



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

VELANKANNI ALEX

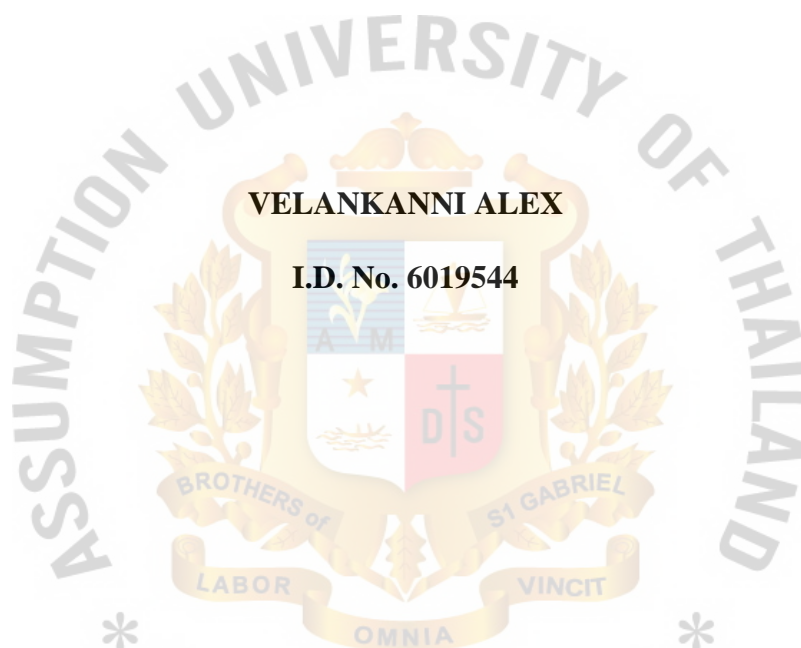
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A Dissertation Submitted in Partial Fulfillment of the
Requirements for the Degree of
DOCTOR OF PHILOSOPHY
in Educational Leadership
Graduate School of Human Sciences
ASSUMPTION UNIVERSITY OF THAILAND
2019

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Dissertation Title: A LEADERSHIP MODEL TO IMPROVE HIGHER SECONDARY MATHEMATICS TEACHERS’ TEACHING STRATEGIES AT DINDIGUL DISTRICT, SOUTH INDIA

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Dissertation Advisor: ASST. PROF. DR.YAN YE

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ABSTRACT

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Key Words: LEADERSHIP MODEL, HIGHER SECONDARY, MATHEMATICS TEACHERS, TEACHING STRATEGIES.

Name: VELANKANNI ALEX

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

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The purpose of this study was to develop a leadership model to improve higher secondary mathematics teaching strategies at Dindigul District, South India. The model was developed to enhance leadership style and teaching strategies. Qualitative and quantitative method was used for the study. A survey was used to collect the quantitative data from the secondary mathematics teachers and a literature review and an interview was held to collect qualitative data from the school leaders. For the quantitative data, statistical analysis was carried out to obtain the Mean and Standard Deviation. Multiple regression analysis was utilized to find significant variables. The qualitative data was analyzed using systematic literature review.

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, for this study, the researcher explored leadership styles. Exploring the review of literature, the researcher found the situational leadership style and transactional leadership style were used by the secondary mathematics teachers at Dindigul District, South India. Review of Literature

and interviews were conducted with eight school leaders who the researcher found to have teaching strategies based from review of literature and the interviews, the secondary teachers were used three kind of teaching strategies. A survey using the leadership styles questionnaire were distributed to a sample of one hundred fifty secondary mathematics teachers in Dindigul District. The current leadership style and teaching strategies were found to be moderately practiced by the higher secondary mathematics teachers. A model of leadership style for higher secondary mathematics teachers' teaching strategy was two parts: leadership style and teaching strategy. The new leadership model will hopefully be utilized by the higher secondary mathematics teachers, school leaders and the administrators.



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LIST OF ABBREVIATIONS

DCHB	District Census Hand Book
DOAJ	Directory of Open Access Journals
DV	Dependent Variables
G. O	Government Order
Hr.	Higher
IOC	Item Objective Congruence
IV	Independent Variables
MANOVA	Multivariate Analysis of the Variance
MHRD	The Ministry of Human Resource Development
MLC	The Mathematics Leadership Corps
NCTM	National Council of Teachers of Mathematics
PCA	Prompt Corrective Action
Sec	Secondary
STEM	Science, Technology, Engineering & Mathematics
TPCK	Technological Pedagogical Content Knowledge

CHAPTER I

INTRODUCTION

The word education is important to everybody. Teaching professional gives more enthusiasm in our life. In the school settings, the principals and the teachers are capable of molding the students' future. They are the ones seen as leader. The principal and the teachers have important role for making the students' life better (Murgan, 1999). The students are good at learning it shows the teachers qualitative of teaching. The teachers need to use the suitable method for learning and the student could be shaped.

The characteristic interest of teacher leader makes them long lasting students who are available to new encounters and difficulties. The significant expert and individual jobs, they successfully organize their work to keep up a feeling of equalization (Babu, 2007). Troublesome difficulties require teacher leaders to take advantage of their profound feeling of boldness, and their unflinching tirelessness encourages them to finish. At the point when best-laid plans have unforeseen results, teacher leaders are available to helpful analysis (Verma & Kishore, 2012). They ponder their experience, gain from it, and after that with flexibility push ahead to the following challenge.

According to Rew, 1998 a teacher involves a significant situation as a key component in the tasks of the educational structure (Wasley, 1991). Educator's skill, learning, quality, dedication, duty, devotion, proficient preparing, disposition, and to a great extent decide the nature of administrations given by the instructor.

Effective teacher leaders offer and keep on building up, a lot of miens and mentalities. They are enthusiastic daring individuals whose honesty, high adequacy, and substance learning give them believability with their partners (Zapata, 2006). Their craving to work with grown-ups is grounded in their conviction that frameworks level change would emphatically affect student learning. All together for teacher leaders to prosper, certain

qualities and conditions. Teacher leaders must have the information and abilities expected to lead. Subsequently, to be viewed as a leader, they should also have a lot of positive thoughts and negative thoughts. At last, there must be an assortment of chances for the initiative in the school, area or larger context.

BACKGROUND OF THE STUDY

As said by Swami Vivekananda “*Education is the manifestation of the perfection already in man*”. The idea of teaching and the way the education was very different in India. Even though there was a regulating leadership but still there were few which runs differently (Nessipbayeva, 2012). The central government is still trying to uniform the whole education system through implementing certain rules and regulations.

Based on Indian Education System, Teaching Competencies were given more important for students learning. A student’s academic achievement is based on teacher’s teaching competencies (Venkataiah, 2002). In India, technology-based education system is still being under developed. Teachers are using the traditional method of teaching like chalk-board method to the students. Teachers are not well trained on the teaching competencies due to financial conditions and their interest.

Teachers leadership style was very important in their teaching journey. The school leaders found the problem for leading the teachers’ leadership skill. The teachers did not experience about the leadership quality so they found very difficult to follow the school leaders (York & Duke, 2004). But the secondary mathematics teachers’ had quality of leadership skill but they did not use properly. All the teachers and the school leaders were not aware of the leadership style to use in the correct place. The school leaders need to identify the teachers’ leadership style so that the school leaders lead the teachers in proper way (Yuki & Maddux, 2010). There are many leadership styles but they need to understand which leadership style help to lead the students for teaching mathematics.

The school leaders must have focused on activities that would have speed up the progress of the mathematics guidance. School-based creators must think about approaches to connect with families in their change deeds (Cobb & Sorum, 2009).. Three key activities that educator can take are as per the following: Encourage the presentation of early training in grade schools, guarantee stringent student disciplinary measures and empower parental inclusion

Each subjects had a different teaching strategies so each subject teachers have their own teaching strategy. Specially teaching mathematics teachers needed different leadership styles and teaching strategies. All the teachers explained the content very clearly and the student output was also good so the school leader should motivate the teachers (Superfine, 2019). The teacher was the primary leaders in the classroom management because the teacher was the models, motivates and initiates acts of leadership. The nature of the influencer was the class room teachers' so the teachers should have the leadership quality.

Teacher leadership had direct cause and effect relationship upon organizations and their success because the leader determines values, culture. Teachers should have more leadership skill when they were leading mathematics subjects to the higher secondary level (Lumby & Foskett, 2005). The mathematics teachers develop the leadership skill towards application and applied oriented. The leadership skill promotes the teachers very strong in their teaching strategies. Also, teachers should possess more experiences to teach higher secondary students.

Mathematics Teachers were having the practice of book knowledge instead of applications based knowledge and no new innovative methods to teach their students. They were not aware of the leading key points of themselves. They were not using the proper leading style to teach mathematics. Teachers were not capable for their leadership quality due to their teaching strategy (Sahayrani, 2011).The exploration on the impacts of teaching

initiative in connection to student accomplishment has concentrated strongly on the important (Lenin & Rajesh, 2015). The essential obligation regarding building up successful schools and raising student accomplishment has been given from the government level to the states. So teachers were very cautious to teach. If, teachers were wrong in teaching, students also learning wrong things.

A math teacher utilized different types of innovation for the teaching. Innovation gives open access to correspondence that brings student broad models of instructing that enhances norms, expands the critical thinking process and makes further conceivable outcomes for intelligent learning (Rigby, 2014). At the point when process was included with utilizing innovation in the classroom, they may build up enthusiasm for the subject being instructed. Clearly, innovation won't really create a productive math learning, anyway it was utilized as a mechanism of guidance.

Teaching mathematics was very difficult in secondary level. The student did not learn properly in the primary level and they promoted in the secondary level so they found difficult in the secondary level (Pegg, 2004). The secondary mathematics teachers should practice all level of subject contents. In mathematics classroom the board was a basic piece of giving quality math guidance. It was the basic method for teaching and learning.

Math teachers were a creative instrument to math teaching in a higher secondary level. Leader guide the teachers academic and showing methodologies and assets that could improve the abilities of teaching mathematics (Babu, 2007). A capacity of teaching leadership was to affect learning and advancement and raise the standard of the teachers and staffs' execution. This should be possible through expanding inspiration, responsibility, aptitudes, information, and workplace.

To progress adjusting viably, an instructor might identify what, which was the topic, yet in addition how which was the technique to teach. Henceforth, the fundamental

requirement of potent educating was the expertise with presenting techniques (Nikoloski, 2015). They should also understand that all process has various degrees of abilities and limitations. The teaching abilities was that a teacher could acquaint inventive, powerful and preparations with the issues of the process.

According to (Siamoo, 2013) a teacher could develop the knowledge process. It has shown as, viable instructors realize how to use teaching strategies, for example, leadership education and supportive learning. Those were utilized properly; the methods could result in student achievement. It was the event that one steps has taken higher than that of standby educated without the utilization of systems.

The researcher reviewed the articles and books to find out the problem with higher secondary mathematics teachers teaching strategies. The higher secondary mathematics teachers were weak in teaching strategy and usage of technology, so the students lost their interest for learning mathematics. The higher secondary mathematics teachers made the student difficult to understand the concept of learning mathematics.

STATEMENT OF THE PROBLEM

South Indian higher secondary mathematics teachers did not practice proper leadership skill. The leadership skill was appropriate for their teaching so they could not successes in their result (Murgun, 1999). The process of teaching and learning was filled difficulties which the secondary teacher was expected to resolve in order to achieve their goals. So the secondary mathematics teachers used different techniques for their teaching but it did not support for their leadership quality.

The secondary mathematics teachers used book-arranged mathematical issues and methods. The problem was not learning all the problems because in order to complete syllables they did not cover all the problems. When they become a teacher they contoured the same system (Venkataiah, 2002). The student asked to explained the problem if it was

unlearnt problem the teacher found difficult to explain it. The secondary level of teaching was based on the application so the teacher need to prepare contents.

The secondary mathematics teachers were aware of comparing the problem into a real-time factor. The teacher did not prepare for the class room and the student asked to explain the formula it affected the teacher classroom management (Sahayrani, 2011). The teacher teaching quality impacts the student learning as well as the teacher leadership. Science was deciphered, clarified and utilized in an alternate circumstance to create sensible, instinct, constructivism, logical, detailing, and speculation of legal power. Mathematics was considered as one of the most troublesome subject.

The higher secondary mathematics teachers had constrained learning and appropriate teaching methods. Mathematics had many subject and each subjects had their own teaching strategies (Rani, 1995). The mathematics teachers were not trained all the subjects in deeply so it created problem for their teaching. A critical thinking approach urges the student to reasons their way to an answer or another comprehension. As the student's requirement the teacher needed to work but the teacher did not do it.

About the modern classroom, the instructing devices have since a long time ago comprised of chalk, load up, pen, and course reading (Kannan & Sivapragasam, 2016). Anyway the accentuation today is to utilize exhibit the model of different shapes and sizes, slide rules, overhead projector drawing instruments, diagram paper, various kinds of picture and scientific magazines, manipulative abilities, showing machine and being utilized in the advanced classroom.

Western countries were increasingly using technology in mathematics teaching and learning but this was not the case in India. Although integration of technology in schools was not uncommon in India, its use in mathematics teaching and learning in this country was

not prevalent. The challenges faced mathematics education in India and broadly categorized in transaction of curriculum, inappropriate assessment, and teacher preparation.

They were inadequate teaching experience and their leadership practices. The higher secondary mathematics teachers needed more experiences and teaching qualification. Those who completed undergraduate they could not teach for the secondary level of mathematics (Rengarajan, 2014). The teachers did not have knowledge about the secondary level mathematics. Constructivist educating was influenced by the convictions that education occurs, as students were successfully involved through a process of significance and learning improvement as disparate to inertly feat information. Developing sustainable professional development programs for teachers which not only enhance the skills of the teacher in terms of usage of various technological tools but also focus on improving their pedagogical content knowledge using technology. The issues of leadership styles in teaching and learning have been brought up in many instances, by attempting to discover the reasons for the poor standard of training in South India (Jandhyala, 1999). It was by all accounts out of the mind that educators' that leadership style in the classroom was an exceptional determinant of student scholastic execution.

The researcher conducted an informal interview with the mathematics teachers, school leaders and the secondary students at Dindigul District, and found that there had been a need in improving teachers' leadership in term of teaching strategies. For example, mathematics teachers required more classroom management ability, subject knowledge, and teaching methodology in mathematics (Babu, 2007). Through the interview, the researcher also found that although teachers have sufficient knowledge with the contents, they require more knowledge with leadership capacity and vice versa. Therefore, the research is inspired to conduct this study to develop a leadership model to improve secondary mathematics teachers teaching strategies at Dindigul District South India.

RESEARCH QUESTIONS

This research focus on seven questions: They are:

1. What is the desirable leadership style to improve higher secondary mathematics teachers teaching strategies in higher education?
2. What are the optimal teaching strategies of higher secondary mathematics teachers at Dindigul district South India?
3. What are the current leadership styles of higher secondary mathematics teachers applied in the classroom at Dindigul district South India?
4. What are the current teacher teaching strategies at higher secondary mathematics teachers applied in the classroom at Dindigul district South India?
5. What is the impact of leadership style on teachers' teaching strategies of higher secondary mathematics teachers at Dindigul District South India?
6. What leadership model would be developed to improve higher secondary mathematics teachers' teaching strategies of at Dindigul District South India?
7. What is the difference of teachers teaching strategies before and after they attend the leadership style training program at Dindigul District South India?

RESEARCH OBJECTIVES

This research focus on seven objectives: They are:

1. To explore desirable leadership style to improve higher secondary mathematics teachers teaching strategies in higher education.
2. To determine the optimal teaching strategies of higher secondary mathematics teachers at Dindigul district South India.
3. To determine the current leadership styles of higher secondary mathematics teachers applied in the classroom at Dindigul district South India.

4. To determine the current teacher teaching strategies at higher secondary mathematics teachers applied in the classroom at Dindigul district South India.
5. To determine the impact of leadership style on teachers' teaching strategies of higher secondary mathematics teachers at Dindigul District South India.
6. To develop a leadership model to improve higher secondary mathematics teachers teaching strategies of at Dindigul District South India.
7. To compare the teachers teaching strategies before and after they attend the leadership style training program at Dindigul District South India.

RESEARCH HYPOTHESES

1. The teachers' leadership styles are significantly impacting on teachers teaching strategies of higher secondary mathematics teachers at Dindigul District South India.
2. There is a significant difference between the teachers teaching strategies before and after they attend the leadership style training program at Dindigul District South India.

THEORETICAL FRAMEWORK

In this part of the research, the researcher explains the major theories on which this research is based. The theoretical framework of this research consists of the theory of Leadership styles, and Teacher teaching strategies. The theories have contributed in supporting and guiding this study throughout.

Part I. Major Theories of Leadership Styles in This Study

1. Situational Leadership Style:

Situational leadership is composed of four constructs: telling, selling, participating, and delegating (Hersy & Blanchard, 2008) This leadership encourages leaders

to work with team members. It helps the leaders to develop the knowledge towards the working place. This leadership brings out the good quality of the team members in the group .

Telling

It specific guidance and supervision. The leader has responsibility to make decisions and lead the team members (Burns, 2008). The main role of the leader is to make objectives and follow according to the objectives. This leader has a good communication skill to convey the details perfectly.

Selling

This leadership quality is explaining and reasoning. The leaders create rules and goals for the team members. But the rules and the goals are to open to all (Haq & Chandio, 2017). They are asked to give suggestion and opinions. So the team members get from different ideas and thoughts in the group and get benefit from it. It's like selling knowledge to others.

Participating

Participating is sharing and facilitating. The knowledge should be shared and utilized. Unless you are not sharing about your knowledge is not worth for learning. This type of leadership helps others to grow well (Zehra, 2013). This type of leaders is good at taking decision. They give lots preference to the team members for making decision.

Delegating

This leadership style helps to do all the work by their team members. This does not take own perception and views. The leaders are responsible for their group member's activity (Ingram, 2016). They are provided to check their decision making and time to time help. Truth be told, with this situational administration style, the devotees choose when to get the leaders included.

2. Transactional leadership style

Transactional leadership is composed of four constructs: directive, supportive, removes obstacles and achievement oriented (House, 1996). This leader watches the activity of their team members to follow the rules, failure of success. The leaders are good at setting the expectations and keeping the standards. Their feedbacks are constructive and improve output. The leaders are good at find new solution for the problems. Based on the situation they use their idea to solve it. Transactional leaders focus on the maintenance of the structure of the team members.

Directive

This leadership quality is very important for the leaders. It guides the teachers to do and not do. Directive guides the team members to perform a task. There are many problems around as according to the followers to behave it (Nessi, 2005). The teachers should be coordinating themselves and scheduling the time frame. The natural climate and uncertain things we could not predicate so the followers should ready for the situation.

Supportive

Supportive leadership makes the team members happy and guidance. Supportive approach is friendly to achieve team members goal (Judge & Piccol, 2004). This leadership works based on the situations. The relationship with the leaders and the teachers should be good because they need to challenge lots of the problem.

Removes Obstacles

Remove obstacles helps the teachers' difficulties. The teachers find many difficulties in their teaching according to the leaders should guide the teachers' in proper approach. The leaders should help not only physically but also psychologically. The leaders are good at guiding the teachers' to bring new and innovative method for teaching and learning.

Achievement Oriented

A leader should be ready for challenging the goals. This type of leader expects their followers to perform highest level (Tsang, 2014). The leaders should be confident in their ability to meet the expectations. It is most effective in professional work environment.

Part II. Teaching strategy in This Study

Teacher Teaching strategy I

Teacher Teaching Strategy is composed of four constructs: creating, utilizing, cooperative learning and nurturing math success (Davies, 2004).

Creating

Creating is the very important skill to achieve the main goal of education. The mathematics teachers have to develop creating methodology in their teaching. The teachers have to use lots of technology to get more interest towards the subject (Dursema, 2013). It helps the teachers create the learning environment in the difficult situation. The teacher should use different approaches to teach the mathematics lessons.

Utilizing the lesson

The teacher should use the correct time frame for each lesson. The teacher needs to design the mathematical problem based on the student understanding level. All the lessons are not same teaching method (Hill, 1998). Find the suitable method for explaining the classroom activity. The teacher should not follow the same method because the student does not accept the regular way teaching. The explanation should be appropriate for learning.

Cooperative learning

The teachers use group learning for better understanding. All the students are not same capacity of understanding so if the teacher allow the student for group learning they discuss with other student and get the knowledge. The teachers need to explain the goals of the cooperative learning (Kurnik, 2008). The process of cooperative learning makes better

learning experience. This strategy makes the student and the teachers exploring the subject knowledge.

Nurturing math success

It explains about the mathematical subject. There are lots method to learn the mathematics but all the methods are not suitable for all lessons. The teachers need to identify the proper method because the student do not the method of learning (Jaworski, 2006). If the student finds the wrong method in easy way, it is very difficult to change the strategy so while learning or teaching use proper method of learning mathematics. The teacher need to explain the formula instead of memorizing. Mathematics are not memorizing subject but need to understand the concepts.

Teacher Teaching Strategy II

Teacher Teaching Strategy is composed of three constructs: attributes, core process, and function (Pisapia, 2009).

Attributes

Attributes showed the quality of teachers teaching strategy. It explains the teachers class room organizing method. The relationship is between with student and the teachers. The students are treated by the teachers in good manner or not. The mathematics teachers teach the mathematics subject well or not (Siamoo, 2013). The capacity to work on plan through trust, strengthening, and understanding. Sets clear goals and builds up student needs. Comprehends what should be done to acknowledge vision and presentations drive to accomplish results through objective.

Core Process

Core process explains positive, safe teaching and learning. It prepares good learning environment (Huang, Barlow, & Haupt, 2017). The mathematics teachers need to use the variety of instruction method and individualized teaching systems. The teacher should

reflect their teaching methods. They have to share the learning and unlearning problems among them.

Functions

It shows the teachers readiness for helping the student learning. The mathematics teacher spends a lots time for student learning. The students have different level of understanding if the teachers help them and they learn well (Leithwood , 2004). This makes the mathematic teachers complex level to comparing another subject teacher. It helps mainly the teachers readiness of their supporting skill.

Teacher Teaching Strategy III

Teacher Teaching Strategy is composed of five constructs: organizing, practice, changing, process, and evaluating (Johns, 2014).

Organizing

The teacher organizes the subject in proper way so the student gets good input. The mathematics teachers find very difficult for organizing the lessons because it has application and applied method (Zimpher, 2006). The teacher could not teach only application method so they need to arrange both method to teach so the student could find the difficulties. For teaching mathematics organizing is the important strategy.

Practice

Teaching mathematics is fine job but if you are not making them to continue it is very difficult. This subject has the process for continue learning. The teacher has to find the new method of practicing again and again (Akhtar, 2013). The mathematics has each steps to learn and the student could not jump to the another process. So that the practice is the very important strategy for teaching and learning process. Practice makes the teacher to become more confident for explaining the mathematics concepts.

Changing

Changing is the most important strategy in teaching mathematics. The student does not understand the concept the teacher need to change the whole method to another method. The mathematics teachers need to change the learning environment because the student find difficult in understanding (Astin, 2013). Changing makes a lot in the teaching and learning process. The teacher change method to method and subject to subject. All the changes are based on the teaching and learning process.

Process

Teaching mathematics has lots process. It is not a new skill to adopt or new lessons to study. The student does not learn the basics concepts of mathematics it is very difficult to proceed next step (Ingersoll, 2000). So it has lots process the student has to learn the primary level of mathematics and go to higher level of mathematics. The teacher should know the level of the student learning process otherwise the teachers teaching input is not worth. The student and the teacher need to follow the process for teaching and learning strategy in mathematics.

Evaluating

The evaluation is the best of learning output. The teachers could evaluate the learning output but the student could not evaluate the teachers teaching strategy. The students are leaner and thy do not have qualification to evaluate the teachers (Mcgrath & Laksana, 2017). The school leaders have the right to evaluate the teachers teaching strategy. The schools get less result the teachers teaching strategy is not good and the school leader ask the teachers to improve or change the teaching strategy. The mathematics learning is based on the result oriented so the students and the teachers need to evaluate teaching and learning output.

CONCEPTUAL FRAMEWORK

The conceptual framework for this is shown in Figure 1. Firstly, this study begins exploring the expected leadership styles mainly from secondary sources such as books, articles and online databases related to the key elements regarding leadership styles. The sources were from the year 1995, when teaching strategies widely accepted, until 2019. The expected elements for objective telling, selling, participating, delegating, supportive, directive, remove obstacles, and achievement oriented. Secondly this study begins exploring and contacting semi interview with the school leaders the expected teaching strategies mainly from secondary sources such as books, articles and online databases related to the key elements regarding teaching strategies. The expected elements for objective creating, utilizing lesson, cooperative learning, nurturing math success, attributes, core process, function, organizing, practice, changing, and evaluating. The Thirdly the researcher developed a survey from the findings objectives two, three in order to determine the current leadership style and teaching strategies for the higher secondary mathematics teachers at Dindigul District, South India. Fourthly, factors impacting the teaching strategy were analyzed by using multiple regression. Fifthly, the researchers developed a leadership model for teaching strategy. The model was valeted by experts and modified to obtain a final model. The finalized model was tested at Dindigul district, South India.

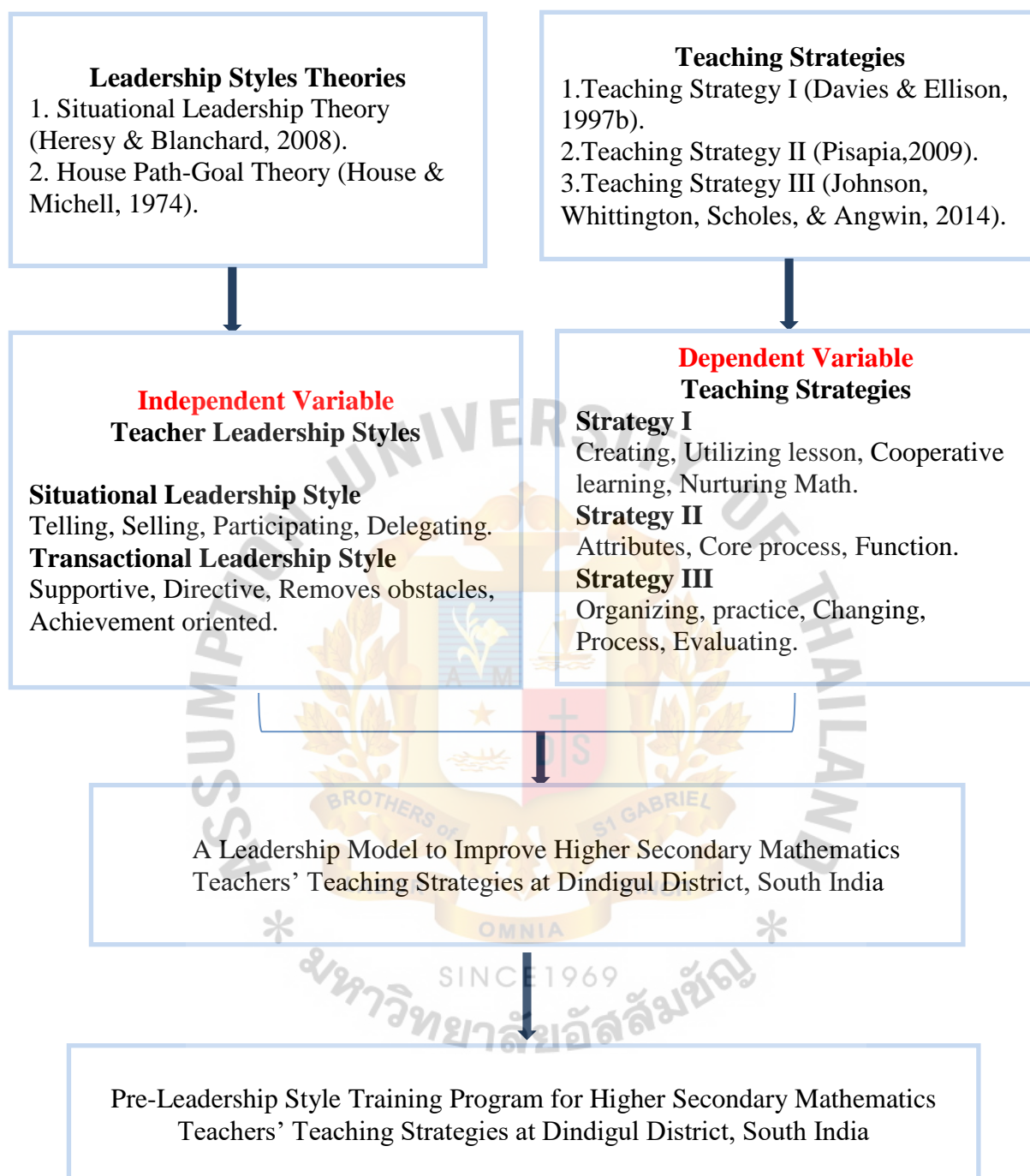


Figure 1. Conceptual Framework of This Study

SCOPE OF THE STUDY

This study focused on the expected leadership style to improve higher secondary mathematics teachers' teaching strategies and a model was developed to assist higher secondary mathematics teachers' teaching strategies. The selections of the eight school leaders for this study was based on their teaching experiences and their teaching qualification. One hundred fifty higher secondary mathematics teachers were selected and attended the training program because they worked currently. This study was try to help those who are working currently as higher secondary mathematics teachers at Dindigul District, South India. The researcher used a total sampling technique.

DEFINITIONS OF TERMS

Higher Secondary

It means those who studies grade eleven and grade twelve.

Higher Secondary Mathematics Teachers

A person who is completed master in mathematics and bachelor in education become a higher secondary mathematics teacher.

Leadership Style

Leadership style is the way and approach of giving direction, energizing people, and achieving objectives. They are the role model of their future life. Leadership means lead themselves as well as guiding others.

Teacher Leadership Styles Sub-variables

Telling refers to how much the educators describe their expectations, explain their views to the students and give the instructions to the students. (Survey items 1-4)

Selling refers to how much the educators deliver the meaning so students understand the mathematical concepts. (Survey items 5-8)

Participating refers to how much the educators help students focus on the work that they do. (Survey items 9-12)

Delegating refers to how much the educators allow students work in their own ways as long as the goal is met. (Survey items 13-16)

Supportive refers to how much the educators use varieties of teaching techniques and instructional teaching aids so students understand the mathematical concepts. (Survey items 17-20).

Directive refers to how much the educators give students guidance so that students understand the concepts. (Survey items 21-24).

Removes Obstacles refers to how much the educators coach students by encouraging and cheering so that students understand the mathematical concepts. (Survey items 25-27)

Achievement Oriented refers to how much the educators inspired students achieve the good outcomes. (Survey items 28-30).

Teaching Strategy

Teacher teaching strategy refers to the school leaders and the higher secondary school mathematics teachers' strategies and activities in driving the teachers to become more competitive and goal-oriented members of the organization. Every educational institution needs a leader whose leadership is dynamic and builds capacity to bring change and improvement to the organization.

With so many challenges faced by higher education institutions, a strategy kind of leadership is needed at this time. Teaching strategy plays significantly in leading the capacity of organizations to look back on their experiences in the past, to be sensible to the changes in the present, and to project how to achieve a better future for the organizations.

Teaching Strategy Sub-variables

Leadership Strategy I

Creating refers how much the educators apply the appropriate teaching method and create effective teaching aids to match students' needs so that students understand the mathematical concepts. (Survey items 1-3)

Utilizing the lesson refers to how much the educators plan to make the lessons alive and interesting so students understand the mathematical concepts. (Survey items 4-6)

Cooperative learning refers to how much the educators give students opportunities to participate and to share their ideas. (Survey items 7-9)

Nurturing math success refers to how much the teachers develop their teaching strategies. (Survey items 10-12)

Leadership Strategy II

Attributes refers to how much the educators contribute the commitment towards trust, strengthening and understanding for students' achievement in learning Mathematics. (Survey items 25-27)

Core Process refers to how much the educators plan, develop, and change to meet the demands of the current system. (Survey items 28-30)

Leadership Strategy III

Organizing refers to how much the educators plan for a vision and quality assurance. (Survey items 13-15)

Practice refers to how much the educators apply proper teaching methods to teach the mathematical concepts. (Survey items 16-18)

Changing refers to how much the educators need to understand students' needs to develop new teaching strategy. (Survey items 19-20)

Process refers to how much the educators teach from the basic level to higher level. (Survey items 22-24).

SIGNIFICANCE OF THE STUDY

The result of this research provides a leadership model to improve higher secondary mathematics teachers' teaching strategies. The findings are useful for the higher secondary mathematics teachers' in Dindigul District to design the leadership styles. It allows the higher secondary mathematics teachers to use proper leadership style to improve teachers' teaching strategies. Moreover, this study can be effective in promoting awareness to the higher secondary mathematics teachers.

The new leadership model aims at implementing in the higher secondary mathematics teachers' being investigated. It is believed that the model would substantially influence the way the higher secondary mathematic teachers' currently practiced leadership. The administrators can adjust themselves in performing their leadership practices through a number of factors which include time constraints and workloads, cooperation, culture, and values, qualification, skills, and experience, organizational structure, funding and facilities, and tasks and roles related to leadership. The leadership model may provide more insights for the school leaders to employ leadership practices that convince teachers to place all their best in their teaching profession for the purpose of student learning. The findings may encourage the administrators to get more involved in the process of leadership through their engagement in curriculum development, instruction planning, and assessment design.

The results may encourage future researchers to use the leadership model to further investigate in a larger contexts including different fields and location across the country. This helps generalize the results that would be beneficial for the higher secondary mathematics teachers' both public and private to promote quality education, quality teaching and student learning.

CHAPTER II

REVIEW OF RELATED LITERATURE

The purpose of this chapter is to review the literature and studies done related to leadership style and higher secondary mathematics teachers' teaching strategies. This chapter is divided into the following parts:

- Context of the study
- Reviewed Leadership Styles
- Reviewed Theories for Leadership Style
- Major Theories for Leadership Style
- Previous Studies on Leadership Style
- Mathematics Teachers Teaching Strategies
- Selection Teacher Teaching Strategies
- Previous Studies on Mathematics Teacher Teaching Strategies

CONTEXT OF THE STUDY

This part provides a literature on Dindigul District, South India higher education in the country.

Dindigul District

The Dindigul district was found in 1951 and located in Tamil Nadu. The district is divided into eight cities, Dindigul, Vadasandur, Palani, Nilakkottai, Oddanchatram, Attur, Natham and Kodaikanal according to 2001 census, its population is 1,923,014. It has got high and higher secondary schools. This district has two universities. Also a number of engineering colleges, polytechnics, are available through-out the district.

Education System in India

In India, the schools are various from province to province but the Figure 2: shows the system. The curriculum may different from 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, and 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 own syllabus, at both the 10th grade and 12th grade levels, and does not prescribe textbooks; schools are free to use textbooks of their choice. The source was taken from Homi Bhabha Centre for Science Education, (2012).

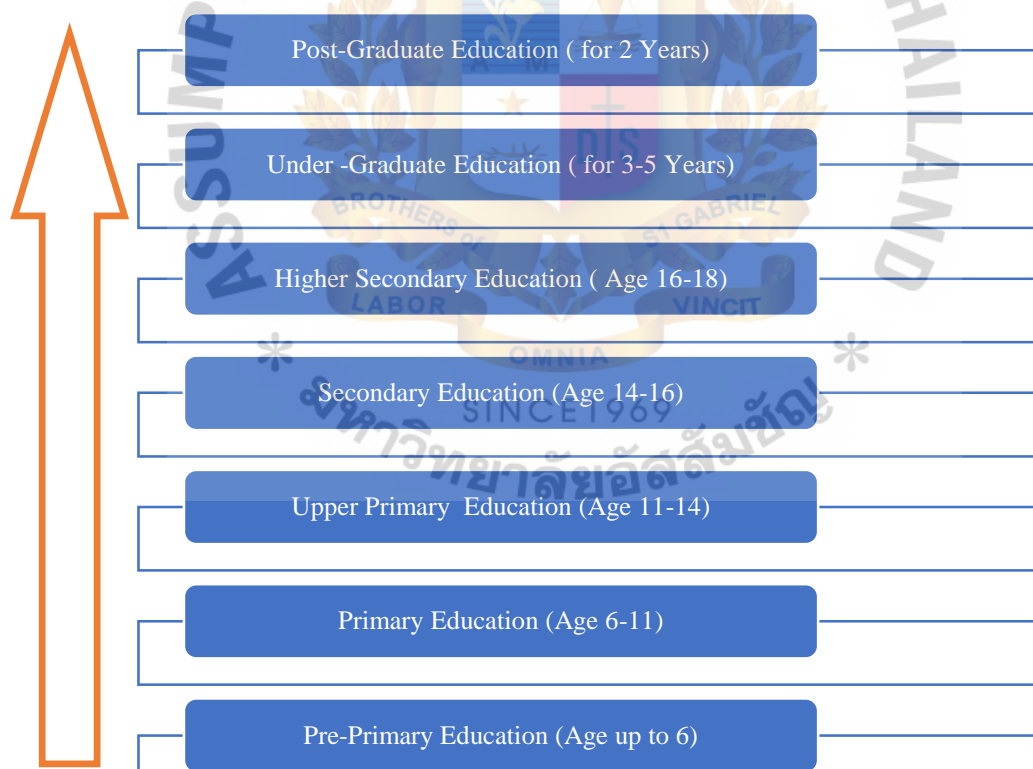


Figure 2. Homi Bhabha Centre for Science Education, (2012).

Higher Secondary Mathematics Education in South India

Higher secondary means grade eleven and grade twelve. School education in India follows a ten plus two systems: ten years of compulsory schooling in which all students follow the same stream, followed by two years in which one chooses a set of optional subjects. India, with its strong mathematical traditions, may be expected by the world to produce excellence in mathematics (Jankvist, 2009). But this may be an unreasonable expectation, since India is grappling with problems of endemic poverty, and even universalizing education is a challenge. Yet, despite adversity, India has managed to produce mathematicians like Ramanujan and Harish-Chandra. All this adds up to an intriguing picture. India is characterized by diversity and cultural riches, as well as endemic poverty and social division, and this is real effected in mathematics education as well.

Mathematics is embedded deeply into the life and culture of people in the Indian subcontinent, attested by a long history of engagement with mathematics in art, craft, work and abstract disciplines of thought. This has also meant a tradition of socially embedded modes of education and learning in aspects of mathematics as well. The subject contents are mathematics logic, correlation and regression (Javed, 2013). The chapter on Mathematical Logic included subtopics on mathematical statements and truth values, the use of Venn diagrams in logic, conjunction, disjunction, conditional statements, biconditional statements, truth tables and applications to switching circuits (Banach, 1956). These topics were reintroduced in 2003 in a chapter called 'Boolean Algebra' which included Boolean algebra as an algebraic structure, principle of duality, concepts of conjunction, disjunction, conditional statements, biconditional statements followed by truth tables and applications to switching circuits.

The revised textbooks appeared in 2007 and the topics were given in the following manner Relations and Functions, Inverse Trigonometric Functions, Matrices,

Determinants, Continuity and Differentiability, Application of Derivatives, Integrals, Applications of Integrals, Differential Equations, Vector Algebra, Three Dimensional Geometry, Linear Programming, Probability.

Proofs in Mathematics

This dealt with various types of proofs in mathematics, namely the direct and the indirect approach (Jaworski, 2006). In the direct approach, straightforward proof, mathematical induction and proof by exhaustion were discussed whereas in the indirect approach, proof by contradiction, proof by proving the contrapositive statement and proof by counter examples were discussed. This is based on the application oriented.

Mathematical Modeling

This is highlighted the need and importance of mathematical modelling, the principles of modelling and steps involved in the modelling process. It included examples from the topic of matrices, trigonometry and linear programming and ended with a paragraph on the limitations of the modelling process (Jita, 2010). Over the years there has not been any major change in the approach of dealing with the topics in terms of introducing or explaining the concepts or in the examples and exercises (Ball, Hill & Bass, 2005). These include equation of a straight line parallel to the axes, slope-point form of the equation of a line, two-point form, slope-intercept form, normal form, symmetric form, angle between two lines, condition of concurrency of three straight lines and translation of axes.

Assessment

Assessment in the Indian school education system is largely limited to the summative variety, and it is for the most part a device to measure cumulative learning: a device used to help teachers write reports and to help make pass/fail decisions (Kumurasamy, 2002). Thus there was little or no feedback into the learning process.

THEORETICAL FRAMEWORK

REVIEWED LEADERSHIP STYLES

This section explains the leadership styles in this study. Leadership styles help the higher secondary mathematics teachers' teaching strategy and the higher secondary mathematics teachers do not practice their leadership style in the classroom. So the researcher started to review all the leadership styles and theories for improving the teachers' teaching strategy (Ahluwalia, 2016; Morsidi, Sian, & Abdullah, 2015; Blanchard, 2013; Caspi, 2014). The leadership styles are autocratic, democratic, laissez-faire, charismatic, task-oriented, transactional, servant, strategic and situational. These styles are widely used in leadership-based literatures. There might be more styles but the above mentioned styles are quoted more effectively than any other.

Autocratic Leadership Style

Autocratic leadership style is known (Masood, Bilal and Baig (2013) were known for individual leadership style overall sets and involvement from staff. Regularly autocratic managements resolve on results reliant on their own opinions and results acknowledge counsel from supporters (Shulman, & Sweitzer 2018). The Autocratic leadership utilizes total, tyrant power over staff. A few highlights of the Autocratic leadership as seen by leadership styles incorporate next to zero involvement from group personalities; leader settles on the choices; team leader directs all the work strategies; group individuals are often trusted with choices or significant errands.

Autocratic leadership could be valuable in making decision, for example, when selections must be prepared promptly without advising with an enormous meeting of persons (Rigby, 2013). Nothing important could be adequately accomplished when a particular kind of leadership style was utilized. Be that as it may, Masood, Bilal and Baig (2013) contended that during military clashes, group individuals may really lean toward an authoritative style.

This style enables staff to concentrate on performing explicit undertakings without stressing over settling on complex choices and to turn out to be deeply talented at playing out detailed requirements, which could be helpful to the association.

The summary of autocratic leadership process generally entails one person making all strategic decisions for assistants. Although it has fallen out of favor in recent decades, the autocratic leadership style is still prevalent. Leaders needing to control minute tasks often were derided as managers. Although the military traditionally encourages superiors to make unchallenged decisions, civilian organizations may not respond to this leadership style much longer.

Democratic Leadership Style

Since creativity assumes a crucial job in democratic development, understanding the idea of popularity based administration is fundamental. The same, research characterized just authority with regards to popularity based developments (Jenkins, 2012). The initiative writing has given no consideration to democratic based administration in such developments, concentrating on democratic based leadership, gatherings and associations. This investigation revealed a structure of admiration based leadership in democratic based developments.

The system incorporates settings, inspirations, attributes, and results of majority rule leadership. The investigation thinks about penance, strength, imagery, native cooperation, and visualization as significant qualities in the platform of right administration in different political, social, and social settings (Roelofs & Sanders, 2007). Applying the structure to Nelson Mandela, Lech Walesa, and Dae Jung Kim; the examination thinks about them as excellent models of open-minded leadership in law-based developments for accomplishing majority rule government.

The summary of democratic leadership style also known as participative leadership or shared leadership, was a type of leadership style in which members

of the group take a more participative role in the decision-making process. This type of leadership could apply to any organization, from private businesses to schools to government.

Laissez Faire Leadership Style

Giving guidance, direction or mentorship did not really reduce opportunity. Whenever Mahatma Gandhi or Winston Churchill inspired thoughts to achieve ridiculous activities, they were not utilizing influence or recommendations (Johnson & Christensen, 2012). This was actually what free initiative leadership was about. Laissez leadership, creativity management does not simple and could go terribly lost if not comprehended completely or executed effectively.

It needs a perfect leader who could build up a vision, get obtaining it from the group towards the vision and set up events that feature whether the group's movements and activities were in a state of harmony with the bigger picture (Bass & Usiskin, 2008). Laissez leadership was tied in with inspiring and driving personalities, yet above all, it was tied in with enabling individuals to set objectives inside the bigger picture and accomplish their best.

The summary of laissez-faire leadership was the direct opposite of autocratic leadership. Instead of a leader making all decisions for an organization, group or team, laissez-faire leaders make few decisions and permit their staff to choose appropriate workplace solutions. Laissez-faire leaders share these characteristics.

Charismatic Leadership Style

A charismatic leadership style could have looked like a transformational activity because these leaders moved fast in their action and were excited in driving others to push ahead. This ability to make zeal and duty was a huge preferred situation (Nikoloski, 2015). The differentiate between engaging leader and transformational leader lies in their point. Transformational leaders need to change their thought and relationships (Almansour, 2012).

Charismatic leaders revolved around themselves and probably did not want to change anything. Magnetic leadership passed on unexpected commitment, and it needed a long give duty from the leader.

Charismatic Leaders used a wide extent of procedures to manage their personality and, in case they were not ordinarily enchanting, may practice tirelessly at working up their capacities (Conger & Kanungo, 1987). They trusted through management and putting it all on the line for their feelings. They would prove amazing trust in their followers. They were attractive and used non-verbal correspondence similarly as verbal language. Deliberate charm occurred from a dramatic perspective, where the leaders were 'playing to the house' to have the perfect effect.

The summary of charismatic leadership was basically the method of encouraging particular behaviors in others by way of articulate communication, encouragement and strength of personality. Charismatic leaders motivate the team members to get things done or improve the way certain things are done. This leadership style was almost of divine origin.

Task Oriented Leadership Style

The task-oriented style covered a couple of features of undertaking the administrators. Task the officials, required coordination of work-related activities, offering important, definitive activities, coordinating thing quality, and arranging financial related reports (Treadway, Ferris, Duke & Adams, 2007). In this manner, it was, in general, be assumed that the leader who grasp a task arranged organization style, revolve around completing basic assignments to show up at various leveled targets.

One of the unquestionable characteristics of this leader was that they were less stressed over the delegates, who were actually the needed administrators to achieve the perfect targets (Carter & Greer, 2013). In spite of what may be normal, they were dynamically stressed over after an organized route in order to achieve clear progressive

targets. Task situated leaders revolved just around doing what needed to be done and could be autocratic (Armenakis, Harris & Mossholder, (1993). They successfully described the work and the occupations required, set up structures, and plan, create, and screen work.

The summary of oriented leadership style performed other key undertakings, for example, making and keeping up benchmarks for execution. The advantage of the task organized out association was that it guarantees done on time. In any case, the task oriented leader didn't will, generally speaking, contemplate their social event's flourishing, this system could continue on through huge amounts of the failures of the absolute action, including causing inspiration and upkeep issues.

Transactional Leadership Style

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 (Zehra, 2013). The leader has an alternative to prevent associates if their work did not satisfy a reasonable rule. Despite the way this may complete controlling and protective, the transactional leadership offers a couple of favorable circumstances. For one, this activity style clarifies everyone's occupations and commitments.

Transactional leadership was extremely a kind of the board, not a genuine leadership style in light of the fact that the attention was on short activities. It has genuine obstacles for information-based or creative work (Burian, Maffei & Pieffer, 2014). It was powerful than the others. This Leadership model was presented by the Max weber in 1947. This leadership was a kind of managerial leadership and generally centered around the association, supervision, and execution of the representatives in the association. Transformational leadership style accentuated the rewards, focuses among workers and the executives.

The summary of transactional leadership focused on the show of representatives in the association and the representatives were compensated with improvements and financial related respects based on the presentation record of the workers. This position style caused the relationship to get the goals reliant on the efficiency and sufficiency of the laborers. This leadership acknowledged that delegates were pushed by reward.

Servant Leadership Style

The term of "servant leadership" was authored by Robert Greenleaf (1904-1990) in the author fundamental work was published in 1970. It started with the normal leaning that one needed to serve, to serve first. Worker leaders as noticed by Greenleaf above, go past personal circumstance (Spillane, Halverson & Diamond, 2004). They were not persuaded by the inspiration of intensity, yet the inspiration to serve others. They expected to serve what the supporters need and lead them. Driving and serving became replaceable.

Servant leadership supporters a get-together centered approach to managing analysis and essential administration as techniques for bracing foundations and improving society. It also emphasized the power of impact and searching for the understanding, over the old top-down kind of administration (Rachmawati & Lantu, 2014). A couple of people have contrasted this with flipping around the dynamic pyramid. Specialist activity holed that the essential job of a business should be to make a beneficial outcome on its agents and system, rather than using advantage as the individual aim.

The summary of the servant leadership talked about the terms "socially responsible companies" or "participative management" styles. Organizations and managers who fit these descriptions are the ones who typically fit the mold of servant leadership. Servant leadership could improve an organization and/or society over the long term. Servant leaders attract employee trust, which can improve the credibility of the organization's brand. Servant leadership typically develops a positive corporate culture and can correct a prevailing

negative culture over time. This leadership style encourages and motivates high performance from employees.

Strategic Leadership Style

Strategic leaders could make an understanding of procedure energetically. Despite strategic leader driving the creation of a reasonable framework for the association was the need to make an understanding of strategy decisively by changing over it into operational terms (Davies, 2004). A couple of activity styles were imperative to key administration, particularly those that consideration on leader lead and that has been the subject of later analysis.

Then in the associated part, the researcher talked about the styles related to rising suggestions of a credible, worker, and capable leadership (Carpenter, 2012). The developing suggestion reflected the acknowledgment of researchers that leaders might go to different analysis to a more important point than previously.

The summary of the strategic leadership talked about the leaders' strong communication skill, good listening, passion & commitment, positive, innovation, collaboration, honesty and empathy. These were the characteristics of the strategic leadership style.

Situational Leadership Style

The Situational leadership style was created by Hersey and Blanchard in 1969. The principal procedure of the situational thought was that different conditions require different categories of activity to get the best results (Blanchard, Zigarmi & Nelson, 1993). According to the situational leadership approach, an individual should more likely than not see different conditions and the specific activity style they required and subsequently have the choice to alter their power style as demonstrated by the conditions to be a good leader.

The situational leadership styles in the situational management approach were showed by their degree of knowledge and consistent lead (McCulloch & Faughts, 2014). It directed that the correspondence, tuning in, explaining decisions, offering assistance, backing, approval, remembering the supporter for important leadership and basic reasoning.

The summary of situational leadership depicted by another way of correspondence from the leader to the supporter, close oversight, stores of contribution on execution and away from of the endeavors including what to do, and when, where, and how to do it.

Summary of Leadership Styles

Autocratic leadership style was known for individual leadership overall sets and involvement from staff. Command and control were typical of this style. This leadership utilizes total, tyrant power over staff. Democratic leadership assumed job in democratic development, understanding the idea of popularity-based administration is fundamental. The system incorporates settings, inspirations, attributes, allows creativity, and results of majority rule leadership.

Laissez-Faire leadership style was given guidance and direction. It needs a good leader who could build up a vision, get it done information ins from the group towards the vision. Charismatic leadership style was strength the leaders' quality in their organization. This ability to make enthusiasm and duty was an enormous preferred position. They prompt trust through identifiable management. They were strict leaders. The task-oriented style required coordination of work-related activities, offering essentialness to definitive activities, coordinating quality and show up at various leveled targets They are less stressed over the delegates and achieve the preferred targets.

Control plays an important role in transactional Leadership. It focusses on completion of the task for the efficient and quick achievement of the goal. The leadership style based on

the product. The Situational leadership style changed the leader to active and get the best results. In this leadership approach an individual have the choice to alter their power style as demonstrated by the conditions to be a good leader.

REVIEWED THEORIES FOR LEADERSHIP STYLE

The leadership theories are great man theory, train & participative theory, behavioral theory, contingency theory, transactional leadership theory, situational leadership theory, management theory, and servant theory. There might be more theories but the above mentioned theories are quoted more effective than any other.

Transactional Leadership Theory (1970)

The transactional leaders' theory addressed the development of leader oriented, approaches normally revolved uniquely around the leaders' exercises and aspects. The general perspective, transactional leadership revealed to the most broadly perceived dynamic of social exchange among activity and association (Venne & Leigh, 2014). This leadership administration analysis has exhibited that the possibility of the exchange strategy among leader and assistants could affect in their implementation of work.

Bass considers the leader effects from the perspective of a fruitful worth based leader who has gone about as a source of analysis, as a communicator, as a model, and a source of effect (Rowold & Rohmann, 2005). The maker similarly examined how assistants use practical systems to effect and get the information and how esteem based organization regularly affected.

Situational Theory

The situational leadership theory was created by Paul Hersey and Ken Blanchard. The situational leadership theory was characterized as a leader's capacity to change their administration strategies to other persons' status and conduct level (Zigarmi & Christenson 1985). Contingent upon the availability and conduct of every person, procedures and

strategies ought to be custom-made to address the issues of individual. An exciting leader could not accept that all individuals could and work at a similar limit in different situations and responsibilities.

The situational leadership theory important was to the leader, mentor and parent. It kept up that there were two measurements to leadership; relationship conduct and assignment conduct. A mix of these two practices characterizes a leader's style (S1, S2, S3, S4). A leader would utilize one of these four styles because of a supporter's conduct that applicable for the development (Thonas, Harris & Hopkins, 2008). The source was taken from (Nigam, 2014).



Figure 3. Situational Leadership Dimensions

Great Man Theory (1840s)

Great Man Theory (GMT) was the organ from which a great part of the important of writing it. The writing revealed Great Men (Northouse, 2004). The researcher found that the leaders had worked for leader who had begun to lose their quality in the wake of perusing the writing on GMT and began to accept they were Great Men. The term Great Man theory has been initially connected with the nineteenth-century (Goethals & Sorenson, 2012).

Scottish student of history Thomas Carlyle, (1841) who pronounced, "*The historical backdrop of the world was nevertheless the account of incredible men*" (p. 127). Carlyle contended that legends shape history through the vision of their insight, the magnificence of their skill, the ability of their leadership and, their splendid motivation.

The Great man theory categorized as take more than a lot of the credit, act like the most astute people in the room, go about as they care about others, rival everybody, invest however much energy as could reasonably be expected beside the enormous manager (Jaworski, 2006), help others to remember their skill, fault those underneath them, at the point when things turn out badly, they could not fault those beneath themselves, they begin to micromanage vigorously, lose their capacity to discuss anything besides work and look to be their own man.

Trait & Participative Theory (1930-1940)

Trait-based based theory thoughts involved in extraordinary man evidences of administration, that incredible leader was conceived and not made, and the quality suggestion that specific attributes were acquired or created (Uslu, 2019). Stodgily additionally addressed the significance of followers to a leader's development and capability, reasoning that an individual did not turn into a leader by restraint of a mix of attributes; yet the example of individual qualities of the leader must bear some related relationship to the attributes,

exercises, and objectives of the supporters (Bass, 1974). The association among leader and their supporters would too frame some helping of later reasoning.

Behavioral Theory (1940-1950)

Behavioral theory of leadership was adopted and unexpected strategy in comparison to the quality assumptions. The most significant opinion basic was that the leader could be made (Burns, (1978). It attempted to demonstrate that not all were not conceived leader but rather there were specific practices that could be figured out how to move toward becoming leader (Augustsson & Boström, 2012). In this way, this would involve that personalities could be prepared to progress toward becoming leader. In this way, individuals could get creativity preparing to begin driving others.

Contingency Theory (1960)

The contingency theory dealt with the association was influenced by going before investigation adventures and endeavoring to pinpoint persuading power lead. During the 1950s, specialists at Ohio State University coordinated far-reaching examines surveying the degree of conceivable leader practices in different leadership settings (Ahanagar, Aramburu & Lines 2009). The plans of intensity practices were from the start seen dependent on these studies, two sorts of practices demonstrated to be particularly standard of a powerful leader. The categorized were thought, leader practiced that unite structure a superior to normal proclivity and social affiliations, exhibiting backing, subordinates what's expanding, starting structure, leader practiced that gave structure, to guarantee task satisfaction and target accomplishment.

Contingency theory was one of the most compelling theory of administration and demonstrated its convenience for the general population and private areas. The supervisors ought to be made mindful of its points of confinement (Rew,1998). None of the CTL models were valuable consistently though a few of them had fascinating thoughts that could be

valuable in the fitting setting. It caused a great deal to manage the complexities of dealing with a group of laborers. In any case, driving a group was just a single piece of the parts of good leadership, particularly in specific degrees of government.

Management Theory

Theory X and theory Y was invented by Douglas McGregor and the book name was "The Human Side of Enterprise" 1960. It showed the leadership styles and framed the reason for much consequent composition regarding leadership the matter. For the most part, the 'theories X' discernments the workers were lethargic and should be closely checked for that and frameworks were required (Mangin, 2007). The managers were inverse where they expected representatives were yearning, appreciate work and were progressively beneficial whenever given the opportunity to sparkle.

Servant Theory

Sarkus (1996) saw that a significant part of the present writing that supports serving and esteeming individuals have been expected by crafted by Greenleaf. The emphasis on worker leadership was to recently serve without hoping to be served by the individuals who pursue (Arjoon, 2000). In spite of the fact that Greenleaf (1977) was the one most in charge of promoting the suggestion of leader administration, the assumption has been polished for a considerable length of time upon hundreds of years all through all societies).

Greenleaf advanced the idea of leadership through an exposition titled the servant as leader, and a later book consolidating that paper servant leadership: A Journey into the nature of legitimate power and greatness (Blanchard & Zigarmi, 1985). Greenleaf attributed Herman Hesse's Journey toward the East (1956) as the source of his concept of the leader head. Greenleaf authored the idea in 1970 (Spears, 1996) so as to bring to the cutting edge the point of viewed that leader was the first important. The author proposed that the extraordinary leader was viewed as worker and then lead the organization.

Summary of Leadership Theories

Great Man Theory (GMT) was used for ancient studies. The term Great Man theory had been originally connected with the nineteenth-century Scottish student of history Thomas Carlyle, (1841). Carlyle contended that legends shape history through the vision of their insight, the magnificence of the ability of their leadership. Trait-based based leadership was conceived the leaders not made. The quality suggestion that specific qualities made the leaders good. The leaders developed capability must bear some related relationship to the attributes, exercises, and objectives of the supporters. The behavioral theories of leaderships most significant presumption are that individuals could be prepared to progress toward becoming leader. It attempted to demonstrate that not all were conceived leaders but rather, there were specific practices that can be figured out how to move toward becoming leader. The contingency theory dealt with the association was influenced by investigation explorations. The leader practiced a superior to normal proclivity and starting structure. This leader practiced that gave structure for work task.

MAJOR THEORIES FOR LEADERSHIP STYLE

The researcher has reviewed various leadership theories. It was found that situational leadership theory and transactional leadership styles were used by the higher secondary mathematics teachers. (Tracey & Hinkin, 1988). The researcher searched books and articles for general counting to find the leadership theory for the higher secondary mathematics leadership style. The books and articles were selected based on the following:

- Date 2000 -2019 (expect the main theory of leadership style)
- Published in recognized publishers. i.e. (SAGE, Emerald, insight, ERIC, etc.)
- Published in English Language
- Area of Education, mainly for secondary mathematics teachers and administrators.

The researcher analyzed the higher secondary mathematics teachers' leadership style according to the design of the study as above mentioned and synthesized in order to identify and utilize as theoretical framework and conceptual framework.

Table 1 explained about two leadership styles were practiced in their teaching and the reason were given below. The characteristics of the situational leadership were teacher readiness, management of teaching, teaching presentation, facilitating teaching and the interaction for teaching. Transactional leadership characteristics were supervising the student learning, organizing the teaching contents, assessing the learning outcome, improving the teaching method and teacher motivation.

Table 1

Findings from a Synthesis of Literature for Leadership Styles

Theory & Sources	Keywords	Expected Leadership Practices
Leadership styles (Ahluwalia, 2016; Morsidi, Sian, & Abdullah, 2015; Blanchard, 2013; Caspi, 2014; Shulman, & Sweitzer 2018; Rigby, 2013; Jenkins, 2012; Roelofs & Sanders, 2007; Johnson & Christensen, 2012; Bass & Usiskin, 2008; Nikoloski, 2015; Conger & Kanungo, 1987; Treadway, Ferris, Duke & Adams, 2007; Carter & Greer, 2013; Zehra, 2013; Burian, Maffei & Pieffer, 2014; Spillane, Halverson & Diamond, 2004; Rachmawati & Lantu, 2014; Davies, 2004; Carpenter, 2012; Blanchard, Zigarmi & Nelson, 1993;	Leadership Styles Efforts of Teaching. Initiates in Teaching. Motivation in Teaching. Shard Vision in Teaching. Cooperate Volunteers for Teaching. Development of Leaders Oriented. Activity and Association. Source of Effect. Leaders' Capacity Assignments Contacts Expected Results. Quality Assumptions. Persuading Power. Leadership services.	Teacher leaders' efforts of teaching. Teacher leaders' initiates in teaching. Teacher leaders' motivation in teaching. Teacher leaders' shard vision in teaching. Teacher leaders' cooperation for volunteers teaching. Teacher leaders develop of leadership styles based non the situations. Teacher leaders' active and associated with their works Teacher leaders' leaders' capacity.

McCulloch & Faughts,
2014).

Situational Leadership
Theory (Hersy &
Blanchard, 2008)

Situational Leadership
Teachers reediness.
Management of teaching.
Teaching presentation.
Facilitating teaching.
Interaction for teaching.

Teachers 'leaders' reediness,
management of teaching,
teaching styles,
facilitation of teaching and
interaction of teaching.

Telling (Barth, 1999;
Siamoo, 2013; Barr & Duke,
2004; Hersey & Blanchard,
2012).

Telling
Imparting the concepts.
Innovative Methods.
Building Confidence.
Mathematics Knowledge.

Finding teachers leader's
imparting the concepts of
teaching styles and the
confidence level of teaching.
Teachers leaders'
mathematics knowledge of
teaching.

Selling (Blanchard, Zigarmi
& Nelson, 2013; Bhargava,
2014; Fenn & Mixon, 2011;
Flumerfelt & Banachowski,
2011).

Selling
Task Achievement.
Changing the Concept.
Cooperating Learning.

Finding the teachers
achievement style of
teaching and how to solve
the difficult situation.
Teachers' team work ability.

Participating (Bruce &
Avolio, 2002; Bruce &
Gardner, 2005; (Viviane,
2009; Firestone, 2008; Gurr-
Mark, Geroe & Mulford,
2010).

Participating
Encourage Learning.
Support Learning.
Strengthening Team.

Finding teacher leader
participating skill with their
team members. To find the
leaders supporting and
strengthening with their
team members.

Delegating (Kishore, 2013;
Chemer, 1997; Baron, 2015;
Vinberg & Larson, 2010).

Delegating
Learning Difficulties.
Self-Directed learning.
Reciprocal learning.

Find out the teachers'
leaders delegating and
learning difficulties.
Teachers have self-learning
about their behavior in the
class room teaching.

House Path-Goal Theory
(House & Michell, 1974).

Transactional Leadership

Find out the teachers' make
any changes for teaching

	Supervising the student learning. Organizing the teaching contents. Improving Teaching Method Teacher Motivation.	and learning situation. Teachers need to take care of the students learning. To find out the teachers improve their teaching method.
Supportive (Davis & Simmt, 2006; Jermier, 1996; Fullan, 2002; Timperley, 2005).	Supportive Preparation for Learning. Fulfilling Necessities. Creating Interest.	Teachers readiness for teaching and learning. Teachers how to create the interest for the students learning.
Directive (Vroom, 1988; Gooty, Gavin, Jonhson & Frazier, 2009; Harms & Egan, 2010; Thornton, 2014).	Directive Cognitive. New Contents. Challenge new-fangled Method.	Finding the teachers leaderships ability in the classroom and how to solve difficulties situations.
Remove Obstacles (Hall & Hord, 1987; Stogdill, 1979; Hogan & Kaiser, 2005; Torabi, Khodayari & Kohandel, 2013).	Remove Obstacles Categorize the Complication. Shrewd Learning. Eliminate Prejudice.	Teachers ability to separate the situation in different learning situation. Finding the teachers eliminate the steps in teaching.
Achievement Oriented (Hine & Lessig, 2018; Hill, Blunk & Charalambous, 2008; Hersy & Blanchard, 1982;	Achievement Oriented Aspire wisdom. Methodical Teaching.	Leaders should be challenging the goals. Teachers use different methodology for achieving the schools' goals.

Situational Leadership

Telling (Directing)

The situational leadership style showed that the leader related to the task and direct concerning the relationship with the social event. Telling was directed a common movement of information from the leader to the social affair. This task guided the leaders

should follow the order from the higher officer whatever and whenever as soon as follow it (Barth, 1999). The leaders should find satisfaction in deliberating hard and for long hours to work. The leaders prefer to think about small and daily projects to long-term ones (Siamoo, 2013). There was a less of an emphasis on accomplishing an objective than structure human relations. The leader despite everything was in charge yet there was a more prominent measure of a complement on checking the ones allocated with the activities.

- Imparting the concepts.
- Innovative Methods.
- Building Confidence.
- Mathematics Knowledge

For example, students may happy experience formal mathematics education for a very long time or more, and they could be motivated wherever over the expansive mathematics educational plans (Copland & Knapp, 2006). Activity learning in science training joined with repetition theory brings mathematics points to this present reality. Normally, essential level occurrences were of basic significance, and this is strengthened with secondary level activity learning. The open issues of mathematics could frequently be acquainted with student in essential, secondary, and tertiary training. Generally, classics outcomes and open issues serve to motivate the students as well as the teachers themselves (Cooney, 1999). Since viable mathematics educators are required, activity learning ought to be utilized promotionally at all degrees of mathematics education, realizing that future teachers were among the current student populations.

The leader expected to explain about the working system in progress level to the new staff, it was continuously about the leader being high in organizing than supporting (Barr & Duke, 2004). The leaders tell others what to do if they want to be rewarded for their work. The leaders expressed with a few simple words what they could and should do (Hersey &

Blanchard, 2012). Since their new and did not have the past knowledge on this kind of task, the leader's fundamental duty was to ensure they get knowledge what the work was and what was required from them assuring both of them to have a sensible picture on it.

Selling (Coaching)

It was the point at which the leader clarifies why, requests proposals, acclaims practices that were roughly right and keeps on coordinating task achievement. As long as things were gone work well, the leaders did not change anything (Blanchard, Zigarmi & Nelson, 2013). The leaders provided recognition and rewards when the teachers reach their goals. The leaders' supporter was in the subsequent improvement level whereby he has some ability yet the responsibility was low.

- Task Achievement.
- Changing the Concept.
- Cooperating Learning.

The technique was utilized in various educational settings, both organized and informal. Teachers may utilize it in a class room. However, the method was helpful in different situations (Cravens, 2019). Organizations, for example, may utilize it as they train teachers in team-building and different exercises. Organizations for mathematics students, for example, Mathematics clubs, could also accomplish a lot from this technique. Such groups meet in quite a number of place – at restaurants, tea-shops, in class room and even at individuals' homes (Crum, 2010). Cooperative learning could be utilized in these situations. For example, think that the top of a mathematics club separates club members into little groups. Each gathering is advised to concoct headings for making a specially food. Each group found to be better.

The leader's job was to mentor their follower more on the undertaking as opposed to guiding them, cooperating with the follower, and help them to figure out how to

deal with various issues (Bhargava, 2014). The leader helped others find meaning in their work. The leader asked others what was absolutely essential.

Participating

The role of the leader was to encourage, support, motivate and strengthen the teachers. The leader worked with intensity on particular task. The leader strived as hard as they could to complete this task (Bruce & Avolio, 2002). The people at this level experience self-question, addressing in the event that they could play out the task all alone. Their responsibility vacillated and uncertainty. Teachers had started up a reasonable learning and aptitudes however the inspiration level was changing.

- Encourage Learning.
- Support Learning.
- Strengthening Team.

Administrators identify specific ways that they could expand teacher inspiration by making feedback and support more significant and relevant, valuing inquiry and curiosity, and fortifying and compensating exertion (Curry, 2008). Video clasps of fruitful school leaders describing their techniques were trailed by small group work by members who identify and analysis their own practices and decide procedures for improvement. Teachers realize that the time they spend in proficient adapting legitimately focuses on their individual needs and those of their students. They leave weekly professional learning with a system addressing to explicit regions of progress, and a plan for executing that technique in their class room the next week (Darling, Chung & Frelow, 2002). Subsequent training by teacher leader gives every teacher individualized and separated support.

The best leadership style would strengthen, as leader and supporter settle on the choice together and the leader indicates all the more supporting conduct and low coordinating conduct (Bruce & Gardner, 2005). The leader should proud of their work on that task. The

supporter should concentrate to the task. In the past it was appointed as the group was ignored however now they needed assistance to take care of the issue (Viviane, 2009). They needed the leader to help in the choice towards the issue. The group had variable fitness and was submitted an accounts as they have been attempting to take care of past issues without their own.

Delegating

Delegating was the point at which the leader enables the representative to act freely with the fitting effects to take care of business. The leader shared duty regarding the objective setting and was accessible (Kishore, 2013). The leaders gave preference to others work in the manner that they want. The leaders gave direction or guidance to others if they could achieve their goal (Chemer, 1997). It was ideal to lessen the lead and let the supporters take over it. However, it could be expected in light of the fact that the gathering cooperates great and the learning and ability expected to do aim their goal.

- Learning Difficulties.
- Self-Directed learning.
- Reciprocal learning.

According to Knowles (1975, 1990), learning did not take place in individual but in association with others such as teachers, tutors, and peers. Therefore, learning could be placed on a continuum, ranging from teacher or other oriented at one end to self-directed at the other end (Den, Van & Koopman, 1997). When shifting from one end the other, the amount of control over learning changes as well as the amount of freedom to evaluate learning needs, to decide on the content of one's learning issues, and to implement learning strategies to unravel one's learning issues.

As long as things are going smoothly, the leader should have satisfied it. The leaders monitored all projects that the leader was in charge of to ensure the team meets its

goal (Baron, 2015). The event that this gathering got any of the other leadership styles they would felt over regulated and this would prompt dissatisfaction so the leader should be low in supporting just as coordinating conduct. Their ability furthermore, duty was completely created at this level and they could be trusted to do the assignment without consistent administration or coordinating.

Summary of Situational Leadership Style

The researcher summarized the situational leadership and the characteristics. The situational leadership were teacher readiness, management of teaching, teaching presentation, facilitating teaching and the interaction for teaching. The main key terms were telling, selling, participating and delegating.

Transactional Leadership Style (Path-Goal Theory, House & Mitchell (1974)

Supportive

Supportive was centered leadership style that comprises of being well prepared and interested with a conduct coordinated towards fulfilling the necessities of people. The leaders helped others to understand the visions through using tools, such as images, stories, and models. The leaders went out of the way to make others feel good to be around it (Davis & Simmt, 2006). Bunch situated choice procedure concentrated on leader conduct in planning cooperative choices dependent on the quantity of practices by unit leaders in the gathering.

- Preparation for Learning.
- Fulfilling Necessities.
- Creating Interest.

The comparative review of school leadership suggests that an important role for school leaders is that of collaborating with the communities around them. Schools and their leaders strengthen collaboration, form networks, share resources, and work together. These

engagements enlarge the scope of leadership beyond the school to the welfare of student in the class room (Eich, 2008). The leadership team also nurture a culture where improving school leadership was accomplished across communities, to the benefit of all concerned. For example, in some Finnish municipalities, school leaders also worked as school district leaders, with one-third of their time devoted to the district and two-thirds to their own schools (Erickson, 2011). Management and supervision are shared, as are evaluation and development of education planning. The aim is to align schools and municipalities to think systemically in order to promote a common vision of schooling and a united school system

The leader made work wonderful for the employees by indicating worry for them and by being cordial and agreeable. The leaders help others with their self-development. The leader ensured others get recognition or rewards when they achieve difficult or complex goals (Jermier, 1996). It has been best in circumstances in which assignments and connections are physically or mentally testing. Supportive leader behavior centers around the individual needs of adherents (Fullan, 2002). It has been fundamentally the same as the first thought leader conduct talked about prior. Good leader has practiced incorporate making the workplace a charismatic spot, what's more, communicating worry for the individual welfare of supporters.

Directive

Directive leadership centered giving mental help to people by giving directions on assignments, what has anticipated from them, how it has done, rules, and timetable. It has conducted for people that have obstinate and dictator because of questionable assignments, it would give direction and mental structure to people (Vroom, 1988). The leader influenced others by developing mutual liking and respect. The leader had an ever-expanding network of people who trust and rely upon them (Gooty, Gavin, Jonhson & Frazier, 2009). It worked assistance concentrated on leaders conduct that comprises of booking, arranging, and sorting out work with people. The leader has educated the follower on what has anticipated from

them, for example, guiding them, how to play out an assignment, and planning and organizing work.

- Cognitive.
- New Contents.
- Challenge new-fangled Method.

Teacher preparation policies and practices were useful only insofar as they translate to action in the classroom, which suggests incentivizing the design and adoption of interest interventions and rewarding faculty for the downstream benefits of their efforts toward enhancing student motivation (Erickson, 2014). Getting down into the weeds of creating instructional opportunities that promote and sustain students' interest or facilitate utility-value connections is time-consuming and requires careful attention to intervention implementation details (Ekawati & Lin, 2016). Various evaluation policies could reward teacher who used evidence-based motivational science to inform their curricula and instructional methods, for example, by providing professional development funds, creating organizational teaching awards, and other meritorious recognition for such efforts.

It was the best when individuals were uncertain about the task or when there was a great deal of exposure inside the organization (Harms & Egan, 2010). Directive path-goal clarifying leader conduct was large planned for diminishing job equivocality, explaining the connection between supporter exertion and objective achievement, and connecting supporter objective accomplishment to outward compensates (Erkutlu, 2008). The leaders provided challenges for their team members to help them grow. The leader managed other by setting standards that they agreed.

Removes Obstacles

Removes obstacles revealed the leadership style conduct to urge and impact people to take an interest in basic leadership, give recommendations, and offer thoughts that

would be incorporated in the association (Hall & Hord, 1987). The leader used simple words, images, and symbols to convey to others what they should or could be doing. The leader gave direction to other to achieve their goals (Stogdill, 1979). Report and systems administration concentrated on leader conduct introducing the gathering in a good way to procure the dynamic effects to finish activities.

- Categorize the Complication.
- Shrewd Learning.
- Eliminate Prejudice.

The leaders needed to provide the characteristics of the teaching methods and the management of the class room setups. The teacher followed up the student learning until satisfying the schools goals (Evans, 1970). The powers of leaders were limited by how worthy they were of following and by whether their followers follow. The best leaders create other leaders and give them the space to lead. The expectation of leaders and followers was also dependent on the culture and systems in organizations.

The leader counseled with their supporters before settling on a choice on the most proficient method to continue. It was best when assistants were profoundly prepared and associated with their work (Hogan & Kaiser, 2005). The leader consistently provided coaching and feedback so that their team members know how they completed. This leadership behavior includes thinking about supporters' information and esteeming their suppositions when settling on choices that influence them (Tannenbaum, 1956). This kind of leader conduct was basically a mix of mandate and steady leader conduct.

Achievement Oriented

Achievement-oriented leadership was conducting difficulties people in defining execution objectives, upgrades, execution smartness to achieve high models and expanded certainty. Accomplishment situated conduct for people in redundant undertakings, by moving

the person to accomplish exclusive requirements (Hine & Lessig, 2018). The leader wanted to be challenged their team work and solved the problems. This leader gave important to all (Hill, Blunk & Charalambous, 2008). This leadership conduct was engaged with respect to verbalizes the vision, show energy for the vision, exhibit fearlessness, going for broke uncommon individual and hierarchical dangers, impart elevated standards, set qualities, and positive assessment of people.

- Aspire Wisdom
- Methodical Teaching

The leader defined testing objectives for the followers, anticipate that they should perform at their most important level and shows trust in their capacity to meet this desire. These leaders needed for mentoring themselves (Hersy & Blanchard, 1982). It was best in expert workplaces, for example, specialized, logical; or accomplishment conditions, for example, deals. Achievement-oriented behavior, which was equally a mix of order and strong leader conduct, was worried about improving supporter execution in a practically moving way.

Summary of Transactional Leadership Style

The researcher summarized the transactional leadership and the characteristics. Transactional leadership characteristics were supervising the student learning, organizing the teaching contents, assessing the learning outcome, improving the teaching method and teacher motivation. The main key terms were supportive, directive, remove obstacles and achievement oriented.

PREVIOUS STUDIES ON TEACHERS' LEADERSHIP STYLES

This section describes the research reviewed related with the main theories of leadership style which is considered as critically important to improving teaching strategy in

higher secondary school. Studies that employed leadership styles, particularly for promoting teaching and learning, were reviewed and summarized.

Leadership Style

This study found that there was a positive connection between transformational leadership and employment educator. In a survey of German teachers, it was found that all parts of change leadership, respect for effect, supportive encouragement and learning interest have a decisive relationship with employment guidance of teachers (Cravens, Drake, Goldring & Schuermann, 2017). Similarly, in another social environment in Iran, through the examination in training, a key positive link has been established between principals' transformational leadership style in the eyes of teachers.

One of the relatively underdeveloped areas of teaching correspondence research was the influenced the teacher management on students' performance. Although exploration has begun, real consistency and solidarity have not improved (Jung, 2001). Teacher leadership has been neglected in both teaching and active communication; however, its utility has been mentioned in some studies (Truter, 2016). Some tests examine the relationship between teacher's board or active style and students' performance, which provides confidence in the investigation of teaching situation.

The viewpoint that the educator played a leading role in a classroom was apparent. Richmond and McCroskey (1992) considered the classroom as an association with purpose of creating the connections with learning and sharing reliance, and it was obvious that the instructors played a role as a leader. The transactional leadership model could be related to the teaching environment. Pound (2003) put forward a material hypothesis of transformation management as teaching environment (Bass, Usiskin & Burrill, 2008). The survey showed broaden the scope of previous examinations and provide knowledge about the impact of change leadership on student performance.

The basis of transformational leadership style was the assumption of leadership based on value. Bass and Avolio (1990) acknowledged transactional leader from the perspective of transformational leader in their original model. Situational leader was influenced by defining objectives, explaining wanted results, giving input, and trading rewards for achievements (Kanfer, Chen & Pritchard, 2008). Transformational leaders were influenced by expanding and improving the objectives. The transformational leadership model adds an attractive factor to encourage leaders to exert influence.

The evaluation of leadership was in the teaching environment. The results reviewed that the teacher student relationship was replaced by the manager and the transactional leadership was applied to the classroom to explore the potential positive correlation between the teachers and the student outcomes (Begle, 1979). The result of the study focused on the results of students' reinforcement, achievement, inspiration, and college learning mathematics subjects.

Transactional leadership, to a large extent, showed clear power tendencies, which were related to the ability to achieve results, control through structures and procedures, deal with problems, design and arrange, and work within the structure and constraints of the association (Coffey & Atkinson, 1996). Because the transactional leadership ran through the planning and maintenance of agreements, the ability to arrange was the foundation of this leadership (Dunne, Nave & Lewis 2000). Only based on clear and feasible relationship ability could skill take place effectively. When leaders need to clearly describe a series of responsibilities and tasks, teachers may have to show results and satisfy the leader's wishes.

The transactional and leader supporter skill speculations have gone beyond the leader oriented approach, which was centered on the activity and character of leaders (Firestone & Bader, 1992). The transactional leadership studies have shown that the concept of transaction procedures between leaders and teachers has a special impact on team

execution and confidence. Buss considers the influence of dependent knowledge of leaders from the perspective of a convincing the leader.

The limitations of transactional leadership depend on the behaviorist statement that a rational individual was largely driven by financial and direct rewards, so the leadership quality was unexpected (Even, 1999). However this study ignored the complex elements of passion and social quality in the workplace and relationships (Eichhorn, 2015). The more excellent was that the effect of mark-based activities on the value of free mark was more likely to exceed that of mark-based activities (Ros, 2006). The situational leadership behavior was used by the school leaders and teachers.

Researchers have studied the pros and cons of transformational or transactional leadership's impact on school students. A study by Mkheze (2005) found that the leadership style of principals has a transformational tendency, and there was no congruence between transactional and transformational leadership based values of the leadership (Roelofs & Sanders, 2007). For a leader to be strong, there needs to be an agreement between principal's leadership style and transformational leadership styles, also proposed a reasonable classroom teaching method, in which teachers could give students the opportunity to feel respected, motivated and effectively participate in the classroom, and improve their learning level in this way.

Ngambi (2011) described activities as a system of influencing others' obligations in order to understand the most extreme limits of their value realization, including the vision of strength and reliability. The possibility of this effect was, to a certain extent, that the teachers in the meeting intentionally cooperate with each other to achieve the goals of school events set by the leaders for each part. Okun (2016) believed that this was the application of power, master, effect and vision, while influence and corresponding leaders tend to kind out personal and social affairs. The goal was that their activities and attempts were inconsistent

and produce goal realization. Ekpiken (2016) described it as a strategy for planning the direction of others to achieve their goals.

Obiwuru, Okwu, Akpa, and Nwakere (2011) described leadership style as one of the elements that assume a critical job in upgrading or impeding the plotting and responsibility of the individual. Yuning (2007) considered leadership styles as the leaders conducting that influence the activity of students with objective achievement as the encouragement. Leadership style as per Achua (2010) was the mixture of qualities, abilities, and practices that leaders use as they connect with followers. Administration style was the conduct a leader shows while driving or controlling individuals from the association to the accomplishment of explicit targets.

The transformational leadership style was first depicted by Max Weber in 1947, advanced by Burns (1978) and extended by Base and Avolio (1997). It was the kind of leadership style in which the leader provoked by making follower increasingly mindful of the significance of undertaking results (Akpa, 2011) and accordingly, there was an expansion in the degrees of execution and responsibility to objectives for their association in a positive manner. Fenn and Mixon (2011) claimed that the situational leadership style was of great benefit to the effectiveness and prosperity of an association in light of its adaptability and how it allows the supporters to be imaginative.

The transactional leadership style pointed out by Bolkan and Goodboy (2009) that the transactional process could improve the traditionalism of followers and meet the needs of leaders without generating the excitement and commitment consistent with the commitment goals (Adler, 2009). Transactional leaders had an instrumental, task-based approach to shape their great results and analysis from the outside, or avoid their presentation.

Leadership styles emphasized the communication or transaction between school leader and teachers. Value based management inferred that leaders and assistants work together to build important or basic things, those two conditions and rewards for completing the task (Andrews & Lewis, 2004). Teacher could be incredibly inspirational conductors by creating an atmosphere in the classroom where all students have qualities and difficulties.

The students saw that the teachers concern about their achievement to give each push to enable them to wind up effective, so that the student has made an inner responsibility to give the same amount of considerably more in defining high objectives (Matlala, 2015). It was imperative to remind them of reflecting on their objective every now and again and talk about where they were as far as accomplishing them (AlFahad, 2013). Similarly, when teachers were pushed, the resolution would be high and this encouraged the accomplishment of instructive goals. It was suggested to improve the enthusiasm of teachers and the students to continue the teaching and learning practices.

Lin and Chuang (2014) conducted an exploration with 2800 students and 165 teachers as the research objects to investigate the influence of leadership style of mathematics teachers on learning inspiration (Evans, 1996). The results showed that both situational leadership style and transactional leadership styles could guide learning inspiration. Padapureackal (2006) used the leader behavior descriptive questionnaire as one of the main tools to explore teachers' leadership style and classroom motivation (Amalu & Njoku, 2019). It was found that the thinking factor was more obvious than the priming structure. Moreover, there was a highly positive correlation between teachers' leadership style and classroom motivation.

Barbuto (2005) worked on inspiration of transactional, charismatic and transformational leadership style utilizing 186 leaders and their 759 teachers. Result revealed that transactional leadership was unforeseen reward, dynamic and the executives (Arjoon,

2000). The exemption had an important and positive association with inherent inspiration between both of the leadership styles.

Summary of Previous Studies on Leadership Style

The researcher reviewed the articles and the books to find out the higher secondary mathematics teachers' leadership styles. The researcher found two leadership styles was used by the higher secondary mathematics teachers. The leadership styles made the teachers to explore in the classroom. A leadership style referred to a leader's characteristic behaviors when directing, motivating, guiding, and managing groups of people. Great leaders could inspire political movements and social change. The leaders could also motivate others to perform, create, and innovate.

MATHEMATICS TEACHERS' TEACHING STRATEGIES

This section describes the research reviewed the teaching strategies for the higher secondary mathematics teachers. This studies that employed teaching strategy, particularly for promoting teaching and learning, are reviewed and summarized.

Teacher Teaching Strategy I

Teacher Teaching strategy: Adapted from Davies and Ellison (1997b, p.59)

1. Creating, 2. Utilizing the lesson ,3. Cooperative learning, 4. Nurturing math success.

Creating

This strategy could really compare to ever in light of the fact that there was more than a strategy needs to learn and share than any time in recent memory. Forbes Bits of knowledge's exploration and experience demonstrated that this strategy for good learning (Akhtar, 2013). In any case, to explore the system of substance and should settle on decisions. Quite a bit of this substance was left by the wayside as administrators depend, generally, on three hotspots for thought leadership.

Utilizing The Lesson

Leaders occupied with Strategy practices identified with one subject, planning-organizing-aligning, which exhibited fundamental vision-centered and frameworks arranged reasoning (Artzt, Armour & Curcio, 2008). As standard meanings of arranging, organizing out, and adjusting were missing, and there was a cover of their related practices, these ideas were not treated as totally unrelated (Miller, Moon & Elko, 2000). Improvement of this key plan comprised of an objective engaged, the constant arrangement of harmonious activities that advanced after some time, as opposed to as a composed arrangement created at a solitary point in time.

Cooperative Learning

As per the National Council of Teachers of Mathematics (NCTM; 1991), learning conditions ought to be made that advance dynamic learning and instructing, class room talk; and individual, gathering, and entire gathering learning (Hopkins, 2000; Fredricks, Blumenfeld & Paris, 2004)). Helpful learning was one case of teaching course of action that could be utilized to cultivate dynamic student realizing, which was a significant element of science learning and exceptionally supported by math teachers and scientists.

The researcher identified with what they call educational, and this requested from educators to come forward and assume their job help evacuate the predominant mental effect as well as to present and instruct the subject of mathematics (Huang & Zbiek, 2017). That inspires the young students to find out increasingly about mathematics thinking about it as a significant tool for the improvement of their future educational achievement (Hambleton, Gumpert & Abused, 2002). Best educational achievement acquired thriving one's life which involves improvement being developed procedure support of the network.

Nurturing Mathematics Success

The National Research Council of U.S. (1989) additionally presumed that the present tests don't point to survey educational goals and hence, teachers frequently show dependent on test, not educational program, or on the other hand learning results. In addition, current high-stakes tests don't require higher request thinking and stress right answers rather than unique thinking (Bogdan & Biklen, 1982). At long last, tests make student, teachers and network look to mathematics as a dry and frightening subject. Surely, to create and sustain our creative mathematical abilities, current scientific guidance, an educational program, and evaluation should be looked into for potential modifications.

Teacher Teaching Strategy II

Pisapia (2009) warned that attributes, core processes and functions were important conditions before a leadership Strategy was adopted by a school leader and the teachers (Fullan, 1994). When these three preconditions are possessed, school leader proceeds to take the five steps in making strategy with the organization through: awareness, articulation, attachment, alignment, and accountability (Sowder, 2007). For each stage, Pisapia described them by using a metaphor like: Learn the Labyrinth, Chart the Course, Raise the Sails, Drop the Anchor and Apply the Artist's Paintbrush.

Attributes

There were plenty of studies on the significance of mentoring fresh teachers. What was missing are information to verify whether the present, established school and district mentoring programs are efficient in providing fresh teachers the trust they need to be successful in the classroom (Vandewalle, Verschaffel, & Van Dooren, 2015). The research showed that imparting trust directly correlates with the choice of a teacher to remain in the teaching industry (Gethals & Sarenson, 2012). Prepared with the abilities to manage the ever-changing world of education, the confident teacher would have a positive effect on student

achievement (Landrum, Howell, & Paris, 2000). As worldwide resource and technology competition continues, teacher must have the required expertise to efficiently teach tomorrow's leaders.

This study was required to determine if any enhancement in a mentoring relationship has an important impact on teacher practice or student learning. Characteristics and abilities of personality, self-efficacy, and self-image may also be fields of concern for further exploration (Dampson, 2017). It may also be regarded for future studies to study the efficacy of training, curriculum, and mentoring programs. Analysis of the role of administrators and the tactics of management used in the sector may be useful for future decision making.

Core Process

The core process of teacher leaders was made and embraced to make certainty and associations with peers, model exposure taking and development mindset, direct intelligent learning cycles, and follow to the criticism direction. As the teachers, their associates trust and regard them (Davis, 2018). Teacher leaders partake a meeting of teachers in proceeding with proficient learning for one scholastic year, for example, empowering, virtual showing encounters, teacher partners, demonstrating preparing, sharing of academic techniques and great, state-standard gear. The teacher leaders were across the nation K–12 school teachers (Griffin, 2002; Gumus & Bellibas, 2013). They all around spoke to in content fields, long periods of involvement with teaching, and urban and rural districts.

This research discussed the difficulties and possibilities in Irish post-primary schools regarding the development of distributed management practice. In the context of modern distributed management theory, it sees school management (Bordage, Foley, & Goldyn, 2000). The research was framed by associated ideas such as distributed cognition and theory of activity. The research was located in a room that recognizes our schools '

present complicated reality, where school management was characterized by enhanced workload and an ever-expanding role-definition.

Functions

The reflections of the teachers' were curriculum discussion and modern thinking as part of the twenty-first-century school's change procedures. The main insightful factors that emerge from the stories include (Minarni, Napitupulu & Husein, 2016). Curriculum change was viewed as a shift in topic material, with teachers recommended for moving towards curriculum change and reform as an essential component in building engaging teaching environments for teachers and learners (Robinson & Timperley, 2007). The absence of creative change in some curriculum considered a restrictive property, resulting in frustration of teachers and absence of leadership.

Teacher Teaching Strategy III

It was adopted from (Johnson, 2014). The method of procedure advancement starts when a leader activity to change the thinking about people. Everyone should undeniably measure the necessity for change and attempt to reflect useful lead for reliable critical organizing.

Organizing

Organizing was empowered individuals to transform the effects they have into the power they have to roll out the improvement need. It was about individuals, power, and change (DuFoure, 2004). It began with individuals and connections, was centered around moving force, and plans to make enduring change (Firmaningsih, 2015). Organization improvement was based on the leadership of key administration practices: telling stories, building connections, organizing groups, strategizing, and acting.

In attempting to create, change, organizers would certainly run into challenges, as a disappointment, struggle, and limits are frequently manifest in our causes (Hendriana,

2017). Teaching was a method for helping people and groups work through those difficulties. In organizing out, training typically appears as intercession in an individual or cooperation to help the teachers in improving their capability.

Practice

The strategy practice referred to for excluding individuals in the change was impervious to change. The organizers were less resistant to change but rather more they proved to being controlled (Jenkins, 2012). At the point when associations attempt to practice to individuals influenced by the change as opposed to including them and tending to their worries, it did not change their activities to disappointment (Lee, Chai & Hong, 2019). Toward the start of a practice effort, the huge majority have data, individual, and usage concerns. Since these stages were consecutive, they could be expected (Javed, 2013). This consistency empowered developer to be proactive in tending to them. At the point when developer realized the difficulties in practice, they could utilize a progression of progress strategies for disappointment.

Changing

The strategy changes envisioned the respondents spotlight what expected to give up rather than what expected to get in light of the fact that the giving up was more decrease. Different kinds of recourses were used as could be acclimated with bringing changes as showed commonly and nature (John Holt & Weir, 2014). Changes were continually grasped for substantial supports and the subject of interest was consistently the consequence of the effort (Jita, 2010). Change may be any action or set of exercises having a couple of courses to investigate new territory or to revise something. It required responsibility and bearings. It did not have positive changes.

Advancing positive connections could be a type of expectation alongside classroom preventive techniques. Keep in mind that grown-up practices influence the

practices of students (Martinovic, Horn-olivito, & Kord, 2015). The grown-ups utilize demonstrated methodologies; the practices of the students would be progressively positive improved (Hallinger, 2010). The grown-up practices were not possible, the practices of the students would turn out to be all the more testing, requiring progressively increased facilitations.

Process

The characterizing methodology process, the model division among substance and procedure in system. The research was conflicting and could not be contained the definition of process (Lashway, 2000). To make it more obvious system procedure look into, specialists ought to characterize the significance of procedure, explain the assumption of procedure and configuration research to watch process. They utilized the technique procedure to make and execute systems in process.

The utilization of process associated with social organizing gives a point of communication between performers, levels of setting leaders (Leatham & Peterson, 2009). They should have followed the process idea in their strategy. It might to be utilized to the development of technique (Palmer, Hermond & Gardiner, 2014). Process-being was used in this manner give a unit of examination that negotiates various points of investigation and authorizations to look at the qualities of utilization associated with adaptable process.

Evaluating

Teachers were generally well conscious of evaluating process within a school. Teachers positioned in roles that carry management needs and resources exhibit both moving and eminently sensitive caution towards their peers (Rodriguez, 1998; Yukl & Van, 1992). On the other hand, when management duties were spread across the school group, student and school results were more likely to enhance (McCulloch, Hollebrands, Harrison & Mutlu, 2018). Evaluating and oversight were viewed in classrooms as the management teams. It was

found that management teams were considered to be moderately consistent (Rimpola, 2011; Zimpher, 2006). The findings of the research also disclosed a powerful connection between democratic governance, and evaluating process.

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 really feels like could be better inspected and characterized with regards to programs proposed to teach (Rodriguez & Berryman, 2002). Teaching strategy literature continues to demonstrate a favorable connection between shared practiced strategy types and enhanced organizational results, making the approach a strong strategy for use in the teaching landscape (Baltaci & Balci, 2017). The literature recommendation was that developing nations should embrace and mentioned Table 2 to enhance learning and teaching circumstances in learning institutions.

Table 2

Teaching Strategies IV

Strategies	Details of Strategy	Metaphor
Strategy 1	Study and comprehend the earth where one practices administration.	Learn the Labyrinth
Strategy 2	Obviously set up headings, distinguish shared qualities and convictions and make an adaptable arrangement of needs so as to abuse openings introduced by the earth and incite adherents to participate in a typical reason.	Chart the course “light the way”
Strategy 3	Assemble authoritative limit and cohesiveness, in this way, increasing interior help for hierarchical bearing and needs.	Raise the Sails “set the glue”
Strategy 4	Set up a procedure for reestablishment and responsibility to implant the association's heading, convictions, qualities and needs into the brains and soul of partners, developer and different partners to build up a self – oversaw association.	“Drop the Anchor”
Strategy 5	Always and deliberately settling on Strategy decisions to utilize a few blends of the political, moral, transformational and administrative windows of activity to control the association through the labyrinth of progress.	Apply the "Artist's paintbrush

Teaching Strategy V

The strategy was indicated by Gerry Jonson and Keven Scholes for understanding technique advancement to the teaching association. It depended on three stages and the means are configuration, experience, and thoughts (Hallinger, 2011). The strategy depended on the adjustment framework on the grounds that without experience they could get the arrangement (Preedy, Glatter, & Wise, 2003). It was so far various perspectives and desires exist. 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 a questionable and changing condition in their everyday exercises.

Table 3

Teacher Teaching Strategy V

Strategy	Design	Experience	Ideas
Over view of Summary	Deliberate positioning through rational, analytic, structured and directive process.	Incremental development as the outcome of individual and collective experience and the taken of granted	Emergence of order and innovation through variety and diversity in and around the organization
Assumptions about Organization	Mechanistic, hierarchical, logical	Cultures based on history, legitimacy, and past success.	Complex systems of variety and diversity.
Role of Top Management	Strategy decision makers	Enactors of their experience	‘Coaches, creators of variety of context and champions of ideas.
Implications for Changes	Change implementation of planned strategy	Change incremental with resistance to major change	Change incremental but occasionally sudden.

These reflections enabled to envision the potential outcomes of a formal and efficient procedure of dynamic strategy. As an organized, cooperative strategy and control of

basic leadership, it would be taught and learned. The all procedures and controls, it would be prepared by others (Quint, Akey, Shelly & Willner, 2007). The characteristics of teaching strategy, transformative, planned to create, moral limits, and individual capacities at key levels and in suffering structures (Banach, 2015; Hill, Rown & Ball, 2005). It included student learning exercises through joint effort, dialog, composing, talking, performing, doing research, driving tasks and introductions, and framing associations with teachers who elevated standards.

Strategy thinking in schools dependably experiences a progression of understood or unequivocal clashes in administration, mission, and vision (Stigler & Hiebert, 1999). Some of them track the essential worth clash in the basic leadership framework itself, reflecting the strain among self-governance and expert, inherent and instrumental qualities, or the ideal models that go with them.

Summary of Teaching Strategies

The researcher reviewed articles and books to find out the higher secondary mathematics teachers' teaching strategies. The researcher reviewed the literature and found five teaching strategies, teaching strategy I, II, III, IV and V. Those strategies were used by the higher secondary mathematics teachers. The researcher used for this study to improve the higher secondary mathematics teachers teaching strategies.

SELECTION OF TEACHING STRATEGIES

Based on the reviewed from the journals, articles, and books the researcher found out that they were three teaching strategies were used in their secondary teaching mathematics. Table 4 showed the criteria for selecting the teaching strategies for the higher secondary mathematics teachers by reviewing the literatures. The books and articles were selected based on the following:

- Date 2000 -2019 (expect the main theory of leadership style

- Published in recognized publishers. i.e. (SAGE, Emerald, insight, ERIC, etc.)
- Published in English Language
- Area of Education, mainly for secondary mathematics teachers and administrators.

Table 4

Findings from a Synthesis of Literature for Teaching Strategies

Theory & Sources	Keywords	Expected Teaching Strategies
Teaching Strategies (Ainley, Jose & Nicholas, 2008; Barnes, 1998; Amalu, 2016; Andrew, 2018; Miller, 2000; Alan. H, 2001; Anne Watson, 2016; Boston, M, 2017; Beswick, Callingham & Watson, 2011; Brophy, 1983; Pisapia, 2009; Smith, 2012; Van de Walle, 2012; Landrum, Howell, & Paris, 2000; Dampson, 2017; Davis, 2018; Bordage, Foley, & Goldyn, 2000; Breed & Virgona, 2006; Cooper, Baturo & Warren, 2005; Denzin & Lincoln, 2005; Micha Popper, 2001; Roelofs & Sanders, 2007).	Teaching Strategies Course Contents. Develop Achievable Goals. Learning Methods. Identification of learning Development. Developments. Successful Teaching. Comparison Learning. Different elements of learning. Classifications of Learning. Summarizing Teaching Contents. Analysis and Presentation.	Teachers' Subject knowledge. Teachers' need to understand the students learning goals. Teachers use different teaching method Teachers to find new method to understand the difficult contents. Teachers should find the students learning outcome. Teachers focused on Student learning out come Teachers use different ideas for a single problem.
Teaching Strategy I (Davies and Ellison, 1997).	Teaching Strategy I Involvement. Planning, Organizing, Implementation and Technique.	Teachers involvements, subject planning, steps to teaching and create new steps in their teaching
Creating (Akhtar, 2013; Ainley, Jose & Nicholas, 2008; Barnes, 1998; Amalu, 2016).	Creating Discover Shape Engage	Teachers discover new idea and make it in their teaching. Teachers engage the student for their understanding.

Utilizing the Lesson (Artzt, Armour & Curcio, 2008; (Miller, Moon & Elko, 2000). Andrew, 2018; Miller, 2000).	Utilizing the Lesson Identify Collect Data Improve Progress of Act	Teachers collect all the data for their teaching and learning materials and follow in step by step.
Cooperative learning (Hopkins, 2000; Huang & Zbiek, 2017; Hambleton, Gumpert & Abused, 2002; Alan, 2001; Anne & Watson, 2016).	Cooperative Learning Lesson Instruction Lesson Evaluation Discussion Steps	Teachers teaching should be clear and understandable. Teachers should evaluate the students learning outcome.
Nurturing Mathematics Success (Bogdan & Biklen, 1982; Beswick, Callingham & Watson, 2011; Brophy, 1983).	Nurturing Mathematics Success Making Better Understanding. Learning and Critical Thinking. Expressive.	Teachers should shape their mathematics knowledge to teach well. Teachers learn to solve all the mathematics problems.
Teaching Strategy II (Pisapia (2009); Sowder, 2007).	Teaching Strategy II Problem Solving, Improvement, Communication, Flexibility in Changing and Accountability.	Teachers should learn to solve unlearned problems. Mathematics teachers' interaction should be understandable.
Attributes (Vandewalle, Verschaffel, & Van Dooren, 2015; Landrum, Howell, & Paris, 2000; Dampson, 2017).	Attributes Knowledge. Good Motivator Constantly Learning	Teachers attributes should be mathematics knowledge and motivated.
Core process (Davis, 2018; (Bordage, Foley, & Goldyn, 2000; Breed & Virgona, 2006; Cooper, Baturo & Warren, 2005; Denzin & Lincoln, 2005).	Core Process Collaborative Disciplinary Authentic	Mathematics teachers should collaborative learner because new teaching method need to adopt from others.

Functions (Minarni, Napitupulu & Husein, 2016; Robinson & Timperley, 2007; Grahm, Thomas & Pegg, 2007; Hibert & Wearne, 1997).	Functions Readiness of Working. Structure in Teaching Method.	Readiness of Working. Structure in Teaching Method.
Teaching Strategy (Johnson, Whittington, Scholes & Angwin, 2014; Drago, 2008).	Teaching Strategy III Developing process, Constructing, Transferring, Engaging and Thinking Valued Reason.	Teachers need to develop teaching process and constructed. Teachers should engage the student thinking in the subject matter.
Organizing (DuFour, 2004; Firmaningsih, 2015; Hendriana, 2017; Jablonka, 2003; McLeod & Adams, 1989).	Organizing Be an Authoritative Subject content. Evaluate Teaching Steps. Acknowledge Teaching demerits.	Teachers should be the responsible for students learning. Teachers should evaluate their teaching process by the school leaders.
Practice (Jenkins, 2012; (Lee, Chai & Hong, 2019; Javed, 2013; Meyer, Dekker & Querelle, 2001; Penguin, 1996).	Practice Implementations. Teaching and Learning Sources.	Teachers should practice their teaching contents and new steps to follow the new method.
Changing (John Holt & Weir, 2014; Jita, 2010; Martinovic, Horn-olivito, & Kord, 2015; Sulliva & Gunningham, 2011).	Changing Understands the Goals. Bringing Success. Allowing to Change Teaching Methods.	Teachers should follow the schools' rules and time schedule. Teachers work based on the result oriented.
Process (Lashway, 2000; Palmer, Hermond & Gardiner, 2014; Leatham & Peterson, 2009; Parker, 2018).	Process Helping Organizations. Reflection of Teaching Method.	Teachers should understand the process of teaching and learning outcomes. Teachers moreover concern about their teachings.

Teacher Teaching Strategy I

Teacher teaching strategy I: adapted from Davies and Ellison (1997b, p.59) and the dimensions are creating, utilizing the lesson, cooperative learning and nurturing math success.

Creating

This strategy addressed the teachers using the multi-sensory aids for their teaching. The teachers need to understand the model pedagogical started in education and follow it. Analysis the current teaching sources and use it in their teaching. Approachability and interest were more significant in the involvement or on the other hand a reputation of achievement (Morsidi, Sian, Sharill & Abdullah, 2015). It had five steps to discovering the teaching methods. Discovering the teaching method, the teachers need to shape the knowledge according it. The teacher to engage the student to achieve their teaching goals. The teachers translated the knowledge provided by teaching (Horng & Loeb, 2010). The teachers should communicate the mathematics subject in getting student understand.

- Discover
- Shape
- Engage
- Translate
- Communicate

Utilizing The Lesson

The teacher explains the content from simple to complex. The teachers start to explain the content from generalization to specific. The teachers should provide the students for learning by doing (Urlick, Wilson, Ford, Frick & Wronowski, 2018). The teachers need to identify the problem is learning and collect the sources for analyzing the unsuccessful teaching and learning. The teachers need to improve in their teaching progress. They need to

examine the related progress of the reasons and rectify it (Huth, 2002). They need to develop new strategy and apply it in their teaching.

- Identify
- Collect data
- Improve progresses of act
- Examine and relate progresses of deed
- Create a choice, Strategy, and Appliance it.

Cooperative Learning

The teachers have the opportunity to participate with the students learning activity. They have to make the students co-operating in their teaching and learning process. The teacher should provide for group discussing for the better learning outcome (Nessipbayeva, 2012; Komives & dugan, 2007)). Teachers could utilize the instruction method in appropriate subjects. They need to evaluate their teaching methods and learning outcomes. The teachers need to explain the mathematics application and applied process in their teaching and learning.

- Lesson Instruction
- Lesson evaluation
- Discussion steps, and solutions.

Nurturing Math Success

The teacher should follow the developing and fostering a collaborative culture of schooling based upon principles of lifelong math learning. The school leaders should design a faculty development program based on the needs of the teacher's needs (Kaune, Fresenborg, & Nowinska, 2016; Kumurasamy, 2002). The school leaders would plan and conduct a workshop to develop teachers' soft skills. The teachers need prepare better strategy for

learning. By learning the student should get new idea form learning new things (Kurnik, 2008). The teachers make the student to get higher score by thinking creative.

- Making better understanding
- Learning and critical thinking and
- Expressive and creative.

Teacher Teaching Strategy II

Teacher teaching strategy II: adopted from (Pisapia, 2009) and the dimensions are attributes, core process and functions.

Attributes

The teachers should research on teaching methods for improving teaching practice that results make the student learning better. The school leaders permit the teachers to prepares a new plan for the improvement of teaching and learning (Leithwood, Jantzi, Earl & Fullan, 2004). The school leaders band the teachers come up with strategies that increase the financial resources and the students learning outcomes (McCulloch, Hollebrands & Mutlu, 2018). They were asked to guide the profession into fresh positions and innovate. The teachers should have the mathematics knowledge in advance level. They have to engaging the student learning by doing new methods (Lord, Hanges & Godfrey, 2003). The teacher should be good motivator for learning mathematics subject. The teachers should follow the constantly learning.

- Knowledge
- Engaging
- Good motivator
- Constantly learning

Core Process

The teachers need to understand the demands of the current system to future growth. The teacher and the school leaders need to address the struggles and risk of the path towards the future strength (Hashmi, 2017). The teachers' collaborations are very important towards student learning. They should pensive mathematics knowledge. The school leaders and the teachers identify the core competencies that are needed for the success of student learning (Loucks, Love & Hewson, 2003). In learning and evaluating how and what management practice in our classrooms and mediating contradictions and innovating change, this view is of importance.

- Collaborative
- Disciplinary
- Authentic

Teacher Teaching Strategy III

Teacher teaching strategy II: adapted from (Johnson, 2014) and the dimensions are organizing, practice, changing, process and evaluating

Organizing

Constantly measuring and evaluating the external and internal conditions of the organization by school leaders. The school leaders analyze the strategy context of the organization and create organizational advantage (McCulloch, 2018). The school leaders assess the purpose and performance of the organization and alter systematically internal procedures. The teachers are authoritative for their content of teaching and learning (Mackenzie, Podsakoff & Rich, 2001). The teachers recognize the teaching process to improve their teaching strategy. They should acknowledge teaching and learning merits and demerits.

- Be an authoritative subject content

- Recognize teaching steps
- Acknowledge teachings demerits

Practice

The teachers team work should design and implement assessment practices and data analysis that results in improving learning and teaching (Inprasitha, 2015; Mangin, 2006)). They submit their teaching and learning strategies to department meetings for the improvement of teaching strategy. The teachers are the role model for the students learning.

Changing

The school leaders focus on the organization by making all members to understand, connect, and actualize the strategies that bring success. The school leaders promote positive learning climate by providing physical and instructional resources to facilitate the teaching and learning needs (Hopkins, 2000). The school leaders grant permission to change the old strategy to new strategy. Classroom preparing fall under the training area. Educational open doors have given developer comparative presentation to ideas, plans, information and ability development (Kadir, Lucyana, & Satriawati, ,2017). Experimental learning includes work assignments and activity learning schemes. A model for associations wishing to utilize experience-based learning incorporates planning, sending and restoring.

Process

The teachers make deal their effort on the things expected from them to do and help their organization (Rimpola, 2011). The confidence on their teaching ability and dedication to reach educational goals. The teachers inspire to give their best as reflected in their job performance (Lumby & Foscort, 2005; Murphy, 2005). Further, the system practice incorporates exercises identified with the arranging method, however is not restricted to them.

Summary of Selecting Teaching Strategies

The researcher summarized the teaching strategies in three steps, teaching strategy I and the characteristics were creating, utilizing lesson, cooperative learning, and nurturing math. Teaching Strategy II and the characteristics were attributes, core process and functions. Teaching strategy III and the characteristics were organizing, practice, changing, process and evaluating. The researcher identified the main idea and most important facts, then writing a brief overview that includes only those key ideas and details.

PREVIOUS STUDIES ON TEACHERS' TEACHING STRATEGIEES

This section describes the research that are related with the main theories of teaching strategies which is considered as critically important to improving teaching strategy in higher secondary school. Studies that employed teaching strategy, particularly for promoting teaching and learning, are reviewed and summarized.

Teaching Strategies

The proposed research motivations, there were multiple links between the capabilities and structures of the three regions, the control, planning and management of educational projects, as well as the preparation of teachers and the improvement and utilization of teaching materials (Pollard, 2015). Worldwide surveys play a crucial, though not artificial, role in shaping scenarios for the structure, use, and achievement of educational programs

The absence of coordinated activities to follow their effect at the classroom level ought to be a reason for concern (Kaparou & Bush, 2015). To sum up a familiar saying, the prompt of the classroom. This study enhanced for educating with the goal to enhance learning. Gathering proof deliberately may demonstrate gainful to accomplishing this extreme objective.

There were frameworks where essential mathematics teachers were experts and other where they were generalists. It had not with in the points of this investigation to enter profoundly about pro and generalist teachers in early teaching both model shows favorable circumstances and inconveniences (Kushwaha, 2014). It was important to highlight the teaching and learning process. If the teachers not proficient in higher secondary mathematics and particular teaching strategy it has affected the learners (Ormord, 2010). So the teacher had to develop the leadership style towards teaching strategy.

To characterize the objectives of mathematics teaching, it was important to think about what mathematics was and did and what may be the reasons for teaching mathematics to class student (Lieberman, 2015; Oktavivanthi, & Supriani, 2015). The teachers represented points of view on the objectives of mathematics teaching which could be thought of as things and stood out these from what was by all accounts the prevailing way to deal with showing mathematics at present.

The critical contention was that the accentuation in school science ought to gain status on valid and practical mathematics that could advance not exclusively for the student (O'Connor & Boles, 1992). This area also acclaimed that student ought to be acquainted with energetic mathematics thoughts and mindsets, yet clarifies that these mathematics thoughts were very not quite the same as the science right now being taught even at senior levels of teaching (Murtafiah, Sadijah, Chandra & Susiswo, 2018; Owen, 2006). This study revealed few information got from the universal and national appraisals on the science achievement of Australian student, whose low achievement compromises their ability to completely take an interest.

Teachers who hold qualification teaching mathematics and its teaching and learning tend to create teacher centered teaching conditions, train science into a standard worth remembering, and describe science as a reliable order (Ahluwalia, Approach, Anand,

Arors & Basu, 2016). Teachers who hold this view tend to introduce science instead of science in a way that considers mathematics a direct subject (Sultan & Artzt, 2011; Pearce, 2017). The present situation is the ability of big element pen and paper movement. Since the primary goal of teachers was to master digital skills, the orderly introduction of any digital technology and the emphasis on correct or wrong answers are likely to be trained.

Teacher holding constructionist perspective of mathematic were depended upon to embrace teacher student cooperation method of guidance by enabling student to investigate and examine while teachers dwell in their classrooms as facilitators (Sullivan, 2011). Critical thinking was key to teach for constructionist environment (Rogus, 1988; Pellicer & Anderson, 2001). Teacher where deliberate action originates from issue circumstances that require thinking and innovative considering, assembling and applying data, finding, imagining, imparting and testing thoughts. Therefore, the classroom went up against a constructivist situation.

There was an innovative evidence to show that substitution makes mathematical programs universal, but experience problems with wise appreciation (Neiss, 2005; Printy, 2008). Procedural cognition refers to the ability to apply and use steps or strategies to different problems, while the determined appreciation is the data reasonably considered. The researchers expanded the importance of guiding perceptual perception.

Mathematics classes frequently center around drills and procedural comprehension, despite the fact that the educational programs were intended to enable student to construct the strong theoretical establishment in science that would empower them to apply their insight and further their adapting effectively (Tsang, Finti & Sharill, 2014). It clarified that once student take in a methodology, they regularly have little inspiration to take in the hidden ideas driving the techniques (Ingersoll, 2000). In consideration of all factors,

prescribes that student take in the ideas driving the methods either previously or among the guidance of methodology, not later.

The after effects of this investigation demonstrated that the largest amount of effect was between the assessment of teacher process and student (Superfine, 2019; Rigby, 2014). The scientists discovered the teacher self-viability assumes between teaching adequacy and teaching qualification. The study declared that self and aggregate feasibility of teachers' increment relying upon the teaching strategy (Zazkis, & Leikin, 2010). At the point when the school principals exhibited teaching administration competencies, teachers' recognition about their own self practicality became more grounded.

The Ministry of Education in Singapore (2006) recognized the destinations of mathematics training in schools. The mathematics training intends to outfit student with the capacity to create and apply mathematical speculation to take care of the scope of issues in ordinary circumstances (Wallace & White, 2014). Expanding on teaching mathematics was on procedure and action, just as information (Lee, Chai & Hong, 2019). In addition, mathematics teacher expected to build up the capacity and readiness of the student to utilize mathematical methods of an idea.

Cangcunke and Yumur (2005) found the practice of basic work applied by teacher to students' learning in the guided examination. The test was designed to distinguish between the basic assessment procedures for high school mathematics teachers in Los Angeles (Little, 2009). In the process of understanding these practices, they determined the methods for mathematics teachers to convey exercises in a similar way, display style, discipline ability, display conditions, network inclusion and expert improvement.

Furthermore, it was in the examination which was led by Arceo, Evangelista, and Vinoya (2004) that practiced and exercised in teaching mathematics were really of great success in making student learning in mathematics (Loucks, 1996). During the time spent

recognizing those practices, they identified the methods for mathematics teacher convey their exercises as needs were showing style, subject ability, showing condition, network inclusion, and expert development.

Calara and Garcia (2003) recognized the factors that affect the mathematical view of substitution, that was, the limitation of substitution on understanding and learning logical thinking. One part reveals that the teacher factor was a noticeable link in the understanding of alternative logic (Erickson, 2014). Under the subdivision of teacher factors, there were restrictions on the authority of teachers to explain activities, provide motivation for alternative learning, provide motivation for substitution in learning mathematics and used points.

Summary of Previous Studies on Teaching Strategies

The researcher summarized the previous studies on teaching strategies to find out the different teaching strategies. The researcher investigated the connection between the teachers' abilities and students' exhibition in the provincial accomplishment test in mathematics grade eleven and twelve. A great number of researches indicated from the main year who were utilized as student respondent.

Table 5

Summary of the Chapter One and Two

No.	Theoretical Frame work	Conceptual Frame work	Definitions of Terms	Questionnaire
1.	1.Situational Leadership theory (Hersey & Blanchard (2008)). 2. House Path- Goal Theory (House and Michell (1974).	Situational Leadership 1.Telling, 2. Selling, 3. Participating, 4. Delegating. Transactional Leadership Style 1.Supportive, 2. Directive, 3. Removes obstacles, 4.Achievement Oriented.	Higher Secondary Mathematics Teachers Leadership styles Telling, Selling, Participating, Delegating. Supportive, Directive, Removes obstacles, Achievement Oriented	Eight dimension of Leadership Style (2019) Telling (1-3) Selling (5-8) Participating (9-12) Delegating (13-16) Supportive (17-20) Directive (21-24) Remove Obstacles (25-27) Achievement Oriented (28-30)
2.	1.Teaching Strategy (Davies & Ellison, 1997 b,). 2. Teaching Strategy (Pisapia, 2009). 3. Teaching Strategy (Johnson, Whittington, Scholes, & Angwin, 2014)	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	2.Teaching Strategy Creating, Utilizing the lesson, Cooperative learning, Nurturing math success Attributes, Core Process, Organizing, Practice, Changing, Process,	Ten dimension of Teaching strategy (2019) Creating (1-3) Utilizing the lesson (4-6) Cooperative learning (7-9) Nurturing math (10-12) Attributes (25-27) Core Process (28-30) Organizing (13-15) Practice (16-18) Changing (19-21) Process (22-24)

CHAPTER III

RESEARCH METHODOLOGY

This chapter entails the process of data collection for the study. Detailed information about the research design, research procedures, population and the sample of the study, validity and reliability of the research instrument, collection of data and its analysis and the table of summary of research process are presented in this chapter.

RESEARCH DESIGN

The researcher utilized qualitative and quantities methods design as referenced Creswell (2013) for this study. The study started by firstly collecting qualitative data and review of literature analysis was used to explore the categories. The results from the qualitative data through review of literature were used to develop a survey instrument to collect quantitative data with respect to research objectives three, four, five and seven. Means, standard deviation and multiple regression were computed. The following is a detailed description of the research methodology for each objective.

Research Objective One: To explore desirable leadership style to improve higher secondary mathematics teachers teaching strategies in higher education.

Source of Data

The researcher collected the various literature reviews from books, articles both online and offline sources that provide information on leadership styles to improve teachers teaching strategies in higher secondary education. There are many documents (books and articles) about the leadership style in the higher secondary levels. Thus, the researcher also looked into the leadership at this level that could possible apply to the higher secondary educational level. As a result, forty books and one hundred articles were included in the review of literature. They were all written in English and published by reputable publishers. It was shown in Appendix A.

Research Instrument

The researcher reviewed the theories and literature review on leadership Styles and theories for improving higher secondary mathematics teachers' teaching strategies to find out the key terms that answered the objective of this study.

Data Analysis

The researcher used synthesis of review literatures as the data analysis method for this research objective.

Step 1: Theory and Rationales. At this step, key variables were determined for examination.

Step 2: Conceptualizations. The key variables for the study were defined conceptually based on the documents reviews (books and articles).

Step 3: Operationalization's (measures). The data collection was basically from the review of the literature. The key variables needed to be well-measured.

Sources Selection criteria. The researcher used the following criteria to select the books and articles for the content analysis.

1. *Year of publication.* The books and articles were published between the years 2000 and 2018. They were considered more up-to-date for the present study.
2. *Publishers.* They were published by recognized publishers (SAGE, Emerald Insight, ERIC, and others) and in well-known academic journals.
3. *Language.* The sources must be written in English.
4. *Emphasis.* They were related to education and focus more on leadership styles.

Validity

Validating the results of the synthesis of review literature: At this stage, the researcher produced a brief summary of the process, including the presentation of the findings from the synthesis of review of literature, elaborating in charts with percentages of

occurrences by categories. Then the analysis was sent to 5 experts for validation and their names and qualifications of experts were shown in Appendix E.

Research Objective Two: To determine the optimal teaching strategies of higher secondary mathematics teachers at Dindigul district South India.

Source of Data

The researcher collected the various literature reviews from books, articles both online and offline sources that provide information on teaching strategies and conducting semi-interview to improve teachers teaching strategies in higher secondary education. There are many documents (books and articles) about the teaching strategies in the higher secondary levels. Thus, the researcher also looked into the teaching strategies at this level that could possible apply to the higher secondary educational level. As a result, was form twenty-six books and one hundred articles. It was shown in Appendix A.

Research Instrument

The researcher reviewed optimal teacher teaching strategies and literature review of higher secondary mathematics teachers' teaching strategies to find out the key terms that would answer the objective of this study. For the interview, the researcher personally conducted a one-on-one interview on teaching strategies with 8 school leaders to find out the teacher teaching strategy and ensure all the questions has been answered and recorded.

Data Analysis

The researcher used synthesis of review literatures and summarizing interview responses from the school leaders as the data analysis method for this research objective.

Step 1: Theory and Rationales. At this step, key variables were determined for examination.

Step 2: Conceptualizations. The key variables for the study were defined conceptually based on the documents reviews (books and articles).

Step 3: Operationalization's (measures). The data collection was basically from the review of the literature. The key variables needed to be well-measured.

Sources Selection criteria. The researcher used the following criteria to select the books and articles for the content analysis.

1. *Year of publication.* The books and articles were published between the years 2000 and 2018. They were considered more up-to-date for the present study.

2. *Publishers.* They were published by recognized publishers (SAGE, Emerald Insight, ERIC, and others) and in well-known academic journals.

3. *Language.* The sources must be written in English.

4. *Emphasis.* They were related to education and focus more on leadership styles

Validity

Validating the results of the synthesis of review literature: At this stage, the researcher produced a brief summary of the process, including the presentation of the findings from the synthesis of review of literature, elaborating in charts with percentages of occurrences by categories. Then the analysis was sent to 5 experts for validation for their names and qualifications of experts were shown in Appendix E.

Research Objective Three: To determine the current leadership styles of higher secondary mathematics teachers applied in the classroom at Dindigul district South India

Sample and sampling technique

The researcher was contacted one hundred fifty higher secondary mathematics teachers and those who were working currently from at Dindigul District South India and the data was according to the 2016 & 2017 handbook (DDS, 2017). The researcher decided to study privates and publics higher secondary mathematics teachers due to the following reasons. Firstly, the private sector and public sectors teachers are limited in higher secondary school. They are in an important role to produce good mathematics student for the

development of science world. Secondly, the researcher wanted to know to what extent the leaders of these schools adapted leadership practices and teaching strategy.

The researcher used total sampling technique for selecting the higher secondary school sampling with the knowledge that the participants were readily available. It is a type of total sampling in which members are chosen according to practical criteria, including easy accessibility, geographical proximity, and availability at a given time for the purpose of the study

Table 6

Sample of Higher Secondary Mathematics Teachers

No.	Cities	Private Teachers	Public Teachers
1	Dindigul	15	10
2	Vadasandur	20	5
3	Palani	15	6
4	Nilakkottai	10	6
5	Oddanchatram	12	8
6	Attur	10	5
7	Natham	10	5
8	Kodaikanal	8	5
Total		100	50
Over all Total		150	

Source from Hand book of Dindigul District, (2017)

Research Instrument

In order to collect the data with respect to research objective three, the researcher used a survey. The survey was designed based on the results of the synthesis literature review from research objective one. The researcher selected the cross-sectional type of survey design to construct the instrument. It is a type of survey that examines the attitudes, beliefs, opinions or practices of the respondents on certain issues (Creswell, 2013). In this study, the researcher wanted to explore the practices of higher secondary mathematics teachers' leadership style at Dindigul District, South India.

Issues about the survey that the researcher needed to consider: choice of population, the design of the survey, logistics of data collection, and how to obtain high response rate. Higher secondary mathematics teachers were the target population. They were expected to provide their opinions about leadership styles. The researcher used a survey to collect quantitative data on the leadership style practices. According to Creswell (2013), a survey is a type of instrument design that allows each participant to complete a questionnaire and return it back to the researcher. In the process of designing the survey, the researcher considered carefully whether it measured the variables. Different type of questions (telling, selling, participating, delegating, supportive, directive, remove obstacles and achievement oriented questions) were included. Strategies for good question construction were employed to make sure that the questions were clear, not repeated, not wordy, not negatively worded, not overlapping, and balanced in response options.

Validation of the Survey

After the survey was developed, five experts were invited to check and validate it to establish Item Objective Congruence (IOC). To validate the survey was to check whether it measured what it was supposed to measure. The degree of leadership styles implemented in the higher secondary school being studied. The researcher revised the survey based on the comments and suggestions from the experts. More details about the experts were shown in Appendix F. Criteria for the expert validators were those who hold Ph.D. particularly in Education and those who received Master of Science in Mathematics with at least 10 years of teaching experience and research particularly in higher education.

Checking the reliability of the Survey

The validated and revised survey was pilot-tested with 30 higher secondary mathematics teachers at Dindigul District South India. Cronbach's alpha was employed to analyze the reliability of the questionnaire. In the use of survey, it was important for the

researcher to make sure that it was always consistent and reliable in measuring what it should. Cronbach's alpha was originated from the work of Lee Cronbach in 1951 and was used to measure the internal consistency of a test or scale. This internal consistency was determined before a test can be used for a research purpose. Thus, it was a common practice in educational research today to measure the reliability of an instrument.

After the pilot study, the instrument was modified based upon the results. The overall result of the study was .91. The range of Cronbach's Alpha according to George and Mallery (2003) was defined as follows: ≥ 0.9 = Excellent, ≥ 0.8 Good, ≥ 0.7 = Acceptable, ≥ 0.6 = Questionable, ≥ 0.5 = Poor, and ≤ 0.5 Unacceptable. The overall results of this pilot study revealed an excellent rating with an alpha coefficient of .91. Each construct scored a good showing an overall steady internal consistency Table 7 Shows the result of each construct and overall scored from the pilot study.

Table 7

Summary of Cronbach's Alpha Reliability of the Leadership Style Survey

Constructs	Domains	Cronbach's Alpha Coefficient based on each variables	Cronbach's Alpha Coefficient based on Variables
Leadership Style	Telling	0.91	0.91
	Selling	0.89	
	Participating	0.90	
	Delegating	0.89	
	Supportive	0.92	
	Directive	0.90	
	Remove Obstacles	0.91	
	Achievement Oriented	0.91	

The survey used in this study employed a five-point Likert-type scale. According to Joshi, Kale, Chandel, and Pal, (2015), Likert-type scale was a set of items designed for the participants to show their level of agreement on a metric scale. The tendency of choosing this Likert-type scale depends on the construct of the item response which interval scale is used.

Moreover, the measures for an interval scale are mean and standard deviation. Beyond this data set, regression analysis could be employed. Table 8 shows the corresponding values and interpretation for the Likert-type scale.

Table 8

Likert and Interpretation for the Leadership Style

Score	Interpretation for the leadership style practices	Range	Interpretation
1	Not at All	1.00 – 1.50	Very Low
2	Rarely	1.51 – 2.50	Low
3	Sometimes	2.51– 3.50	Medium
4	Often	3.51 – 4.50	High
5	Always	4.51 – 5.00	Very High

Source: Creswell (2013). Likert scales, levels of measurement and the “laws” of statistics.

Data Analysis

Means and Standard Deviation were used to analyze the data.

Research Objective Four: To determine the current teachers teaching strategies at higher secondary mathematics teachers applied in the classroom at Dindigul district South India.

Sample and sampling technique

The source of data was above research objective 3.

Sample

The source of data was above as Research Objective 3.

Research Instrument

In order to collect the data with respect to research objective four, the researcher used a survey. The survey was designed based on the results of the synthesis literature review from research objective one. The researcher selected the cross-sectional type of survey design to construct the instrument. It is a type of survey that examines the attitudes, beliefs, opinions or practices of the respondents on certain issues (Creswell, 2013). In this study, the researcher

wanted to explore the practices of higher secondary mathematics teachers teaching strategies at Dindigul District, South India.

Issues about the survey that the researcher needed to consider: choice of population, the design of the survey, logistics of data collection, and how to obtain high response rate. Higher secondary mathematics teachers were the target population. They were expected to provide their opinions about teaching strategies. The researcher used a survey to collect quantitative data on the teaching strategies. According to Creswell (2013), a survey is a type of instrument design that allows each participant to complete a questionnaire and return it back to the researcher. In the process of designing the survey, the researcher considered carefully whether it measured the variables. Different type of questions (creating, utilizing the lesson, cooperative learning, nurturing math success, organizing, practice, changing, process, attributes and core process) were included. Strategies for good question construction were employed to make sure that the questions were clear, not repeated, not wordy, not negatively worded, not overlapping, and balanced in response options.

Validation of the Survey

After the survey was developed, five experts were invited to check and validate it to establish Item Objective Congruence (IOC). To validate the survey was to check whether it measured what it was supposed to measure. The degree of teaching strategies implemented in the higher secondary school being studied. The researcher revised the survey based on the comments and suggestions from the experts. More details about the experts were shown in Appendix F. Criteria for the expert validators were those who hold Ph.D. particularly in Education and those who received Master of Science in Mathematics with at least 10 years of teaching experience and research particularly in higher education.

Checking the reliability of the Survey

The validated and revised survey was pilot-tested with 30 higher secondary mathematics teachers at Dindigul District South India. Cronbach's alpha was employed to analyze the reliability of the questionnaire. In the use of survey, it was important for the researcher to make sure that it was always consistent and reliable in measuring what it should. Cronbach's alpha was originated from the work of Lee Cronbach in 1951 and was used to measure the internal consistency of a test or scale. This internal consistency was determined before a test can be used for a research purpose. Thus, it was a common practice in educational research today to measure the reliability of an instrument.

After the pilot study, the instrument was modified based upon the results. The overall result of the study was .91. The range of Cronbach's Alpha according to George and Mallery (2003) was defined as follows: ≥ 0.9 = Excellent, ≥ 0.8 Good, ≥ 0.7 = Acceptable, ≥ 0.6 = Questionable, ≥ 0.5 = Poor, and ≤ 0.5 Unacceptable. The overall results of this pilot study revealed an excellent rating with an alpha coefficient of .91. Each construct scored a good showing an overall steady internal consistency Table 9 Shows the result of each construct and overall scored from the pilot study.

Table 9

Summary of Cronbach's Alpha Reliability Rating for the Teaching Strategies

Constructs	Domains	Cronbach's Alpha Coefficient based on each variables	Cronbach's Alpha Coefficient based on Constructs
Teaching Strategy	Creating	0.91	0.91
	Utilizing	0.90	
	Cooperating the Learning	0.92	
	Nurturing Math Success	0.90	
	Organizing	0.92	
	Practice	0.90	
	Changing	0.92	
	Process	0.90	
	Attributes	0.90	
	Core Process	0.90	

The survey used in this study employed a five-point Likert-type scale. According to Joshi, Kale, Chandel, and Pal, (2015), Likert-type scale is a set of items designed for the participants to show their level of agreement on a metric scale. The tendency of choosing this Likert-type scale depends on the construct of the item response which interval scale is used. Moreover, the measures for an interval scale are mean and standard deviation. Beyond this data set, regression analysis could be employed. Table 10 shows the corresponding values and interpretation for the Likert-type scale.

Table 10

Likert scale and Interpretation for Teaching Strategies

Score	Perception Level	Scale	Interpretation
1	Strongly Disagree	1.00 – 1.50	No Practice
2	Disagree	1.51 – 2.50	Little Practice
3	Neutral	2.51 – 3.50	Medium Practice
4	Agree	3.51 – 4.50	Much Practice
5	Strongly Agree	4.51 – 5.00	Most Practice

Source: Norman (2010). Likert scales, levels of measurement and the “laws” of statistics.

Data Analysis

Means and Standard Deviation were used to analyze the data.

Research Objective Five: To determine the impact of leadership style on teachers teaching strategies at higher secondary mathematics teachers applied in the classroom at Dindigul district South India.

Source of Data

The researcher used the results from the survey (from research objective one and two) data.

Data Analysis

The researcher used multiple regression to analyze the data. Multiple regression is used when there are more than two variables, one dependent variable and the others are independent variables. According to McDonald (2014), multiple regression was used to find which independent variables have greater effect on the dependent variable. In this research objective, the researcher wanted to find out among the eight factors, which ones had greater effects on teaching strategy. The eight factors were the independent variables and the teaching strategy was the dependent variable.

Research Objective Six: To develop a leadership model to improve higher secondary mathematics teachers teaching strategies at Dindigul district South India.

Source of Data

The results from all the research objectives were used to develop a new leadership model to improve higher secondary mathematics teachers' teaching strategies at Dindigul District, South India.

Proposed Leadership model

Through the results of all objectives, the researcher proposed a leadership model to improve the higher secondary teachers' teaching strategies at Dindigul District South India.

Model Validation

To prove whether the new leadership model was valid for the higher secondary mathematics teachers' teaching strategies at Dindigul District, South India, the researcher used the validation method.

The proposed leadership model was validated by five experts with diverse education backgrounds experts' details were shown in Appendix E. The validation was implemented through a survey. Suggestions and comments from the experts were incorporated into the final model.

Research Objective Seven: To compare the teachers' teaching strategies before and after they attend the leadership style training program at Dindigul district South India.

Source of Data

The researcher used the results from the survey (from research objective one and two) data.

Data Analysis

The researcher used t-Test to check the pre-test and post-test results were analyzed and Mean scores were calculated. The Mean scores of both pre-test and post-test were computed using a statistical program, and utilized a Paired Samples t-Test as the analytical method. The major purpose of using t-Test to analyze the data was because this analytical method was to find if there was a significant difference between the means of pre-test and post-test. It was to check leadership styles and the higher secondary mathematics teachers' teaching strategy.

Summary of the Research Process

Table 11

Summary of the Research Process

Research objective	Source of Data or Sample	Data Collection Method	Method of Data Analysis
1.To explore desirable leadership styles to improve higher secondary math teachers teaching strategies in higher education.	Literature Review, journals, and online articles published in acceptable journals (2000-2018).	Literature Review	Synthesis of review of literature (validated by 5 experts)
2.To determine the optimal teaching strategies of higher secondary mathematics teachers' at Dindigul District, South India.	Literature Review, journals, and online articles published in acceptable journals (2000-2018).	1.Literature Review 2.Semi structured interview	Synthesis of review of literature (validated by 5 experts)
3.To determine the current leadership styles of higher secondary math teachers' applied in the classroom at Dindigul District, South India.	150 higher secondary mathematics teachers at Dindigul District South India	Survey	Mean, Standard Deviation
4.To determine the current teacher teaching strategies of higher secondary math teachers' applied in the classroom at Dindigul District, South India.	150 higher secondary mathematics teachers at Dindigul District South India	Survey	Mean, Standard Deviation
5.To determine the impact of leadership style on teachers teaching strategies of higher secondary math teachers' at Dindigul District, South India.	150 higher secondary mathematics teachers at Dindigul District South India	Survey	Regression
6.To develop a leadership model to improve higher secondary mathematics teachers' teaching strategies of at Dindigul District, South India.	Result from research objectives 1-5	Model Development	Development and validation of leadership model
7.To compare the teachers teaching strategies before and after they attend the leadership style training program at Dindigul District South India.	150 higher secondary mathematics teachers at Dindigul District South India	Survey	Dependent samples t-Test.

CHAPTER IV

FINDINGS FROM THE RESEARCH OBJECTIVES

This chapter explains the results of the data analysis according to the nature of the research objectives. A qualitative and quantitative method data was collected. The qualitative data was analyzed by synthesis of review literature and quantitative data was summarized and analyzed by statistical methods including Mean, Standard Deviation, Multiple-regression and t-Test.

The following reports are the findings investigated in the sixth objectives.

Findings from Research Objective One: To explore desirable leadership style to improve higher secondary mathematics teachers teaching strategies in higher education.

The following sections of the paper detailed the findings of the synthesis of review literature for the leadership styles of higher secondary mathematics teachers in Dindigul District, South India.

The researcher reviewed leadership styles, autocratic, democratic, laissez-faire, charismatic, transactional, servant, and situational. Those styles were widely used in leadership based literatures. The table showed that the practices of the leadership styles were used by the higher secondary mathematics teachers. The results were in percentage. The autocratic leadership style was used by the secondary mathematics teachers at 7% level. The autocratic leadership style was used by the secondary mathematics teachers at 7% level. The democratic leadership style was used by the secondary mathematics teachers at 8% level. The laissez-faire leadership style was used by the secondary mathematics teachers at 6% level. The charismatic leadership style was used by the secondary mathematics teachers at 13% level. The transactional leadership style was used by the secondary mathematics teachers at 34% level. The servant leadership style was used by the secondary mathematics teachers at

10% level. The Situational leadership style was used by the secondary mathematics teachers at 33% level. The books and the articles were given in the Appendix A.

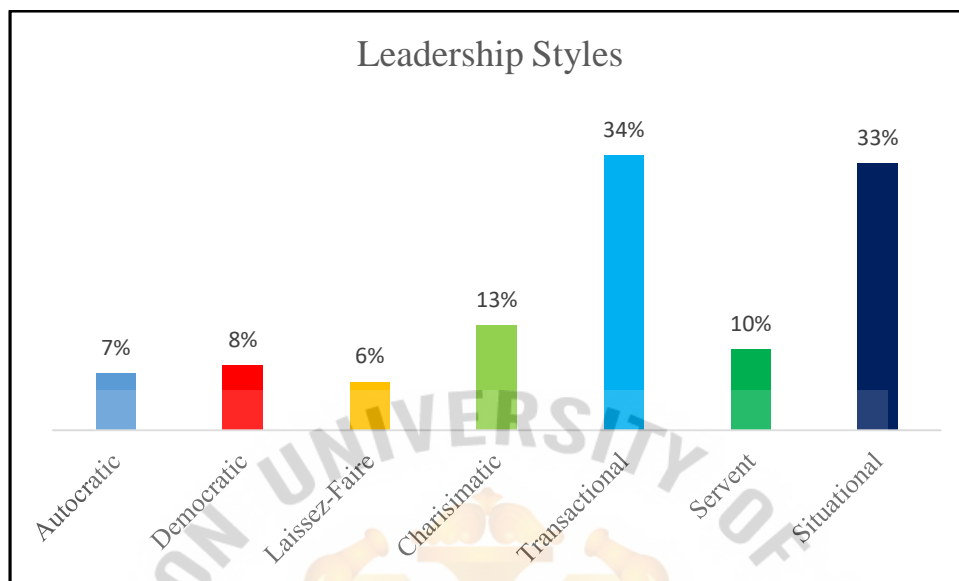


Figure 4. Teachers' Leadership Styles

The researcher synthesized reviewed literature of leadership style for the higher secondary mathematics teachers, literature review was employed. Approximately, sixty percent out of the forty books and one hundred articles were read. The results of the systematic review literature revealed two leadership styles practices in higher secondary mathematics teachers at Dindigul district South India.

The researchers ensured that the situational leadership and the transactional leadership styles were used by the higher secondary mathematics teachers. Table 12 showed that the researcher used all the keywords to synthesis the reviewed literature from the books and the articles. The books and articles were selected based on the following:

- Date 2000 -2019 (expect the main theory of leadership style)
- Published in recognized publishers. i.e. (SAGE, Emerald, insight, ERIC, etc.)
- Published in English Language
- Area of Education, mainly for secondary mathematics teachers and administrators.

Table 12

Selection of Books and Articles for Leadership Style

Keywords	Books	Articles
Leadership Styles	9	24
Teaching Leadership styles	9	23
Mathematics Teachers Teaching Leadership styles	9	17
Higher Secondary Mathematics Teachers Teaching Leadership styles	8	18
India Hr.Sec.Mathematics Teachers Teaching Leadership Styles	5	18
Total number of books and articles	40	100

Situational Leadership

Situational leadership style referred that the leaders had organized the thing well and follow the other. The leaders made the decision was not made personally. The leaders aware involved and closely supervises the people who worked. The results of the synthesis of review literature regarding leadership styles were consistent with overall framework theory. Four categories were found in this leadership styles. The dimensions were telling, selling, participating, and delegating.

Transactional Leadership

Transactional leadership style, promoted the leader reward and punishments. This leader should be motivating by working with their faculty. This leadership showed the value of order and structure. Their function was like military order. This leadership showed that the innovative in their work. It was based on the result oriented. This leader should be more responsible for the organization. Four categories were found in this leadership styles. The dimensions were supportive, directive, remove obstacles and achievement oriented.

Findings from Research Objective Two: To determine the optimal teaching strategies of higher secondary mathematics teachers at Dindigul district South India.

The following sections of the paper detailed the findings of the synthesis of review literature on teaching strategy and the school leaders interview summary for the higher secondary mathematics teachers in Dindigul District, South India.

The researcher reviewed literature of teaching strategy for the higher secondary mathematics teachers teaching strategy. The researcher found that the higher secondary mathematics teaching strategies were widely used. The table showed that the teaching strategy were used by the higher secondary mathematics teachers. The results were in percentage. The strategy I was used by the secondary mathematics teachers at 23% level. The strategy II was used by the secondary mathematics teachers at 24% level. The strategy III was used by the secondary mathematics teachers at 23% level. The strategy IV was used by the secondary mathematics teachers at 8% level. The strategy V was used by the secondary mathematics teachers at 12% level. The books and the articles were given in the Appendix A.

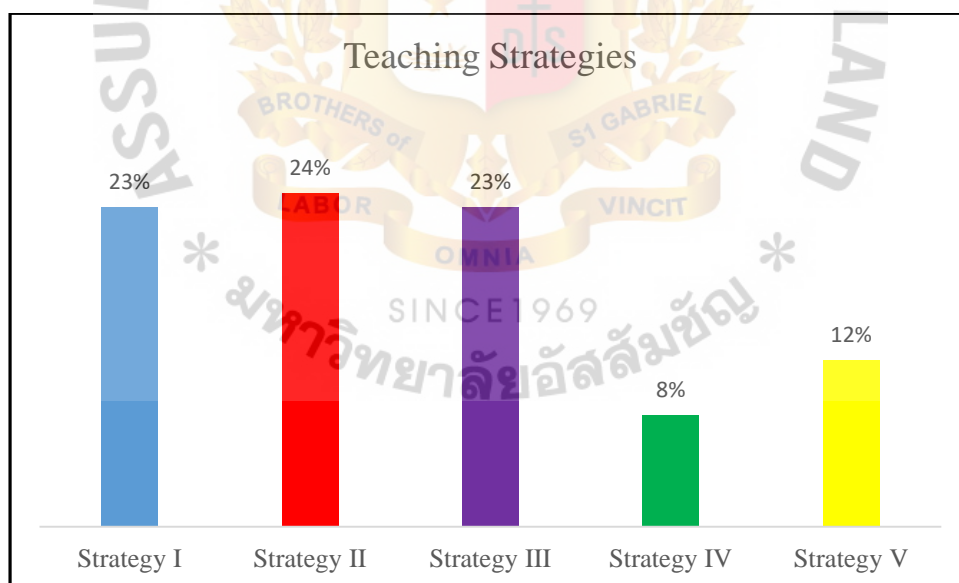


Figure 5. Level of Teachers' Teaching Strategies

The researcher synthesized reviewed literature of teaching strategy for the higher secondary mathematics teachers, literature review and semi-interview was conducted. Approximately, sixty percent out of the twenty-seven books and one hundred sixty-four

articles were read. The results of the systematic review literature revealed three teaching strategy practices in higher secondary mathematics teachers at Dindigul district South India.

The researchers ensured that the teaching strategy I, teaching strategy II and the teaching strategy III were used by the higher secondary mathematics teachers. Table 13 showed that the researcher used the keywords to synthesis the reviewed literature from the books and the articles. The books and articles were selected based on the following:

- Date 2000 -2019 (expect the main theory of leadership style)
- Published in recognized publishers. i.e. (SAGE, Emerald, insight, ERIC, etc.)
- Published in English Language
- Area of Education, mainly for secondary mathematics teachers and administrators.

Table 13

Selection of Books and Articles for Teaching Strategies

Keywords	Books	Articles
Strategies	8	48
Teaching Strategies	6	38
Teachers' Teaching Strategies	3	30
Mathematics Teachers' Teaching Strategy	2	26
Higher Secondary Mathematics Teaching Strategy	4	16
Indian Hr.Sec.Maths Teachers' Teaching Strategy	4	8
Total books and articles	27	164

Teaching Strategy I

Teacher strategy showed that the method of teaching and learning process, All the teachers used in different method of teaching. The teachers delivered the course materials in order to engage the student learning. The teachers used many skills for teaching. The strategy was mainly used for problem solving. The dimensions were creating, utilizing lessons. cooperative learning and nurturing math success.

Teaching Strategy II

Teaching strategy was a method that used to help students learning the desired source contents and be able to develop achievable goals in the future. The strategy used to enable learners to compare and contrast different elements. Strategy helped to pass a message to the learners through mental images, physical models, pictorial representations, graphical organizers and flow charts. The dimensions were attributes, core process and function.

Teaching Strategy III

Teaching strategy would be the methods of instruction used by the teacher to help students to learn and to apply their knowledge to achieve their academic goals. The teacher took into account the age of the students, their level, the setting of the class, the length of the class and the curriculum. The teacher might use different teaching aids to reach all students with different learning styles and abilities. The dimensions were organizing, practice, changing, process and evaluating.

Interview Summary

The interview was contacted to eight school leaders in Dindigul District and their responses were summarized in the Table 14. The school leaders' name, qualification, and their experience were mentioned in Appendix G.

Table 14

Feedback of School Leaders Interview Summary

Questions	Answers	F	%
1. Did you have a formal training/experience before taking the post?	All the leaders had formal training/experience before taking the post.	8	100
2. What are the strengths of the department in terms of leading the mathematics teacher?	Team work. Contacting competitive board exams. Math Olympiads test in national level.	6	75
3. How do you evaluate the mathematics teachers teaching strategy?	Students' feedback. The classroom audit. Results.	5	63
4. Do you have the evaluation on the effectiveness of the mathematics teachers?	Periodic class audits, Informal visit by the head of the school. Coding sheet for parents evaluation.	6	75
5. What are the weaknesses of the department in terms of leading mathematics teachers?	Time allocated. Curriculum designing.	5	63
6. What are the activities to develop mathematics teachers' knowledge and skills?	Teaching technology. Faculty program. Seminar and workshop	7	87
7. Do you include strengthening mathematics teachers teaching strategy in your plan? Please specify?	Updated syllables. Updated application knowledge. Training program	5	63
8. What are some constraints in improving mathematics teachers teaching strategy? Please mention them?	Time management. Satisfying the government norms. Non co-operation of the management	6	76
9. What are the teaching strategies of the department to improve your status?	Clinic classes to teach students who are slow in learning.	7	87
10. What are the result and common suggestion?	Teaching strategies and Curriculum must be revamped to suit the Gen Z students' attention level.	8	100

The above table revealed that the result of interview. The school leaders had formal training and experience in before taking post and the responses were at 100% agreed. The strengths of the organization were team work, contacting competitive board exams and math Olympiads test in national level and their responses were at 75% not followed. The evaluation of mathematics teaching strategies were students' feedback, the classroom audit,

the student results and the response were 63% not followed. The effective of revelations were periodic class audits, informal visit by the head of the school and coding sheet for parents' evaluation and their responses were 75% level not followed. The weakness of the department was time allocated and curriculum designing and the responses were 63% not followed. The activities were teaching technology, faculty program, seminar, workshop and the responses were 87% not followed. The strengthening mathematics strategies were updated sully bus, updated application knowledge, training program and the responses were 63% not followed. The improving part was time management, satisfying the government norms, non-co-operation of the management and the responses were 76% not followed. The improve of teaching strategies were clinic classes to teach students who are slow in learning and the responses were 87% not followed. The suggestions were teaching strategies and curriculum must be revamped to suit the Gen Z students' attention level and the responses were 100% level.

Findings from Research Objective Three: To determine the current leadership styles of higher secondary mathematics teachers applied in the classroom at Dindigul district South India.

Survey Results

The data has collected from the eight district higher secondary schools' mathematics teachers by survey indicated that the current leadership style was very good the overall Mean score was 3.94. The findings explained the current leadership styles of higher secondary mathematics teachers applied in the class rooms at Dindigul District South India.

Table 15

Mean and Standard Deviation for “Telling” Dimension.

Item no.	Item descriptions	M	SD	Interpretation
1	I find satisfaction in deliberating hard and for long hours.	3.98	0.82	High
2	I prefer to think about small, daily projects to long-term ones.	4.04	0.86	High
3	I tell others what to do if they want to be rewarded for their work.	3.77	0.84	High
4	I express with a few simple words what we could and should do.	3.98	0.92	High
Overall Mean		3.94	0.85	High

The result shown in Table 15 shows the Mean of the first four items under the telling dimension. The overall Mean (M=3.94), which was in “High” category (SD=.85). The highest Mean was in item #2 (M=4.04) indicating that thinking about small to long-term ones. The lowest Mean showed in item #3 (M=3.77) showed in “High” category in regards the express with a few words about doing.

Table 16

Mean and Standard Deviation for “Selling” Dimension

Item no.	Item descriptions	M	SD	Interpretation
5	As long as things are working, I do not try to change anything.	4.29	.92	High
6	I provide recognition/rewards, when others reach their goals	3.45	.79	Medium
7	I help others to find meaning in their work.	4.36	.81	High
8	I ask no more of others than what is absolutely essential.	3.87	.94	High
Overall Mean		3.99	.85	High

The overall results at this dimension show “High” category ($M= 3.99$) ($SD = .85$).

The highest mean showed at items #7 ($M=4.36$) for helping others to find meaning in their work and #5 ($M=4.29$) for working properly. The lowest Mean showed at item #6 ($M=3.45$) which about recognition and rewards for their work.

Table 17

Mean and Standard Deviation for “Participating” Dimension

Item no.	Item descriptions	M	SD	Interpretation
9	I worked with intensity on this task.	4.34	.79	High
10	I strived as hard as I could to complete this task	3.47	.94	Medium
11	I am proud of my work on this task	4.33	.88	High
12	I devoted a lot of attention to this task	3.78	.82	High
Overall Mean		3.98	.84	High

Table 17 shows that the overall Means 3.98 which is in “High” high category ($SD = .84$). The highest Mean showed at item #9 ($M=4.34$) indicating the work with intensity on that task. The lowest Mean showed at item #10 ($M=3.47$) showing the hardness to complete the work.

Table 18

Mean and Standard Deviation for “Delegating” Dimension

Item no.	Item descriptions	M	SD	Interpretation
13	I let others work in the manner that they want.	3.91	.94	High
14	I rarely give direction or guidance to others if I sense they can achieve their goal.	3.90	.92	High
15	As long as things are going smoothly, I am satisfied	4.03	.85	High
16	I monitor all projects that I am in charge of to ensure the team meets it goal.	3.53	.82	High
Overall Mean		3.84	.86	High

Table 18 shows the overall Mean in a “High” category ($M=3.84$) ($SD=.86$). The highest Mean showed at item #15 ($M=4.03$) for satisfying the work process. The lowest Mean showed at item #16 ($M=3.53$) indicating the monitor the projects to meet the goal.

Table 19

Mean and Standard Deviation for “Supportive” Dimension

Item no.	Item descriptions	M	SD	Interpretation
17	I help others to understand my visions through the use of tools, such as images, stories, and models	4.31	.79	High
18	I go out of the way to make others feel good to be around me	3.19	.81	Medium
19	I help others with their self-development	4.37	.88	High
20	I ensure others get recognition and/or rewards when they achieve difficult or complex goals	3.31	.87	Medium
Overall Mean		3.79	.85	High

Table 19 shows the overall Mean in a “High” category ($M=3.79$) ($SD=.85$). The highest Mean showed at item #19 ($M=4.37$) for helping others self-development. The lowest Mean showed at item #18 ($M=3.19$) indicating to find the way to make others feel good to be around.

Table 20

Mean and Standard Deviation for “Directive” Dimension

Item no.	Item descriptions	M	SD	Interpretation
21	Influence others by developing mutual liking and respect	4.13	.86	High
22	I have an ever-expanding network of people who trust and rely upon me	3.91	.80	High
23	I provide challenges for my team members to help them grow.	4.11	.79	High
24	I manage others by setting standards that we all agree with	3.72	.80	High
Overall Mean		3.96	.82	High

Table 20 shows the overall Mean in a “High” category ($M=3.96$) ($SD=.82$). The highest Mean showed at item #21 ($M=4.13$) for influencing others by developing mutual liking and respect. The lowest Mean showed at item #24 ($M=3.72$) indicating to manage others by setting standards that we all agreed with that.

Table 21

Mean and Standard Deviation for “Remove Obstacles” Dimension

Item no.	Item descriptions	M	SD	Interpretation
25	I use simple words, images, and symbols to convey to others what we should or could be doing.	3.88	.78	High
26	I rarely give direction or guidance to others if I sense they can achieve their goal.	3.93	.87	High
27	I consistently provide coaching and feedback so that my team members know how they are doing	3.80	.89	High
Overall Mean		3.87	.86	High

It shows the overall Mean in a “High” category ($M=3.87$) ($SD=.86$). The highest Mean showed at item #26 ($M=3.93$) for directing or guiding to achieve their goals. The lowest Mean showed at item #27 ($M=3.80$) indicating for coaching and feedback to know how they are doing

Table 22

Mean and Standard Deviation for “Achievement Oriented” Dimension

Item no.	Item descriptions	M	SD	Interpretation
28	I want to be challenged in my work to solve new problems	3.88	.89	High
29	Being inspired at my job is something that is important to me	3.85	.83	High
30	Having a mentor in my job is important to me	3.61	.94	High
Overall Mean		3.78	.88	High

Table 22 shows the overall Mean in a “High” category ($M=3.78$) ($SD=.88$). The highest Mean showed at item #28 ($M=3.88$) for solving new problems. The lowest Mean showed at item #30 ($M=3.61$) indicating the importance of the mentor role in my job.

Findings from Research Objective Four: To determine the current teacher teaching strategies at higher secondary mathematics teachers applied in the classroom at Dindigul district South India.

Survey Results.

The data has collected from the eight district higher secondary school mathematics teachers by survey indicated that the current leadership style was very good (the overall Mean score was 3.94).The findings explained the current leadership styles of higher secondary mathematics teachers applied in the class rooms at Dindigul District South India.

Table 23

Mean and Standard Deviation for “Creating” Dimension

Item no.	Item descriptions	M	SD	Interpretation
1	Using multi-sensory Aids	4.31	.79	Much Practice
2	Understand and model best pedagogical strategy in education and serve as mentors and coaches for other educators.	3.61	.78	Much Practice
3	Synthesize and use research to improve teaching practice that results in greater student learning.	3.63	.96	Much Practice
Overall Mean		3.85	.82	Much Practice

Table 23 shows that the overall Mean is ($M=3.85$) ($SD=.82$) which is in “Much Practice” category. The highest Mean showed at item #1 ($M=4.31$) for using multi-sensory Aids. The lowest Mean showed at item #2 ($M=3.61$) indicating the understand and model best pedagogical strategy in education and serve as mentors and coaches for other teachers.

Table 24

Mean and Standard Deviation for “Utilizing the Lesson” Dimension

Item no.	Item descriptions	M	SD	Interpretation
4	Explaining from general to specific; Complex to simple.	4.23	.84	Much Practice
5	Explain the lesson starting from generalization to specific; from whole to abstract.	3.61	.89	Much Practice
6	Let the learners do the activities in their own; “learn by doing”.	4.03	.79	Much Practice
Overall Mean		3.95	.82	Much Practice

Table 24 shows that the overall Mean is (3.95) (SD=.82) in “Much Practice” category. The highest Mean showed at item #4 (M=4.23) for explaining from general to specific; Complex to simple. The lowest Mean showed at item #5 (M=3.61) indicating the explanation of the lesson starting from generalization to specific; from whole to abstract.

Table 25

Mean and Standard Deviation for “Cooperating the Learning” Dimension

Item no.	Item descriptions	M	SD	Interpretation
7	Giving opportunities for learners to participate in classroom activities	4.17	.79	Much Practice
8	Make the learners’ to feel they belong to a cooperative of learners with a shared goal or purpose to reach their potentials.	3.74	.92	Much Practice
9	Using exposit method when discussing.	3.94	.96	Much Practice
Overall Mean		3.95	.88	Much Practice

The overall Mean is “Much Practice” category (M=3.95 and (SD=.88)). The highest Mean showed at item #7 (M=4.17) for giving opportunities to learners to participate in classroom activities. The lowest Mean showed at item #8 (M=3.74) indicating the learners to feel they belong to a cooperative of learners with a shared goal or purpose to reach their potentials.

Table 26

Mean and Standard Deviation for “Nurturing Math Success” Dimension

Item no.	Item descriptions	M	SD	Interpretation
10	Developing and fostering a collaborative culture of schooling based upon principles of lifelong math learning.	3.67	.84	Much Practice
11	Design a faculty development program based on the needs of the teachers by school leaders.	4.10	.88	Much Practice
12	School leaders plan and conduct a workshop to develop teachers’ soft skills.	4.05	.84	Much Practice
Overall Mean		3.94	.85	Much Practice

The overall Mean is a “Much Practice” category ($M=3.94$ and $(SD=.85)$). The highest Mean showed at item #11 ($M=4.10$) for designing a faculty development program based on the needs of the teachers by school leaders. The lowest Mean showed at item #10 ($M=3.67$) indicating the developing and fostering the principles of lifelong math learning.

Table 27

Mean and Standard Deviation for “Attributes” Dimension

Item no.	Item descriptions	M	SD	Interpretation
25	Using research to locate and improve teaching practice that results in greater student learning.	3.64	.89	Much Practice
26	My organization prepares a new plan for the improvement of teaching and learning.	3.78	.92	Much Practice
27	My organization comes up with strategies that increase the financial resources.	4.10	.87	Much Practice
Overall Mean		3.84	.88	Much Practice

Table 27 shows the overall Mean is a “Much Practice” category ($M=3.84$) and ($SD=.88$). The highest Mean showed at item #27 ($M=4.03$) for utilizing the financial according to the strategies. The lowest Mean showed at item #16 ($M=3.64$) indicating the usage of research results in greater student learning.

Table 28

Mean and Standard Deviation for “Core Process” Dimension

Item no.	Item descriptions	M	SD	Interpretation
28	Understanding the demands of the current system to future growth.	3.75	.92	Much Practice
29	To address the struggles and risk of the path towards the future strength.	3.91	.87	Much Practice
30	Identifying the core competencies that are needed for the success by using research.	4.13	.87	Much Practice
Overall Mean		3.93	.88	Much Practice

Table 28 shows the overall Mean is a “Much Practice” category ($M=3.93$) and ($SD=.88$). The highest Mean showed at item #30 ($M=4.13$) for identifying the core competence that is needed for future work. The lowest Mean showed at item #28 ($M=3.75$) indicating the understanding the demands of the current system to future growth.

Table 29

Mean and Standard Deviation for “Organizing” Dimension

Item no.	Item descriptions	M	SD	Interpretation
13	Constantly measuring and evaluating the external and internal conditions of the organization by school leaders.	3.99	.87	Much Practice
14	School leaders analyze the strategic context of the organization and create an organizational advantage.	3.85	.97	Much Practice
15	School leaders assess the purpose and performance of the organization and alter systematically internal procedures accordingly.	3.79	.94	Much Practice
Overall Mean		3.87	.89	Much Practice

The overall Mean is “Much Practice” category ($M=3.87$) and ($SD=.89$). The highest Mean showed at item #13 ($M=3.99$) for satisfying the Constantly measuring and evaluating the external and internal conditions of the organization. The lowest Mean showed at item #15 ($M=3.79$) indicating performance of the assessments.

Table 30

Mean and Standard Deviation for “Practice” Dimension

Item no.	Item descriptions	M	SD	Interpretation
16	Working with others to design and implement assessment practices and data analysis that results in improving learning and teaching	3.88	.87	Much Practice
17	Presenting learning strategies to department meetings.	3.73	.84	Much Practice
18	It has given me the tools to be a better role model as a teacher.	3.69	.89	Much Practice
Overall Mean		3.76	.85	Very Good

Table 30 shows the overall Mean is a “Much Practice” category (M=3.76) and (SD=.85). The highest Mean showed at item #16 (M=3.88) for working with others to design and implement assessment practices and data analysis that results in improving learning and teaching. The lowest Mean showed at item #18 (M=3.69) indicating the teacher’s role model.

Table 31

Mean and Standard Deviation for “Changing” Dimension

Item no.	Item descriptions	M	SD	Interpretation
19	School leaders focus on the organization by making to understand, connect.	3.87	.97	Much Practice
20	School leaders promote positive learning climate by providing physical and instructional resources to facilitate the teaching and learning needs	3.95	.87	Much Practice
21	School leaders grant permission to change the old strategy to new strategy.	3.96	.87	Much Practice
Overall Mean		3.92	.88	Very Good

Table 31 shows the overall Mean is a “Much Practice” category (M=3.92) and (SD=.88). The highest Mean showed at item #20 (M=3.96) for providing permission to change the teaching strategy from old to new. The lowest Mean showed at item #16 (M=3.87) indicating the success of bringing new strategies.

Table 32

Mean and Standard Deviation for “Process” Dimension

Item no.	Item descriptions	M	SD	Interpretation
22	Put a great deal of effort on the things expected from me to do to help my organization.	3.99	.97	Much Practice
23	A sound confidence my teaching ability and I show devotion to my work to reach educational goals.	3.72	.94	Much Practice
24	I am inspired to give my best as reflected my job performance.	4.25	.84	Much Practice
Overall Mean		3.98	.89	Much Practice

Table 32 shows the overall Mean is a “Much Practice” category ($M=3.98$) and ($SD=.89$). The highest Mean showed at item #24 ($M=4.25$) for reflecting on my job performance. The lowest Mean showed at item #23 ($M=3.72$) indicating the ability and devotion to reach educational goal.

Findings from Research Objective Five: To determine the impact of leadership style on teachers teaching strategies of higher secondary mathematics teachers at Dindigul District South India.

The objective five aimed to determine whether there was a significant predictive impact of teaching strategy. In order to address research objective five, statistical hypothesis testing multiple regression was performed on the eight variables in the current study.

An initial step, the bivariate correlations between the independent variables (telling, selling, participating, delegating, supportive, directive, remove obstacles, and achievement oriented) and the dependent variable teachers’ teaching strategy were examined. If bivariate correlations were not significant for any of the independent variables with teachers’ teaching strategy, it was deemed appropriate to exclude such variable from further analysis. All

statistical hypothesis testing performed to assess the significance of the correlations were set using a significance level of .05, or 5%. A 5% significance level is the conventionally used maximum level in social science and behavioral science studies (Cohen, 1988).

Table 33 displays the bivariate correlations between telling, selling, participating, delegating, supportive, directive, remove obstacles, and achievement oriented and the dependent variable teachers' teaching strategy.

Table 33

Bivariate Correlation Based on the Leadership styles and Teaching Strategy

	1	2	3	4	5	6	7	8
Telling								
Selling	.305**							
Participating	-.211**	.384**						
Delegating	.010	.000						
Supportive	.048	.355**	.588**					
Directive	.556	.000	.000					
Removes	.095	.480**	.208*	.763**				
Achievement	.247	.000	.011	.000				
Teaching	.182*	.063	.089	.446**	.420**			
	.026	.446	.277	.000	.000			
	-.076	-.201*	.231**	.451**	.202*	.665**		
	.356	.014	.004	.000	.013	.000		
	.115	-.378**	.027	.091	.068	.276**	.479**	
	.162	.000	.741	.266	.409	.001	.000	
	.499**	-.150	.041	.196*	.097	.475**	.511**	.770**
	.000	.067	.620	.016	.238	.000	.000	.000

Note *denotes a significant relationship (statistical significant level at $p = .05$, two tailed). p -values appear within parentheses below the correlations coefficients.

The correlation analysis revealed that, from the eight independent variables considered in this study, selling did not have a significant relationship with teaching strategy for the ($r = -.150, p = .067$). This finding suggested that did not have a predictive relationship with the dependent variable addressed in this study. Hence it was deemed appropriate to exclude not significant factor from further analysis.

Participating did not have a significant relationship with teaching strategy for the ($r = .041, p = .620$). This finding suggested that did not have a predictive relationship with the dependent variable addressed in this study. Hence it was deemed appropriate to exclude not significant factor from further analysis.

Supportive did not have a significant relationship with teaching strategy for the ($r = .097, p = .238$). This finding suggested that did not have a predictive relationship with the dependent variable addressed in this study. Hence it was deemed appropriate to exclude not significant factor from further analysis.

Telling was found to be significantly, moderately and positively correlated with the respondents teaching strategy for the ($r = .499, p = .000$), at significant level of .05. The coefficient of determination (r^2) for these variables was .25, which indicates that 25% of the variance in teaching strategy could be accounted by Independent variable.

Delegating was found to be significantly, weakly and positively correlated with the respondents teaching strategy for the ($r = .196, p = .016$), at significant level of .05. The coefficient of determination (r^2) for these variables was .038, which indicates that 3.8% of the variance in teaching strategy could be accounted by Independent variable.

Directive was found to be significantly, moderately and positively correlated with the respondents teaching strategy for the ($r = .475, p = .000$), at significant level of .05. The

coefficient of determination (r^2) for these variables was .23, which indicates that 23% of the variance in teaching strategy could be accounted by Independent variable.

Remove obstacles was found to be significantly, moderately and positively correlated with the respondents teaching strategy for the ($r = .511, p = .000$), at significant level of .05. The coefficient of determination (r^2) for these variables was .26, which indicates that 26% of the variance in teaching strategy could be accounted by Independent variable.

Achievement oriented was found to be significantly, strongly and positively correlated with the respondents teaching strategy for the ($r = .770, p = .000$), at significant level of .05. The coefficient of determination (r^2) for these variables was .59, which indicates that 59% of the variance in teaching strategy could be accounted by Independent variable.

Overall, eight out of three independent variables were found to be not significantly correlated with dependent variable. These findings suggested that further correlational analysis using multiple linear regression could be performed. Correlational analysis using multiple linear regression is useful to determine the predictive relationship of a combination of independent variables (i.e., the predictors) on the dependent variable (i.e., the response). Through multiple linear regression is possible to generate a predictive equation model for the dependent variable, using the relative contribution of each of the predictor variable as parameters.

The summary of the results obtained from conducting the multiple regression is presented in Table 34.

Table 34

Multiple Linear Regression for Factors Predicting Teaching Strategies for Leadership style

Variable	Coefficients	SE	t (df = 149)	P
(Constant)		.149	-1.986	.049
Telling	.424	.037	11.154	.000
Delegating	-.014	.048	-.344	.731
Directive	.115	.045	2.258	.025
Removes	.185	.036	3.245	.001
Achievement	.603	.031	14.513	.000
N	150			
<i>F</i> (5,149)	132.872			
<i>Prob</i> > <i>F</i>	0			
<i>R</i>	0.907			
<i>R</i> ²	0.822			

Note. * The regression coefficients reported here for each of the predictor variables are unstandardized. An unstandardized or raw regression coefficient (often denoted described the relationship between the predictor and the dependent variable in some of the original (i.e., raw) units of measurement.

The regression analysis results shown table 0 revealed that the overall regression was significant. And there was a significant but weak multiple correlation between the combination of independent variable (telling, delegating, directive, remove obstacles, and achievement oriented) and the dependent variable (teaching strategy) $r = .907$, $p = .000$ The multiple coefficient of determinations (R^2) for these variables was .822, which indicated that 82% of the variance in leadership style to the teaching strategy.

Findings from Research Objective Six: To develop a leadership model to improve higher secondary mathematics teachers teaching strategies of at Dindigul District South India.

The objective was to develop a leadership model to improve higher secondary mathematics teachers teaching strategy which could be applicable for the Dindigul District South India. The model was developed based on the results of research objectives and the possible desirable elements from the related theories. The new leadership model for teaching strategy was validated by five experts. A summary of the model was provided to the experts for validation. After the model testing, the proposed model was modified and submitted for the approval from the research adviser. In this way, the new leadership model was finalized. This new leadership model was recommended for the higher secondary mathematics teachers to implement their teaching strategy.

Proposed a leadership model for Teaching Strategy

The model was developed based on the results of the five objectives and the statistical analysis results. Multiple regression results showed that all leadership style dimensions significantly correlated with teaching strategy. The regression analysis results revealed that the overall regression was significant. And there was a significant but weak multiple correlation between the combination of independent variable (telling, delegating, directive, remove obstacles, and achievement oriented) and the dependent variable (teaching strategy) $r = .907, p = .000$. The multiple coefficient of determinations (R^2) for these variables was .822, which indicated that 82% of the variance in leadership style to the teaching strategy.

The proposed leadership model for improving higher secondary mathematics teachers' teaching strategy was composed two parts: leadership styles and teaching strategy. The main emphasis of the model was to promote the teaching strategies at Dindigul District, South India. The researcher believed that the leadership model offered a more systematic approach in planning in teaching and learning. Once their leadership styles were practiced

more the teaching strategy would be improved. In order to improve the adoption of leadership model played an important role.

Figure below shows the details of the proposed a leadership model for teaching strategy. The summary process of the proposed leadership model for teaching strategy was provided. Moreover, the meaning and how it was used were presenting in the later part of this chapter.

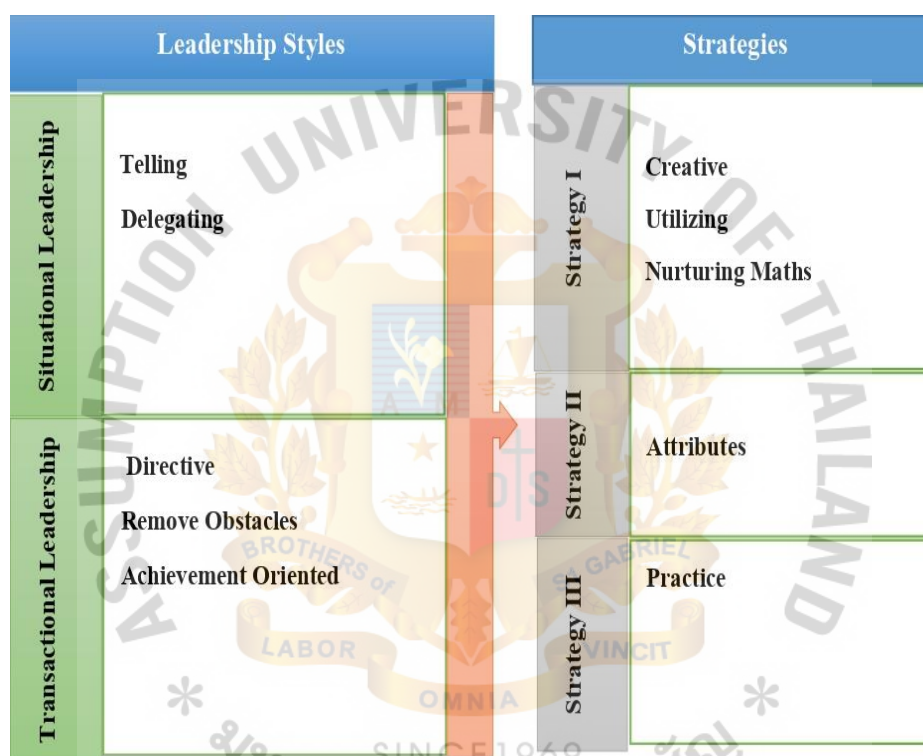


Figure 6. Proposed Leadership Model for Teaching Strategies

The goals of this proposed model is to offer the higher secondary mathematics teachers to improve 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 composed of two dimensions: Situational leadership and Transactional leadership. Situational leadership dimension had two sub-variable telling and delegating. Transactional leadership had three sub-variable directives, remove obstacles, and achievement oriented. Those variables were taken from the regression result based Tables, 3 and 33.

Part Two: Teaching Strategies 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. Those dimensions and variables were taken from the objective result based on the mean values Tables, 22,23,24,25,26,27,28,29,30 and 31.

Implications of the Model

The purpose of the model is the leadership style to improve higher secondary mathematics teacher teaching strategies. The proposed model is submitted to the Dindigul District Education officer. The officer permit to all the school headmaster/headmistress to follow the leadership model to the higher secondary mathematics teachers teaching strategies.

Headmaster or Headmistress

All the school headmasters or headmistress listen to the district education officers order. They have to make new environment for following the leadership model for improving higher secondary mathematics teachers teaching strategy and report to the district education officer. The school leaders have to provide a space for their adaptation of the leadership model. The school leaders have to conduct a program for twice a month. The school leaders have to follow up the process and give some freedom to access the model in their teaching journey.

Higher Secondary Mathematics Teachers

The teachers have to support the school leader's instruction and adopt the new leadership model. Adopting new thing is very easy and find the way to involve it. The higher secondary teachers need to understand the student's requirement and shaped themselves. If you make it simple, everybody likes very much. So the students show more interest towards learning mathematics. The higher secondary mathematics teacher's need to update current knowledge of mathematics the leadership styles.

Situational Leadership Style

This leadership showed the direct and clear communication. The leaders were inspiring the people to do their work more. All the people had own nature to become a leader but it practiced different from others. This leadership style was appropriate for different contexts. This leaderships style showed the leaders' strength and weakness. It worked in multiple task to complete their work. It concentrated to the development of the followers. It is described as a situational methodology that causes a modification in individuals and social systems. In its ideal structure, it makes a productive and positive change in the followers with the genuine goal of shaping enthusiasts into leaders.

Telling

The teacher's leader could make a positive difference in a person's life and might be a solution in various cases. In communicating the content, it was very important for the teacher leader to keep in mind the background of the student or the level of understanding.

Delegating

A delegating leader comes the ordinary decisions, for instance, parting the exceptional job that needs to be done, to their supporters. The leaders were supervised by the head leaders

to do their work well. These leaders expect from the other to come with new idea and successful work.

Transactional Leadership Style

Transactional leadership style was routinely explained as an advantage exchange among leader and their followers. The exchange incorporates something of critical worth between what the leader had or controls that the final product of their organizations. The achievement of this type of leader supporter relationship depends upon the affirmation of different leveled contrasts and the ability to work through this technique for exchange.

Directive

The directive explained about identifying the problems and guided to rectified it. The major function was directing the leaders to do and not to do. The leaders were good at doing their work in correct but they did not guide to be in proper way.

Remove Obstacles

It was portrayed by a leader who advises with subordinates, demands their proposition and considers these proposals genuinely before choosing a decision.

Achievement Oriented

A leader may show directedness toward the teacher leaders in specific problem and be participative. The leader work should be based the school goal so the need to achieve the school goals.

Teaching Strategy I

Math anxiety had not consigned exclusively to higher secondary students. Many educators have negative mentalities toward math dependent on their own school experiences.

Higher secondary students could get on that antagonism. There were things they could do to forestall transmitting any of their own math uneasiness to your students. Abstain from encouraging and supporting when a student was struggling and rather express trust in their capacity to take care of the issue and recommend techniques for how they may go about it.

Creating

Creating developmental evaluations to guarantee that student comprehends the ideas. What the student realize could control our guidance and decide to follow it.

Utilizing the Lesson

This explained about how to use mathematics concepts while learning the subjects. The teacher leaders should know the method teaching and the concepts of mathematics. The subject needed to be explained in well level. The teachers should start from the lower level to higher so the student found to be good.

Nurturing Math Success

The teacher developed the subject content towards the current situation. The teacher leader should update their mathematics knowledge. The leader organized the teaching and learning materials. They should use proper method for proper concepts.

Teaching Strategy II

Imparting about math assists students with handling new learning and expand on their reasoning. Engage students during discussions and have them describe why they tackled an issue with a particular goal in mind.

Attributes

The mathematics teacher has an ability to teach and explain in an easy way to the school students. The clarity of problem-solving techniques to the students to understand very well. Create an enthusiasm and interest in mathematics to explore and expand the application knowledge in their future studies.

Teaching Strategy III

Whenever students were allowed the chance to pick how they learn and show their comprehension of an idea, their upfront investment, and inspiration increment. It has allowed them to see how they learn best, gives office over their own learning, and takes into consideration the space to rehearse various ways to deal with taking care of math issues.

Practice

The students were given an authentic issue, pose a major inquiry and let them struggle to make sense of a few different ways to explain it. The teacher leaders asked the student to practice more and more practices. The mathematics problems were practiced well then the student got more confident in their learning.

Model Validation by Experts

The proposed leadership model for higher secondary teachers; teaching strategy was validated by five experts in the field of educational and curriculum development and instruction.

The validation through experts was helpful in modifying the proposed leadership model. The results show strong support from the experts of all the practices. All the experts accepted the model but they asked to change the tables. The experts suggested that the

leadership practices were well-thought but should be restated specifically to fit with teaching strategy.

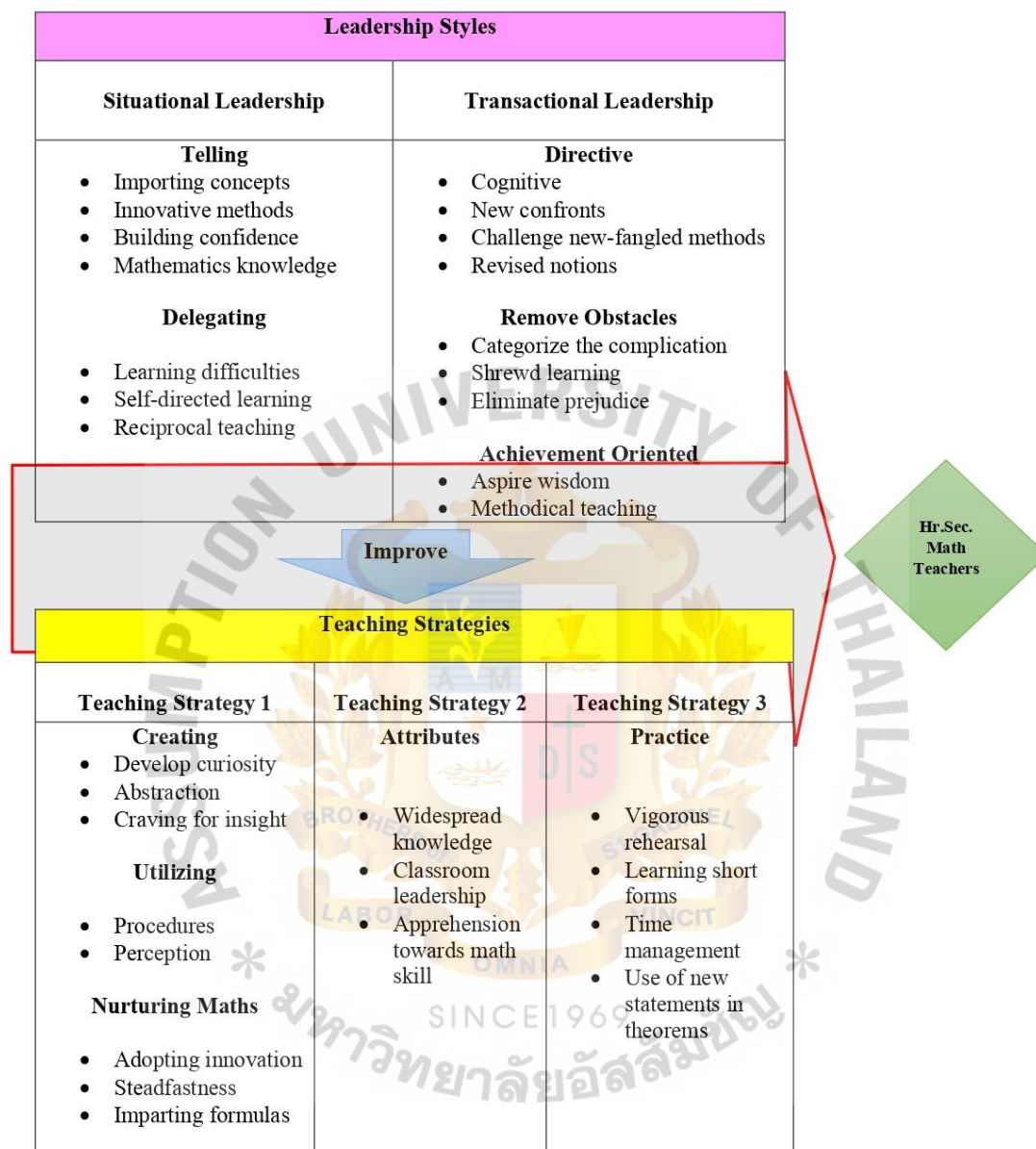


Figure 7. Revised Leadership Model for Higher Secondary Mathematics Teachers' Teaching Strategy at Dindigul District, South India.

Implication of the Model

The model was modified (Shown in Figure). The model was composed of two parts: leadership style and teaching strategy. The model explains that the teachers; leadership style

practiced to be well-implemented in order to promote the second part, teaching strategy. If these two parts are well-practiced, the ultimate goals of this model which is student learning will be enhanced.

Situational Leadership Style

Situational leadership was a leadership style in which a leader adapts their style of leading to suit the current work and needs of a group. This style of leadership was not dependent on the abilities of a leader; rather it was based on a leader's capacity to adjust to the necessities of a team or organization in order to be a better and more effective leader.

Telling

This style is when a team requires close supervision and constant guidance. Leaders using a telling style may make all of the decisions and then communicate these decisions to the team. The telling style is most commonly used when repetitive results are needed or when a team is at the novice level.

- Imparting the concept
- Innovative methods
- Building confidence
- Mathematics knowledge

The most common phobia of mathematics is that it is a boring and very difficult subject. It is a challenging task for the teacher to overcome this fear among the children. The teacher has to introduce the subject with lot of enthusiasm and interest for the students. Activity based approach can be an effective way to solve this problem. While teaching mathematics emphasis should be on making the student understand the basic principles rather than a mechanical understanding of concepts and make new innovative methods for teaching.

Delegating

The delegating leadership style is when a team is efficient and effective at their jobs and require little guidance. The leader comes the results, for instance, parting the exceptional job that needs to be done, to their groups.

- Learning difficulties
- Self-directed learning
- Reciprocal teaching

The teacher should be encouraged to consider mistakes as learning opportunities. Monitoring the progress periodically and setting measurable goals can help them in the learning process. The teachers should be self-directed learning. Reciprocal Teaching is a technique that requests that students and instructors share the role of the educator by permitting both to lead the conversation about a given perusing. The corresponding Teaching includes four techniques that control the conversation: foreseeing, question producing, summing up, and explaining.

Transactional Leadership Style

Transactional leadership emphasizes results, stays within the existing structure of an organization and measures success according to that organization's system of rewards and penalties. This leadership emphasizes results, stays responsible for maintaining routine by managing individual performance and facilitating group performance.

Directive

The directive type of managerial style characterized by a leader who tells subordinate staff what they are expected to do and how to perform the expected tasks. This leadership style might be helpful for a school leader and the teachers where their subordinate staff

members have jobs that are not particularly specialized and so they need more guidance to avoid uncertainty.

- Cognitive
- New contents
- Challenge new-fangled methods
- Revise notions

Directive instruction is a way of teaching aimed at helping students acquire some basic skills and procedural knowledge. It is done in a set-by step manner to solve mathematical equations. In Transactional Learning Style Most of the teachers follow his method to solve complex problems and avoid repetitive teaching. It is important for the teacher to understand that not every students' attention level is focused and learning can become a tedious task for students in this process. It is more teacher dominated rather than collaborative learning. Every step must be mastered and promote passive learning. There is very less scope for learners' involvement. There is less scope for new knowledge. The teachers have to keep in mind these drawbacks and plan the learning process.

Remove Obstacles

Encourage the team members to come when they face an obstacle they can't seem to get around. Remind the teachers that the leaders are better than the teachers so they need to approach them. The leaders need to remove the difficulties in terms of their leadership style.

- Categorize the complication
- Shrewd learning
- Eliminate prejudice

Mathematics is a performative subject where the students have to come up with answers quickly. Mall interventions can change the attitude towards learning and effect the

performance. Students learn better when they make mistakes. The teacher plays a vital role in helping the students to identify the obstacle and categories the problem. The more brain pathways the student explores, the stronger the learning. To solve this problem, the teachers can group the students based on their ability and allow student to participate in the learning process. It helps in eliminating the prejudiced ideas by teachers that understanding mathematics is difficult. Students need to be guided towards productive practice, and approaching the problem from different directions and apply the ideas.

Achievement Oriented

A leader should guide the teachers to challenge the difficulties and performed well in their leadership styles. This leader performed high level of achievement in teaching and learning concepts.

- Aspire wisdom
- Methodical teaching

Students are motivated to learn and study hard to improve their skills and knowledge. Likewise learning Mathematics is considered as an important factor in achieving high performance. The knowledge of the teacher about the subject plays a vital role here. you cannot teach what you don't know. Therefore, the teaching process should be methodical and provide scope for reflective learning, teachers must know how to apply value to their teaching and develop proficiency across concepts.

Teaching Strategy I

Teaching strategies may be what a non-educator might think of as activities. Within the education world, they group different activities under broader groups, which are also referred to as strategies. Supportive learning is a popular strategy, but there are dozens of ways- twists-that individual teachers may use depending on the age, or content, being taught.

Creating

Creating a good classroom environment always has some elements of creativity which makes the lessons more interesting and interactive. The curriculum helps students to be innovative and also encourages them to learn new things. Students can grow up as good communicators in addition to improving their emotional and social skills.

- Develop curiosity
- Abstraction
- Craving for insight

Curiosity makes our brain more receptive to learning. Instilling students with a strong desire to know or learn something in a rewarding process for the teacher. The students will be better prepared to learn concepts they feel difficult and boring. It also stimulates creativity in the student. Abstracts concepts and difficult problems could be taught in this method. Posing challenges, linking real world challenges and focusing on the history can increase insight into the learning process and increase curiosity. Self-directed learning and explorative teaching methods can be adopted by the teachers.

Utilizing the Lesson

It makes the teachers inspired, engaged and motivated. The school teachers challenge the new method of teaching. Their level of making process increase the confident level. A lesson plan is the teacher's road map of what students need to learn and how it will be done effectively during the class time.

- Procedures
- Perception

The teachers need to use in different steps to explain the problem solving questions. In mathematics has two type of learning methods, application oriented and applied oriented.

For explaining the teachers use applied method should useful for better understandings because application is very difficult to understand it. So the teachers make procedures and follow up the perception go learning.

Nurturing Math Success

Nurturing math success provides a general outline of teaching goals, learning objectives, and means to accomplish them. A productive math lesson is not one in which everything goes exactly as planned, but one in which both students and teacher learn from each other. This makes a more grounded, calculated understanding and mental associations with the material for the student.

- Adopting innovation
- Steadfastness
- Imparting formulas

“Mathematics” it’s the dredged word that most often every student hates to hear. Showing interest and passion while teaching the subject is incredibly vital when teaching. Highlighting the areas of relevance within mathematics can help in reducing the stereo type apprehension. By focusing on reducing the anxiety and fear of the subject the teacher can create curiosity. Sharing own experiences and success stories can help create a positive relationship beyond classroom learning.

Teaching Strategy II

Strategic teaching is a way of making decisions about a course, an individual class, or even an entire curriculum, beginning with an analysis of key variables in the teaching situation. Those variables include the characteristics of the learners, the learning objectives, and the instructional preferences of the teacher. Once these variables have been analyzed,

informed decisions can be made about course content, structure, methods of assessment, and other key components.

Attributes

The ability to make math applicable to students' lives is just one of the qualities of a good math teacher. Continue reading to find out more about the qualities of good teachers and how you can become one. The next step in explaining these complex ideas is making the concept relevant to the real world.

- Widespread knowledge
- Classroom leadership
- Apprehension towards math's acquaintance

The mathematics teachers' knowledge should be out of the box, so that they can explain the students' questions but some steps are explained but not all the steps. The classroom management should be positive so that they are happy with students. Ability to explain the mathematics concept towards the student need not for the knowledge of the teacher.

Teaching Strategy III

Teaching strategy is the pre planning of a teacher before teaching the students. Teachers make their strategy through his lesson design that how they want to delivered their lesson to students and grab their attention and interest towards the lesson.

Practice

Practice makes the teachers confidence and capacity to develop and deliver quality teaching and learning programs for numeracy and mathematics and help to improve student outcomes.

- Vigorous rehearsal
- Learning short forms
- Time management
- Use of new statements in theorems

The teachers have to pre-preparation of teaching methods, teaching aids, and teaching ideas. Those preparation helps the mathematics teachers' readiness and sharp knowledge of teaching mathematics. They make the short-steps for teaching and learning. They need to finish the chapter according to the time periods. The mathematics teachers need to identify the new methodology to explain the difficult concepts.

Research Objective Seven: To compare the teachers teaching strategies before and after they attend the leadership style training program at Dindigul District South India.

The revised model of leadership style for higher secondary teachers' teaching strategy was tested in one hundred mathematics teachers in Dindigul District, South India. The pre-test and post-test results were calculated to find the Mean scores showing the practices of leadership style and teaching strategy as indicated in the model. The means were computed using Paired Samples t-Tests to compare the Means between the pre-test and post-test under leadership and teaching strategy.

The training program was contacted by the researcher with the help of leadership program trainers, Mr. Anand, Mr. Jayapaul, and Dr. Selvekumar) at Palani. The program scheduled was shown in Appendix H. The trainers were selected based on their education qualification and field of training experience. The program was a seminar and was taken attendance and it was shown in Appendix H.

First Day of Leadership Training Program

The first day (11-10-2019) of leadership program was conducted by the researcher and the resource person Mr. Anand from Bangalore. The training program was done in Subramanian Engineering College Auditorium at Palani. It was started with registration at 9.am. After completing registration, the trainer started the leadership training program around at 9.45 am. The trainer has started with explaining about the leadership styles. The trainer divided the training program in four sessions. The first session was explained about the leadership meaning an hour and fifteen minutes after fifteen minutes was taken as tea break. The second session was started at 11.30 am and ended at 12.30 pm. The trainer explained about the function of the leadership. The lunch break was taken from at 12.30 pm to at 1.30 pm. Third session was group sharing so the trainer asked the teachers to make a groups and the situation was given to discuss about 30 minutes with in the group and again the group of the teachers shuffled and 30 minutes was given to discuss the same situation. The teachers were asked to go back their place and recall about the key points of discuss points and it was stopped by the trainer. The fourth secession was continued by the trainer to explain the leadership styles after 30 minutes. Stopping to explain the secession the trainer asked five teachers to share about their sharing experience about the leadership styles. Finally, the researcher thanked the trainer as well as the participation of the secondary mathematics teachers.

Second Day of Leadership Training Program

The second day (12-10-2019) of leadership program was conducted by the researcher and the resource person Mr. Jayapaul from Bangalore. The training program was done in Subramanian Engineering College Auditorium at Palani. It was started with registration at 9.am. After completing registration, the trainer started the leadership training program around

at 9.45 am. The trainer has started with explaining about the leadership styles and its function. The trainer divided the training program in four sessions. The first session was explained about the leadership function an hour and fifteen minutes after that fifteen minutes was taken as tea break. The second session was started at 11.30 am and ended at 12.30 pm. The trainer explained about the function of the leadership. The lunch break was taken from at 12.30 pm to at 1.30 pm. Third session was group sharing so the trainer asked the teachers to make a groups and the situation was given to discuss about 30 minutes within the group and again the group of the teachers shuffled and 30 minutes was given to discuss the same situation. The fourth secession was continued by the trainer to explain the leadership function after 30 minutes. After completing the secession, the trainer asked 3 teachers to share about their sharing experience about the leadership functions. Finally, the researcher thanked the trainer as well as the participation of the secondary mathematics teachers.

Third Day of Leadership Training Program

The third day (13-10-2019) of leadership program was conducted by the researcher and the resource person Dr. Selvakumar from Chennai. The training program was done in Subramanian Engineering College Auditorium at Palani. It was started with registration at 9.am. The trainer has started with explaining about the leadership styles, function and strategies. The trainer divided the training program in four sessions. The first session was explained about the leadership styles an hour and fifteen minutes after that fifteen minutes was taken as tea break. The second session was started at 11.30 am and ended at 12.30 pm. The trainer explained about the function of the leadership. The lunch break was taken from at 12.30 pm to at 1.30 pm. Third session was taken by the trainer to explain about the teaching strategies. The fourth secession was continued by the trainer in different way of conducting program like group discussion, panel discussion and contacting game. The participation was happy to reacted in positive way. Finally, the researcher requested the teachers to fill the

questionnaires and collected from them. Again the researcher thanked District Education officer (Dindigul) for permitting the researcher to conduct the leadership training program, Subramanian College of Technology Management committees, the trainers, and the participation of the secondary mathematics teachers, providing the permission.

Part # 1: Leadership Style

Table 35 and 36 present the results comparing the Means from pre-test and post-test under Part # 1: Leadership Style.

Table 35

Paired Sample Statistics (Pre-Test and Post-Test) Leadership Style

	<i>M</i>	<i>N</i>	Std. Deviation	Std.Error Mean
Pair 1 Pre-Test	2.6607	150	.22538	.01840
Post-Test	3.9024	150	.12338	.01007

Table 35 presents descriptive statistics for the condition of Pre-Test and Post-Test results about results about the practices of leadership style by the higher secondary mathematics teachers. From the mean, the participants scored higher ($M=3.9024$) than the Pre-Test ($M=2.6607$). The standard deviation explains that the scores on both Pre-Test ($Std.=.22538$) and Post-Test ($Std.=.12338$) were similarly dispersed.

Table 36

The Results of Pre and Post Tests by Paired t-Test (Leadership Style)

	Paired Difference						Sig. (2-tailed)	
	Mean	Std. Deviation	Std.Err or Mean	95% Confidence Interval of the Difference		T		Df
				Lower	Upper			
Pair 1	-1.24167	.26219	.02141	-1.28397	-1.19936	-58.001	13	.000
Pre-Test- Post-Test								

Table 36 conveys that repeated-measures t-test found this difference to be significant since, $t(150) = -58.001$, $p = .000 < .05$ level of significance. This was supporting that there was a significant difference between the means of Pre-Test and Post-Test.

Part #2: Teaching Strategy

Table 37

Paired Sample Statistics (Pre-Test and Post-Test) Teaching Strategies

	M	N	Std.D	Std.Error
Pair 1 Pre-Test	2.5943	150	.35572	.02904
Post-Test	3.9027	150	.15103	.01233

Table 37 presents descriptive statistics for the collection of Pre-Test and Post-Test results about the teaching strategies by the secondary mathematics teachers. From the mean, the participants scored higher ($M=3.9027$) than the Pre-Test ($M=2.5943$). The standard deviation explains that the scores on both Pre-Test ($Std.=.35572$) and Post-Test ($Std.=.15103$) were similarly dispersed.

Table 38

The Results of Pre and Post Tests by Paired t-Test (Teaching Strategies)

	Paired Difference						Sig. (2- tailed	
	Mean	Std. Deviation	Std.Erro r Mean	95% Confidence Interval of the Difference		T		Df
				Lower	Upper			
Pair 1	-1.30840	.40846	0.3335	-1.37430	-1.24250	-39.232	13	.000
Pre-Test - Post-Test								

Table 38 conveys that repeated-measures t-test found this difference to be significant since, $t(149) = -39.232$, $p = .000 < .05$ level of significance. This was supporting that there was a significant difference between the means of Pre-Test and Post-Test.

Hence the research hypothesis of objective seven was supported. So, there was a significant difference between the teachers teaching strategies before and after they attend the leadership style training program at Dindigul District South India.

CHAPTER V

CONCLUSIONS, DISCUSSION, AND RECOMMENDATION

The objective of this research was to develop a leadership model for improving teachers' teaching strategies at Dindigul District, South India. The leadership model was developed based on the qualitative and quantitative data.

CONCLUSIONS

The nature of the research was based on the seven research objectives. The conclusion or findings from the objectives are briefly summarized in the following paragraphs:

Objective One: To find out the leadership style for the higher secondary mathematics teachers, literature review was employed. Approximately, sixty percent out of the forty books and one hundred articles were read. The results of the systematic review literature revealed two leadership styles practices in higher secondary mathematics teachers at Dindigul district South India. Situational leadership style, the dimensions were telling, selling, participating, and delegating. Transactional leadership style, the dimensions were supportive, directive, remove Obstacles and achievement Oriented. The results of the synthesis of review literature regarding leadership styles were consistent with overall framework theory. Eight categories were found in leadership styles.

Objective Two: To find out the teaching strategy for the higher secondary mathematics teachers, literature review and semi-interview was contacted. Approximately, sixty percent out of the twenty-six books and one hundred sixty-four articles were read. The results of the systematic review literature revealed three teaching strategy practices in higher secondary mathematics teachers at Dindigul district South India. Teaching Strategy I, the dimensions were creating, utilizing lessons. cooperative learning, nurturing math success. Teaching

Strategy II, the dimensions were attributes, core process and function. Teaching Strategy III, the dimensions were Organizing, Practice, Changing, Process, Evaluating. The results of the systematic review literature regarding teaching strategy were consistent the overall framework theory.

Objective Three: A survey was conducted with one hundred fifty higher secondary mathematics teachers at Dindigul District, South India to collect responding to this research objective. The data was analyzed using Mean and Standard Deviation.

According to the findings the eight dimensions showed very high mean scores. The item telling mean score was 3.94, (SD= .85) (Often) which meant “High”. This meant that the higher secondary mathematics teachers leadership style practicing was high. The goals were-communicated to stakeholder. However, the result of the second dimension selling mean score was 3.99 (SD=.85) (Often) which meant “High”. One item out of four scored lower than 3.99, (item #6). This meant that the teachers work was not recognized by the leaders. They were not encouraged to reward their work. Third dimension, participating mean score was 3.98, (SD=.84) (Often) which meant “High”. This meant that the higher secondary mathematics teachers leadership style practicing was high. One item out of four scored lower than 3.98, (item #10). This meant that the teachers failed to complete their work. Fourth dimension, delegating mean score was 3.84, (SD=.86) (Often) which meant “High”. This meant that the higher secondary mathematics teachers leadership style practicing was high. One item out of four scored lower than 3.98 (item #16). This meant that the teachers find difficult to monitor the team members work. Fifth dimension, supportive mean score was 3.79, (SD=.85) (Often) which meant “High”. This meant that the higher secondary mathematics teachers leadership style practicing was high. Two item out of four scored lower than 3.79 (item #18 and items # 20). This meant that the teachers relationship with other was very low and their hard work was not accepted by the leaders. Sixth

dimension, directive mean score was 3.96, (SD=.82) (Often) which meant “High”. This meant that the higher secondary mathematics teachers leadership style practicing was high. One items out of four scored lower than 3.96 (item #24). This meant that the teachers managing decision was very low. Seventh dimension, remove obstacles mean score was 3.87, (SD=.86) (Often) which meant “High”. This meant that the higher secondary mathematics teachers leadership style practicing was high. All items were scored well. This result revealed that the teachers’ practicing leadership style was high. Edith dimension, achievement oriented mean score was 3.78, (SD=.88) (Often) which meant “High”. This meant that the higher secondary mathematics teachers leadership style practicing was high. One items out of four scored lower than 3.78 (item #30). This meant that the teachers needed a mentor for counselling their emotional problems.

Objective Four: A survey was conducted with one hundred fifty higher secondary mathematics teachers at Dindigul District, South India to collect responding to this research objective. The data was analyzed using Mean and Standard Deviation.

According to the findings the ten dimensions showed very high mean scores. The item creating mean score was 3.85 and the (SD= .82), (Agree) which meant “Much Practice”. This meant that the higher secondary mathematics teachers teaching strategy was much practice. The goals were-communicated to stakeholder. Second dimension, utilizing the lesson mean score was 3.95 and the (SD= .82), (Agree) which meant “Much Practice”. This meant that the higher secondary mathematics teachers teaching strategy was much practice. Third dimension, cooperative learning mean score was 3.95 and the (SD= .88), (Agree) which meant “Much Practice”. This meant that the higher secondary mathematics teachers teaching strategy was much practice. Fourth dimension, nurturing math lesson mean score was 3.94 and the (SD= .85), (Agree) which meant “Much Practice”. This meant that the higher secondary mathematics teachers teaching strategy was much practice. Fifth

dimension, attributes mean score was 3.84 and the (SD= .88), (Agree) which meant “Much Practice”. This meant that the higher secondary mathematics teachers teaching strategy was much practice. Sixth dimension, core process mean score was 3.93 and the (SD= .88), (Agree) which meant “Much Practice”. This meant that the higher secondary mathematics teachers teaching strategy was much practice. Seventh dimension, organizing mean score was 3.87 and the (SD= .89), (Agree) which meant “Much Practice”. This meant that the higher secondary mathematics teachers teaching strategy was much practice. Eight dimension, practice mean score was 3.76 and the (SD= .85), (Agree) which meant “Much Practice”. This meant that the higher secondary mathematics teachers teaching strategy was much practice. Ninth dimension, changing mean score was 3.92 and the (SD= .88), (Agree) which meant “Much Practice”. This meant that the higher secondary mathematics teachers teaching strategy was much practice. Tenth dimension, process mean score was 3.98 and the (SD= .89), (Agree) which meant “Much Practice”. This meant that the higher secondary mathematics teachers teaching strategy was much practice.

Objective Five: A survey was conducted with one hundred fifty higher secondary mathematics teachers at Dindigul District, South India to collect responding to this research objective. The data was analyzed using Multiple Regression.

The result revealed that the eight out of three independent variables were found to be not significantly correlated with dependent variable. These findings suggested that further correlational analysis using multiple linear regression could be performed. Correlational analysis using multiple linear regression is useful to determine the predictive relationship of a combination of independent variables (i.e., the predictors) on the dependent variable (i.e., the response). Through multiple linear regression is possible to generate a predictive equation model for the dependent variable, using the relative contribution of each of the predictor variable as parameters. The regression analysis results revealed that the overall

regression was significant. And there was a significant but weak multiple correlation between the combination of independent variable (telling, delegating, directive, remove obstacles, and achievement oriented) and the dependent variable (teaching strategy) $r = .907$, $p = .000$ The multiple coefficient of determinations (R^2) for these variables was .822, which indicated that 82% of the variance in leadership style to the teaching strategy.

Objective Six: The model was to developed by two parts, leadership style and teaching strategy. Leadership style was composed of five practices that was to implemented by the higher secondary mathematics teachers. These practices were from the current situation appeared in Dindigul District, South India. Teaching strategy was comprised of five strategies key words which need to be implemented by the higher secondary mathematics teachers. The model was to offer to the higher secondary mathematics teachers these practices which were expected to endorse the adaptation of teaching strategy. The model was validated by experts.

Objective Seven: The model was implemented to higher secondary mathematics teachers in Dindigul District, South India. The results of the test showed that the new leadership model was applicable in Dindigul District, South Indian context. However, the model would not be fully implemented due to the fact that the higher secondary mathematics teachers needed to pay more attention on leadership style and tried to adapt leadership model in their own pace. They needed time and space to progressively implement the model.

DISCUSSION

This part of the research discusses the findings of this study relates them to issues discussed in the literature review. The conformity of the findings to the previous research is also discussed.

The result of the synthesis review literature presented two leadership styles situational leadership and transactional leadership which supported research objective one. These dimensions included 1) telling, 2) selling, 3) participative and 4) delegating. The findings were consisting to the overall framework of the leadership style theory by Heresy and Blanchard (2008), and House and Michell (1974). They claimed that the two leadership styles were used by the higher secondary mathematics teachers' teaching strategy.

The result of the synthesis review literature and semi-interview presented three teaching strategies which supported research objective two. Teaching strategy I dimensions included 1) creating 2) utilizing the lesson, 3) cooperative learning and 4) nurturing math. The Teaching strategy II dimensions included 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 consisting to 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 two teaching strategy were used by the higher secondary mathematics teachers.

Current Leadership style

The results also conveyed that the higher secondary mathematics teachers' leadership styles concern to the school leaders and the classroom management for teaching mathematics. The higher secondary mathematics teachers use proper leadership style in the behavioral of teaching and learning. The attention given to higher secondary mathematics teachers would help determine students' success in school. The researchers mentioned that if the academic administrators took good care of secondary mathematics teachers, they would take good care of students. Thus, whenever higher secondary mathematics teachers sought for consultation with academic administrators, they should have a room for them. When

listening to their concerns, they could hear their perspectives, reasons, and emotion (Bordage, Foley, & Goldyn, 2000).

The survey result indicated an overall current practice of leadership style, the teachers found satisfaction in deliberating hard and for long hours. The teachers prefer to think about small, daily projects to long-term ones. And they expressed their work in simple way to do. The work completed within the time but the leaders were not acknowledged their work. The leaders should not find their work was good. The teachers worked the need of the school and the need of the students learning.

The findings indicated that the teachers worked with intensity on this task and the strive as hard as they could to complete this task. The teachers were proud of their work on that task. The teacher had a lot of attention to the task and let others worked in the manner that they want. The teachers rarely gave direction or guidance to others if they sensed they could achieve their goal. As long as things were gone smoothly, the teachers were satisfied. The teachers monitored all projects that they were in charge of to ensure the team meets its goal.

The results conveyed that the teachers helped others to understand their visions through the use of tools, such as images, stories, and models. The teachers went out of the way to make others feel good to be around them. The teacher helped others with their self-development. The teachers ensured others get recognition and/or rewards when they achieve difficult or complex goals. Influence others by developing mutual liking and respect. They had an ever-expanding network of people who trust and rely upon them. They provided challenges for their team members to help them grow. The teachers managed others by setting standards that they all agree it.

The findings showed the teachers used simple words, images, and symbols to convey to others what we should or could be doing. They rarely gave direction or guidance to others

if they sensed they could achieve their goal. The teachers consistently provided coaching and feedback so that their team members know how they are doing. They want to be challenged in their work to solve new problems. Being inspired at their job was something that was important to them. Having a mentor in their job was important to them.

Current Teaching Strategy

The guidance and support gave by the teachers are fundamental in urging students to examine and build up their thoughts with one another, both in managing entire class.

The findings presented that the teachers used multi-sensory aids. They understood that the model way of teaching pedagogical strategy was good in the education system. The teachers synthesized and used in their research to improve teaching practice that results in greater student learning. The teachers explained from specific to general; simple to complex. The teachers explained the lesson starting from generalization to specific; from whole to abstract. The teachers allowed the learners to do their activities in their own; “learn by doing”.

The results revealed that the opportunities were given to learners to participate in classroom activities. The teachers made the learners to feel they belong to a cooperative of learners with a shared goal or purpose to reach their potentials. The teacher used exposit method when they discussed in that group. Developing and fostering were collaborative culture of schooling based upon principles of lifelong math learning. A faculty development program based on the needs of the teachers by school leaders.

The findings conveyed that the school leaders focused on the organization by making all members understand, connect, and actualize the strategies that bring success. The school leaders promoted positive learning climate by providing physical and instructional resources to facilitate the teaching and learning needs. The school leaders granted permission to change

the teaching old strategy to new strategy. The school leaders gave a great deal of effort on the things expected from them to help their organization. A sound confidence on their teaching ability and the teachers showed devotion to their work to reach educational goals. The school leaders inspired to give the best as reflected in their job performance.

The results conveyed that the using research to locate and improved teaching practice that results in greater student learning. The organization prepared a new plan for the improvement of teaching and learning. The organization came up with strategies that increase the financial resources. The teachers and the leaders understood the demands of the current system to future growth. They addressed the struggles and risk of the path which lay towards the future strength. Identifying the core competencies that were needed for the success by using research. It was given the tools to be a better role model as a teacher.

The proposed leadership model was validated by five experts who were from the field of education. The experts provided supports to the model and they suggested for both leadership styles and teaching strategies. The finalized model comprised of two parts (leadership styles and teaching strategies) which formed five practices of leadership and five teaching strategies.

After finalizing leadership model for teaching strategy with experts, the model was tested in one hundred higher secondary mathematics teachers training program in Dindigul District, South India. The results of the testing computed by SPSS, particularly using Paired Samples t-Test conveyed that there was a significant difference between the means of the pre-test and that of post-test as the p-value ($p = .000 < .05$) was smaller than. The results explained that the model was applicable in the selected higher secondary mathematics teachers in Dindigul District, South India. There was an increase in means of pre-test and post-test indicating that the researchers tried to implement the leadership style towards

teaching strategy. The results indicated that the higher secondary mathematics teachers had tried very best to adapt the leadership style into their daily leadership roles.

Though leadership model could not be fully implemented, but the School leader and the academic administrators should allow teachers to adapt leadership model teaching in 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.

RECOMMENDATIONS

The research set out to develop a leadership model to improve higher secondary mathematics teachers teaching strategy at Dindigul District, South India. The adaption of leadership model would not be well-adapted without regular and close monitoring the school leaders and administrators. Thus the following recommendations are proposed.

Higher Secondary Mathematics Teachers

The higher secondary mathematics teachers should practice the two leadership style in their class room teaching. Situational leadership style and the transactional leadership style help the higher secondary mathematics teachers teaching strategy. The higher secondary mathematics teachers practice the key variables of the situational leadership, telling selling, participating and delegating. The higher secondary mathematics teachers practice the key variables of the transactional leadership style, supportive, directive, remove obstacles and achievement oriented. They need to seek for teaching strategies, and assessment methods to obtain the learning outcomes. Preparing programs on leadership and general frame of mind to work ought to be composed for teachers. This will assist them in realizing that they are leaders in the classroom. It will help them to open a suitable leadership style for students' learning inspiration.

They could adapt three teaching strategies to designing the mathematics curriculum and teaching to enhance student mathematics learning. This will empower them to create trust in the teaching and furthermore rouse them to perform mathematical errands feeling loose. The mathematics teacher should support the higher secondary students to think logically and gain new knowledge.

Periodically the mathematics teachers must learn advanced concepts and teaching strategies through MOOCS courses online or any other diploma courses. Group project-based activities need to be encouraged. This will enable teachers to identify potential leaders in the subject and encourage them for advanced levels of competitions and exams. It takes time to observe the results of the higher secondary mathematics teachers' leadership style.

School Leaders

The school leaders need to receive training themselves in leadership style as they have 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 some other techniques. They need to explore various methods of teaching and assessment for supporting teachers in implementing a new strategy in their mathematics teaching.

The school leaders have to provide a training program for every end of the semester so the secondary mathematics teachers can update themselves and develop their knowledge towards mathematics teaching. The secondary mathematics teachers should be encouraged to conduct research to improve their teaching strategies. If possible, incentives and rewards should be provided for higher secondary mathematics teachers who have research tasks done.

The academic administrators should consider of having more full-time higher secondary mathematics teachers so that they have sufficient time to prepare for instructions.

They should allow the teachers to adopt a new approach for their teaching practices. The school leaders have to solve the financial issues in providing free education for their children.

Faculty Development Programs must be conducted when the curriculum gets revised. This will equip teachers ready enough to teach any advancement in the revised curriculum.

Future Researchers

This research was conducted with only eight cities at Dindigul District South India. If another research related to this topic shall be conducted, the sample should be including some district too. Doing so, the researcher could make a better assumption of the findings in regards to higher secondary education in South India. Moreover, interviews with some representatives of school leaders should be held to obtain more accurate information in the areas of leadership, teaching strategy of higher secondary mathematics education, and the factors affecting teaching strategies. Apart from teachers, the students' ability and their leadership qualities while learning mathematics as one of their core credit course, the results may be more interesting to link between teachers, school leaders.

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APPENDICES

APPENDIX A

Sources for the Review Literature

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Mathematics Teachers' Teaching Strategy

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APPENDIX B

Leadership Styles Questionnaire

Directions: Read the following statements carefully, determine how closely they describe your leadership style, and put a (✓) check mark on the number which closely describes.

1-Not at All**2- Rarely****3- Sometimes****4- Often****5- Always**

Please be sincere as you mark these items because your answers will be used for research purposes. Please do not leave any item unanswered.

S.L	Criteria	1	2	3	4	5
	I. Telling					
1	I find satisfaction in deliberating hard and for long hours.					
2	I prefer to think about small, daily projects to long-term ones.					
3	I tell others what to do if they want to be rewarded for their work.					
4	I express with a few simple words what we could and should do.					
	Selling					
5	As long as things are working, I do not try to change anything.					
6	I provide recognition / rewards when others reach their goals					
7	I help others find meaning in their work.					
8	I ask no more of others than what is absolutely essential.					
	Participating					
9	I work with intensity on this task.					
10	I strive as hard as I could to complete this task					
11	I am proud of my work on this task					
12	I devoted a lot of attention to this task					
	Delegating					
13	I let others work in the manner that they want.					
14	I rarely give direction or guidance to others if I sense they can achieve their goal.					
15	As long as things are going smoothly, I am satisfied					
16	I monitor all projects that I am in charge of to ensure the team					

	meets its goal.					
	II. Supportive					
17	I help others to understand my visions through the use of tools, such as images, stories, and models					
18	I go out of the way to make others feel good to be around me					
19	I help others with their self-development					
20	I ensure others get recognition and/or rewards when they achieve difficult or complex goals					
	Directive					
21	Influence others by developing mutual liking and respect					
22	I have an ever-expanding network of people who trust and rely upon me					
23	I provide challenges for my team members to help them grow.					
24	I manage others by setting standards that we all agree with					
	Removes Obstacles					
25	I use simple words, images, and symbols to convey to others what we should or could be doing.					
26	I rarely give direction or guidance to others if I sense they can achieve their goal.					
27	I consistently provide coaching and feedback so that my team members know how they are doing					
	Achievement Oriented					
28	I want to be challenged in my work to solve new problems					
29	Being inspired at my job is something that is important to me					
30	Having a mentor in my job is important to me					

APPENDIX C

Teacher Teaching Strategies Questionnaires

Directions: Read the following statements carefully, determine how closely they describe your Teacher teaching Strategy, and put a (✓) check mark on the number which closely describes.

1- Strongly Agree**2-Disagree****3- Neutral****4-Agree****5-Strongly Agree**

Please be sincere as you mark these items because your answers will be used for research purposes. Please do not leave any item unanswered.

S.L	Criteria	1	2	3	4	5
	I-Creating					
1	Using multi-sensory Aids					
2	Understand and model best pedagogical strategy in education and serve as mentors and coaches for other educators.					
3	Synthesize and use research to improve teaching practice that results in greater student learning.					
	Utilizing the Lesson					
4	Explaining from specific to general; simple to complex.					
5	Explain the lesson starting from generalization to specific; from whole to abstract.					
6	Let the learners do the activities in their own; “learn by doing”.					
	Cooperating the Learning					
7	Giving opportunities to learners to participate in classroom activities					
8	Make the learner’s to feel they belong to a cooperative of learners with a shared goal or purpose to reach their potentials.					
9	Using exposit method when discussing.					
	Nurturing Math Success					

10	Developing and fostering a collaborative culture of schooling based upon principles of lifelong math learning.					
11	Design a faculty development program based on the needs of the teachers by school leaders.					
12	School leaders will plan and conduct a workshop to develop teachers' soft skills.					
	II-Organizing					
13	Constantly measuring and evaluating the external and internal conditions of the organization by school leaders.					
14	School leaders will analyze the strategy context of the organization and create organizational advantage.					
15	School leaders assess the purpose and performance of the organization and alter systematically internal procedures accordingly.					
	Practice					
16	Working with others to design and implement assessment practices and data analysis that results in improving learning and teaching					
17	Presenting learning strategies to department meetings.					
18	It has given me the tools to be a better role model as a teacher.					
	Changing					
19	School leaders focus on the organization by making all members understand, connect, and actualize the strategies that bring success.					
20	School leaders promote positive learning climate by providing physical and instructional resources to facilitate the teaching and learning needs					
21	School leaders grant permission to change the teaching old strategy to new strategy.					
	Process					
22	Put a great deal of effort on the things expected from me to do to help my organization.					

23	A sound confidence on my teaching ability and I show devotion to my work to reach educational goals.					
24	I am inspired to give my best as reflected in my job performance.					
	III- Attributes					
25	Using research to locate and improve teaching practice that results in greater student learning.					
26	My organization prepares a new plan for the improvement of teaching and learning.					
27	My organization comes up with strategies that increase the financial resources.					
	Core Process					
28	Understanding the demands of the current system to future growth.					
29	To address the struggles and risk of the path which lay the way towards the future strength.					
30	Identifying the core competencies that are needed for the success by using research.					

APPENDIX D

Interview Questionnaire Survey for School Leaders

1. Do you have a formal training / experiences before taking the post?
2. What are the strengths of the organization/ department in terms of leading the mathematics teachers?
3. How do you evaluate the mathematics teachers' teaching strategy?
4. Do you have evaluation on the effectiveness of the mathematics teachers' standards?
5. What are the weaknesses of the department in terms of leading the mathematics teachers?
6. What are the programs/ activities to develop mathematics teachers' knowledge and skills?
7. Do you include strengthening mathematics teachers' teaching strategy in your plan?
Please specify them.
8. What are some constraints in improving mathematics teachers' teaching strategy?
Please mention them.
9. What are the teaching strategies of the department to improve your status?
10. What is the result and common suggestions?

APPENDIX E

List of Experts for the Instrument and Model Validation

Sl.No	Name	Work Position	Organization	Education Background	Years of Experience
1	Dr.S.Devasahayam Selvakumar	Principal	Meston College of Education, India	M.Phil. Mathematics & Ph.D. in Education	23
2	Dr.Eugene Michal	Asst.Professor	Meston College of Education, India	M.Phil. Mathematics & Ph.D. in Education	23
3	Dr. Kulandai Theresal	Principal	Loyola College of Education, India	M.Phil. Mathematics & Ph.D. in Education	20
4	Dr. Annie Kavitha	Asst.Professor	Stella Matutina College, India	M.Phil. Mathematics & Ph.D. in Education	12
5	Dr.P.Caroline Jeba Sorna	Asst. Professor	Stella Matutina College, India	M.Phil. Mathematics & Ph.D. in Education	15



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Dr. S. Devasahayam Selvakumar
Principal

To Whomsoever It May Concern

Mr. Velankanni Alex from Assumption University requested for the instrument validation and checking leadership model of his dissertation title "A Leadership Model to Improve Higher Secondary Mathematics Teachers Teaching Strategies at Dindigul District South India".

I have validated the instrument and have checked leadership model of the Above Research titled and the necessary correction have been incorporated.



[Signature]

PRINCIPAL

Meston College of Education

Royapettah, Chennai

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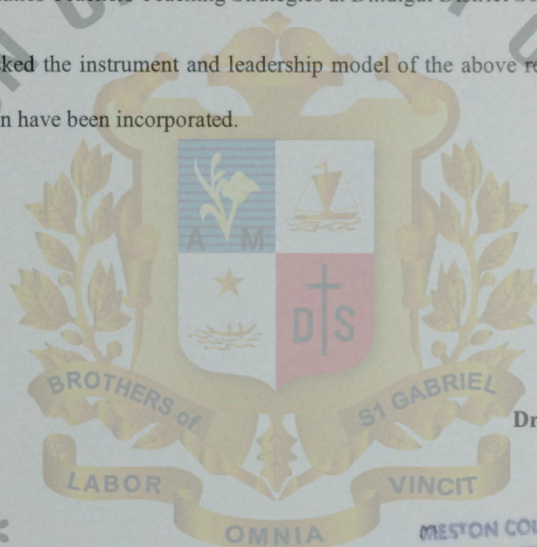
E-MAIL : eugin1867@gmail.com

Dr. P. Eugene Michael
Assistant Professor

To Whomsoever it May Concern

Mr. Velankanni Alex from Assumption University requested for the instrument validation and checking leadership model of his dissertation title "A Leadership Model to Improve Higher Secondary Mathematics Teachers Teaching Strategies at Dindigul District South India".

I have checked the instrument and leadership model of the above research titled and the necessary correction have been incorporated.

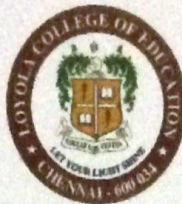


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Dr. (Mrs.) L. KULANDAI THERESAL,
Principal



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TO WHOMSOEVER IT MAY CONCERN

Mr. Velankanni Alex from assumption university requested for the instrument validation and checking leadership model for his dissertation titled "A Leadership Model to Improve Higher Secondary Mathematics Teachers Teaching Strategies at Dindigul District at South India". I have checked the instrument, leadership model and I have given my suggestions. I acknowledge that the instrument and leadership model are good for our state scenario.

Yours sincerely

PRINCIPAL

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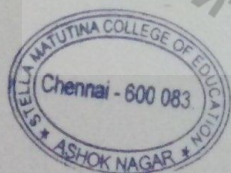
Report of the tool and leadership model titled, "A leadership model to improve higher secondary mathematics teachers teaching strategies at Dindigul district south India".

In leadership style questionnaire, the dimensions taken for leadership style are appropriate. Telling style gives instruction with high task behavior. So the items telling style are good. The items in the selling style is also good. The four items in the participating style are having good. The items 5 & 13, 6 & 20, 17 & 25 are good.

In teachers' strategies questionnaires and the leadership model are also good. I have checked the instruments and leadership model for the necessary corrections have been incorporated.

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Research Tool Validation and Checking Leadership Model

Greetings...!

I congratulate the research Scholar **Mr.Velankanni Alex** for his study based up on teaching strategies and leadership model for Mathematics teachers. I have checked it and have given few suggestions for further development in his research work. The leadership style questionnaire and leadership model also has given clear idea. thanks for the opportunity.

Yours Truly,

P.C. Jeba Sorna

Dr. P. Caroline Jeba Sorna

Assistant Professor



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มหาวิทยาลัยอัสสัมชัญ

APPENDIX F

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

IOC DOCUMENT FOR QUESTIONNAIRE FOR TEACHERS

This questionnaire was intended to study the current leadership style capabilities of teachers, and Teaching strategies for enhancing the secondary mathematics teachers at Dindigul District South India. The questionnaire will be distributed to selected number of teachers. The questionnaire is divided into two parts, includes 60 questions in total.

Part 1: Leadership Styles Questions are 30

Part 2: Teaching Strategies Questions are 30

Please determine the content validity score as the following:

Score = +1, if you are sure that this item really measures the related area of practices.

Score = -1, if you are sure that this item does not measure the related area of practices.

Score = 0, if you are not sure that the item measures or does not measure related area of practices.

Part-A

Leadership Styles Questionnaire

Directions: Read the following statements carefully, determine how closely they describe your leadership style, and put a (✓) check mark on the number which closely describes.

1-Not at All

2- Rarely

3- Sometimes

4- Often

5- Always

Please be sincere as you mark these items because your answers will be used for research purposes. Please do not leave any item unanswered.

S.L	Criteria	Commends		
		-1	0	+1
	I. Telling			✓
1	I find satisfaction in deliberating hard and for long hours.			✓
2	I prefer to think about small, daily projects to long-term ones.			✓
3	I tell others what to do if they want to be rewarded for their work.			✓
4	I express with a few simple words what we could and should do.			✓
	Selling			
5	As long as things are working, I do not try to change anything.			✓
6	I provide recognition / rewards when others reach their goals			✓
7	I help others find meaning in their work.			✓
8	I ask no more of others than what is absolutely essential.			✓
	Participating			
9	I worked with intensity on this task.			✓
10	I strived as hard as I could to complete this task			✓
11	I am proud of my work on this task			✓
12	I devoted a lot of attention to this task			✓
	Delegating			
13	I let others work in the manner that they want.			✓
14	I rarely give direction or guidance to others if I sense they can achieve their goal.			✓
15	As long as things are going smoothly, I am satisfied			✓
16	I monitor all projects that I am in charge of to ensure the team meets its goal.			✓
	II. Supportive			
17	I help others to understand my visions through the use of tools, such as images, stories, and models			✓
18	I go out of the way to make others feel good to be around me			✓
19	I help others with their self-development			✓
20	I ensure others get recognition and/or rewards when they achieve difficult or complex goals			✓
	Directive			
21	Influence others by developing mutual liking and respect			✓
22	I have an ever-expanding network of people who trust and rely upon me			✓
23	I provide challenges for my team members to help them grow.			✓
24	I manage others by setting standards that we all agree with			✓
	Removes Obstacles			✓
25	I use simple words, images, and symbols to convey to others what we should or could be doing.			✓
26	I rarely give direction or guidance to others if I sense they can achieve their goal.			✓
27	I consistently provide coaching and feedback so that my team members know how they are doing			✓
	Achievement Oriented			
28	I want to be challenged in my work to solve new problems			✓
29	Being inspired at my job is something that is important to me			✓
30	Having a mentor in my job is important to me			

Part-B

Teacher Teaching Strategies Questionnaire

Directions: Read the following statements carefully, determine how closely they describe your Teacher teaching Strategy, and put a (✓) check mark on the number which closely describes.

1- Strongly Agree

2-Disagree

3- Neutral

4-Agree

5-Strongly Agree

Please be sincere as you mark these items because your answers will be used for research purposes. Please do not leave any item unanswered.

S.L	Criteria	Commends		
		-1	0	+1
	I-Creating			
1	Using multi-sensory Aids			✓
2	Understand and model best pedagogical strategy in education and serve as mentors and coaches for other educators.			✓
3	Synthesize and use research to improve teaching practice that results in greater student learning.			✓
	Utilizing the Lesson			
4	Explaining from specific to general; simple to complex.			✓
5	Explain the lesson starting from generalization to specific; from whole to abstract.			✓
6	Let the learners do the activities in their own; “learn by doing”.			✓
	Cooperating the Learning			
7	Giving opportunities to learners to participate in classroom activities			✓
8	Make the learner’s to feel they belong to a cooperative of learners with a shared goal or purpose to reach their potentials.			✓
9	Using exposit method when discussing.			✓
	Nurturing Math Success			
10	Developing and fostering a collaborative culture of schooling based upon principles of lifelong math learning.			✓
11	Design a faculty development program based on the needs of the teachers by school leaders.			✓
12	School leaders will plan and conduct a workshop to develop			✓

	teachers' soft skills.			
	II-Organizing			
13	Constantly measuring and evaluating the external and internal conditions of the organization by school leaders.			✓
14	School leaders will analyze the strategy context of the organization and create organizational advantage.			✓
15	School leaders assess the purpose and performance of the organization and alter systematically internal procedures accordingly.			✓
	Practice			
16	Working with others to design and implement assessment practices and data analysis that results in improving learning and teaching			✓
17	Presenting learning strategies to department meetings.			✓
18	It has given me the tools to be a better role model as a teacher.			✓
	Changing			
19	School leaders focus on the organization by making all members understand, connect, and actualize the strategies that bring success.			✓
20	School leaders promote positive learning climate by providing physical and instructional resources to facilitate the teaching and learning needs			✓
21	School leaders grant permission to change the old strategy to new strategy.			✓
	Process			
22	Put a great deal of effort on the things expected from me to do to help my organization.			✓
23	A sound confidence on my teaching ability and I show devotion to my work to reach educational goals.			✓
24	I am inspired to give my best as reflected in my job performance.			✓
	III- Attributes			
25	Using research to locate and improve teaching practice that results in greater student learning.			✓
26	My organization prepares a new plan for the improvement of teaching and learning.			✓
27	My organization comes up with strategies that increase the financial resources.			✓
	Core Process			
28	Understanding the demands of the current system to future growth.			✓
29	To address the struggles and risk of the path which will lay the way towards the future strength.			✓
30	Identifying the core competencies that are needed for the success by using research.			✓

APPENDIX G

List of Interviewer Demographic Information

Sl.No	Name	Place	Work Position	Education Background	Years of Experience
1	Mrs.Shantha Mary	Dindigul	Headmistress	M.Phil,in Maths & B.Ed	23
2	Dr.Sarala	Kodaikanal	Principal	M.Phil in Maths & PhD in Education	14
3	Mr.Veera Sachin	Palani	Head Master	M.Phil in Maths & B.Ed	15
4	Mrs.Jaquiline	Nilakkottai	Head Mistress	M.Sc Maths & B.Ed	24
5	Mr.Brain Jenkins	Oddanchatram	Head Master	B.Sc Maths & Anthropology	30
6	Mr.Palanicamy	Attur	Head Master	M.Phil in Maths & M.Ed	32
7	Mrs. Sheela Mary	Natham	Head Mistress	M.A in Maths & B.Ed	11
8	Sr.Jaya	Vadasandur	Head Mistress	M.A Maths & B.Ed	17

Name: J. Shantha Mary

Place: Dindigul, Dindigul

Interview Questions for School Leaders

1. Do you have a formal training / experiences before taking the post?

yes / 23

2. What are the strengths of the organization/ department in terms of leading the mathematics teachers?

Teaching Techniques, Aids, updates their knowledge, in service

3. How do you evaluate the mathematics teachers' teaching strategy? Training

Content, Questions, teaching aids, doubt clearance, Evaluation.

4. Do you have evaluation on the effectiveness of the mathematics teachers' standards?

update of knowledge, Teaching methodology.

5. What are the weaknesses of the department in terms of leading the mathematics teachers?

freedom in teaching, syllabus

6. What are the programs/ activities to develop mathematics teachers' knowledge and skills?

Inservice training, work shop

7. Do you include strengthening mathematics teachers' teaching strategy in your plan? Please specify them.

Work shop

8. What are some constraints in improving mathematics teachers' teaching strategy? Please mention them.

update their knowledge.

9. What are the teaching strategies of the department to improve your status?

Questioning, Teaching aids,

10. What is the result and common suggestion?

Q = M.Sc, M.A, B.Ed, M.Phil

P = 23 years

The students feel Mathematics is a difficult subject. The Mathematics teacher should make it as a easy subject by their techniques.

Name: DR. T. SARALAPlace: Kodalkanal

Interview Questions for School Leaders

1. Do you have a formal training / experiences before taking the post?

Yes. 14 years.

2. What are the strengths of the organization/ department in terms of leading the mathematics teachers?

Teaching techniques.

3. How do you evaluate the mathematics teachers' teaching strategy?

Through Observation.

4. Do you have evaluation on the effectiveness of the mathematics teachers' standards?

Yes. I have it

5. What are the weaknesses of the department in terms of leading the mathematics teachers?

Using technology.

6. What are the programs/ activities to develop mathematics teachers' knowledge and skills?

Training, and workshop

7. Do you include strengthening mathematics teachers' teaching strategy in your plan? Please specify them.

Helping to attend seminar.

8. What are some constraints in improving mathematics teachers' teaching strategy? Please mention them.

Updating their knowledge.

9. What are the teaching strategies of the department to improve your status?

Teaching aids.

10. What is the result and common suggestion?

PrincipalMsc Mphil MEd, Mphil Ph.D.,Women's University college of EducationKodalkanalExperience! - 14 years

Name: M. VEERA SACHIN

Place: Palani
~~KODAKKANK~~

Interview Questions for School Leaders

1. Do you have a formal training / experiences before taking the post?

Yes. 15 years.

2. What are the strengths of the organization/ department in terms of leading the mathematics teachers?

Updating knowledge.

3. How do you evaluate the mathematics teachers' teaching strategy?

Continue assessment.

4. Do you have evaluation on the effectiveness of the mathematics teachers' standards?

Yes. we have.

5. What are the weaknesses of the department in terms of leading the mathematics teachers?

Not using proper teaching method.

6. What are the programs/ activities to develop mathematics teachers' knowledge and skills?

Training programs.

7. Do you include strengthening mathematics teachers' teaching strategy in your plan? Please specify them.

Book freedom. and adding their own idea.

8. What are some constraints in improving mathematics teachers' teaching strategy? Please mention them.

Providing teacher training program.

9. What are the teaching strategies of the department to improve your status?

Freedom to ask questions.

10. What is the result and common suggestion?

Use proper method.

Q. : M.Sc., M.Ed., MPhil.,

Ex. : 15 Years.

Name: P. Jaqueline

Place:

Nilakottai
~~Nilakottai~~ ~~Nilakottai~~

Interview Questions for School Leaders

1. Do you have a formal training / experiences before taking the post?

24 - Years

2. What are the strengths of the organization/ department in terms of leading the mathematics teachers?

Proper guidance

3. How do you evaluate the mathematics teachers' teaching strategy?

Question.

4. Do you have evaluation on the effectiveness of the mathematics teachers' standards?

Test.

5. What are the weaknesses of the department in terms of leading the mathematics teachers?

Organise.

6. What are the programs/ activities to develop mathematics teachers' knowledge and skills?

Art Training program.

7. Do you include strengthening mathematics teachers' teaching strategy in your plan? Please specify them.

Special class.

8. What are some constraints in improving mathematics teachers' teaching strategy? Please mention them.

Syllabus.

9. What are the teaching strategies of the department to improve your status?

Energetic teaching practices

10. What is the result and common suggestion?

Proper update knowledge towards their subject.

Ex: 20 years = 24.

Name: Sholai School, CLOAAT

Place: Odadainatham
Tamil Nadu.

Interview Questions for School Leaders

1. Do you have a formal training / experiences before taking the post?

Relevant work experience and educational qualification

No formal training. BA(Hons) Social Anthropology, Sussex Univ.
DEVED.

2. What are the strengths of the organization/ department in terms of leading the mathematics teachers?

Holistic place of learning. Encouraging practical learning.

3. How do you evaluate the mathematics teachers' teaching strategy?

No child should develop a block towards the subject (Maths). Hands-on approach.

4. Do you have evaluation on the effectiveness of the mathematics teachers' standards?

Ability to apply mathematical learning in our Practical Engineering classes.

5. What are the weaknesses of the department in terms of leading the mathematics teachers?

Limited Resource bank. Maths teachers have a good relationship
Maths teachers are innovative with the students

6. What are the programs/ activities to develop mathematics teachers' knowledge and skills?

Academic meetings and workshops.
Projects, presentations

7. Do you include strengthening mathematics teachers' teaching strategy in your plan?

Please specify them.

We do not have special teaching strategies structured. It is incorporated into our way of teaching.

8. What are some constraints in improving mathematics teachers' teaching strategy? Please mention them.

Greater Emphasis on academic learning at junior levels.
Textbooks do not emphasize enough on practical learning.

9. What are the teaching strategies of the department to improve your status?

Math is best learnt when we do things.
especially at junior level.

10. What is the result and common suggestion?

We are not interested in "status" but the overall development and maturity of the students. We encourage Practical Mathematics and Practical Engineering e.g. Woodwork and Mechanical Engineering. e.g. measuring in thousands of an inch etc.

Name: PALANICHAMY. KPlace: BALUR Athur

Interview Questions for School Leaders

1. Do you have a formal training / experiences before taking the post?

Yes.32 years

2. What are the strengths of the organization/ department in terms of leading the mathematics teachers?

Providing Lots of freedom for their decision

3. How do you evaluate the mathematics teachers' teaching strategy?

Through observation and questionnaires

4. Do you have evaluation on the effectiveness of the mathematics teachers' standards?

Yes, we have monthly observation.

5. What are the weaknesses of the department in terms of leading the mathematics teachers?

Adopting new methodology.

6. What are the programs/ activities to develop mathematics teachers' knowledge and skills?

Teacher training program

7. Do you include strengthening mathematics teachers' teaching strategy in your plan? Please specify them.

Yes. we have given freedom to add any methods

8. What are some constraints in improving mathematics teachers' teaching strategy? Please mention them.

Proper technology

9. What are the teaching strategies of the department to improve your status?

Teaching aids and Lesson plan.

10. What is the result and common suggestion?

Remove bias on Mathematics. To teach easy method.D = M.Sc., M.Ed., M.Phil.,E = 32 YEARS OF SERVICE

Name: Mrs. Sheila Mary

Place: Nathan

Interview Questions for School Leaders

1. Do you have a formal training / experiences before taking the post?

Yes, 11 years

2. What are the strengths of the organization/ department in terms of leading the mathematics teachers?

Good services for teaching

3. How do you evaluate the mathematics teachers' teaching strategy?

Teaching aids, observation, and overall result.

4. Do you have evaluation on the effectiveness of the mathematics teachers' standards?

Yes, we do continuous assessment.

5. What are the weaknesses of the department in terms of leading the mathematics teachers?

Not following syllabus.

6. What are the programs/ activities to develop mathematics teachers' knowledge and skills?

Workshop and seminar.

7. Do you include strengthening mathematics teachers' teaching strategy in your plan? Please specify them.

Proper lesson plan, and keeping daily diary.

8. What are some constraints in improving mathematics teachers' teaching strategy? Please mention them.

Updating teaching and learning.

9. What are the teaching strategies of the department to improve your status?

Questioning, and Lesson plan

10. What is the result and common suggestion?

To teach easy method.

Name: Sr. Jaya

Place: Vennadunka

Interview Questions for School Leaders

1. Do you have a formal training / experiences before taking the post?

yes, 17 years.

2. What are the strengths of the organization/ department in terms of leading the mathematics teachers?

Organizing in proper method.

3. How do you evaluate the mathematics teachers' teaching strategy?

Quarterly result based.

4. Do you have evaluation on the effectiveness of the mathematics teachers' standards?

Teacher evaluation questionnaires.

5. What are the weaknesses of the department in terms of leading the mathematics teachers?

Not using teaching aids.

6. What are the programs/ activities to develop mathematics teachers' knowledge and skills?

Teacher training seminar.

7. Do you include strengthening mathematics teachers' teaching strategy in your plan? Please specify them.

→ To use proper methods and using technology.

8. What are some constraints in improving mathematics teachers' teaching strategy? Please mention them.

Plan, execute and evaluate.

9. What are the teaching strategies of the department to improve your status?

→ Proper technique.

10. What is the result and common suggestion?

→ Better understanding towards mathematics.

Ex: 17.

Qu: MA. MPhil. B.Ed.

APPENDIX H

Leadership Style Training Program

Introduction

The researcher explained about the leadership style training program to the District Education officer and got permission from the officer. The researcher met all the higher secondary mathematics teachers and explained about leadership style training program and requested to attend the program. The research gathered one hundred fifty higher secondary mathematics teachers in the city of Palani and contacted training program for three days. It started at 10 am and finished at 4 pm.

Training Program Objective

- a) Introduction of the Training Program
- b) Explaining the leadership style
- c) How the leadership style going to improve the secondary mathematics teachers teaching strategy?

Trainer names and Qualification

No.	Name of the Trainers	Qualification	Year of Experiences
1.	Mr.Anand	Master's in Psychology	12
2.	Mr.Jayapaul	Master's in Philosphy	15
3.	Dr.Devasahyam	Ph.D in Education	25

Conclusion

Starting the training program, the researcher distributed the questionnaire and collected the data. The end of the training program, again the researcher distributed the same questionnaire to all and asked to fill it according to their understanding of the training program. After collecting the data, the researcher thanked all for their co-operation.

Day 1

**Educational Leadership Training
Program For Higher Secondary
Mathematics Teachers**

By
Mr. Anand
At Palani

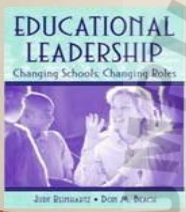
Presentation Outline



- ▶ Educational Leadership
Introduction & Definition
- ▶ Leadership Styles in Education
Situational leadership
- ▶ Developing effective Leaders
Teacher's role as Leaders
- ▶ Leadership in Education
Innovation Leadership and Teaching & Learning

Educational Leadership

Educational leadership examines functions of leadership and management of the School System and foundation.



- Explores organizational theories, models of theories, models of leadership & management, and personal & organizational change.


Goal

To provide participants with an insight of Educational Leadership **styles** and opportunity to explore **role** of Teacher as leaders in school **change** management and restructuring in the **teaching and learning**.




To assist participants to choose and **situate** best leadership **styles** within organization function, and to develop a **vision** of their leadership practice within a perspective of how school organization works.

Situational Leadership
Introduction & Definition



EDUCATION

Education in general sense is a form of **learning** in which the **knowledge, skills, and habits** of a group of people are transferred from one generation to the next through teaching, training, or research.



- A process of acquiring knowledge and delivering to others
- Knowledge is an awareness of **self and surroundings**
- **Self awareness** is a process of knowing about personal potentials, faculties, dreams and desires.
- **knowing surroundings** with its realities, structures, requirements, usages and its relationship to self is knowledge.

LEADERSHIP

Definition: described as "a process of **social influence** which one person can enlist the aid and **support** of others in the accomplishment of a **common task**".



For example, some understand a leader simply as somebody whom people follow, or as somebody who guides or directs others, while others define leadership as "organizing a group of people to achieve a common goal". 'Studies of leadership' have produced theories involving traits, situational interaction, function, behavior, **power**, **vision** and **values**, **charisma**, and intelligence, among others.

School (Educational) Leadership

School leadership- a process of enlisting and guiding the talents and energies of **teachers**, **pupils**, and **Parents** toward achieving common **educational** aims.

HOW TEACHERS BECOME LEADERS

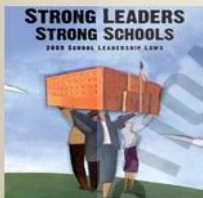


School leadership-often used synonymously in **USA** and has replaced **educational management** in the United Kingdom and **school management** in Tamil Nadu.

Several institutions through out the world offer graduate degrees in educational leadership.

Introduction: School Leadership

Came into currency in the late 20th century. Demands were made on schools for higher levels of pupil achievement, and schools were expected to improve and reform.



These expectations accompanied by calls for **accountability** at the school level.

Administration and **management** are terms that suggest stability through the exercise of control and supervision.

Introduction: School Leadership

The concept of leadership was favored because it conveys dynamism and pro-activity.



The **principal** or **school head** is commonly thought to be the school leader; however, school leadership may include other persons, such as members of a formal leadership team and other persons who contribute toward the aims of the school.

Good leaders are made not born.

Effective leader- desire and will power through a never ending process of self-study, education, training, and experience.



To inspire your workers into higher levels of teamwork, you must- **be, know** and, **do**.

These do not come naturally, but are acquired through continual work and study. Good leaders continually improve their leadership skills; they are **NOT** resting on their achievements.

When it comes to **Educational Leadership**, which **Style?**

Educational Leadership

Types of Leadership Styles in Education



Types of Leadership Styles in Education

Education is an important aspect of human life. How we receive and translate it into our daily way of life is quite largely dependent upon the way it gets passed on.



Educational leadership has been studied over years to address long-standing concern of students, educators, and society as a whole.

Types of Leadership Styles in Education

Leadership styles were introduced to address the needs of students from diverse backgrounds. Three different types of styles commonly practiced are.

1. Situational



Developing Effective School Leaders.

Role of school leader has grown beyond that of administrator as more countries require better achievement and grant greater autonomy to schools in designing curricula and managing resources.



Responsibilities need to be clearly defined, providing access to appropriate professional development, and acknowledging their pivotal role in improving school and student performance.

Knowledge of the different roles and responsibilities of school leaders and how countries succeeded in developing effective school leaders at scale is now a necessity.

Developing Effective School Leaders

Teacher's role as Leaders

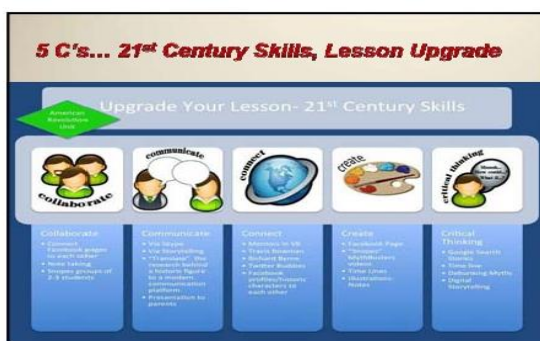
Ten Teacher's Role



7. School Leader

Being a school leader means serving on a committee, such as a school improvement team; acting as a grade-level or department chair; supporting school initiatives; or representing the school on community or district task forces or committees

A school leader shares the vision of the school, aligns his or her professional goals with those of the school and district, and shares responsibility for the success of the school as a whole.



Situational Leadership

The Situational leadership style was created by Hersey and Blanchard in 1969. The principal procedure of the situational speculation is that different conditions require different sorts of activity to get the best results.

Telling

The teacher's leader could make a positive difference in a person's life and might be a solution in various cases. In communicating the content, it is very important for the Teacher/educator /leader to keep in mind the background of the student or the level of understanding.

Imparting the concept

The most common phobia of mathematics is that it is a boring and very difficult subject. It is a challenging task for the teacher to overcome this fear among the children. The teacher has to introduce the subject with lot of enthusiasm and interest for the students.

Innovative methods

Activity based approach can be an effective way to solve this problem. While teaching mathematics emphasis should be on making the student understand the basic principles rather than a mechanical understanding of concepts and make new innovative methods for teaching.

Building confidence

Classroom preparing and corporate colleges fall under the training area. Instructive open doors have given developer comparative presentation to ideas, plans, information and ability development. One of the inquiries spinning around instructive open doors is the exchange of preparing from the class room to the activity

Mathematics knowledge

Moving was the accompanying stage where various leveled top organization perceives, plan, and complete the fitting methods. In this stage, it was additionally picked that either affiliation has expected to go for progressive or radical changes

Delegating

A delegating leader comes the ordinary decisions, for instance, parting the exceptional job that needs to be done, to their supporters.

Learning difficulties

The teacher should be encouraged to consider mistakes as learning opportunities. Monitoring the progress periodically and setting measurable goals can help them in the learning process.

Self-directed learning


The teachers should be self-directed learning. Reciprocal Teaching is a technique that requests that students and instructors share the role of the educator by permitting both to lead the conversation about a given perusing. The corresponding Teaching includes four techniques that control the conversation: foreseeing, question producing, summing up, and explaining.

Reciprocal teaching

The leader's activity was also huge in unfreezing in light of the fact that it has required an efficient technique for executing the change by managing the lead and attitudes of people collaborating. It has furthermore required a strong duty regarding the extensive number of people to participate in a communicated typical vision

Thank You!

Educational Leadership Program for Higher Secondary Mathematics Teachers



By
Mr. Jayapaul
At Palani

Leaders are people who do right things.
Manager are people who do things Right.
Peter Drucker

Leadership is an act of influencing others to perform and engage them in achieving a goal.

A leader steps up in the time of crisis and is able to think and act creatively in different situations.

- As we look in to next century, leaders will be those who empower others.
Bill Gates
- Leadership is influence- nothing more, nothing less.
John Maxwell
- Leadership is an extra push.
Koontz

Definitions _____

LEADERSHIP



WHAT'S EDUCATION?

THE PROCESS OF GIVING OR RECEIVING SYSTEMATIC EDUCATION, ESPECIALLY AT A SCHOOL

Educational leaders usually are employed
As school principles or administrators.
Additional, such as department chair or academic dean.

EDUCATIONAL LEADERS

Are really trained to advance and improve educational systems or institutions




CONCEPT OF EDUCATIONAL LEADERSHIP: THEN & NOW

The concept of educational leadership has undergone changes across the time- with the concept of **Jug & Mug**

Earlier teachers were considered as jugs full of knowledge and the students as empty mugs i.e. having no knowledge

This concept has changed in the recent years. now the students are not regarded completely empty. They have some prior knowledge which gets enhanced when the teacher acts as the facilitator.

- This theory believes that Leaders are in born, not made. Qualities are inherent in a leader. They do not require any training.



Great Man Theory

- **TRAIT THEORY:** It is in some ways to Great Man theories, trait theories assume that people inherit certain qualities and traits that make them better suited to leadership. Trait theories often identify particular personality or behavioral characteristics shared by leaders.



- Leadership is the product of situational demand: situational factors determine who will emerge as a leader rather than a person's heritage. The emergence of a great leader is the result of time, place and circumstances.



Situational Theory

- Personal Situational theory represents the combination of great man, trait and situational theories.
- Leadership includes intellectual, affective and action traits as well as the specific conditions under which the individual operates.



Personal Situational Theory

- This theory believes that the human being are by nature motivational things and organization are by nature structured and controlled.
- Leadership is to modify organizational constraints to provide freedom for individual in order to realized their full potential and contribute to the organization.



Humanistic Theory

- Leaders enforce change in the followers by showing path, also clarify the goal to the followers and encourage them to perform well.



Path Goal Theory

- Participative theory deals with power sharing and empowerment of the followers.



Participative Leadership theory

- It is also known as managerial leadership. It focuses on the role of supervision, organization and group performances. Leaders who implement this theory focus on specific tasks such as building rapport with team mates and use rewards and punishments to motivate followers

TRANSACTIONAL THEORY

- This implies that leaders primarily leads by serving others- customers, employees and community.
- This includes listening, empathy, healing, awareness, foresight, commitment to others growth and development and community building.



Servant Leadership Theory

Transactional Leadership Style

- Transactional leadership style is routinely explained as an advantage exchange among leader and their followers. The trade or exchange incorporates something of critical worth between what the leader has or controls and what the aficionado needs as a final product of their organizations.

Directive

- Directive is depicted by a leader who mentions to subordinates what was foreseen from them, provides express guidance concerning what should be done and how It should be done, makes their part in the social event appreciated, plans work to be done, keeps up away from of execution and asks that get-together people seek after standards and rules.

Cognitive

- Cognitive instruction is a way of teaching aimed at helping students acquire some basic skills and procedural knowledge. It is done in a set-by step manner to solve mathematical equations. In Transactional Learning Style Most of the teachers follow his method to solve complex problems and avoid repetitive teaching.

New contents

- It is important for the teacher to understand that not every students' attention level is focused and learning can become a tedious task for students in this process. It is more teacher dominated rather than collaborative learning. Every step must be mastered and promote passive learning.

Challenge new-fangled methods

- There is very less scope for learners' involvement. There is less scope for new knowledge. The teachers have to keep in mind these drawbacks and plan the learning process.

Revised notions

- With numerous districts encountering educator deficiencies, purposeful endeavors like vocation pathways and instructor driven proficient learning are important to improve educator standards for dependability

Remove Obstacles

- It is portrayed by a leader who advises with subordinates, demands their proposition and considers these proposals genuinely before choosing a decision.

Categorize the complication

- Mathematics is a performative subject where the students have to come up with answers quickly. Mall interventions can change the attitude towards learning and effect the performance. Students learn better when they make mistakes.

Shrewd learning

- ▶ The teacher plays a vital role in helping the students to identify the obstacle and categories the problem. The more brain pathways the student explores, the stronger the learning. To solve this problem, the teachers can group the students based on their ability and allow student to participate in the learning process.

Eliminate prejudice

- ▶ It helps in eliminating the prejudiced ideas by teachers that understanding mathematics is difficult. Students need to be guided towards productive practice, and approaching the problem from different directions and apply the ideas.

Achievement Oriented

- ▶ A leader may show directedness toward subordinates in specific instances and be participative or solid in various instances.

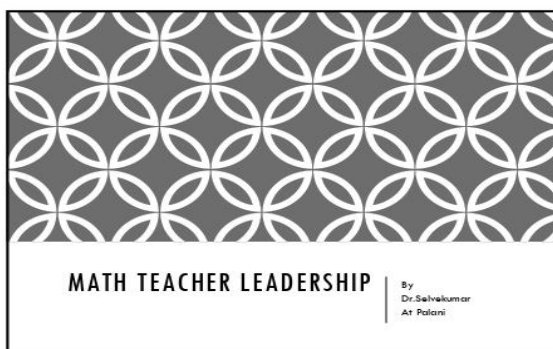
Aspire wisdom

- ▶ Students are motivated to learn and study hard to improve their skills and knowledge. Likewise learning Mathematics is considered as an important factor in achieving high performance. The knowledge of the teacher about the subject plays a vital role here.

Methodical teaching

- ▶ The teaching process should be methodical and provide scope for reflective learning, teachers must know how to apply value to their teaching and develop proficiency across concepts.





DESCRIBE THE ATTRIBUTES AND CORE COMPETENCIES FOR TEACHERS

Math Teacher
Coach
Administrator

Who exemplifies these attributes and core competencies in the clip?

MATH AND SCIENCE TEACHING (MAST) SYSTEM MISSION

Teaching and learning that equally values students and rigorous mathematics and science as the core of the system, requires teachers to make connections, uses mathematical and scientific reasoning within the context of storytelling and designs an experience for the learner that is active, connected, sensory, and emotional; thereby inspiring and motivating students to learn and achieve in mathematics and science.

What is your vision for teacher leadership?

WHO ARE LEADERS?

"Leaders are purveyors of hope. Their optimism communicates a belief in the worth of followers and the talents of those around them"

Learning to Lead, A Workbook on Becoming a Leader by Warren Bennis & Joan Goldsmith (2010)

Transformative Math Teacher Leaders

"To Be or Not to Be, That is the Question"

CALIFORNIA'S RESPONSE

Mathematics Instructional methods

The program provides extensive opportunities for candidates to

- demonstrate mathematical and pedagogical content knowledge and skills to support effective mathematics instruction and student learning.
- Coursework and fieldwork address the complex interplay of math content and pedagogy in effective teaching.
- Candidates are prepared to enhance mathematical development for all students
- Candidates are prepared to collaborate and co-teach with other math teachers as well as teachers of other subject matter disciplines.
- Candidates are prepared to teach K through Pre-Algebra (or K through Algebra I).
- Candidates are equipped to understand the challenges of developing mathematics literacy among California's diverse student and teaching population.

MIC → MIL

Mathematics Instructional Leadership

The program includes a planned process for the comprehensive assessment of candidates in the following areas:

1. Understand practitioner research and encourage teachers to use it in their practice
2. Design and implement professional development that engages teachers, administrators, and parents while promoting student engagement and achievement in mathematics
3. Analyze and use data to design solutions to the challenges of developing mathematical literacy among California's diverse population
4. Lead a professional community of practitioners to promote student engagement and achievement in mathematics and minimize the achievement gap

TEACHER LEADERSHIP

The concepts of leading and teaching are so intertwined that every leader is a teacher, and every teacher is a leader. The art of leading students is one of the greatest challenges faced by today's teacher. The process is intensified in a prison setting where the environment for blending leadership practices is complex (Hand & Penuel, 2013).

TEACHER LEADERSHIP IS:

- A way of organizing learning.
- A way of understanding the connections between knowledge and practice.
- A way of combining the explicit and tacit ways of knowing.
- A way of learning the skills, abilities and capacities for developing and nurturing community among peers.
- A way of negotiating the tensions between privacy and a new view of community (Lieberman, 2013).

QUALITIES OF TEACHER LEADERS

- Significant experience in their teaching fields
- Excellent teaching skills
- Extensive knowledge of teaching and learning, curriculum, and content area
- Clearly developed personal philosophy of education
- Creative
- Innovative
- Seekers of challenge and growth,
- Take risks
- Lifelong learners,

ROLE OF TEACHER LEADERS

Katzenmeyer and Moller (2001) described three main facets:

- **leadership of students or other teachers:** facilitator, coach, mentor, trainer, curriculum specialist, creating new approaches, leading study groups;
- **leadership of operational tasks:** keeping the school organized and moving towards its goals, through roles such as head of department, action researcher, member of task forces;

Furthermore, (Harrison & Killian, 2007) described roles of teacher leaders

1. Resource Provider
2. Instructional Specialist
3. Curriculum Specialist
4. Classroom Supporter
5. Learning Facilitator

DEVELOPING TEACHER LEADERSHIP

- Be set aside for teachers to meet to plan and discuss issues such as curriculum matters, developing school-wide plans, leading study groups, organizing visits to other schools, collaborating with HEIs, and collaborating with colleagues
- Being freed up for teacher leadership tasks
- Give more time to collaborate with one another
- Rich and diverse opportunities for continuous professional Development
- Improvement of teachers' self-confidence to act as leaders in their schools
- Mentoring, Observation, Peer coaching and Mutual reflection

WHY TEACHER LEADERSHIP?

Harris and Alambert (2003) and Holden (2002) describe that we may adopt the teacher leadership in our school to;

1. Operate the school as a professional learning community
2. Strong and measurable improvements in students' learning
3. Building professional skills
4. Building capacity to keep the school progressing
5. Sustainable improvement in school and classroom
6. Improvement in students engagement with school

WHY TEACHER LEADERSHIP?

7. Outweighs principal leadership effects
8. Enhances teachers' self-esteem and worksatisfaction
9. Higher level of teacher performance and motivation
10. Improved confidence of teachers in their own abilities
11. Collaboration between teachers
12. Transforming schools as organizations
13. Helping to diminish teacher alienation
14. Improving the life chances of students in disadvantaged schools
15. Involvement in decision-making

WHY TEACHER LEADERSHIP?

16. Decreases in teacher absenteeism
17. Encouraging the introduction of reform
18. Mitigate the negative effects of frequent headteacher change in a restructuring school
19. Cultivates a largely untapped resource for change and improvement in schools
20. Keeps good teachers in the classroom
21. Benefits students
22. Frees principals from unrealistic expectations

BARRIERS IN DEVELOPING TEACHER LEADERSHIP

Egalitarian values among teachers may militate against any teacher presenting her/himself as a 'leader'

- Being ostracized by their colleagues
- Loss of connectedness to peers when engaging in teacher leadership
- Hesitant, but not hostile
- Top-down management structures in schools
- Fear and uncertainty

BARRIERS IN DEVELOPING TEACHER LEADERSHIP

- Selection of role
- Lack of trust between staff
- Credibility with teacher colleagues
- Delineation of responsibilities between teachers and administrators
- Finding the right structure

TEACHING STRATEGY I

Math nervousness has not consigned exclusively to higher secondary students. Many educators have negative mentalities toward math dependent on their own school experiences. Higher secondary students can get on that antagonism. There are things you can do to forestall transmitting any of your own math uneasiness to your students.

CREATING

Creating developmental evaluations to guarantee that student comprehends the ideas. What the student realize can control our guidance and decide to follow the steps.

Develop curiosity

Abstraction

Craving for insight

UTILIZING THE LESSON

Some of the time we stand out in an attitude of "an exercise a day" so as to get past the substance, however, we must have deftly pondered pacing or student will get left behind.

Procedures

Perception

NURTURING MATH SUCCESS

This makes a more grounded, calculated understanding and mental associations with the material for the student.

Adopting innovation

Steadfastness

Imparting formulas

TEACHING STRATEGY II

Whenever students are allowed the chance to pick how they learn and show their comprehension of an idea, their upfront investment, and inspiration increment. It has allowed them to see how they learn best, gives office over their own learning, and takes into consideration the space to rehearse various ways to deal with taking care of math issues.

CON...

The teachers have to pre-preparation of teaching methods, teaching aids, and teaching ideas. Those preparation helps the mathematics teachers' readiness and sharp knowledge of teaching mathematics. They make the short-steps for teaching and learning. They need to finish the chapter according to the time periods. The mathematics teachers need to identify the new methodology to explain the difficult concepts.

PRACTICE

When giving students an authentic issue, pose a major inquiry and let them struggle to make sense of a few different ways to explain it, recommends Andrews.

Vigorous rehearsal

Learning short forms

Time management

Use of new statements in theorems

TEACHING STRATEGY III

Imparting about math assists students with handling new learning and expand on their reasoning. Engage students during discussions and have them depict why they tackled an issue with a particular goal in mind.

ATTRIBUTES

The mathematics teacher has an ability to teach and explain in an easy way to the school students. The clarity of problem-solving techniques to the students to understand very well. Create an enthusiasm and interest in mathematics to explore and expand the application knowledge in their future studies.

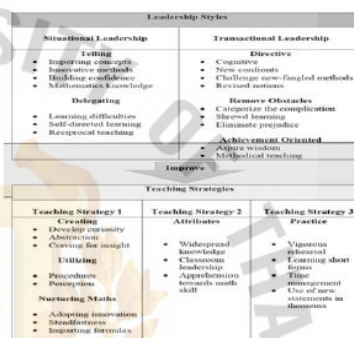
CON...

The mathematics teachers' knowledge should be out of the box, so that they can explain the students' questions but some steps are explained but not all the steps.

Widespread knowledge

Classroom leadership

Apprehension towards math's acquaintance



TEACHERS' LEADERSHIP MODEL

The proposed leadership model for higher secondary teachers' teaching strategy was validated by five experts in the field of educational and curriculum development and instruction.

THANKS A LOT

Leadership Training Program For Hr.Sec.Math Teachers (Signatures)				
SL.No	Name	Day 1 (11-10-2019)	Day 2 (12-10-2019)	Day 3 (13-10-2019)
1	Banu priya	B	B	B
2	Bhuraneshwari	Bh	Bh	Bh
3	Gowari Mariammal	Gowari	Gowari	Gowari
4	Boby Sunitha	Boby	Boby	Boby
5	Karpagaralli	Karpagaralli	Karpagaralli	Karpagaralli
6	Krishanrapriya	KP	KP	KP
7	Manana Patra	Manana	Manana	Manana
8	Nathiya	Nathiya	Nathiya	Nathiya
9	Nivetha Kaleeswari	NK	NK	NK
10	Preethi Angel	Preethi Angel	Preethi Angel	Preethi Angel
11	Rabeccal	Rabeccal	Rabeccal	Rabeccal
12	Sarulatha	Sara	Sara	Sara
13	Subashree	Sub	Sub	Sub
14	Tamil elakya	Slak	Slak	Slak
15	Vijayarani	விஜயரணி. G	விஜயரணி. G	விஜயரணி. G
16	Matheena begam	MB	MB	MB
17	Amsa priya	Amsa	Amsa	Amsa
18	Deepa	D	D	D
19	Esther dayana	Esther	Esther	Esther
20	Fathima	Fath	Fath	Fath
21	Rabeca sweety	Rabeca sweety	Rabeca sweety	Rabeca sweety
22	Anusiya	Anusiya	Anusiya	Anusiya
23	Divya	Divya	Divya	Divya
24	Mariammal	Mariammal	Mariammal	Mariammal
25	Nagalakshmi	Nagalakshmi	Nagalakshmi	Nagalakshmi
26	Nithya	Nithya	Nithya	Nithya
27	Saranaya	Saranaya	Saranaya	Saranaya
28	Sasikala	சசிகலா	சசிகலா	சசிகலா
29	Gomathi	G	G	G
30	Selvaranni	Selvaranni	Selvaranni	Selvaranni
31	Mary	M	M	M
32	Geetha	Geetha	Geetha	Geetha
33	Solami	Solami	Solami	Solami
34	Jenifer	Jenifer	Jenifer	Jenifer
35	Nivesha	N	N	N
36	Nithiya	Nithya	Nithya	Nithya
37	Mageshwarri	Mageshwarri	Mageshwarri	Mageshwarri
38	Amsavalli	Amsavalli	Amsavalli	Amsavalli
39	Jackeline	Jackeline	Jackeline	Jackeline
40	Joe ann mary	Joe ann mary	Joe ann mary	Joe ann mary
41	Vimala	V	V	V
42	Arockia dass	Arockia dass	Arockia dass	Arockia dass
43	Saveri	Saveri	Saveri	Saveri
44	Anand	Anand	Anand	Anand
45	Santha kumar	S.kumar	S.kumar	S.kumar
46	Kalaierasan	Kalaierasan	Kalaierasan	Kalaierasan
47	Tamil alezin	Tamil alezin	Tamil alezin	Tamil alezin
48	Immanual	Immanual	Immanual	Immanual
49	Thulasi	Thulasi	Thulasi	Thulasi
50	Shalani	S	S	S

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51	Susi	Susi	Susi	Susi
52	Raghu	Raghu	Raghu	Raghu
53	Sussai	Sussai	Sussai	Sussai
54	Sr.mary	Sr.mary	Sr.mary	Sr.mary
55	Alaguraj	Alaguraj	Alaguraj	Alaguraj
56	Prakash	Prakash	Prakash	Prakash
57	Bhavanni	Bhavanni	Bhavanni	Bhavanni
58	Leo raja	Leo raja	Leo raja	Leo raja
59	Arul prakash	Arul prakash	Arul prakash	Arul prakash
60	Dinesh	Dinesh	Dinesh	Dinesh
61	Gokila	Gokila	Gokila	Gokila
62	Fredin joe	Fredin joe	Fredin joe	Fredin joe
63	Joseph	Joseph	Joseph	Joseph
64	Vinnarasi	Vinnarasi	Vinnarasi	Vinnarasi
65	Venu gopal	Venu gopal	Venu gopal	Venu gopal
66	Selvaranni pillai	Selvaranni pillai	Selvaranni pillai	Selvaranni pillai
67	Kanmani	Kanmani	Kanmani	Kanmani
68	Prabakaran	Prabakaran	Prabakaran	Prabakaran
69	Abhin P J	Abhin P J	Abhin P J	Abhin P J
70	Afnan khan	Afnan khan	Afnan khan	Afnan khan
71	Akhilesh B M	Akhilesh B M	Akhilesh B M	Akhilesh B M
72	Chris isy	Chris isy	Chris isy	Chris isy
73	Darshan R	Darshan R	Darshan R	Darshan R
74	Dayas a dixon	Dayas a dixon	Dayas a dixon	Dayas a dixon
75	Dhanush S	Dhanush S	Dhanush S	Dhanush S
76	Edwin	Edwin	Edwin	Edwin
77	Fabian joseph	Fabian joseph	Fabian joseph	Fabian joseph
78	Gomath kumar l	Gomath kumar l	Gomath kumar l	Gomath kumar l
79	Harshith N	Harshith N	Harshith N	Harshith N
80	Hitesh A	Hitesh A	Hitesh A	Hitesh A
81	Kaushik manu m	Kaushik manu m	Kaushik manu m	Kaushik manu m
82	Lohith S	Lohith S	Lohith S	Lohith S
83	Mirza wasi abbas	Mirza wasi abbas	Mirza wasi abbas	Mirza wasi abbas
84	Mohamed aimaan baig	Mohamed aimaan baig	Mohamed aimaan baig	Mohamed aimaan baig
85	Mohammed sufyaan	Mohammed sufyaan	Mohammed sufyaan	Mohammed sufyaan
86	Mokshith S	Mokshith S	Mokshith S	Mokshith S
87	Muzamil ahmed	Muzamil ahmed	Muzamil ahmed	Muzamil ahmed
88	Nagraj B G	Nagraj B G	Nagraj B G	Nagraj B G
89	Pawan kumar h	Pawan kumar h	Pawan kumar h	Pawan kumar h
90	Pawan S S	Pawan S S	Pawan S S	Pawan S S
91	Prajwal kumar s	Prajwal kumar s	Prajwal kumar s	Prajwal kumar s
92	Sachin U	Sachin U	Sachin U	Sachin U
93	Sanjay yadav n	Sanjay yadav n	Sanjay yadav n	Sanjay yadav n
94	Srikanth M	Srikanth M	Srikanth M	Srikanth M
95	Subhash B R	Subhash B R	Subhash B R	Subhash B R
96	Syed zaid	Syed zaid	Syed zaid	Syed zaid
97	Tameem khan t	Tameem khan t	Tameem khan t	Tameem khan t
98	Annette benjamin	Annette benjamin	Annette benjamin	Annette benjamin
99	Anu bhargavi b	Anu bhargavi b	Anu bhargavi b	Anu bhargavi b
100	Diana paul	Diana paul	Diana paul	Diana paul

Leadership Training Program For Hr.Sec.Math Teachers (Signatures)				
SL.No	Name	Day 1 (11-10-2019)	Day 2 (12-10-2019)	Day 3 (13-10-2019)
101	Gajalakshmi M	GJM	GJM	GJM
102	Harshitha B	haci	haci	haci
103	Kavitha reddy s	Reddy	Reddy	Reddy
104	Kruthika C	K	K	K
105	Lavanya R	லாவண்யா ராஜ்	லாவண்யா ராஜ்	லாவண்யா ராஜ்
106	Lea sony	Leah	Leah	Leah
107	Leena B N	bi	bi	bi
108	Likhitha M	liji	liji	liji
109	Meena S	Meena	Meena	Meena
110	Moksha R	Mok	Mok	Mok
111	Niharika M	N	N	N
112	Niroosha C	ni	ni	ni
113	Nithya shree r	N.S	N.S	N.S
114	Noor saba	Noor	Noor	Noor
115	Sara cathrin s	Sara	Sara	Sara
116	Shalini K	SK	SK	SK
117	Sharadhi kavoor	Kavoor	Kavoor	Kavoor
118	Suba R	Suba	Suba	Suba
119	Supradha N	S	S	S
120	Syeda afiya s	S	S	S
121	Vaishnavi D	VD	VD	VD
122	Goutham m p	G	G	G
123	Hiran k s	H	H	H
124	Jeswin jose	Jeswin	Jeswin	Jeswin
125	Junaid pasha m	J	J	J
126	Juwal sony	Sony	Sony	Sony
127	Macarius antonine p	Anto	Anto	Anto
128	Monish babu reddy	Reddy	Reddy	Reddy
129	Murali r	R	R	R
130	Nishanth m	NM	NM	NM
131	Nithin kumar c	N	N	N
132	Pavan kumar m	P	P	P
133	Preetham m	P	P	P
134	Raghavan k	R	R	R
135	Reethesh s	Reeth	Reeth	Reeth
136	Sagar s	S	S	S
137	Shijin chacko	Shiji	Shiji	Shiji
138	Siddique ahmed shariff	Siddique	Siddique	Siddique
139	Steve joy	Steve	Steve	Steve
140	Suhas h	S	S	S
141	Syed muteeb	S.M	S.M	S.M
142	Vineet s	V	V	V
143	Saravanan	Saravanan	Saravanan	Saravanan
144	Raja	R	R	R
145	Jayanthi	Jai	Jai	Jai
146	Nirmal	N	N	N
147	Stalin	Stalin	Stalin	Stalin
148	Pannerselvam	Pannerselvam	Pannerselvam	Pannerselvam
149	Madasamy	Madasamy	Madasamy	Madasamy
150	Sathees pandian	S	S	S

BIOGRAPHY

NAME AND SURNAME: VELANKANNI ALEX

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EDUCATION:

2016 to 2017	Masters of Philosophy in Mathematics (M.Phil) Madurai Kamaraj University – Veerapandi College Theni, Tamil Nadu, India.
2014 to 2015	Master in Education (M.Ed) TN Teacher's Education University- Meston College Chennai, Tamil Nadu, India.
2013 to 2014	Bachelors in Education (B.Ed) TN Teacher's Education University - Loyola College Chennai, Tamil Nadu, India.
2011 to 2013	Master in Mathematics (M.Sc) Madurai Kamaraj University - SN College Madurai, Tamil Nadu, India.
2006 to 2009	Bachelors in Mathematics (B.Sc) Madurai Kamaraj University - Arul Anandar College Karumathur, Tamil Nadu, India.

WORKEXPERIENCE

Jan-2018 to June -2018 – Lecturer – Mathematics

Worked as a Math Lecturer in Basic Science, Assumption University of Thailand, Bangkok (Teaching Mathematics to the Engineering Students).

May-2015 to July -2017 – PG Teacher – Mathematics

Worked as a Mathematics teacher at Christ school Bangalore in India

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