A LEADERSHIP MODEL TO IMPROVE HIGHER SECONDARY MATHEMATICS TEACHERS' TEACHING STRATEGIES AT DINDIGUL DISTRICT, SOUTH INDIA

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Abstract: This study aimed to determine the leadership style to improve higher secondary mathematics teachers' teaching strategies in Dindigul district, South India. The model was developed to enhance leadership style and teaching strategies. A qualitative method was used for the study. The leadership style a teacher possesses is one of the influential factors in students' learning, inspiration, and output. Applying the type of suitable leadership style in their teaching is very important. There are many different types of leadership styles. However, the researcher explored leadership styles and teaching strategies for this study. Exploring the literature review, the researcher found that the secondary mathematics teachers in Dindigul District, South India used situational and transactional leadership styles. An interview was conducted with eight school leaders and found that the secondary mathematics teachers used three teaching strategies. The researcher developed a leadership model to improve higher secondary mathematics teachers' teaching strategies from the leadership style and teacher's teaching strategies. Hopefully, the higher secondary mathematics teachers, school leaders, and administrators will utilize the new leadership model.

Keywords: Higher Secondary; Mathematics Teachers; Teaching Strategies; Leadership Model

Introduction
The word education is vital to everybody. Teaching professionals give more enthusiasm to our life. In the school setting, the principals and the teachers can mold the students' future. They are the ones seen as a leader. The principal and the teachers have an essential role in making the students' lives better (Murgan,1999). The students are good and learning; it shows the teachers'

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qualitative teaching. The teachers need to use a suitable teaching strategy for learning because the student could be shaped. As said by Swami Vivekananda, "*Education is the manifestation of the perfection already in man*" (the Padma, 2016). The idea of teaching and the way education was very different in India. Even though there was a regulating leadership, there were still few that ran differently. The central government is still trying to uniform the whole education system by implementing specific rules and regulations (Babu,2007). The issues of leadership styles in teaching and learning have been brought up in many instances by attempting to discover the poor standard of training in South India.

It was by all accounts out of the mind that educators' leadership style in the classroom was a prime determinant of student scholastic execution. There was an issue of the executives of classroom discipline, one of the good and moral exercises that empower students to improve their social and intelligent aptitudes (Jandhyala, 1999). A teacher involves a significant situation as a critical component in the tasks of the educational structure. Educator's skill, learning, quality, dedication, duty, devotion, proficient preparation, disposition, and to a great extent, decide the nature of administration given by the teacher (Johnson & Christensen, 2012).

Research Objectives:
1. To explore desirable leadership styles to improve higher secondary mathematics teachers teaching strategies in higher education.
2. To determine the optimal teaching strategies of higher secondary mathematics teachers in Dindigul district, South India.
3. To develop a leadership model to improve higher secondary mathematics teachers' teaching strategies in Dindigul District, South India.

Literature Review:
The Dindigul district was founded in 1951. According to the population, it contains many villages, towns, and wards of the district. After a couple of years, in 1961, the administrative statistics gradually increased (Kannan & Sivapragasam, 2016).In India, the schools are various from province to province. The curriculum may be different for each province. All the public schools and private schools get approval from The Central Board of Secondary Education (CBSE). The Central Board of Secondary Education (CBSE) and Council for the Indian School Certificate Examinations (CISCE) are national examination boards. The better-known schools in the country are associated with one or the other of these. CBSE follows the syllabus set by NCERT and uses NCERT textbooks, whereas CISCE sets its syllabus at both the 10th grade

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and 12th-grade levels and does not prescribe textbooks; schools are free to use textbooks of their choice (Kushwaha, 1995).

Leadership Styles

The leadership styles are autocratic, democratic, laissez-faire, charismatic, task-oriented, transactional, servant, strategic and situational. These styles are widely used in leadership-based literature (Akpa 2013). There might be more styles, but the above-mentioned styles are quoted more effectively than any other.

The task-oriented style covered a couple of features of undertaking the administrators. The officials must coordinate work-related activities, offer important, definitive activities, coordinate quality, and arrange related financial reports. In this manner, it is generally assumed that the leader who grasps a task arranged organization style revolves around completing basic assignments to show up at various leveled targets (Treadway, 2007).

Masood, Bilal, and Baig (2013) opined autocratic leadership style was known for individual leadership style. But it was overall teamwork and involvement from the staff members. Regularly autocratic leadership resolves on results, dependent on their own opinions. Autocratic leadership utilizes power over staff. As seen by leadership styles, a few highlights of autocratic leadership include zero involvement from group personalities, leader settling on the choices, team leader directing all the work strategies, and group individuals being trusted with options or significant assignments (Fullan, 1994).

Democratic leadership style explains the system incorporates settings, inspirations, attributes, and results of majority rule authority. The investigation considers penance, fortitude, imagery, native cooperation, and vision as significant qualities in showcasing fair administration in different political, social, and social settings. Applying the structure to Nelson Mandela, Lech Walesa, and Dae Jung Kim, the examination considers them excellent fair authority models in law-based developments for accomplishing majority rule government (Ruzgar, 2018).

The transactional leadership style starts with the possibility that associates agree to conform to their leader when they recognize work. This skill, generally speaking, incorporates the association paying partners as a final product of their effort and consistency. The leader has an alternative to prevent associates if their work does not satisfy a reasonable rule. Despite how this may be completely controlling and protective, transactional leadership offers

a couple of favorable circumstances. For one, this activity style clarifies everyone's occupations and commitments (Carter & Greer, 2013).

Hersey and Blanchard created the Situational leadership style in 1969. The principal procedure of situational speculation is that different conditions require different sorts of activity to get the best results. According to the Situational Leadership Approach, an individual should more likely than not see different conditions and the specific activity style they require and subsequently choose to alter their power style as demonstrated by the conditions to be a perfect leader (Blanchard, 1993).

Their knowledge and consistent leadership showed the situational leadership styles in the situational management approach. It directed the correspondence, tuning in, explaining decisions, offering assistance, backing, approval, remembering the supporter for important leadership, and basic reasoning. This leadership is depicted by correspondence from the leader to the supporter, close oversight, stores of contribution on execution, and away from the endeavors, including what to do, when, where, and how to do it (McCulloch, 2014).

Teacher Teaching Strategy I
The teacher Teaching strategy I was adapted from Davies and Ellison (1997b, p.59) Creating, Utilizing the lesson, Cooperative learning, Nurturing math success. This strategy addressed the teachers using multi-sensory aids for their teaching. The teachers need to understand the model pedagogical started in education and follow it. Analysis of the current teaching sources and use them in their teaching. Approachability and interest were more significant in the involvement or, on the other hand, a reputation of achievement (Martens, 2015). It had five steps to discovering the teaching methods. By discovering the teaching method, the teachers need to shape the knowledge according to it. The teacher engages the student to achieve their teaching goals. The teachers translated the knowledge provided by teaching(Vidoni, Grassetti, & Vidoni, 2003).

Teacher Teaching Strategy II
Teacher Teaching strategy II was adapted from Pisapia (2009) warned that attributes, core processes, and functions were necessary conditions before a leadership Strategy was adopted by a school leader and the teachers. The teachers should research teaching methods to improve teaching practice, resulting in better student learning. The school leaders permit the teachers to prepare a new plan to improve teaching and learning. The school leaders band the teachers with strategies that increase the financial resources and the

students learning outcomes. They were asked to guide the profession into new positions and innovate. The teachers should have mathematics knowledge at an advanced level. They have to engage the students learning by doing new methods. The teacher should be a good motivator for learning mathematics subjects (Pisapia, Reyes-guerra, & Coukos-semmel, 2015).

Teacher Teaching Strategy III
Teacher Teaching Strategy III was adapted from Johnson, W. S., and Angwin (2014). The dimensions are organizing, practice, changing, process, evaluating, constantly measuring, and evaluating the external and internal conditions of the organization by school leaders. The school leaders analyze the organization's strategic context and create organizational advantage. The school leaders assess the organization's purpose and performance and systematically alter internal procedures. The teachers are authoritative in their content of teaching and learning. The teachers recognize the teaching process to improve their teaching strategy. (Roony, 2014).

Teacher Teaching Strategy IV
The current research theoretically and exactly embraced the requirement for school leaders to share dynamic leadership with teachers to help their teaching strategy. Be that as it may, what this agreeable relationship feels like could be better inspected and characterized with regard to programs proposed to teach (Ronald E. Riggio, 2002). Teaching strategy literature demonstrates a favorable connection between shared, practiced strategy types and enhanced organizational results, approaching a strong strategy for use in the teaching landscape (Baltaci, 2017).
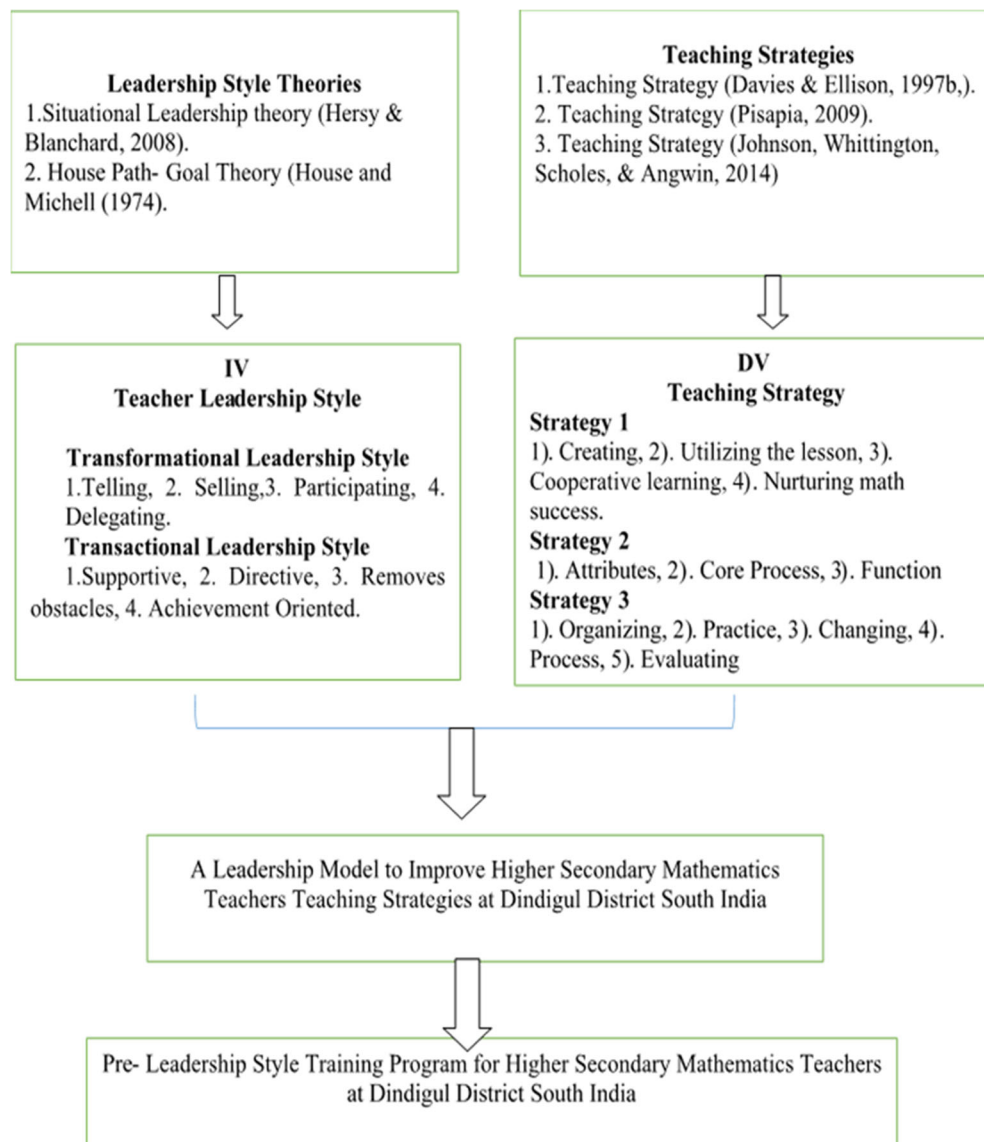
Teaching Strategy V
The strategy was indicated by Gerry Jonson and Keven Scholes for understanding technique advancement to the teaching association. It depends on three stages, and the means are configuration, experience, and thoughts. The strategy relied on the adjustment framework because, without experience, they could get the arrangement (Preedy, Glatter, & Wise, 2003). It was so far, various perspectives and desires have existed. The procedure was considered not to be much as arranged from the top yet as rising from inside and around the associations as individuals adapt to questionable and changing conditions in their everyday exercises.

Conceptual Framework:
This study attempts to explore the leadership styles for improving teacher teaching strategies. This study is based on the theory of transformational leadership style proposed by Hersy & Blanchard (2008), transactional

leadership style proposed by House and Michell (1974), and teacher teaching strategies presented by Davies and Ellison (1997), Pisapia (2009) and Johnson, Whittington, Scholes, and Angwin (2014). As shown in the conceptual framework, this study has three phases. The researcher has used an exploratory mixed-method research design by collecting substantial qualitative data from books, journals, and online sources. Then, quantitative research data was collected using the validated questionnaires based on the result of the qualitative data.
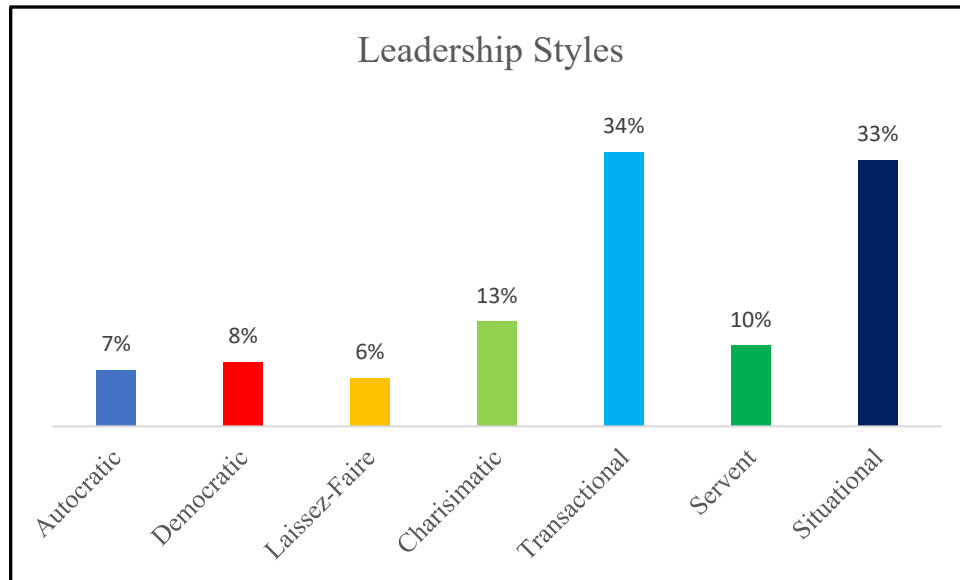
Leadership Style Theories
1. Situational Leadership theory (Hersy & Blanchard, 2008).
2. House Path- Goal Theory (House and Michell (1974).

Teaching Strategies
1. Teaching Strategy (Davies & Ellison, 1997b,).
2. Teaching Strategy (Pisapia, 2009).
3. Teaching Strategy (Johnson, Whittington, Scholes, & Angwin, 2014)

IV
Teacher Leadership Style

Transformational Leadership Style
1. Telling, 2. Selling, 3. Participating, 4. Delegating.
Transactional Leadership Style
1. Supportive, 2. Directive, 3. Removes obstacles, 4. Achievement Oriented.

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Teaching Strategy
Strategy 1
1). Creating, 2). Utilizing the lesson, 3). Cooperative learning, 4). Nurturing math success.
Strategy 2
1). Attributes, 2). Core Process, 3). Function
Strategy 3
1). Organizing, 2). Practice, 3). Changing, 4). Process, 5). Evaluating

A Leadership Model to Improve Higher Secondary Mathematics Teachers Teaching Strategies at Dindigul District South India

Pre- Leadership Style Training Program for Higher Secondary Mathematics Teachers at Dindigul District South India

Figure 1. *Conceptual Framework of This Study*

Research Methodology:
The researcher used the qualitative method to get the breadth and depth of conducting this study to achieve the study's objectives. A qualitative method requires the researcher to collect the data through documents and analyze the synthesis review of the literature to answer the identified research questions (Randolph, 2009). The researcher searched many books and articles for general counting to find the leading theory for the higher secondary mathematics leadership style. The researcher reviewed books and articles to explore teaching strategies for higher secondary mathematics teachers. The books and articles were selected based on 2000 -2019 (except the main theory of leadership style, Published in recognized publishers. i.e. (SAGE, Emerald, insight, ERIC, etc.), published in English language, area of education, and mainly for secondary mathematics teachers and administrators. The interview was conducted with eight school principals from eight cities in India. The principals were selected based on their work experience and their teaching qualification.

Findings
Research Objective One to find out the leadership style of the higher secondary mathematics teachers, a systematic literature review was employed. Approximately sixty percent out of the forty books and one hundred articles were read. The result of the autocratic leadership style was practiced at a 7% level. Democratic leadership style was practiced at an 8% level. The Laissez-Faire leadership style was practiced at the 6% level. The charismatic leadership style was practiced at a 13% level. The transactional leadership style was used at a 34% level. Servent's leadership style was practiced at a 10% level. The situational leadership style was practiced at a 33% level. The situational and transactional leadership styles were practiced at higher levels, so the researcher found that the higher secondary mathematics teacher practiced the two leadership styles. The results of the systematic review literature revealed two leadership styles practices in higher secondary mathematics teachers in Dindigul district, South India. 1. Situational Leadership style and sub-variables are telling, selling, participating, and delegating, 2. Transactional leadership style and sub-variables are supportive, directive, remove Obstacles, and achievement Oriented. The results of the review of the literature regarding leadership styles were consistent with the overall framework theory.

Figure 2. *Teachers' Leadership Styles*

Research Objective two: A systematic literature review was employed to find out the teaching strategy for higher secondary mathematics teachers. Approximately sixty percent out of the twenty-six books and one hundred sixty-four articles were read.

The results of the review literature regarding teaching strategy were consistent with the overall framework theory. The results were in percentage. The strategy the secondary mathematics teachers used me at the 23% level. Strategy II was used by the secondary mathematics teachers at a 24% level. The secondary mathematics teachers used strategy III at a 23% level. The secondary mathematics teachers used strategy IV at the 8% level. The secondary mathematics teachers used strategy V at the 12% level. The results of the review literature revealed three teaching strategy practices in higher secondary mathematics teachers in Dindigul district, South India. Teaching Strategy I and the sub-variables are creating utilizing lessons. Cooperative learning, Nurturing math success. Teaching Strategy II and the sub-variables are attributes of core processes. Teaching Strategy III and the sub-variables are organizing, practice, changing, process, evaluating.
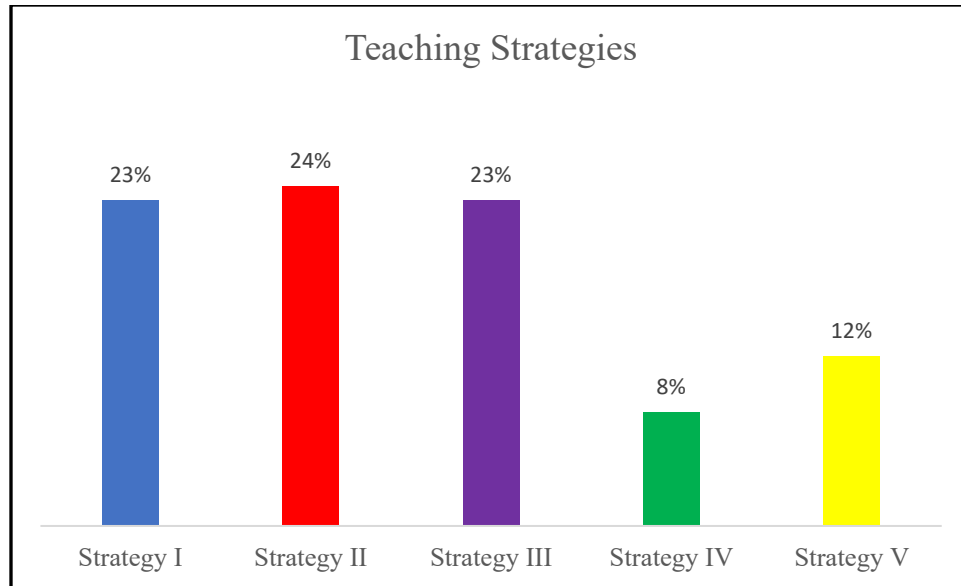
Figure 3. *Level of Teachers' Teaching Strategies*

Research objective three is to develop a leadership model to improve higher secondary mathematics teachers' teaching strategy applicable to the Dindigul District, South India. The model was developed based on the results of research objectives one, two and the possible, desirable elements from the related theories. The proposed leadership model for improving higher secondary mathematics teachers' teaching strategy was composed of leadership styles and teaching strategies. The main emphasis of the model was to promote the teaching strategies in Dindigul District, South India. The researcher believed that the leadership model offered a more systematic approach to planning in teaching and learning. Once their leadership styles were practiced more, the teaching strategy would be improved. To enhance the adoption of leadership, the model played an important role. This proposed model offers higher secondary mathematics teachers to enhance their teaching strategy. The school leaders can have clear tasks and directions of leadership practices and teaching strategies. As expected, if the model is well-implemented, the higher secondary mathematics teachers will be improved their teaching strategy will be greatly obtained.

About the Model
*Part One*
Leadership styles are composed of two dimensions: Situational leadership and Transactional leadership. The situational leadership dimension had two sub-

variables telling and delegating. Transactional leadership had three sub-variables directives, remove obstacles and achievement-oriented.

Part Two
Teaching Strategies are composed of three dimensions, teaching strategy1, teaching strategy 2, teaching strategy3. Teaching strategy 1 had three sub-variables creating, utilizing, and nurturing math. Teaching strategy 2 had a sub variable practice. And Teaching strategy 3 had a sub-variable attributes.
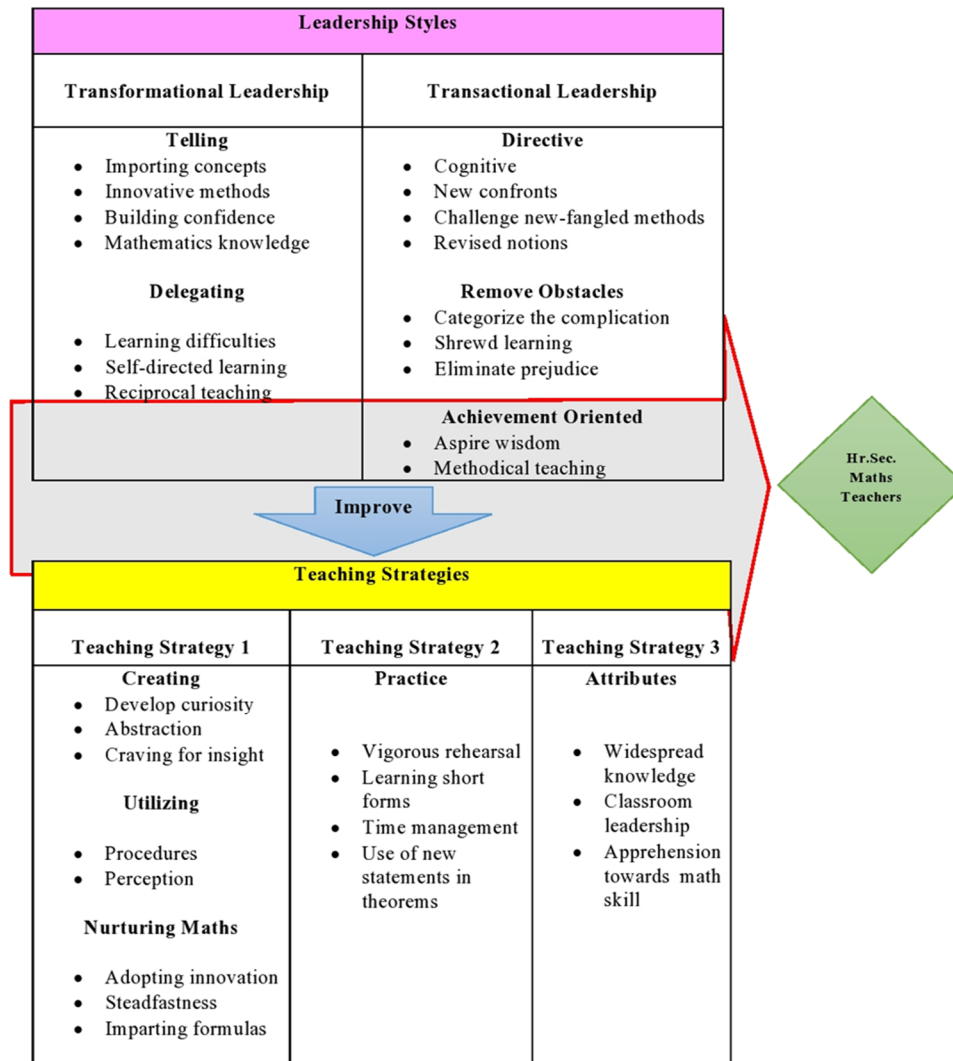
Figure 4. *A Leadership Model to improve Teaching Strategy for the Higher Secondary Mathematics Teachers' at Dindigul District, South India.*

Conclusion
The higher secondary mathematics teachers should practice the two leadership style in their classroom teaching. Situational and transactional leadership styles help the higher secondary mathematics teachers' *teaching* strategy. They could adapt three teaching strategies to design the mathematics curriculum and enhance student mathematics learning. This will empower them to create trust in the teaching and rouse them to perform mathematical errands feeling loose. The mathematics teacher should support the higher secondary students to think logically and gain new knowledge. The school leaders need to train themselves in leadership style to supervise the mathematics teachers' teaching strategy. If they are familiar with their teaching strategy, particularly in developing course curriculum and instruction, they can encourage secondary mathematics teachers to develop and try other techniques. This research was conducted in only eight Dindigul Districts, South India. If another research related to this topic shall be conducted, the sample should include some districts. The researcher could better assume the findings regarding higher secondary education in South India.

Discussion:
The synthesis review literature presented two leadership styles, situational and transactional leadership, supporting research objective one. These dimensions included 1) telling, 2) selling, 3) participative and 4) delegating. The findings were consistent with the overall framework of the leadership style theory by Hersy and Blanchard (2008) and House and Michell (1974). They claimed that the higher secondary mathematics teachers used the two leadership styles' teaching strategies.

The results also conveyed that the higher secondary mathematics teachers' leadership styles concern the school leaders and the classroom management. The higher secondary mathematics teachers use proper leadership style in teaching and learning behavior. The attention given to higher secondary mathematics teachers would help determine students' success in school (Bordage, Foley, & Goldyn, 2000). The researchers mentioned that if the academic administrators took good care of secondary mathematics teachers, they would care for students. Thus, whenever higher secondary mathematics teachers seek consultation with academic administrators, they should have room for them. When listening to their concerns, they could hear their perspectives, reasons, and emotion.

The related literature and semi-interview presented three teaching strategies supporting research objective two. The teaching strategy I dimension included

1) creating, 2) utilizing the lesson, 3) cooperative learning and 4) nurturing math. The Teaching strategy II dimensions had 1) attributes, 2) core process and 3) function. Teaching strategy III dimensions included 1) organizing, 2) practice, 3) changing, 4) process and 5) evaluating. The findings were consistent with the overall framework of the teaching strategies theory by Davies and Ellison (1997), Pisapia (2009). And Johnson, Whittington, Scholes, and Angwin (2014). They claimed that the higher secondary mathematics teachers used the two teaching strategies.

The proposed leadership model was validated by five experts from the field of education. The experts supported the model, suggesting both leadership styles and teaching strategies. The finalized model comprised two parts (leadership styles and teaching strategies) which formed five practices of leadership and five teaching strategies. Though the leadership model could not be fully implemented, the Scholl leader and the academic administrators should allow teachers to adapt leadership model instructions at their own pace. As the school leaders and the academic administrators had to focus more on their leadership roles, the leadership model would be adapted gradually and progressively.

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