selected teacher respondents
- ✓ To determine the influence of personal profile on the TP of the selected teacher respondents and
- ✓ To formulate a suggestive framework for subject-wise AA with positive and negative predictors in terms of MI and LS of students and TP of teachers