

Proficiency and Competency of Mathematics Professors A Literature Review

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Abstract-

This study aims to do an empirical study of the innovative teaching of Mathematics teachers. The area of teaching is related to classroom education, classroom management, and academic progress. The primary role of a teacher is the maintenance of appropriate and positive student behavior a teacher's efficacy is related to both teacher motivation and meta-cognition as teachers focus on the plans and events that may create either a productive or nonproductive learning environment. The effect of these variables in the population is evaluated more worldwide. The most fertile area for creative thinking of students inculcated by a teacher.

Keywords-

soft skill, innovative teaching, Mathematics learning, Academics.

Introduction- Mathematics makes our life orderly and prevents chaos. Those characteristics that are developed by mathematics are the power of reasoning, creativity, theoretical or mathematical thinking, critical thinking, problem-solving, and even effective communication skills. As per the Scholastic Children's Dictionary (1996), mathematics is "a study of numbers, quantities dimensions, and proportions, and how they compare to each other." Think regarding mathematics as a science of how we use and interrupt events around us while using numbers.

The practice of Mathematics was conducted rather distinctly than it is now, primarily since Geometry and Arithmetic were distinct topics. Someone who had time, money, and a tendency may follow further studies in the science of numbers. Students started their education at home, under the guidance of a parent or a math tutor. Early childhood education included letters, music, and gymnastics, but little or no mathematics or geometry.

Mathematics was first taught in Egypt as a subject in the field of education. It seems to be a qualified mathematics teacher someone who has been specialized in mathematics and receives sure additional pedagogical or prescriptive preparation analytical and practical and afterward continues to teach mathematics. Having survived records from that time seemed to suggest that Mathematics education was not welcome or approved, but that it was considered necessary in several situations. Expertise recommended to students in architectural studies Optics, Astronomy, Law, Geometry and Arithmetic Galen that prospective doctors study Medicine, Rhetoric, Art, Metaphysics, Geometry, and Arithmetic recommended to study Geometry and Arithmetic if only to enhance or improve logical thinking techniques.

Evolution of mathematics across the years as an academic subject and concept, methodology prepared, and evaluated. Mathematics developed a social status as an academic subject to be taught at school and colleges at the start of the seventeenth century, near the campus of Aberdeen in 1683. After the University of Oxford, Cambridge University's expertise split mathematics into a different subject as Calculus, Geometry, Arithmetic, Algebra, and Statistics. These concepts were well adapted by academic institutions in the 18th and 19th centuries.

Felix Klein's experience in mathematics at the University of Göttingen founded the modern Pure Mathematics in 1893, after some success he organized the Official Society as the International Committee on Mathematical Instruction (ICMI) in 1908, and Felix Klein became the organization's first president. ICMI had periodical meetings and conference every four years. At the first conference, only 4000 articles were presented. So Classified Index was published in 1941 with Editor as Prof. Dr. William L. Schaaf. The Shell Center for Math Learning was established at Nottingham in 1968. However The first International Congress on Mathematical Education (ICME) held in 1969 at Lyon.

In India, the same evolution followed. After graduation, Tilak began teaching mathematics at a private school in Pune. Later, due to ideological differences with his colleagues at the new school, he withdrew and became a journalist. Tilak has been frequently involved in public relations. He gave his new idea that religion and a realistic existence are no longer unique. It studies the

views of Lokmanya Tilak on various facets such as political, society, law, media, culture, education etc.(Tilak, D., & Tilak, G. (2019))

The true spirit is to make the nation your family, rather than just having lived for yourself. The Massachusetts Institute of Technology (MIT) is a renowned multinational university that has developed its sites, such as "Coursera" or "Miriada X," with great success. This success, together with the unique opportunity provided by electronic and digital resources to create learning experiences in algebra and geometry, has driven us to sustain the course and to make it available to students and teachers as a teaching aid. It is necessary to create these learning environments as, as we have shown in the analysis, the teaching methods used in math classes and their techniques have a significant influence on learners from a pedagogical point of view.

Objectives –

Build and develop a Mathematical competency model for mathematics teachers in college.

Implement the model as open interactive training programs with an emphasis on math skills.

To deal with the Issues faced by Mathematics Teacher viz. Prerequisite Knowledge, Connections to Real Life, Cheating, Math Block, Varying Instruction, Dealing With Absences, Timely Grading, After-School Tutoring, Varying Student Abilities, Homework Issues.

To create awareness in the field of rational, analytical, and creative thinking, through the application of educational goals focused on the learning of expertise and abilities.

With regard to math skills, teachers should ensure that students are competent to think carefully, think, reason, analyze, and argue logically, critically, and creatively.

To plan, solve problems, and make decisions.

For Numerically Reason have to Know and use mathematics in formulating, analyzing, and solving theoretical and practical problems, as well as in the development of logical reasoning.

Theoretical Review- To check and test the Characteristics of Mathematics Teacher as follows-

Sound Knowledge of Mathematics

Engaging

Good Motivator

Constantly Learning

Caring

People have differing views on how to classify the qualities of a great math teacher. Nevertheless, one thing that remains the same is that all the great math

instructors have specific characteristics that differentiate them from others. Such elements make them produce amazing outcomes for learners as well as for themselves. Different cultures have different perceptions of how to determine the characteristics of an excellent academic professor. Moreover, one thing that remains the same is that all the good academic teachers have specific characteristics that differentiate them from others. Specific skills make them produce excellent effects not only for students but for them as well. Below are the main five qualities that every great math teacher has.

1) Must have Sound Knowledge of Mathematics

2) Each great math teacher has a deep understanding of mathematics. Every great math professor has a profound mathematical knowledge.

In an established university or college, they perform a comprehensive learning process at which they obtain the knowledge and expertise they need to essentially educate their students. It involves an experience of calculus, probability, logic, mathematics, and estimation. The expertise they have developed from these institutions gives them the strength to communicate all mathematical concepts directly to their students and to solve mathematics quickly. Effective professors of math may not encourage students to obey their methodology.

However, neither do they think that they know everything about this to the fact that they disregard every method of correction.

Additionally, they serve as facilitators, allowing students to make suggestions and solve problems differently on their own. We allow room for group debates so that everyone in the classroom comes to the same conclusion. If a student is unable to address a problem, he or she will not be allowed to quit. Teachers allow students to get the preference for group debates so that everyone in the classroom comes to the same conclusion. If a student is unable to solve a problem, he or she will not be allowed to quit but continue with the new strategies and the methodology, also provide the right and appropriate guidance and support where necessary. The teacher must be a Good Motivator for all students.

Good academic teachers know that students have different interests in education. They then come up with innovative programs that identify with the motivating source of the students. For instance, students that want to be professionals may be motivated by mathematical problems relevant to their ambitions.

The same is relevant for everyone to become engineers, scientists, doctors, and any other relevant professionals. We often speak to their students regularly to help them develop the right problem-solving skills that apply to the careers during which we wish to enter. By doing so, students are prevented from losing interest and disadvantaging from studying mathematics. Always learning is the next important aspect of this link.

Good math teachers know they are not perfect; that is why they are reading

new materials to update their knowledge and understanding. Students are also participating in supplementary classes in their specialization areas in order to develop themselves and gain more confidence in the classroom. This may require learning established techniques and computational terms and learning new ones. Once a good teacher learns about a new mathematical concept, he allows all students to know about it, contributing to effective teaching and better education. Caring is also important for students. Good math teachers depend not only on the curriculum they teach but also to the students. They have a protective attitude towards their learners and are always ready to encourage those who have problems. These conditions could also be affected by emotional distress, learning disabilities, or disorders. The particular teacher may acknowledge when a student has a big problem day or requires some support. They also understand that sometimes unforeseen problems can give rise to students to write their math homework. In such cases, they offer second chances when required and take several extra times to help such students catch up with the rest. Being a great teacher does not necessarily mean that you will have to record high scores in your teaching or conform to education requirements. Also, there are many more Issues faced by Mathematics teachers and have to get feasible solutions to all. There is a mandatory requirement of having Prerequisite Knowledge. Math teaching is often based on evidence learned in past years. If the learner does not possess the required prior understanding, the math teacher may be left with the option of either remedial work or development, progression and the student may not be able to understand the content. There must always be a connection between society, factory, and education. Business mathematics is readily linked to daily life. However, often it can be challenging for students to see that the connection between their experiences and geometry, trigonometry, and even fundamental algebra. If students do not see why they have to study a subject, it affects their confidence and performance. Professors can already do this by providing real-life examples of where students might use math concepts taught, specifically in higher-level mathematics. For reference to lessons where students need to take tests or construct regular reports, math is often simplified to solution-solving. This may be challenging for a math teacher to evaluate whether students are manipulating. Traditionally, math teachers provide wrong answers and incomplete strategies to determine if students cheated. Several students have learned over time to think that they are just not good at math. That kind of approach can contribute to students not even trying to learn certain issues. Fighting this personality-esteem-related issue can be difficult, but trying to draw students aside collectively to try and convince them can help students resolve homework difficulties. The teaching of mathematics does not commit everything to a wide variety

of instruction While teachers might have students sharing materials students may work in different clusters on certain themes, Build interactive initiatives associated with mathematics, the practice of a math class is formative assessments followed by a period of solving problems. Teachers always find it harder and harder for students to be absent from lectures for several reasons by trying to brush the subject. If students miss a math class at key instructional points, it may also be difficult for them to catch up. For example, if a student is not present in the first few days when a new topic is discussed and explained, A teacher, will be dealing with the question of helping the student learn the content through her own. Mathematical teachers, more than educators in many other areas of the curriculum, need to keep up with their daily assignments. It does not motivate a student to get a paperback a few weeks after the unit has been finished. Instead, by doing what mistakes they have made and attempting to correct everything should students be able to use that information effectively For math teachers, giving immediate feedback is particularly important. This all processor is called as timely grading. Math teachers usually have many demands on their pre-and post-school time from students who need extra help. This may require a greater commitment on the part of math teachers, but additional help is generally necessary to help students understand and master the subjects they are studying. Teachers in math often have students of subjects with different abilities in the same class. Teachers may decide how to meet the needs of individual students in their classrooms, possibly by extra tutoring or by meeting with students to evaluate their abilities and inform them about their ability to succeed. Syllabus of mathematics often requires daily practice and competency evaluation. The execution of regular homework assignments is, therefore, important to the learning of the subject. Students who do not finish their assignments or copy from other students often suffer at the time of the test. It is often very challenging for math teachers to deal with these homework issues. One of the key requirements of the education system is the creation of awareness in the production of rational, analytical, and creative thinking through the application of instructional goals focused on the learning of expertise and abilities. All teachers must be Use Technology Reflexively and Pragmatic such as the use of information and communication equipment to search and understand the consequences surrounding it, solve problems, have access to and express the creativity of the information society, avoid the exploitation, and misapplication of knowledge. These skills can only be acquired through a teacher who practices them and has experienced trained as a math teacher. Also, no mathematical knowledge enables a person to teach. These skills can only be developed by a teacher who practices them and has already been trained as a math teacher. Hence it is therefore essential to devel-

op teaching and evaluation expertise. These experiences and requirements have led us to consider and evaluate this aptitude model through an assessment process. In order to evaluate performance and adequately evaluate the competency method, we also developed professional appraisal methods aimed at evaluating the type of headings: the math skills learned and the level of understanding of the skills applied. In conclusion, we suggested an evaluation that could encourage us to measure whether the testing process allows the teacher to practice mathematics and to communicate about and with mathematics, including developing skills in the use of software and mathematical language as a teacher in training. A student-teacher who appropriates these abilities would be ideally able to teach. In this context, we evaluated the course using it as an assessment variable for both the achievement of the two Niss competitions. That is also found in the Process for International Student Assessment (PISA), where the processes are in this aspect. The capacity to put and answer questions about and with mathematics to think mathematically, to understand the use of dice principles, to formulate theories, and to generalize results.

Different Methods following in Mathematical teaching approach-

Classical education

Computer-based Mathematics

Computer-based mathematics education

Conventional approach (Conceptual understanding)

Discovery math (Formative assessment)

Exercises (Homework)

Historical method (Algebraic reasoning)

Mastery (Students with difficulties)

New Math (Methodology)

Problem-solving (Numerical & Conceptual)

Recreational mathematics

Standards-based mathematics

Relational approach

Review of Literature-

In 1990, the Educational Committees approved some Standards for Teacher Competence in Educational Assessment of Students (AFT, NCME, & NEA, 1990). The documentation made mandatory for that. However, that realizes that those documents were much more dependent on the situation seven the psychology of the teachers and the students & not checking exacts knowledge and skills of the teachers. The students are not using the experience and knowledge in their job improvements. So their suggestions to another different way to test the competency of the teachers. There must be taken the help of the

senior teachers to update, improve the skills, professional developers, proper teacher education to improve the teacher's assessments of students.

The exact idea that teachers should be competent at which level means the teachers are well educated but not competent to teach up to the mark so not able to satisfy the students and their requirements. So this explains, in particular, the mainstream appeal of competency-based approaches to education and teaching, which have quickly spread over several countries across the world in recent years. There are several problems with the practical implementation of the idea of competence, particularly in the field of teacher education. Aristotle provides a valid and sufficient number of theories to understand the complexity of assessment in teaching. This research article seeks to illustrate why we should have guidance in teaching, when we need a decision, and what kind of assessment we need to do in academic achievement. You could even say that they are booming, mainly because they have been driven by prestigious global institutions such as the Massachusetts Institute of Technology (MIT) is prestigious international institutions the creation of its platforms, such as "Coursera" or "Mirada X," with great success. Also, there has been the creation of its own. This popularity, along with the unique opportunity offered by software and multimedia resources to create learning activities of algebra and geometry, prompted us to maintain the course and make it available to students and teachers as a support to teaching.

Objective-

Teacher Competency Improvement

The objective of enhancing teacher quality through teacher training is to improve the teaching and learning process in which teachers and students participate through a series of actions, guidance, and direction.

Developing professional education and training and developing qualified teachers is expected to contribute to improving the quality of education.

In the connection of a training program to train problem writing about mathematics is one of the activities of teacher professional development.

The Research and development and Training Program to Enhance Teachers ' Competence in Mathematics Problem Solving is expected to be of better value.

Findings-

Teachers are not optimistic enough to persuade students to learn the fundamentals of mathematics.

Teachers are not well acquainted with current and new developments.

Students have been very pessimistic about studying the subject.

Students are not well off to do the hard work of updating the subject.

Conclusions-

To teaching Mathematics and Statistics, first clear out the fundamentals. Introduce Mathematics Software like G-graphs, Matlab, SPSS, R-studio. Conduct the Faculty Development Programs every year to update the faculties. FDP must be followed by the laboratory sessions to practice the software.

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