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A growing revolution is under way in the teaching of science to undergraduates. It is driven by concerns about Indian competitiveness as well as results from recent educational research, which explains why traditional teaching approaches in large classes fail to reach many students and provides a basis for designing improved methods of instruction. Discipline-based educational research in the life sciences and other areas has identified several innovative promising practices and demonstrated their effectiveness for increasing student learning.

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Introduction

Innovation pedagogy is "a learning approach focused on the development of innovation competences, defining how knowledge is assimilated, produced and used in a manner that can create innovations". Innovation competences are learning outcomes that refer to knowledge, skills and attitudes needed for the innovation activities to be successful. The humanistic way of understanding people as the creators of their own future forms the philosophical foundations of innovation pedagogy.

The concept of innovation pedagogy is a didactic operational model based on the socio-cultural perception of learning that supports the work of universities of applied sciences as a part of regional competence and innovation networks. Applied research and development activities that support regional development and the production of innovations in working life are integrated into multidisciplinary teaching in accordance with the principles of innovation pedagogy. The education offered by the university promotes entrepreneurship and includes service activities while taking into account both the needs of the region as a whole as well as the constantly changing trends of working life.

Learning environments where students of different fields are daily in contact with each other offer new interfaces for working. Such surroundings are known to be best when innovations are expected. In addition, an innovative approach to teaching and learning are also needed as well as enthusiasm for trying new methods. In the context of innovation pedagogy, innovations are seen as an integral part of the process of constantly improving know-how as well as generating new sustainable ideas and practices applicable in working life.

A fruitful environment for innovation consists of individuals with different backgrounds working together on similar problems. These innovation communities can be tight teams meeting every day or network-like looser communities. The success of the communities is based on know-how and sharing knowledge as well as on the ability to combine different points of view and approaches. Innovations are more frequently generated where different fields of expertise meet.

Thus the aim of innovation pedagogy bconfesses the societal needs as the basis for the work done at HEIs. Having social learning theories as a background, innovation pedagogy links university work together with the regional needs emphasising the meaning of innovation competencies without forgetting the study specific skills

students must have. Innovation pedagogy emphasises the meaning of teamwork and multidisciplinary groups, as well as internationalisation as main sources of innovations and especially as core competencies which a today's innovator should have. Innovation pedagogy is put into practice via different activating learning methods such as hatchery methods that produce study specific and innovation competencies, and simultaneously serve regional, national and international operators ensuring direct societal benefits.

Various Types of Innovative Pedagogy

1. Sensitisation of Parents and Community
2. Organised visits to Science Museums, Innovation hubs and Science fairs and Mathematics Melas
3. Participation of Students in Inter-school, State/ National Science and Mathematics competitions/ Olympiads etc.
4. Expand outreach of programmes of Ministry of Science and Technology to promote science learning
5. Science, Mathematics and Technology Clubs for Children
6. Promotion of Science & Mathematics Teacher Circles
7. School Mentoring
8. Effective Classroom transaction: teaching –learning
9. Strengthening teacher support institutions through use of technology
10. Development of Resource Materials
11. Use of Technology in Science and Mathematics teaching
12. Provision of Teaching-learning equipment and materials
13. Strengthening School Science and Mathematics Laboratories
14. Recruitment of Science and Mathematics Teachers
15. Assessment Design for Science and Mathematics for students
16. Teacher Preparation for Science, Mathematics and Technology

1. Sensitisation of Parents and Community

Government will contribute to nurture SMT talent among children through right attitudes through following activities viz.,

a) Promotional communication strategy to sensitize parents and society on Science and Mathematics education in an increasingly knowledge based society through mass media.

b) Community-Scientist interactions at six monthly intervals using TV, Radio and other technologies.

c) Engagement of parents in Classroom teaching at school level.

d) Invitation of parents and community leaders in Science and Mathematics events/ activities of schools

e) Parent-Science & Math teacher meetings

f) Engage Civil Society / NGOs working on Science and Mathematics (selected based on set norms by State/ National level Mentoring Institution) in popularising science and mathematics.

2. Organised visits to Science Museums, Innovation hubs and Science fairs and Mathematics Melas

a) Guided student visits to local vocations/ activities involving traditional and modern science and technology viz., Cycle / Car / Road Transport/Rail/Ship yard workshop, Diary, agriculture, field irrigation system, Bakery, community radio/ TV station, zoo, power stations, telephone exchanges etc; and Science Museums/ Parks/ R&D centres/ Institutions of /Higher Education/ Industry etc.

b) Planned visits to Science Museums and Innovation hubs under mentorship of Higher Education Institutions/ UG or PG Students of Engineering or Science / Mathematics students.

c) Visits to Science fairs and Mathematics Melas organised locally

3. Participation of Students in Inter-school, State/ National Science and Mathematics competitions/ Olympiads etc.

a) Under schemes of the MHRD, schools, students would be

encouraged to participate in programmes and events that promote Mathematics and Science awards and incentives for children. The effort would be to take these programmes/events to decentralised levels to ensure greater wider participation and involvement of teachers and children as well as ensure greater & wider participation of children in competitions and awards.

b) MHRD, NCSM, Nehru YuvakKendras& DST will work together to encourage following greater participation of children in the events:

- Events

i. National Children Science Congress

ii. Teachers Science Congress

iii. Competitions for Science & Innovation at State/district level

iv. Maths and Science Olympiads

v. IRIS Intel Programme

vi. ISRO Science Competitions

- Citizen Science Programme

- MHRD, NCSM, DST (VP) & Nehru YuvakKendras would also collectively work for the following

- Formation of Science Clubs in all Schools in phases, in partnership with VigyanPrasar.
- Subscription/ Membership in Science Clubs/ Circles
- Encouraging students to write Science communication articles in local media based on self- observation, experience and analysis.

4. Expand outreach of programmes of Ministry of Science and Technology to promote science learning

Expand outreach of programmes of Ministry of Science and Technology and National Council of Science Museums (NCSM) for school children, to cover schools across the country and for wider participation of children. The schemes of MHRD, SSA and RMSA would enhance the outreach of DST and NCSM programmes to all Govt. Upper Primary Schools and all Govt. & aided Secondary schools as per approved norms.

a) DST's Scheme for Early Attraction of Talents for Science (INSPIRE) involving identification of students of classes 6-10 of age group 10-15 years, for INSPIRE awards to seed and experience the joy of innovation with Rs.5000/ per child (one time grant) would be popularized across schools to enable greater participation from all schools.

b) INSPIRE Internship School camp for the top 1% students in Class X examination of all School boards would also be popularized and all secondary schools encouraged to participate& compete.

c) NCSM Innovation hubs will be actively involved in student engagement and long term handholding.

5. Science, Mathematics and Technology Clubs for Children

a) MHRD in partnership with VigyanPrasar (DST) and National Council of Science Museums (NCSM) will assist schools in a nationwide effort to institutionalise science clubs for students in schools for Science and Mathematics. Mentoring Institutions will play a lead role in formation of these clubs. Science based reputed voluntary agencies could also be involved at local level to provide necessary support to building activities of Science Clubs and popularise them in schools amongst children and local communities.

b) The objectives of the Science & Mathematics clubs would be to:

c) Stimulate a spirit of curiosity, enquiry, innovation and creativity amongst students/children through activities which would supplement conventional(in class) education and make science

and mathematics an enjoyable and interesting pursuit.

a. Motivate children and youth to take up scientific activities and contribute towards the cherished goals of achieving a scientific society.

b. To transform teachers as a facilitator and change agent (from that of educator)

c. To encourage and empower students to participate in the National Children's Science Congress.

d) Informal out-of-school engagement with Science and Maths Teachers would typically be learner-motivated, guided by learner interests, be voluntary, contextually relevant, collaborative, nonlinear, and as often open-ended. The activities to be undertaken under the RAA, thus would have to be:

a. Designed to be interactive, support and encourage learners to extend their learning over time

b. Provide multiple ways for learners to engage with concepts, practices, and phenomena within a particular setting

c. Promote and support participants to interpret their learning experiences in the light of relevant prior knowledge, experiences and interests

e) Developed through partnerships with appropriate expert(s)/ agencies and wherever possible be rooted in scientific problems and ideas that are relevant for the local community.

f) All educational tools and materials should be developed through iterative processes involving learners, educators, designers, and experts in SMT through appropriate field trials.

6. Promotion of Science & Mathematics Teacher Circles

a) Teachers of Science and Mathematics in Schools to be grouped by Mentoring Institutions in teacher circles at decentralised levels on a voluntary basis. The Mentor Institutions would endeavour to develop teacher capacities for teaching Science and Mathematics in new and empowering ways so as to render the experience of Science & Maths teaching in an engaging manner for children.

b) Mentoring Institutions would try to engage teachers as a community, with the depths and intricacies of specific subject details (Science and Mathematics) to propagate a culture of doing and creating knowledge through problem-solving, 12 programme and demonstration.

c) The Monitoring Institutions would try and propagate a culture of "beyond text books" to bring live Science, Mathematics and Technology issues in to the classroom.

d) The MIs would help to provide a platform (at decentralised levels) for teachers to share experiences with each other, make & present presentations of them professional experiences – innovations, successes and failures in teaching-learning of Mathematics and Science – with their peers.

The MIs would provide expert mentoring and build partnerships in these meetings.

The MIs would help form & sustain Teacher Circles that can be

a. Subject oriented Circles

b. Project-based clubs/Circles

c. Problem-solving circles

d. Guided exploration circles

e. Research mathematicians/Scientists

f. Topic-centred clubs

g. Applied math /technology clubs

e) Teacher Circles/ Clubs in Science and Mathematics would encourage local school-based programs, development of low cost Science and Mathematics kits for schools to use, local campaigns on natural events/phenomenon in Science, residential summer programs for teachers for up-gradation in Science and Mathematics teaching, methods, organise local Math/Science contests for students and teachers or both, teaching Workshops/Seminars/Demonstrations on fun with mathematics/science lessons, organisation of local Science Exhibitions/Book fairs/Math Melas, publish media articles on

Science & Mathematics, activities on Contemporary scientific events to create awareness etc.

f) Provision of Good books for teachers in different languages and e-format.

g) Subscription/ Membership to local, regional, State and National Teacher Science & Mathematics Associations/ Circles/ National Teachers Science Congress (NTSC).

h) Participation in National Teachers Science Congress and activities of nearby Research /R&D Institutions/Mentoring Institutions.

7. School Mentoring

a) Higher Education Institutions (HEI) will be encouraged and networked to mentor neighbourhood Higher Secondary, Secondary and Upper Primary schools over a period of 5 years. They will be

b) Called Mentoring Institutions.Homi Bhabha Centre for Science Education (HBCSE), Indian Institutes of Technology (IITs), Indian Institute of Science Education and Research (IISERs), National Institutes of Technology (NITs), National Council of Science Museums (NCSM) and other institutions would provide the leadership and engage with mentoring of schools.

c) The Department of Science and Technology and National Council of Science Museums (NCSM) through its various agencies would also play a major role in mentoring and encouraging activities in schools for the promotion of Science.The students of Indian Institutes of Technology /NIT and other premier Institutions may be encouraged to mentor KVS & NVS school students to take up local problem solving projects.For the purpose the State/UT Govt. will map schools and Higher Education Institutions and then network each other considering neighborhood, mutual convenience and subject interests etc.

d) The role of these Mentoring Institutions would be to:

a. To improve student engagements through Science and Mathematics activities in schools

b. To create a culture of "making and doing" by students and teachers.To encourage collaborative engagement of teachers and students with planned and coordinated sustenance in the form of material access (resources, documentation and e-materials), institutional support (work load, scheduling, flexibility etc.) and intellectual support (content experts, mentoring, etc.).

c. To ensure technology enabled scientific talks at schools.

8. Effective Classroom transaction: teaching –learning

Endeavour is for an enabling Class room transaction with following features viz.

Sustained & Active engagement with every child	Hands on-Activity based learning	Problem Solving
Experimentation & Demonstration	Modeling	Self- Learning
Peer-to-Peer Collaborative Learning	Online resources	Culture of Beyond Text books and inquiry based learning

a) Sustained & Active engagement with every child.

b) Teaching –learning preferably be in the mother tongue of children /child's home language/language of school instruction related to daily life experience and socio-cultural context, especially in case of primary classes.

a. Encouraging children to share their experiences, news and observations in nature in the class and use their talk as a resource in building classroom discussion richer.

b. Allow children to invent their own ways of using existing vocabulary to convey science and mathematical ideas.

c. Encourage children to express their scientific and mathematical findings.

d. Opportunity to respond, discuss and share STM readings and books.

e. Encouraging children to participate in classroom activities through asking questions and framing of problems.

f. An environment that tolerates learning from failures and therefore motivates children (and teachers) to be creative, and think out-of-the-box.

g. Encouragement for perseverance, by providing positive reinforcement for persevering on tasks; and by not rewarding only the fastest correct answer.

- Hands on-Activity based learning (tod phodjod)
- Problem Solving
- Modelling
- Experimentation & Demonstration
- Self learning
- Peer to peer collaborative learning
- Online resources (in local language) use
- Culture of Beyond Text books and inquiry based learning.

9. Strengthening teacher support institutions through use of technology

The State SCERT/SIE, IASE, CTE, DIETs and Block and Cluster Resource Centres be strengthened with specific emphasis on Science and Mathematics by constituting a Resource Group at each level and build their capacity by networking them with Higher Education Institutions, Teacher Circles and Science Congress etc. The teacher educators and academic support institutions (SCERT, DIETs, BRC and CRCs) also be empowered in using ICT in science and mathematics teaching-learning and activities.

10. Development of Resource Materials

MHRD will constitute an Institutional consortium under the joint leadership of NCERT, DST and National Council of Science Museums (NCSM) to undertake the following activities viz.,

a) NCERT in collaboration with DST VigyanPrasar, National Children Science Congress and National Science Teachers Congress will systematise availability of academic resources on Science & Mathematics in the country.

b) The online resources available at NCERT NROER (National Repository of Open Educational Resources) will be further improved with the collaboration of Children's Science Centre, Pune, UNESCO, Homi Bhabha Centre for Science Education and other organizations working for promoting science math teacher education in the country.

c) NCERT, National Book Trust, VigyanPrasar, Bal Bhawans, National Computer Saksharta Mission, SahityaAkademi, National Council for Science & Technology Communication and other institutions be encouraged to make available their publications in e-format in the public domain.

d) NCSTC, NCERT and National Book Trust to translate popular science books available in public domain in different scheduled regional languages.

e) Individual authors be invited to contribute e-Books.

11. Use of Technology in Science and Mathematics teaching

The Higher Secondary, Secondary and Upper Primary Schools will incrementally supported with ICT infrastructure to support Science and Mathematics teaching/learning in order to transform the scope of classrooms to e-classrooms, rich in audio-video, demonstrations and access to internet.

12. Provision of Teaching-learning equipment and materials

Good scaffolding and other conceptual, physical demonstrations, mathematical and statistical visualization and digital models which fosters active engagement of children in the classrooms be

encouraged. All schools be provided with a variety of science and mathematics models and science magazine for example (National Institute of Science Communication and Information Resources) for active engagement of children. In addition, School libraries be enriched with books for teachers and students to sustain interest in Science, Mathematics and Technology.

13. Strengthening School Science and Mathematics Laboratories

School Science Laboratories will be strengthened based on set standards. The students will be given opportunity to explore and visualize science and mathematics ideas, concepts through activities and enhance their understanding of the subjects through critical thinking and problem solving skills. All the elementary and secondary Schools will be provided Science and Mathematics Kits to augment materials for use in mathematics to understand concepts as well as to build upon understanding for applications and problem solving. Funds under centrally sponsored schemes can be accessed for the purpose. Mentoring Institutions can help & guide schools/States Govt. to build appropriates& modern school laboratories.

14. Recruitment of Science and Mathematics Teachers

a) States and UTs must have earmarked teacher posts for Science and Mathematics from classes VI to XII and recruitments be done with teachers with Science and Mathematics background as per NCTE guidelines Regular monitoring of States/UTs for filling up of vacancies.
b) States Governments & Universities to keep register of Science& Maths graduates and organize regular counselling services to attract such graduates to Teacher Professional Degrees/Diplomas such as D.Ed. & B.Ed. etc.

15. Assessment Design for Science and Mathematics for students

a) Development of appropriate methods for Continuous and Comprehensive Assessment learning of Science & Mathematics by teachers, where in students are assessed not for rote learning

of Science and Mathematics concepts but by testing their comprehension through applications and projects, problem solving and creative use of concepts etc.

b) Workshops & seminars to be held with school boards to rectify assessment systems. Mentoring Institutions Science/ Maths organizations, Department of Science &Technology and National Council of Science Museums (NCSM) to play a lead role in this task.

16. Teacher Preparation for Science, Mathematics and Technology

a) Pre-Service Teacher Education

b) Review of Teacher Education Programmes curriculum (viz., D.El.Ed., B.Ed. etc.) on Science, Mathematics and Technology with emphasis on problem solving, critical thinking, and reflective learning and on incorporating the use of technology in Science and Mathematics teaching-learning, pedagogy and assessment systems.

c) Teacher In-Service Capacity building

d) Enlist best and brightest teachers in Science and Mathematics in the State/ UT as Master Teachers for developing training designs and training modules for Science and Mathematics separately for primary and upper primary, secondary and senior secondary levels. Teacher training modules to promote spirit of enquiry, discovery, project work and investigation, validation and application of concepts in day to day life of a child.

e) Capacity building of Teacher Educators in SCERT, CTEs & IASEs, DIETS & Block and Cluster Resource Centres on the design, modules and conduct of In-service teacher training in Science and Mathematics.

f) Mentoring System

g) Teacher Mentoring by Science, Math Teacher based Higher Education Institutions/ R&D Institutions/Private S&T Institutions. Basic guidelines for mentoring by Higher Education Institutions & SC/Maths organizations to include:-

h) Support – material (print, ICT-NROER, lab resources, space, maps), institutional (policy, network, scheduling), and intellectual (subject experts, college teachers, researchers) are provided with resource material viz. Posters, Audio-visual material, visually rich handbooks, pamphlets, videos etc. to facilitate conceptual understanding of different aspects.

i) Block/Cluster level Meetings with Teacher SMT Circle members and for Peer learning. Peer discussion to include teaching processes, children learning behaviour, their interests, and their resources and ways in which these can be brought into the classroom for improved learning outcomes.

j) Demonstration, practice and reflection opportunity for Teacher to observe, learn and space for making and doing and get opportunity for classroom and beyond classroom practice under guidance in pedagogy & methodology sensitive to the diversity of learners and learning situations.

a. Academic support: Access to Resource Persons (BRP/CRP) for guidance and feedback and innovation.

k) National Teachers Science Congress (NTSC)

l) Encourage and support teachers to communicate and share innovative concepts/methodologies in the fora. Mentoring Institutions to help identify and nurture Science & Maths teachers towards this goal.

m) Teacher's as Change Agents

n) Orientation of School Head Masters and Teachers to nurture student Science and Mathematics clubs/ circles as motivators (not as Educators) to create excitement and stimulation for SM&T among students/children.

Effectiveness of Co-Operative Learning for Teaching Mathematics at Secondary Level

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Co-operative learning is one such approach which makes the students to learn as group to maximize their own and each other's' learning. Co-operative learning strategy stands for teaching in which students are provided opportunities on co-operative principles in which they share their knowledge and experiences with their peer group. In Co-operative learning, individuals' work with his\her peers to achieve a common goal rather than individual gain. Thus, we have shown that cooperative learning is an alternative to answer the socialization, motivation and academic performance problems, and we have verified that co-operative strategies can be an efficient tool, among others, to improve the class climate.

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Introduction

Education is derived from the Latin word “Educatum” which means to draw out to foster growth and to develop. Education in its general sense is a form of learning in which knowledge, skills, and habits of a group of people are transferred from one generation to the next generation through teaching training and research or simply through any experience, that has a formative effect on the way one thinks, feels or acts. The word “Education” has a very wide connotation and it is very difficult to define it precisely. Education is important from various points of view. Its field of activity is so wide that all activities and experiences are embraced in its sphere of work. Education develops the social qualities of service, tolerance, co-operation, fellow-feeling inspiring the child to lay down all, even his life for the glory and prosperity of his country. Education is an effort of the senior people to transfer their knowledge to the younger members of society.

Co-operative Learning

Co-operative learning is an educational approach which aims to organize classroom activities into academic and social learning experiences. There is much more too co-operative learning than merely arranging students into groups, and it has been described as "structuring positive interdependence." Students’ *learning* goals may be structured to promote *co-operative*, competitive, or individualistic efforts. Co-operative learning is a successful teaching strategy in which small teams, each with students of different levels of ability use a variety of learning activities to improve their understanding of a subject. Each member of a team is responsible not only for leaning what is taught but also for helping teammates learn, thus creating an atmosphere of achievement.

Co-operative learning is the instructional use of small groups so that students work together to maximum their own and each other learning. Co-operative learning provides the context within the cognition and meta cognition takes place. Within the cooperative leaning group, interpersonal exchange takes place, intellectual change result from conflicting ideas and conclusions; they promote critical thinking, higher level reasoning and Meta cognitive thought.

Need and Significance of the Study

Now a days, there is a trend to consider learning as perceived by the students and not as the teacher. Effective learning occurs only through effective and constant interaction between the learner and the teacher is psychologically engaged in. Now a days peer collaboration is used in many classrooms. In this study the investigator tried to unreal the possibilities of co-operative learning by comparing with the conventional method. Co-operative learning methods have been used in several schools in recent years. The use of cooperative learning methods indicate better students achievement and the spin off in the form of the development of skills and attitude of working together. The use of co-operative learning method in the classroom boosts an involvement of each individual to achieve a common goal and sharing of the experience.

Usually mathematics is taught as one of the subject in school and universities. Mathematics is considered as queen of all sciences. The present study is an investigation on the Effectiveness of co-operative learning for teaching mathematics in particular to the secondary school students. Many complex mathematical concepts can be taught easily with the help of co-operative learning. So it is the need for the teachers in their millennium to provide quality in delivering of learning instruction to the learners. Learning which is considered as the lifelong process should be effective, meaningful and joyful to the learner.

Objectives of the Study

The objectives of the present study are,

1. To find whether any significant difference between pre-test score of control group and experimental group.
2. To find whether any difference between post test score of control group and experimental group.
3. To find whether any significant difference between pre-test and post test score of control group.
4. To find whether any significant difference between pre-test and post test score of experimental group.

Hypotheses of the Study

Hypotheses of the present study are,

1. There will be significant difference between pre-test score of control group and experimental group.
2. There will be significant difference between post test score of control group and experimental group.
3. There will be significant difference between pre-test and post test score of control group.
4. There will be significant difference between pre-test and post test score of experimental group.

Method Used for the Present Study

Among of the various methods of research, the investigator plan to adopt experimental method on view of objective of the study.

Population & Sample

A population is any group of individual that have one or more characteristics in common that is of interest to the researcher. The population of the present study is the entire student doing in secondary level.The sample portion of the population selected for observation and analyses is called sample. For the investigation two divisions of VIII standard students will select from one school. A sample of 40 students will select for the study. One group is considered as control group and other as experimental group.

Tools used in the Study

The tools used in the study are:

1. Lesson Presented through Co-operating Learning Method
2. Achievement Test in Algebra

3. Personal Data Sheet

Analysis of Data

H1: There will be significant difference between pre-test scores of Control group and Experimental group.

Table -1

Difference Between Pre test Scores of Control group and Experimental Group

Test	Group	N	Mean	S.D	t - value	p - value	Result
Pre-test	Control	20	54.850	15.4316	-1.058	0.846	N.S
	Experimental	20	59.850	14.4524			

The table 1 shows that the p value is greater than 0.05 at 5% level of significance.

Hence the hypothesis is accepted. That is, there is no significant difference between pre test scores of control group and experimental group.

H2: There will be significant difference between post test scores of Control group and Experimental group.

Table - .2

Difference Between Post Test Scores of Control group and Experimental Group

Test	Group	N	Mean	S.D	t - value	p - value	Result
Post test	Control	20	66.900	15.2139	-3.263	0.772	N.S
	Experimental	20	81.400	12.7873			

The table 2 shows that the p value is greater than 0.05 at 5% level of significance.

Hence the hypothesis is accepted. That is, there is no significant difference between post test scores of control group and experimental group.

H 3:There will be significant difference between pre-test and post test scores of control group.

Table -3

Difference Between Pre-test and Post test Scores of Control Group

Group	Test	N	Mean	S.D	t - value	p - value	Result
Control	Pre test	20	54.850	15.4316	-8.975	0.000	S
	Post test	20	66.900	15.2139			

The table 4.3 shows that the p value is less than 0.05 at 5% level of significance. Hence the hypothesis is accepted. That is, there is a significant difference between pre-test and post test scores of control group.

H 4: There will be significant difference between pre-test and post test scores of experimental group.

Table -4

Difference Between Pre-test and Post test Scores of Control Group

Group	Test	N	Mean	S.D	t - value	p - value	Result
Experimental	Pre test	20	54.850	14.4524	-15.189	0.000	S
	Post test	20	66.900	12.7873			

The table 4 shows that the p value is less than 0.05 at 5% level of significance.

Hence the hypothesis is accepted. That is, there is a significant difference between pre-test and post test scores of experimental group.

Findings of the Study

1. No significant difference found between pre-test score of control group and experimental group.
2. No significant difference found between post test score of control group and experimental group.
3. Significant difference found between pre-test and post test score of control group.
4. Significant difference found between pre-test and post test score of experimental group.

Interpretation

From the results derived from the testing of hypothesis, it is observed that the control and experimental group differ significantly in the post test scores. The experimental group students are found to be superior to control group students with regard to post test achievement score. This may be due to the fact that the students of VIII standard may gain more information or knowledge during the experimental teaching of algebra. Co-operative learning of teaching improves the creativity of bright students and the dull students can also understand the content easily. In traditional method students

may omit some concepts, unknowingly, but through Co-operative learning method increase the interest of students. It saves the time for learning. During examinations, students can learn the concept on seeing the picture itself. This study further revealed that there is significant difference between pre test and post test scores of control group. The post test scores of control group is greater than the pre test scores of control group. This may be due to the effectiveness of teaching method used by the teacher who handles the subject to the control group. Hence, they are found to be superior in this regard. In the experimental group, there is significant difference between pre test and post test scores of students of standard VIII. The post test scores of experimental group students are greater than the pre test scores of experimental group students. The reason behind this may be the method of teaching (direct experience) may provide various information about the algebra. Through direct experience, the students are able to understand the concept meaningfully.

Educational Implications

Co-operative learning has several strategies and techniques for promoting an educational experience that facilitates students and teachers to move beyond standard classroom parameters. In co-operative learning, teams, each with students of different levels of ability, use a variety of learning activities to improve their understanding of the subject through a constructivist approach. In recent research studies, researchers used many of the cooperative learning strategies alone or with the cooperation of other methods, techniques and technologies to prove their points.

The investigator of the present study would like to recommend the following educational implications.

- The Co-operative Learning method of teaching should be introduced in the schools for the development of mathematical attitude and interest in pupils.
- Faculty improvement programmes viz., orientation courses refresher courses, seminar and workshop should be organized for teachers to familiarize them with various instructional strategy such as Co-operative Learning.
- Model lesson transcripts based on the Co-operative Learning of teaching on selected units may be developed by an expert's team and made available to the teachers.

- The present study proves the effectiveness of direct experience for teaching algebra to the students of standard VIII. Considering the meritorious aspects of such teaching method, the teacher handling difficult subjects may use this method of teaching for the better understanding of the subject matter among the students.
- The teacher should adopt novel methods of teaching. Such introduction of novel practices in teaching promotes interest and involvement in the subject among the students. It also motivates the students to learn the subject matter with spirit and enthusiasm, which in turn, the scholastic achievement of students may also be increased.
- The experiment done in the present study cannot be implemented in the classes where the student's strength is more in number. Such classes may be divided into two or three sub-sections and they can be given this experiment with the help of fellow teachers.
- The government and educational authorities should encourage the teachers who undertake or introduce such novel experiment in the traditional method of classroom teaching.
- The direct experience of field trip should be introduced not only for the Mathematics students but also for the subject groups. While making field trips, the students should be properly guided by the teacher or the expert in the concerned field and the students should take necessary notes. After the field trip or direct experience, the teachers should provide additional time for clarifying their doubts.
- Proper guidelines should be provide in the method field study, evaluation and grading.

Conclusion

In this study it is found that co-operative learning in teaching mathematics is more effective than the traditional method. The traditional method is effective in some dimensions. But co-operative learning is more effective than the traditional method in classroom teaching learning process. The co-operative learning approach is more effective than the traditional method.So, Co-operative learning approach is a powerful tool in the classroom situation.

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Handling Students Unrest and Behavioral Problem

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Every student comes from a different background and there are different reasons that underline problematic behavior and although many bad behavior can be the result of a student's family life or peers, often bad behavior is the result of a student struggling in school. Student unrest has been a grave phenomenon and syndrome to educational system in India and world as such. Time and again student organizations give call for agitations to protest their dissent which is either just or unjust, causing violence and civic disturbance. Social anomaly of Indian society and politicization of student folk has further made the educational institutions more vibrant and dynamic organizations.

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Students Unrest

Students' unrest is characterized by "collective discontent, dysfunctional conditions in educational institutions and concern (of public and students) for change in existing norms". Students 'agitations, on the other hand, are characterised by 'action based on the feeling of injustice, identifying source of discontent, frustration and deprivation, emergence of leadership, mobilisation for action, and collective reaction to stimuli'.Of the many types of studies made on students, relates to student unrest. Students' indiscipline described as 'disobedience to authority, disrespect to teachers and elders, deviation from norms, refusing to accept control, and rejecting socially sanctioned goals and means'.

Three situations create indiscipline among students:

i. Students lose interest in the goals of education and educational institution and refuse to follow its norms.
ii. Students accept the goals but doubt whether the institution can achieve them. They, therefore, try to improve the institution by deviating from its norms.
iii. Norms of institution fail to achieve goals and students, therefore, want a change in norms.

Student's unrest leads to protests

Student's protests sometimes lead to aggression, agitation and movement. Aggression is a physical or a verbal behaviour or a hostile act intended to harm, hurt or destroy. Agitation is to bring grievance and injustice to the notice of people in power. It is to shake up, to move, to stir up, to cause anxiety, and to disturb the power-holders.

The important elements of protests are:

i. Action expresses grievance,
ii. It points out conviction of injustice,

iii. Protesters are unable to correct the condition directly by their own effort,
iv. Action is meant to provoke ameliorative steps by the target group, and
v. Protesters bank upon the combination of coercion, persuasion and discussion to move the target group.

The pre-conditions for student's agitations:

The important functions of student agitations are to create collective consciousness and group solidarity, to organise students to work for new programmes and new plans, and to provide opportunities to students to express their feelings and make some impact on the course of change such as structural strain, identifying the source of strain, precipitating factor in initiative action, and mobilisation of force for action by a leader.

Five types of students have been identified in this context:

1) Socially isolated, who feel alienated and cut off from the larger society;
2) Personally maladjusted, who have failed to find a satisfying life role, e.g., they do not have an adequate interest in studies;
3) Unattached to family, who lack intimate ties with their families;
4) Marginal's, who are not fully integrated with their caste/religious/linguistic group, and
5) Mobile or migrants, who have little chance of getting integrated into the larger community.

The causes of students' unrest and agitations, as pointed out by the UGC committee in 1960, are:

1) Economic causes, like demands for reducing fees, increasing scholarship;
2) Demands for changes in existing norms pertaining to admissions, examinations and teaching;
3) Poor functioning of colleges/universities;

4) Conflicting relations between students and teachers, e.g., behaviour of teachers with girl students or student leaders, cutting classes and so on;
5) Inadequate facilities in the campus, e.g., inadequate hostels, poor food in hostels, lack of canteen facility, etc.; and
6) Student leaders being instigated by politicians.

Main Causes of Students Unrest:

- Defective Education System
- Aimless life and uncertain future
- Economic difficulties
- Excessive number of students in the class
- Defective teaching methods
- Indifference of the family members
- Unsuitable teachers
- Student union in various ways

Lack of co-curricular and creative activities such as defective examination system, elements of indiscipline and anarchy prevailing in the society, defective examination system, behaviour problems

Address Problematic Student Behaviour

Reports of problematic behaviors are on the rise nationally, not only in the classroom but in society at large. Some of these immature, irritating, or thoughtless behaviors include:

- lateness or leaving early
- inappropriate cell phone and laptop usage in class
- side conversations
- disregard for deadlines
- grade grubbing
- sniping remarks
- cheating

These behaviors are not just instructors' pet peeves, they have real costs including:

- distracting other students and instructor in class
- reducing student participation
- lowering other students' and instructor's motivation in or out of class
- affecting fairness in grading
- using instructor or TA time unproductively
- feeling disrespected as a fellow learner or authority figure

Sometimes students simply refuse to do their work, pulling teachers into a power struggle. If this happens:

- Give students a choice with consequences attached.
- Provide take-up time.
- Reestablish the relationship.
- Distinguish between primary and secondary behavior.
- Avoid unnecessary power struggles
- Plan a follow-up.
- Time your invitation effectively.
- Keep your presentation positive.
- Offer to mirror the problem behavior
- Start with tactical ignoring.
- Combine simple directions and reminders with hand signals
- Give students alternatives.
- health problems, personal or family problems, adjustment or developmental issues

Possible Strategies

Based on these findings and a comprehensive literature review, Sorcinelli (2002) suggests 4 principles to reduce incivilities. The principles are broad enough that each one can be used to generate several concrete strategies such as define expectations at the outset, decrease anonymity, seek feedback from students, encourage active learning.

Four things you can do to minimize disruptive behavior in the classroom:

1. Remediate learning difficulties.
2. Keep the class schedule very consistent.
3. Create a calming environment that isn't over stimulating.
4. Compliment them on every success.

Influences on student behavior

There are many potential influences on student behaviour, and many factors that can lead to behaviour that is challenging for schools to deal with. These include:

- Biophysical factors, such as medical conditions or disabilities
- psychological factors, including emotional trauma or lack of social skills
- Behavioural or social factors, including where a student's problem behaviour has been learned through reinforcement, consequences or adaptation to social practices. For example, a student with a learning difficulty repeatedly misbehaves knowing that he/she will be removed from the class and this will avoid his/her learning difficulty being exposed.
- Historical community factors, including for students whose family member/s had difficult, sometimes traumatic, experiences of school and government agencies
- Cultural factors.

- Student group dynamics, such as bullying and teasing, cliques or student apathy or hostility.
- Environmental factors, for example the level of classroom noise or classroom seating arrangements
- Classroom organization issues, such as inconsistent routines, inadequate materials or obliviousness to cultural differences
- Teacher behaviour, for example boring or disorganized lessons, over-reaction to mis behaviour or over-reliance on punishment.

In many cases, there is no single cause of challenging behavior, but it is the result of several factors operating in combination.

Handle the Common Classroom Problem Behaviours Using a Behaviour Management:

Teachers who can draw on a range of responses when dealing with common classroom misbehaviors are more likely to keep those students in the classroom, resulting in fewer disruptions to instruction, enhanced teacher authority, and better learning outcomes for struggling students. A good organizing tool for teachers is to create a classroom menu that outlines a range of response options for behavior management and discipline. Teachers are able to assert positive classroom control when they apply such a behavior management menu consistently and flexibly--choosing disciplinary responses that match each student's presenting concerns.

This document groups potential teacher responses to classroom behavior incidents into 8 'menu' categories: (1) Behavior reminder, (2) academic adjustment, (3) environmental adjustment, (4) warning, (5) time-out, (6) response cost, (7) behavior conference, and (8) defusing strategies. Teachers can use these categories as a framework for organizing their own effective strategies for managing student problem behaviors

Strategies for Teaching Students with Behavioural Problems

Teaching students with behavior problems creates a higher demand on the teacher. Though some teachers are specially trained to handle special needs children who need more of the teacher's time, the average classroom is likely to contain one or more students who

demand more attention due to behavioral difficulties. In some cases, principals, guidance counselors and other educators must address these problems. Yet, in some cases, hormones, challenges with peers and home life struggles can make even a "good kid" troublesome for a period of time.

For this reason, all teachers need to learn how to teach students with behavior problems. No matter if the child is one student in a classroom with a concern or if the classroom is designed for children with these complex behavioral issues, the methods to teaching and avoiding complications or outbursts are sometimes the same. When teachers learn how to avoid situations that can push the button on these children, it is possible to ensure the classroom's lesson plan is fully explored and all students get equal attention

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A Study on "Violence and Academic Achievement of Higher Secondary Students of Kanyakumari District".

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This study investigated the student willingness to seek help for bullying and threats of violence in a sample of 300 higher secondary students from 10 higher secondary schools. Violence in many forms is preventable. There is a strong relationship between levels of violence and modifiable factors such as concentrated poverty, income and gender inequality. The teachers and parents should give individual attention to the higher secondary students. If any higher secondary students face violence, proper guidance and counseling can be provided at home. The use of internet and television viewing should be restricted to some extend by the parents at home.

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Introduction

Education in its wider sense it is a process that goes on throughout life and is promoted by almost every experience in life education means to draw out to faster growth and to develop the modern concept education seeks to develop the inherent capacities of a child in the social environment. Education can neither be categorized as a science nor as an art. It is both a science and an art. It is as proper to use the term art of education as it is to use the term science of education. Education is that process of development in which consists the passage of human being from infancy to maturity. Education is the knowledge of putting one potentials to maximum use. One can safely say that a human being is not in the proper since till he is not in the proper sense till he is educated.

Violence is defined by the world health organization as the "intentional use of physical force or power, threatened or actual against oneself, another person or against a group or community, which either results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment or deprivation". Although the group acknowledges that the inclusion of "the use of power " in its definition expands on the conventional meaning of the word. This definition involves intentionality with the committing of the act itself, irrespective of the outcome it produces. However generally anything that is excited in an injurious or damaging way may be described as violent even if not meant to be violence.

Need and Significance of the Study

Violence is a form of aggressive behavior that has a debilitating effect on the optimal growth and development of our youth. Violence pervades the lives of a significant proportion of all higher secondary students in the world. But has a particularly devastating impact on male and minority youth. Higher school males are more likely to be victimizers and victims of violence and aggression except in cases of sexual victimizers and suicide attempts. For all higher school exposure to violence at home, school, or in the community is associated with aggression later in life, the development of supportive attitudes towards aggression and violence, psychological distress, school absenteeism, academic dysfunction and subsequent injury.

Violence has historical, cultural and societal roots in our world and unless we begin to understand where violence fits on the continum of aggressive behavior and until we address the politics of violence we will remain conflicted and paralyzed by the danger of our youth face.

Objectives of the Study

- To study the violence on higher secondary school students.
- Specific Objectives

The specific objectives of the study are the following.

1. To find if there exists any significant difference between the violence on

   Male and Female Higher Secondary school students

   Rural and Urban Higher Secondary school students

2. To find if there exists any significant difference among the violence on

   Higher Secondary Students with number of siblings.

   Higher Secondary students of Government, Aided and Private Schools

   Higher Secondary student's religion of Hindu, Christian and Muslim

   Higher secondary students of BC, MBC, OC, and SC communities.

   Higher Secondary students whose father's occupation is Government Private, Business and Coolie.

   Higher Secondary students Mother's occupation is Government, Private, Coolie and House wife.

   Higher Secondary students with regard to their family income.

3. To find if there exists any significant difference between the academic achievement on

Male and Female Higher Secondary school students

Rural and Urban higher Secondary school students

4. To find if there exists any significant difference among the academic achievement on

Higher Secondary Students with number of siblings.

Higher Secondary students of Government, Aided and Private Schools

Higher Secondary students religion of Hindu, Christian and Muslim .

Higher secondary students of BC, MBC, OC, and SC communities.

Higher Secondary students whose father's occupation is Government Private, Business and Coolie.

Higher Secondary students Mother's occupation is Government, Private, Coolie and House wife.

5. To find if there exist any significant relationship between violence and academic achievement of higher secondary students.

Hypotheses of the Study

Hypotheses of the present study are,

1. There is no significant difference between the violence on male and female higher secondary students
2. There is no significant difference between the violence on Rural and Urban higher secondary students
3. There is no significant difference among the violence on Higher secondary students with number of siblings
4. There is no significant difference among the violence on Higher secondary students of Government , Aided and private schools
5. There is no significant difference among the violence on Higher secondary students of Hindu, Christian and Muslim.
6. There is no significant relationship between the violence and academic achievement of higher secondary students.

Method used for the Present Study

The investigator has used survey method. Normative survey method is most devoted to the study of characteristics of the populations under investigation.

Population & Sample

Population for the present study comprises of Higher secondary school students from various schools in Kanyakumari District. The sample of the present study consists of 300 higher secondary school students from ten schools.

Description of the Tool & Data Collection

For the purpose of collecting data the investigator has selected 10 Schools in KanyaKumari District, which covered all categories of independent variables concerned as samples for collecting data. The investigator first approached the head of the institution of all the 10 Schools and sleeked their permission. Later the questionnaire was distributed to the sample students, after giving an adequate introduction about purpose of the data collection students were given enough time for answering the questionnaire was collected back.

Analysis of Data

Hypothesis-1:

There is no significant difference between the Violence on male and female higher secondary students.

Table –4.3.1

Difference between the Violence based on Gender of higher Secondary students

Gender	Number	Mean	SD	't'	P	Remark
Male	126	67.06	6.433	5.552	0.637	S
Female	174	62.97	6.203			

(S-Significant)

Interpretation:

The table (4.3.1) shows that the calculated 't' value (5.552) is greater than table value (0.637) at 0.05 level of significance. Hence the null hypothesis is rejected. This shows that there is significant difference between the Violence on Male and Female higher secondary students.

Hypothesis-2:

There is no significant difference between the Violence on Rural and Urban higher secondary students.

Table – 4.3.2
Difference between the Violence based on Locality of higher secondary students

Locality	Number	Mean	SD	't'	P	Remark
Rural	204	64.63	6.355	-0.312	0.427	NS
Urban	95	64.88	7.161			

(NS-Not Significant)

Interpretation:

The table (4.3.2) shows that the calculated 't' value (-0.312) is less than table value (0.427) at 0.05 level of significance. Hence the null hypothesis is accepted.

This shows that there is no significant difference between the Violence on higher secondary Rural and Urban students.

Hypothesis-3:

There is no significant difference among the Violence on higher secondary students of number of siblings.

Table - 4.3.3
Difference between the Violence based on siblings of higher secondary students

Variable	Variance	Sum of square	Df	Mean square	F	P	Remark
Siblings	Between groups	25.843	5	51.169	1.175	0.321	S
	Within groups	12798.327	294	43.532			
	Total	13054.170	299				

(S-Significant)

Interpretation:

The table (4.3.3) shows that the calculated 'F' value (1.175) is greater than table value (0.321) at 0.05 level of significance. Hence the null hypothesis is rejected.

This shows that there is significant difference among the Violence on Higher Secondary Students of Siblings.

Hypothesis-4:

There is no significant difference among the Violence on higher secondary students of Government, Aided and Private.

Table – 4.3.4
Difference between the Violence with reference to type of school

Variable	Variance	Sum of square	Df	Mean square	F	P	Remark
Type of school	Between groups	316.849	2	158.424	3.694	0.026	S
	Within groups	12737.321	297	42.887			
	Total	13054.170	299				

(S-Significant)

Interpretation:

The table (4.3.4) shows that the calculated 'F' value (3.694) is greater than table value (0.026) at 0.05 level of significance. Hence the null hypothesis is rejected. This shows that there is significant difference among the Violence on higher secondary students of Government, Aided and Private.

Hypothesis-5:

There is no significant difference among the Violence on higher secondary students of Hindu, Christian and Muslim.

Table – 4.3.5
Difference between the Violence with reference to Religion of higher secondary students

Variable	Variance	Sum of square	Df	Mean square	F	P	Remark
Religion	Between groups	1.827	2	0.914	0.021	0.979	NS
	Within groups	13052.343	297	43.947			
	Total	13054.170	299				

(NS-Not Significant)

Interpretation:

The table (4.3.5) shows that the calculated 'F' value (0.021) is less than table value (0.979) at 0.05 level of significance. Hence the null hypothesis is accepted.

This shows that there is no significant difference among the Violence on higher secondary students of Hindu, Christian and Muslim.

Findings

1. There is significant difference between the violence on male and female higher secondary students.
2. There is no significant difference between the violence on Rural and Urban higher secondary students
3. There is significant difference among the violence on Higher secondary students with siblings and without siblings
4. There is significant difference among the violence on Higher secondary students of Government, Aided and private schools

5. There is no significant difference among the violence on Higher secondary students of Hindu, Christian and Muslim.
6. There is significant relationship between the violence and academic achievement of higher secondary students.

Conclusion

From the above findings it is inferred that the demographic variables of the samples like Gender, locality of the school, type of school, religion, community, number of siblings, parents occupation and family income influence the violence on higher secondary students. The study concludes that the violence in the gender, type of school, siblings, mother occupation, and family income media and gang affects the higher secondary students. The teachers and parents should give individual attention to the higher secondary students. If any higher secondary students face violence, proper guidance and counseling can be provided at home. The use of internet and television viewing should be restricted to some extend by the parents at home

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The King Maker K. Kamaraj

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Kamaraj was the chief minister of Tamil Nadu during 1954–1963 and a Member of Parliament during 1952–1954 and 1967–1975. He was known for his simplicity and integrity. He was involved in the Indian independence movement. As the president of Indian National Congress, he was instrumental in navigating the party after the death of Jawaharlal Nehru and bringing to power two Prime Ministers, namely Lal Bahadur Shastri in 1964 and Indira Gandhi in 1966. In Tamil Nadu, his home state, he is still remembered for bringing school education to millions of the rural poor by introducing free education and the free Midday Meal Scheme during his tenure as chief minister. He was awarded India's highest civilian honour, the Bharat Ratna, posthumously in 1976. The domestic terminal of the Chennai airport is named "Kamaraj Terminal". Chennai's Beach Road renamed "KamarajarSalai", Bangalore's North Parade Road as "K. Kamaraj Rd." and the Madurai Kamaraj University in his honour.

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Early Life

Kamraj was born on July 15, 1903, in a family of traders at Virudunagar. His real name was Kamakshi Kumaraswamy Nader but was affectionately shortened to Raja by his mother, SivakamiAmmal. His father, Kumarswamy Nader, was a coconut merchant. Kamaraj was enrolled at the local elementary school, the Nayanar Vidyalaya but was later shifted to the high school Kshatriya Vidyalaya. Unfortunately his father died within a year of Kamaraj's enrollment in school. Kamaraj's mother sold all jewelry except her earrings and deposited the money with a local merchant and cared for the entire family on the monthly interest that the money earned. Kamaraj was not a good student in school and dropped out when he was in the sixth grade. When he entered mainstream public life he felt handicapped and realized the importance of a good education. He educated himself during his periods of imprisonment and even learned English from his co-worker.

Kamaraj joined as an apprentice in his maternal uncle Karuppiah's cloth shop after dropping out of school. He would slip out from the shop to join processions and attend public meetings addressed by orators like Dr. Varadarajulu Naidu and George Joseph. His relatives frowned upon Kamaraj 's budding interest in politics. They sent him to Thiruvananthapuram to work at another uncle's timer shop. Even there Kamaraj participated in the Vaikom Satyagraha led by George Joseph, of the Congress, against the atrocities of the higher caste Hindus on the Harijans. His elders had him called back home and pressured him to marry. Kamaraj resolutely refused to bow to the dictates of his elders.

At the age of 16, Kamaraj enrolled himself as full-time worker of the Congress. He participated in inviting speakers, organizing meetings and collecting funds for the party. He also participated in the march to Vedaranyam led by Rajagopalachari as part of the Salt Satyagraha of March 1930. Kamaraj was arrested and sent to Alipore Jail for two years. He was twenty seven at the time of arrest and was released in 1931 following the Gandhi-Iriwn Pact. Kamaraj was implicated in the Virudhunagar Bomb Case two years later. Dr. Varadarajulu Naidu and George Joseph argued on Kamaraj's behalf and proved the charges to be baseless. Kamaraj was arrested again in 1940 and sent to Vellore Jail while he was on his way to Wardha to get Gandhiji's approval for a list of satyagrahis. While still in jail, Kamaraj was elected Chairman to the Municipal Council. Nine months later upon his release, Kamaraj went straight to the Municipality and tendered his resignation from his post. He felt that

"one should not accept any post to which one could not do full justice." Kamaraj was arrested once more in 1942 and sentenced to three years in the Amaravathi prison for spreading propaganda material for Quit India movement initiated by Gandhiji. While in prison, Kamaraj read books and continued his self-education.

Politics

On 13 April 1954, Kamaraj became the Chief Minister of Madras Province. To everyone's surprise, Kamaraj nominated C. Subramaniam and M. Bhakthavatsalam, who had contested his leadership, to the newly formed cabinet.

Education

As Chief Minister, Kamaraj removed the family vocation based Hereditary Education Policy introduced by Rajaji. The State made immense strides in education and trade. New schools were opened, so that poor rural students had to walk no more than three kilometres to their nearest school. Better facilities were added to existing ones. No village remained without a primary school and no panchayat without a high school. Kamaraj strove to eradicate illiteracy by introducing free and compulsory education up to the eleventh standard. He introduced the Midday Meal Scheme to provide at least one meal per day to the lakhs of poor school children. Later it was expanded to four more schools. This was the precursor to the free noon meal schemes introduced by K. Kamaraj in 1960's and expanded by M. G. Ramachandran in the 1980s. He introduced free school uniforms to weed out caste, creed and class distinctions among young minds.

Agriculture

Major irrigation schemes were planned in Kamaraj's period. Dams and irrigation canals were built across higher Bhavani, Mani Muthar,
Aarani, Vaigai, Amaravathi, Sathanur, Krishnagiri, Pullambadi, Para

mbikulam and Neyyaru among others. The Lower Bhavani Dam in Erode district brought 207,000 acres (840 km^2) of land under cultivation. 45,000 acres (180 km^2) of land benefited from canals constructed from the Mettur Dam. The Vaigai and Sathanur systems facilitated cultivation across thousands of acres of lands in Madurai and North Arcot districts respectively. Rs 30 crores were planned to be spent for Parambikulam River scheme, and 150 lakhs of acres of lands were brought under cultivation; one third of this (i.e. 56 lakhs of acres of land) received a permanent irrigation facility.

In 1957–61 1,628 tanks were de-silted under the Small Irrigation Scheme and 2,000 wells were dug with outlets. Long term loans with 25% subsidy were given to farmers. In addition farmers who had dry lands were given oil engines and electric pump sets on an instalment basis. He then was caught for a case for selling harmful fertilizers.

Commerce and Industry

Industries with huge investments in crores of Rupees were started in his period: Neyveli Lignite Corporation, BHEL at Trichy, Manali Oil Refinery, Hindustan raw photo film factory at Ooty, surgical instruments factory at Chennai, and a railway coach factory at Chennai were established. Industries such as paper, sugar, chemicals and cement took off during the period.

Kamaraj Plan

Kamaraj remained Chief Minister for three consecutive terms, winning elections in 1957 and 1962. Kamaraj noticed that the Congress party was slowly losing its vigour. On Gandhi Jayanti day, 2 October 1963, he resigned from the Tamil Nadu Chief Minister Post. He proposed that all senior Congress leaders should resign from their posts and devote all their energy to the re-vitalization of the Congress. In 1963 he suggested to Nehru that senior Congress leaders should leave ministerial posts to take up organisational work. This suggestion came to be known as the Kamaraj Plan, which was designed primarily to dispel from the minds of Congressmen the lure of power, creating in its place a dedicated attachment to the objectives and policies of the organisation. Six Union Ministers and six Chief Ministers including Lal Bahadur Shastri, Jagjivan

Ram, Morarji Desai, Biju Patnaik and S.K. Patil followed suit and resigned from their posts. Impressed by Kamaraj's achievements and acumen, Prime Minister Jawaharlal Nehru felt that his services were needed more at the national level. In a swift move he brought Kamaraj to Delhi as the President of the Indian National Congress. Nehru realized that in addition to wide learning and vision, Kamaraj possessed enormous common sense and pragmatism. Kamaraj was elected President, Indian National Congress, on 9 October 1963.

The King Maker

After Nehru's death in 1964, Kamaraj successfully navigated the party through turbulent times. As president of the Indian National Congress, he refused to become the next prime minister himself and was instrumental in bringing to power two Prime Ministers, Lal Bahadur Shastri in 1964 and Nehru's daughter Indira Gandhi in 1966. For this role, he was widely acclaimed as the "King Maker" during the 1960s.

Death

Kamaraj died at his home, on Gandhi Jayanti day (2 October 1975), which was also the 12th anniversary of his resignation. He was aged 72 and died in his sleep. He was awarded India's highest civilian honour, the Bharat Ratna, posthumously in 1976.

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A Study on Slow Learners and Their Study Habit of High School Students in Kuzhithurai Educational District

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Education is the process of facilitating learning or the acquisition of knowledge, skills, values, beliefs and habits. Teaching slow learners is an arduous task. Their ability to deal with abstract and symbolic materials that is language number and concept is very limited and their reasoning in practical situation is inferior to that of average students. These pupils differ slightly from normal students in learning ability. They are also unable to deal with relatively complex games and school assignments. They need much external stimulation and encouragement to do simple type of work. Study habits comprise of such factors as made of taking notes mode of reading method of memorizing proper division of time arrangement for rest. This study examines the relationship between the slow learners and their study habit of high school students in Kuzhithurai educational district. Survey research was conducted on 250 slow learners from high school students in Kuzhithurai educational district. The result shows that a positive correlation was found between the slow learners and their study habit.

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Introduction

The term slow learners is reserved for those children who are unable to cope with the work normally expected of their age group. There is a great need for special educational measures for the slow learners to ensure maximum progress. They are capable of we have to give them special attention on humanitarian grounds so that they can overcome the unhappiness and personal inadequacy that are the concomitants of server educational and social failures. Good study habit is also necessary for the slow learners to possess the knowledge of effective methods of study.

Need and Significance of the Study

As human beings not everyone can do everything. Teaching slow learners is an arduous task. The late bloomers differ slightly from normal students in learning ability. The way the perceive things also vary from individual to individual since, education is something common to all, something has to be done to take this education to all the children. Every research should be done only on its importance. The importance of the present investigation is to raise the academic level of slow learners like the average students in Kuzhithurai Educational District. The Scope of the study is also concerned with the improvement of quality life of students. So the investigator wants to find out the relationship between Slow Learners and their Study Habit of High School Students.

Objectives of the Study

The objectives of the present study are,

- To find out the significant difference between the slow learners of high school students based on gender.
- To find out the significant difference between the study habit of high school students based on locality.
- To find out the significant difference between the study habit of high school students based on gender.
- To find out the significant difference between the slow learners of high school students based on the locality.

- To find the significant relationship between the slow learners and their study habit of High school students.

Hypotheses of the Study

Hypotheses of the present study are,

1. There is no significant difference between the slow learners of high school students based on gender.
2. There is no significant difference between the slow learners of high school students based on locality.
3. There is no significant difference between the study habit of high school students based on gender.
4. There is no significant difference between the study habit of high school students based on their locality.
5. There is no significant relationship between the slow learners and their study habit of high school students.

Method Used for the Present Study

The investigator has used survey method to study the relationship between the slow learners and their study habit of high school students.

Population & Sample

Population for the present study comprises of slow learners from High school students in Kuzhithurai Educational District. The sample of the present study consists of 250 slow learners from twenty schools.

Description of the Tool & Data Collection

Data were collected from 250 slow learners of high school students in Kuzhithurai educational district. The tool for the present study is self made questionnaire entitled as "Study Habit Scale". For the

purpose of collecting data the investigator has selected 20 schools in Kuzhithurai Educational District.

Anslysis Of Data

H1: There is no significant difference between the slow learners of high school students based on Gender.

Table – 1

Slow Learners of High School Students Based on Gender

Gender	Number	Mean	SD	't'	P	Remark
Male	100	78.715	11.1197	0.353	0.724	NS
Female	150	79.168	8.8637			

The obtained 't' value (0.353) is not significant at 0.05 level. Hence the null hypothesis is accepted. This shows that there is no significant difference between the slow learners of high school students based on gender.

H2 : *There is no significant difference between the slow learners of high school students based on locality.*

Table –2

Slow Learners of High School Students Based on Locality

Locality	Number	Mean	SD	't'	P	Remark
Rural	220	78.255	10.0636	2.009	0.046	S
Urban	30	81.440	9.8689			

The obtained 't' value (2.009) is significant at 0.05 level. Hence the null hypothesis is rejected. This shows that there is significant

difference between the slow learners of high school students based on locality.

H3: *There is no significant difference between the study habit of high school students based on Gender.*

Table – 3

Study Habit of High School Students Based on Gender.

Gender	Number	Mean	SD	't'	P	Remark
Male	100	72.227	8.5472	0.900	0.369	NS
Female	150	73.252	8.5293			

The obtained 't' value (0.900) is significant at 0.05 levels. Hence the null hypothesis is accepted. This shows that there is no significant difference between the study habit of high school students based on gender.

H4: *There is no significant difference between the study habit of high school students based on locality.*

Table – 4

Study Habit of High School Students based on Locality

Locality	Number	Mean	SD	't'	P	Remark
Rural	220	71.850	8.2070	3.356	0.01	S
Urban	30	76.280	8.9009			

The obtained 't' value (3.356) is not significant at 0.05 levels. Hence the null hypothesis is rejected. This shows that there is significant difference between the study habit of high school students based on locality.

H 5: *There is no significant relationship between the slow learners and their study habit of high school students.*

Table-5

Relationship between Slow learners and their Study habit of High School Students

Variables	Number	'r'	Level of Significance
Slow Learners Study Habit	250	0.601	0.01

As it is shown in the above table, it is clear that the slow learners and their study habit of high school students are positively correlated. It shows there is no significant relationship between the slow learners and their stud habit of total sample. The relationship between the variables may be described as 'substantial'.

Findings

- There is no significant difference between the slow learners of high school students based on gender.
- There is significant difference between the slow learners of high school students based on locality.
- There is no significant difference between the study habit of high school students based on gender.
- There is significant difference between the study habit of high school students based on locality.
- There is no significant relationship between the slow learners and their study habit of high school students.

Interpretation of the Study

The F test result reveals that there is significant difference among Hindu, Christian and Muslim religion slow learners and their study habit. While comparing with Hindu, Christian and Muslim religion students, the Hindu and Christian religion slow learners have good study habit. The Muslim students do not come to school regularly. This is because of the rigid rules and regulations they have in their

religion which demands that they adhere and exercise them without fail.

Educational Implication

From the analysis of the present study the investigator wishes to recommend the following.

- Use of Interactive Software available in the Net will enhance the Speaking Skill of the slow learners. The teachers will upload the software in the computers available in schools and use it. .
- Use of Copy Writing Books for three months with individual attention and correction will make the hand writing of the slow learners legible. The fluent teachers who are prone to deliver lecture throughout the whole period must allot some time to go through the Copy writing books of the students.
- In every group of students, there should be bright students and slow learners. Peer tutoring will help the slow learners. Knowing the importance of forming peer groups, the teachers will evince interest in forming them. The myth that slow learners will retard the progress of the gifted learners is not correct as far as the language learning is concerned. By repeating the structures and words for the slow learners, the brilliant students get them reinforced in their minds.
- Verbal Intelligence Tests may be prepared separately for each type of school. Slow Learners must have access to the language laboratory frequently to practice spoken language.
- Diagnostic Test Paper has to be prepared separately for the slow learners and the bright students. The teachers will prepare a general diagnostic test and then they will insert special words, phrases and sentences for testing the brilliant students. The first time preparation alone will need some time. There are slow learners in every subject. After school hours, the slow learners must be drilled in one subject a day.

Conclusion

The present study gives the following conclusion. Activity Based Method of Teaching creates a lot of interest and enthusiasm in slow learners. The syllabus and textbooks may be old but the content used in activities must be from things and events happened recently.

The teacher should revive the activities. Slow learners are diverted soon from the subject matter if it is boring. Maintain good study habit in the slow learners is very important to make them good citizen and a useful member of the society and role model of others.

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Classroom Management

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The term classroom management includes all the organizational and procedural measures that keep the class moving along, Classroom management is viewed as organizational function in which tasks are performed in a variety of settings resulting in the inculcation of certain values such as human respect personal integrity self direction group cohesion etc. Classroom management is' A system of actions and activities are managed in classroom to induce learning through teacher- taught relationship or interaction," Teachers used the term classroom management to describe the process of ensuring classroom lessons run smoothly despire disruptive behavior by students. Classroom management is one of the main functions of a teacher the other being teaching and instruction. According to Moskowitz & Hayman (1976), once a teacher loses control of their classroom, it becomes increasingly more difficult for them to regain that control. From the student's perspective, effective classroom management involves clear communication of behavioral and academic expectations as well as a cooperative learning environment. Classroom management is closely linked to issues of motivation, discipline and respect. It include technique used by teacher to control classroom, preventive techniques, systematic approaches, classroom management as time management, supporting devices of classroom management and common mistakes in classroom management etc.

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Introduction

The term classroom management includes all the organizational and procedural measures that keep the class moving along, Classroom management is viewed as organizational function in which tasks are performed in a variety of settings resulting in the inculcation of certain values such as human respect personal integrity, self direction, and group cohesion etc. Classroom management is' A system of actions and activities are managed in classroom to induce learning through teacher- taught relationship or interaction,". Teachers used the term classroom management to describe the process of ensuring classroom lessons run smoothly despire disruptive behavior by students. Classroom management is one of the main functions of a teacher the other being teaching and instruction.

Techniques of Classroom Management

1. Classroom Design and Size.

Classroom design and organization is used to promote student participation will probably depend on the class size, classes 10 to 30 students. If you have a class of only 10 students, your major problem will encourage participation and student to student interaction. Teachers are an essential link between children with learning. All students exhibit difficulties at one time or another with spoken or written language memory attention concentration organizational skills physical co-ordination and social behavior.

2. Participate in ongoing workshops and staff development programs

Good teachers are constantly learning update your teaching skills and share successes with fellow educators. Their support and advice will help you to better address the needs of students with learning.

3. Design a learning profile of each student

Monitor each student's ability and involvement in your classroom. By being aware of the learning styles, work level, reasoning ability, classroom participation, comprehension and progress of student with learning. This will help you to improve your students learning skill.

4. Develop effective teaching technique

Always gain a student's attention before giving directions on initiating class instruction call the student by name. This will help alert the child to focus attention upon the classroom activity. Use visual aids to capitalize on students visual processing and to provide the auditory/visual association needed to learn new concepts and language.

5. Provide individualized instruction.

To be effective in learning, teacher should modify their instruction to meet the various learning styles and abilities of student. Class is the basic unit of the big hierarchy of educational administration. The destiny of India is now being shaped in the classrooms. This is the assessment of situation by the first ever comprehensive commission 1964-66 on education. The term classroom is very broad as well as very specific phenomenon. The knowledge of teaching training and instruction is applied for organizing class room activity.

6. Corporal punishment

Corporal punishment was widely used as a means of controlling disruptive behavior but it is now illegal in most schools.

7. Rote discipline

"Rote discipline is a negative sanction used for behavior management. It involves assigning a disorderly student sentences or

the classroom rules to write repeatedly. Among the many types of classroom management approaches, it is very commonly used.

Preventative techniques

Preventative approaches to classroom management involve creating a positive classroom community with mutual respect between teacher and student. Teachers using the preventative approach offer warmth, acceptance, and support unconditionally - not based on a student's behavior. Fair rules and consequences are established and students are given frequent and consistent feedback regarding their behavior. One way to establish this kind of classroom environment is through the development and use of a classroom contract. The contract should be created by both students and the teacher. In the contract, students and teachers decide and agree on how to treat one another in the classroom. The group also decides on and agrees to what the group will do should there be a violation of the contract. Preventative techniques also involve the strategic use of praise and rewards to inform students about their behavior rather than as a means of controlling student behavior.

Good Teacher-Student Relationships

Good teacher-student relationships in the classroom involve the appropriate levels of dominance, co-operation, and awareness of high-needs students. Dominance is defined as the teacher's ability to give clear purpose and guidance concerning student behavior and their academics. By creating and giving clear expectations and consequences for student behavior, this builds effective relationships. Such expectations may cover classroom etiquette and behavior, group work, seating arrangements, the use of equipment and materials, and also classroom disruptions.

Systematic Approaches

1. Culturally Responsive Classroom Management

Culturally Responsive Classroom Management (CRCM) is an approach to running classrooms with all children, in a culturally

responsive way. More than a set of strategies or practices, CRCM is a pedagogical approach that guides the management decisions that teachers make. It is a natural extension of culturally responsive teaching which uses students' backgrounds, rendering of social experiences, prior knowledge, and learning styles in daily lessons. Teachers, as culturally responsive classroom managers, recognize their biases and values and reflect on how these influence their expectations for behavior and their interactions with students as well as what learning looks like.

2. The Good Behavior Game

The Good Behavior Game (GBG) is a "classroom-level approach to behavior management "that was originally used in 1969 by Barrish, Saunders, and Wolf. The Game entails the class earning access to a reward or losing a reward, given that all members of the class engage in some type of behavior The GBG can be used to increase desired behaviors (e.g., question asking) or to decrease undesired behaviors (e.g., out of seat behavior).

3. Positive Classrooms

Positive Classrooms developed by Dr. Robert DiGiulio sees positive classroom management as the result of four factors: how teachers regard their students (spiritual dimension), how they set up the classroom environment (physical dimension), how skillfully they teach content (instructional dimension), and how well they address student behavior

4. Assertive Discipline

Assertive discipline is another systematic approach of classroom management. Lee and Marlene Canter discuss the ideas behind this approach in several published books. Assertive discipline can be achieved by using erect posture, appropriate tone of voice depending on the current situation and taking care not to ignore inappropriate behavior by taking action.

5. Discipline without Stress, Punishments or Rewards

Discipline without Stress is a K-12 discipline and learning approach developed by Dr. Marvin Marshall described in his 2001 book, Discipline without Stress, Punishments or Rewards. The approach is designed to educate young people about the value of internal motivation. The intention is to prompt and develop within youth a desire to become responsible and self-disciplined and to put forth effort to learn.

Classroom management as a process

Teachers must (i) develop caring, supportive relationships with and among students; (ii) organize and implement instruction in ways that optimize students' access to learning; (iii) use group management methods that encourage students' engagement in academic tasks; (iv) promote the development of students' social skills and self–regulation; and (v) use appropriate interventions to assist students with behavior problems.

Classroom management as time management

Classroom management in terms of time management. The goal of classroom management, to Kauchak and Eggen, is to not only maintain order but to optimize student learning. They divide class time into four overlapping categories, namely allocated time, instructional time, engaged time, and academic learning time.

- Allocated time

  Allocated time is the total time allotted for teaching, learning, and routine classroom procedures like attendance and announcements.

- Instructional time

  Instructional time is what remains after routine classroom procedures are completed. That is to say, instructional time is the

time wherein teaching and learning actually takes place. Teachers may spend two or three minutes taking attendance, for example, before their instruction begins. The time it takes for the teacher to do routine tasks can severely limit classroom instruction. Teachers must get a handle on classroom management to be effective.

- Engaged time

  Engaged time is also called time on task. During engaged time, students are participating actively in learning activities—asking and responding to questions, completing worksheets and exercises, preparing skits and presentations, etc.

- Academic learning time

  Academic learning time occur when students 1) participate actively and 2) are successful in learning activities. Effective classroom management maximizes academic learning time.

Supporting Devices of Classroom Management

1. Laboratory experimentation 2.Field work 3.Library study 4.Educational excursion or Field trips.5.Home assignment 6. Self study 7.Tutorials for remedial teaching 8.Action research 9.Guidance services. Teacher is the principal component of class room management.

Common mistakes in classroom behavior management

In an effort to maintain order in the classroom, sometimes teachers can actually make the problems worse. Therefore, it is important to consider some of the basic mistakes commonly made when implementing classroom behavior management strategies. For example, a common mistake made by teachers is to define the problem behavior by how it looks without considering its function.

1. Interventions are more likely to be effective when they are individualized to address the specific function of the problem behavior. Two students with similar looking misbehavior may require entirely different intervention strategies if the behaviors are serving different functions. Teachers need to understand that they need to be able to change the ways they do things from year to year, as the children change. Not every approach works for every child. Teachers need to learn to be flexible.
2. Another common mistake is for the teacher to become increasingly frustrated and negative when an approach is not working.
3. The teacher may raise his or her voice or increase adverse consequences in an effort to make the approach work. This type of interaction may impair the teacher-student relationship. Instead of allowing this to happen, it is often better to simply try a new approach.
4. Inconsistency in expectations and consequences is an additional mistake that can lead to dysfunction in the classroom. Teachers must be consistent in their expectations and consequences to help ensure that students understand that rules will be enforced. To avoid this, teachers should communicate expectations to students clearly and be sufficiently committed to the classroom management procedures to enforce them consistently.
5. "Ignoring and approving" is an effective classroom management strategy. This involves ignoring students when they behave undesirably and approving their behavior when it is desirable. When students are praised for their good behavior but ignored for their bad behavior, this may increase the frequency of good behavior and decrease bad behavior.
6. Student behavior may be maintained by attention; if students have a history of getting attention after misbehavior, they may continue this behavior as long as it continues to get attention. If student misbehavior is ignored, but good behavior results in attention, students may instead behave appropriately to acquire attention

Conclusion

Classroom management is one of the main functions of a teacher the other being teaching and instruction. Once a teacher loses to control of their classroom, it becomes increasingly more difficult for them to regain that control. So classroom management is important factor in teaching and learning process.

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A Study of Creativity and Problem-Solving Skills of IX Standard Students in Mathematics

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The current study aimed to identify the creativity and problem solving skills of IX standard students in learning mathematics. The sample of the study consisted of 250 students studying in IX standard. Creativity scale (CS) was developed and standardized by Dr. A. Beaula was used to collect data. Susan Barkman and KrisanaMachtmes tool was modified suitably for the study of problem solving skills. Data were analysed by using product moment correlation, t-test and ANOVA test. The results of the study revealed that creativity and problem solving skills are not significantly correlated to each other. Significant difference was found between Male and Female students in their creativity and problem solving skills.

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Introduction

The purpose of education is not just making a student literate but adds rationale thinking, knowledge ablity and self-sufficiency. When there is a willingness to change, there is hope for progress in any field. Creativity can be developed and innovation benefits both students and teachers.

Creativity

Creativity is the ability to see something in a new way, to view and solve problems in different ways. Creative individuals are as achievement oriented as their less creative counterparts. Creativity is a great motivator because it makes people interested in what they are doing. Creativity gives the possibility of sort of achievement to everyone. Achievement in education has become an index of success in this highly competitive world in the present century this is marked as safe corner for the successful future and career security.

Problem Solving Skills

Problem solving is often seen as one of a number of skills to be taught in mathematics classrooms. Problem solving consists of activities such as understanding the problem, devising a plan, carrying out the plan, and looking back. A problem for a task situation is where students are required to connect the known information in a way that is new to do the task.

Need and Significance of the Study

Creativity and Problem solving skills is a simple process that involves breaking down a problem to understand it, generating ideas to solve the problem and evaluating those ideas to find the most effective solutions. Highly creative people tend to follow this process in their heads, without thinking about it. Less naturally creative people simply have to learn to use this very simple process. Mathematics is a subject which needs creative thinking and problem

solving ability to solve the problem. Thus this study is an effort on the part of the investigator to find out significant relation if any between creativity and problem solving skills.

Objectives of the Study

1. To find the significant difference if any, in creativity of IX standard students with respect to Gender.
2. To find the significant difference if any, in creativity of IX standard students with respect to Type of Management.
3. To find the significant difference if any, in problem solving skills of IX standard students with respect to Gender.
4. To find the significant difference if any, in problem solving skills of IX standard students with respect to Type of Management.
5. To find the significant relationship between creativity and problem solving skills of IX standard students in Mathematics.

Hypotheses of the study

1. There is no significant difference between the creativity of IX standard students in Mathematics with respect to Gender.
2. There is no significant difference among the creativity of IX standard students in Mathematics with respect to Type of Management.
3. There is no significant difference between the problem solving skills of IX standard students in Mathematics with respect to Gender.
4. There is no significant difference among the problem solving skills of IX standard students in Mathematics with respect to Type of Management.
5. There is no significant relationship between creativity and problem solving skills of IX standard students in Mathematics.

Method used for the Present Study

Descriptive survey method was used in order to fulfill the objectives.

Population and Sample

A sample of 250 students from 11 Secondary Schools of Kanyakumari District was selected by using simple random sampling technique.

Tools used

1. Creativity scale (CS) developed and standardized by Dr. A. Beaula was used to collect data.
2. Susan Barkman and KrisanaMachtmes tool was modified suitably for the study of problem solving skills.

Analysis of Data

$H_0$1: There is no significant difference between the Creativity of IX Standard Students in Mathematics with respect to Gender.

Table-1

T value of the Creativity of IX Standard Students in Mathematics with respect to Gender

Gender	N	Mean	Std. Deviation	't' - value	Remarks at 5% level
Male	109	96.93	9.564	3.256	S
Female	141	101.23	11.299		

(The table value of 't' at 5% level of significance is 0.45)

Table-1 reveals that the calculated value of 't' is less than the value at 5% level of significance with respect to Creativity. Hence there is significant difference between the Creativity of IX Standard Students in Mathematics with respect to Gender.

$H_0$2: There is no significant difference among the Creativity of IX Standard Students in Mathematics with respect to Type of Management.

Table-2

'F'- Value of the Creativity of IX Standard Students in Mathematics with respect to Type of Management

Source of Variation	Sum of Squares	Mean Square	Calculated 'F' value	Remarks at 5% level
Between Groups	57.332	28.666	0.246	NS
Within Groups	28831.692	116.727		

(The table value of 'F' at 5% level of significance is 0.782)

Table-2 reveals that the calculated value of 'F' is greater than the value at 5% level of significance with respect to Creativity. Hence there is no significant difference among the Creativity of IX Standard Students in Mathematics with respect to Type of Management.

$H_0$3: There is no significant difference between the Problem Solving Skills of IX Standard Students in Mathematics with respect to Gender.

Table-3

t- value of the Problem Solving Skills of IX Standard Students in Mathematics with respect to Gender

Gender	N	Mean	Std. Deviation	't' - value	Remarks at 5% level
Male	109	46.10	9.103	2.722	S
Female	141	42.77	10.218		

(The table value of 't' at 5% level of significance is 0.017)

Table-3 reveals that the calculated value of 't' is less than the value at 5% level of significance with respect to Problem Solving Skills. Hence there is significant difference between the Problem Solving Skills of IX Standard Students in Mathematics with respect to Gender.

$H_0$4: There is no significant difference among the Problem Solving Skills of IX Standard Students in Mathematics with respect to Type of Management.

Table-4

'F'- Value of the Problem Solving Skills of IX Standard Students in Mathematics with respect to Type of Management

Source of Variation	Sum of Squares	Mean Square	Calculated 'F' value	Remarks at 5% level
Between Groups	21.004	10.502	0.107	NS
Within Groups	24229.896	98.097		

(The table value of 'F' at 5% level of significance is 0.899)

Table-4 reveals that the calculated value of 'F' is greater than the value at 5% level of significance with respect to Problem Solving Skills. Hence there is no significant difference among the Problem Solving Skills of IX Standard Students in Mathematics with respect to Type of Management.

$H_0$5: There is no significant relationship between creativity and problem solving skills of IX standard students in Mathematics.

Table-5

Significance of Correlation between creativity and problem solving skills of IX standard students in Mathematics

Variables	N	Calculated 'r'value	Remarks at 5% level
Creativity	250	0.003	NS
Problem Solving Skills	250		

(The table value of 'F' at 5% level of significance is 0.958)

Table-5 reveals that the calculated value of 'F' is greater than the value at 5% level of significance with respect to creativity and Problem Solving Skills. Hence there is no significant relationship between creativity and problem solving skills of IX standard students in Mathematics.

Findings and Interpretations

- There is significant difference between the creativity of IX standard students in mathematics with respect to gender and also there is significant difference between the problem solving skills of IX standard students in mathematics with respect to gender. This may be due to the fact that the female students think always creatively, logically and systematically. This may be the reason that female students have higher level of creativity compared to male students.
- No significant difference is revealed among the creativity of IX standard students in mathematics with respect to type of management. And also there is no significant difference among the problem solving skills of IX standard students in mathematics with respect to type of management. This may be due to the fact that government, aided and private school students have equal opportunities in learning new things which enhance their creativity and problem solving skills.
- There is no significant relation between creativity and problem solving skills of IX standard students in mathematics. This may be due to the fact that learning mathematics develops many soft skills like skill of organizing data, analysis and skill of problem solving. knowledge-technical, procedural, intellectual, how flexibly and imaginatively people approach problems these are the components of creativity it is not related to problem solving skills.

Educational Implications

- Teachers can use different methods of teaching to create interest among students and to remove phobia related to mathematics.

- Teachers can guide practice of solving problems by the students under their close supervision.
- Teachers can encourage co-operative learning strategies among students in class room set up.
- Peer tutoring, mentoring systems can also be adopted by teachers to help the backward students in mathematics.

Conclusion

The child who is trained to think creatively not only finds himself as a better acquirer of knowledge but also as a better user and producer of new knowledge. If creative thinking and problem solving skills are not developed during the formative period of child's life be gets stunted and cannot then be properly developed at this stage. Acquisition of knowledge of a more complex nature will be no problem to him at all if creativity and problem solving skills is developed during the early years of life. Therefore the teacher should be very careful in selecting and giving the teaching learning process. His success as a teacher depends upon the suitability of learning process, which he selects to give to the students.

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